University of Rhode Island

DigitalCommons@URI

2018

TRANSTHEORETICAL MODEL DEVELOPMENT FOR RETAIL HEALTH CLINIC UTILIZATION

Stephen V. Matsko
University of Rhode Island, stevematsko@gmail.com

TRANSTHEORETICAL MODEL DEVELOPMENT FOR RETAIL HEALTH

CLINIC UTILIZATION

BY

STEPHEN V. MATSKO

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

PSYCHOLOGY

UNIVERSITY OF RHODE ISLAND

2018

DOCTOR OF PHILOSOPHY DISSERTATION

OF

STEPHEN V. MATSKO

APPROVED:

Dissertation Committee:

Major Professor   James O. Prochaska

Colleen Redding

Bryan Blissmer

Nasser H. Zawia
DEAN OF THE GRADUATE SCHOOL

UNIVERSITY OF RHODE ISLAND
2018

ABSTRACT

Primary Care is considered to be in a crisis in the U.S. related to increasing rates of chronic disease, increasing numbers of patients, less physicians, and less money. This dilemma has led to the rise of what could be a disruptive innovation in the form of retail health clinics, health clinics located within retail settings like pharmacies and large retail stores. The core aim of this study was to use a sequential approach to measurement development to develop TTM measures for the Stage of Change, Decisional Balance, and Self-Efficacy for patients' readiness to utilize retail health clinics using split half validation procedures. The sample consisted of 551 patients with a stage distribution of Precontemplation 24.4%, Contemplation 14.2%, Preparation 20.3%, Action 5.8% and Maintenance 35.3%. Table 3 reports demographics and Stage of Change. Exploratory principle components analyses produced a 2-factor (Pros α=.88; Cons α=.85) 8-item scale for the Decisional Balance measure and a 1-factor 5-item scale for the Self-Efficacy measure (α=.83). Confirmatory analyses replicated the hypothesized factor structures for both the decisional balance (CFI=.958, SRMR=.055, loadings .63-.88) and Self-Efficacy (CFI=.999, SRMR=.019, loadings .73-.84) scales. MANOVA results by stage of change were significant Wilk's Λ= .79, F(4, 4,484)= 9.85, p<.001, multivariate η^2=.076. The Self-Efficacy measure and the Pros scale of the Decisional Balance measure replicated the expected patterns across the stages. The Cons scale deviated from the expected pattern of decreasing from Precontemplation to Maintenance, actually resulting in an increase. Overall, this study supports the application of the

TTM to retail health clinic utilization and the initial development of specific TTM

measures for Self-Efficacy and Decisional Balance.

ACKNOWLEDGMENTS

With the sincerest gratitude, I would like to thank my major professor, James Prochaska, for his tremendous mentorship, support, and guidance throughout all of my graduate school training. I feel extremely fortunate to have had the opportunity to work with him during my graduate training. His excitement and curiosity was contagious and consistently inspired me to continue asking more questions and seeking more answers. I would also like to extend my sincerest gratitude to my entire dissertation committee including Drs. Redding and Blissmer. Each was extremely helpful in the development of this project including challenging me to think in novel ways. I would also like to thank my family for their support and understanding during the long days and nights required of this project.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Primary Care has been considered to be in a crisis in the U.S. related to increasing rates of chronic disease, increasing numbers of patients, less physicians, and less money (Lee, Bodenheimer, Goroll, Starfield, & Treadway, 2008). This dilemma has led to the rise of what could be a disruptive innovation in the form of retail health clinics across the country. Retail clinics are generally located in retail settings including pharmacies, grocery stores, and discount chains with the vast majority owned and operated by large pharmacy companies (Arthur et al., 2015). In fact, only 3 companies, CVS, Walgreens, and Target accounted for the ownership of 73% of all retail clinics in 2012. In contrast, existing hospital chains or physician groups owned just 11% (Mehrotra & Lave, 2012). Like more traditional care providers, retail clinics have a referral network for more serious or chronic illnesses and collaborate with other local providers. They generally accept most major health insurance plans and utilize electronic medical records (McKinlay & Marceau, 2012). In many ways, the patient experience can be very similar to more traditional providers.

For example, retail clinics are generally open 7 days a week for 12 hours on weekdays and 8 hours on weekends for walk-in appointments. They provide services like vaccinations and physical exams in addition to treating a limited number of acute conditions. However, lab tests, EKGs, the diagnosis of serious medical conditions, and in many cases the management of chronic diseases are not offered. Visits are short

(approx. 15 mins) and costs can be as much as 30-80% less than costs for more traditional providers of acute care. Prices are predominantly displayed and they generally accept all major insurance carries. The providers staffing retail clinics are often Nurse Practitioners (NPs) and Physician Assistants (PAs).

While data on the expansion in quantity and scope of these clinics is becoming more readily available, there is limited research into better understanding who are using these clinics and why. Rising healthcare costs have brought new found attention and interest to cost reduction strategies. Some patients are also becoming better healthcare consumers who are more likely to consider costs when selecting providers and treatment facilities. Retail health clinics not only offer an additional treatment facility option with expanded access, but have capitalized on healthcare consumerism via increased cost transparency.

Improving our understanding of what may lead patients to use retail clinics can provide valuable information for how the rise of these will impact the current healthcare structure, costs, and coordination of care. These data can also add to the understanding of what healthcare consumers value in their decisions where to obtain care and could help to predict future healthcare trends in the areas of acute and preventive care. Moreover, the possible consequences of increased retail health clinic utilization are not well understood. Expanding our knowledge about this potentially disruptive addition to the healthcare system is vital if we are to keep pace with the constantly evolving US healthcare system.

CHAPTER 2

REVIEW OF LITERATURE

The retail health clinic industry began in 2000 with the opening of QuickMedX clinics in Minnesota and the industry has seen substantial growth since (Leppel, 2010). There were questions in 2007 about the continued growth and sustainability of clinics with as few as 60 clinics at the beginning of 2006 (Tu & Cohen, 2008). However, those concerns seemed to diminish quickly with the number of clinics rising dramatically over the next few years. According to Professional Pulse (Professional Pulse, 2016), there were approximately 1,900 clinics in existence by 2014. The number of clinics is expected to exceed 2,800 by the end of 2017 supporting more than 11 million annual appointments according to a report by Accenture (Accenture, 2015). Retail clinics may be here to stay.

Services Provided

Retail clinics focus the care they provide on a limited number of common acute conditions. These conditions generally have widely accepted treatment guidelines and generally do not require follow-up appointments making them ideal for treatment in the retail settings (Dalen, 2016). Approximately 5% of cases that present at retail clinics fall outside the scope of their practice and in these cases, retail clinics refer patients to other available providers like urgent care or emergency departments in hospitals (Mehrotra, Wang, Lave, Adams, & McGlynn, 2008). By far, the most common presenting illness is upper respiratory infections accounting for

approximately 61% of all visits. Preventive exams and vaccinations also account for a substantial portion of visits, 22% of all visits (Weinick, Burns, & Mehrotra, 2010).

While the scope of retail clinics has been limited to date, there are efforts currently underway to expand into the areas of chronic care management, public health related interventions, and supplementing the care they provide via telemedicine. These shifts have large implications for the role of retail clinics and have led to the formation of partnerships between retail clinics and larger healthcare systems. For example, CVS, operator of approximately 1,000 retail clinics, currently has affiliations with more than 50 healthcare organizations including the Cleveland Clinic, Henry Ford Health System, and Kaiser Permanente (Dalen, 2016). These partnerships, along with efforts made by independent retail clinics, are creating a shift away from fragmented care and may actually facilitate connected health care system growth and access.

As the reach of retail clinics continues to expand, their ability to treat chronic illness continues as well. Indeed, most of the major players in the retail health business have expanded into some areas of chronic care. For example, Walgreens is now offering management services for asthma, diabetes, and high cholesterol (Appleby, 2013). Clinics operated by WalMart now have the capability to diagnose, treat, and manage a wide range of chronic illness including hypertension, dyslipidemia, and COPD in addition to diabetes and asthma (Chang, Brundage, & Chokshi, 2015). CVS offers many of these same services, and is expanding into weight management.

QCare Clinics, partnered with ShopRite grocery stores, developed behavioral health screen kiosks placed in the waiting rooms of retail clinics to screen for common mental health conditions (Bacharach, Frohlich, Garcimonde, & Nevitt, 2015). This highlights the potential for areas of further expansion into public health domains such as mental health screening, smoking cessation, alcohol reduction, and HIV screening. There is a precedent in other countries for community pharmacies to be points of care for such interventions. For example, pharmacies in the United Kingdom are using the Transtheoretical Model of Behavior Change, which has proven to be effective and cost efficient when delivered in community pharmacies. Weight management interventions have also proven to be feasible in these settings and early research has shown positive short-term results (Brown et al., 2016). Pharmacies are also practical and appealing for HIV screening because at-risk populations often lack PCPs or medical homes, cannot afford the costs of traditional settings, and may require repeat testing (Dugdale, Zaller, Bratberg, Berk, & Flanigan, 2014).

A relatively new expansion for retail clinics has been to leverage the use of telemedicine technologies. CVS announced in 2015 that they were partnering with three leading direct-to-patient telemedicine services to bring these services to their in-store clinics (CVS Health, 2015). In such a system, patients are offered the opportunity to be treated remotely by a physician with the assistance of an on-site nurse. Early data on these services has been positive with 32% actually preferring a telehealth visit over a traditional in-person visit and 70% reporting that they were highly satisfied with the experience, would use it again, and would recommend it to

others. Of those that utilized the service, 80% were insured, 70% were female, and 59% had a primary care provider (Polinski et al., 2016).

Benefits of Retail Clinics

Cost

Retail clinics have generally been able to offer cost savings over traditional providers largely because of less expensive staffing models (Chang et al., 2015). The median cost of retail clinic visits was $88.10 compared to $126.30 for similar services at traditional providers (Mehrotra & Lave, 2012; Rohrer, Angstman, & Bartel, 2009). Average savings have been estimated to be approximately $50-55 per episode and some research suggests that an estimated 13-27% of all ED visits could be handled in retail clinics resulting in a potential savings of $4.4 billion dollars annually (Thygeson, Van Vorst, Maciosek, & Solberg, 2008; Weinick et al., 2010).

Ahmed and Fincham conducted a discrete choice experiment that found that despite a preference to be treated by a physician, cost remained a key factor in deciding where to be treated and by whom (Ahmed & Fincham, 2011). Specifically, they found that it would take an average savings of $31.42 for patients to seek care from a nurse practitioner at a retail clinic rather than a physician at a private office. They also found that it would require an average savings of $83.20 to wait an additional day to seek care. These data support the success and continued growth of retail clinics as point of care options that offer reduced costs and increased convenience that are appealing to modern healthcare consumers. While the data on

episodic costs highlights consistent savings, more research is needed to better understand the overall impact of retail clinics.

Access

The benefits of costs in retail clinics seem to go beyond simple, episodic cost savings. Most retail clinics accept insurance but also have pricing systems in place that are appealing to those needing or willing to pay out of pocket (Ahmed & Fincham, 2011; Rudavsky, Pollack, & Mehrotra, 2009). Their flat fee pricing is prominently displayed, which is generally not the case in traditional settings. This level of transparency can increase access for those who are without insurance or who are underinsured (Chang et al., 2015).

Similar to cost savings and transparent pricing, convenience has consistently proven to be a positive driving factor in the success of retail clinics. Retail clinics generally offer afterhours care on weekdays and access throughout weekends, which many physician offices do not (Mehrotra & Lave, 2012). Their locations in large retail settings also provide free, accessible parking in areas that patients already frequently travel to and from. Further, most retail clinics are co-located with or nested in retail pharmacies, allowing for prescriptions to be filled on-site (Dalen, 2016).

Some retail clinics will accept scheduled appointments, but their current business model continues to be based on walk-in services. Despite this, they are able to keep wait-times shorter than most traditional providers (Chang et al., 2015; Dalen, 2016). In fact, most retail clinics view what would be considered a modest traditional wait-time of 20 minutes to be far too long and are constantly trying to innovate ways

to decrease wait-times. Such immediate access is of extreme importance to today's healthcare consumers as 75% of Americans report that it is difficult to make timely doctor's appointments, get phone advice, or obtain care after hours without seeking care from an emergency department (Levine & Linder, 2016).

Quality of Care

Despite offering lower costs though less expensive staffing models, the quality of care received continues to receive marks similar to traditional care in physician offices, urgent care, and emergency departments. Concerns about quality of care will be discussed later in this paper, but it should be noted that there is substantial evidence that quality of care by Nurse Practitioners is high (Horrocks, 2002). In the largest study to date that utilized 14 measures constructed from the most widely used quality assurance measures, researchers found that CVS MinuteClinics performed similarly to ambulatory care facilities and emergency rooms on seven of the measures and had superior scores on the other seven. The multivariate model provided even more impressive results with MinuteClinics individually outperforming both ambulatory care and emergency departments on all quality measures (Shrank et al., 2014).

Limitations and Concerns

Geographic Location

Geographically, access to retail clinics has been somewhat limited with 88% located in major metropolitan areas (Martsolf et al., 2017). With the unprecedented growth of retail clinics, access to retail clinics remains limited for many Americans. A

subsequent study in 2012 noted that 43% of retail clinics were located in the south, 31% in the Midwest, and nearly half of all retail clinics were located in just 5 states, FL, CA, TX, MN, and IL (Mehrotra & Lave, 2012). People in these regions, especially those in and around urban settings, are likely to have access to a retail clinic within a 10-minute drive of their home.

Distribution of clinics across areas of high and low socioeconomic status presents another factor limiting access. According to a 2009 study, counties that had a retail clinic had lower Black population percentages, lower poverty rates, higher median incomes, and were less likely to be medically underserved (Craig Evan Pollack & Armstrong, 2009). Retail stores that had health clinics were also less likely to be located in medically underserved areas compared to stores without clinics. Indeed, subsequent research has found similar results with only 12.8% being located in medically underserved areas and more likely to be located in metropolitan areas with lower poverty rates and higher median incomes (Mehrotra & Lave, 2012). These findings suggest that retail clinics and their benefits are not equally accessible for those with the greatest need. Increasing access to care could help to increase health equity and reduce demonstrated health disparities in low income areas if clinics were distributed in ways that improved access across communities.

Quality of Care

The American College of Physicians and others in the medical field have expressed concern about the rise of retail clinics and their impacts on the healthcare

system (Daniel & Erickson, 2015; Rohrer et al., 2009). The core concern often centers on the implications for long-term care and they argue for a balance of accessibility and convenience with the importance of longitudinal care. The issues of patient care coordination are supplemented by additional concerns related to over-utilization, over-prescribing of antibiotics, perceived lack of preventive care and the potential for eroding relationships with PCPs and medical homes. Also, there is some concern about public awareness related to providers in retail clinics with some patients being treated by NPs reporting beliefs they are being treated by "doctors" (Hunter, Weber, Morreale, & Wall, 2009).

The concern about patient care coordination and subsequent impacts is supported by a few studies. For example, the lack of coordination of care has traditionally cost the U.S. healthcare system billions of dollars (Institute of Medicine & Committee on Quality of Health Care in America & The Institute of Medicine, 2001). There is also evidence suggesting that patients who visit retail clinics make fewer subsequent visits to their PCPs and as a result, may have less continuity of care (Reid et al., 2013). Fewer interactions with PCPs could lead to less knowledge of the patient and for those without PCPs, the availability of retail clinics may impact their motivation to seek one (Craig E. Pollack, Gidengil, & Mehrotra, 2010). However, this seems to be a part of the system that can and is being continuously improved upon.

In an article published in the *New England Journal of Medicine,* Cassel highlights three ways to improve the coordination of care in retail settings (Cassel, 2012). The first is to maintain relationships with PCPs and refer patients to them. The second is to create means of open communication via faxing or emailing episode data

when patients identify that they have a PCP. The third is to develop ongoing relationships with medical homes of accountable care organizations and promoting shared electronic medical records.

A recent review of CVS's MinuteClinic care coordination offers some insight into the problems facing retail clinics in their attempts to coordinate care. Moore and colleagues found that only about 2/3rds of patients visiting the clinic reported having a PCP or medical home (Carney Moore, Dolansky, Hudak, & Kenneley, 2015). Unfortunately, it is unclear how many failed to report a PCP because they were not explicitly asked and how many didn't actually have one or denied having one for other reasons. Regardless, for a number of reasons, over 1/3 did not report PCP information to the clinic. Moreover, only 60% of those reporting that they had a PCP gave permission to share information. Other reasons noted for a failure to coordinate care were patients not providing accurate contact information for their PCP or the clinic not being able to locate the medical home in the EMR database. More research is needed to better understand patient concerns about sharing information with PCPs, and ways to improve care coordination in retail clinics.

Two specific concerns stemming from the continued growth of retail clinic usage are the potential for treatment over-utilization and over-prescribing of antibiotics. Over-utilization is mostly limited to the emerging area of telemedicine in retail settings, which consumes valuable physician resources and can generate unnecessary follow-up appointments (Chang et al., 2015; Levine & Linder, 2016). More research is needed to better observe and understand the potential for treatment overutilization in retail clinic settings.

Concern about the over-prescribing of antibiotics is better researched and findings suggest this concern is overstated with rates of prescriptions in retail clinics being similar to or better than those in physician offices, urgent care, and emergency rooms (Mehrotra & Lave, 2012). Specific findings have shown that 99.75% of patients in a retail clinic received an appropriate antibiotic prescription and that 99.05% of cases appropriately withheld antibiotic prescriptions. Of the remaining 0.95% where antibiotics were prescribed, half were supported with documentation of clinical concerns justifying the prescription as reasonable (Woodburn, Smith, & Nelson, 2007). In fact, antibiotic prescribing has been shown to be more guideline concordant in retail clinics and thus, more diagnostically appropriate than one might find in primary care practices and emergency rooms (Mehrotra, Gidengil, Setodji, Burns, & Linder, 2015).

Concerns about a lack of preventive care in retail clinics have also been raised. These concerns stem from the advantage in cases where a patient presents at their PCP for an acute episode. The PCP knows the patient and their ongoing medical risks and despite an unrelated presenting problem, has the opportunity to check in and follow up on ongoing or chronic conditions. Despite these seemingly valid concerns, the limited research to explore the impacts of retail clinic visits on preventive care have found no significant differences compared to primary care and urgent care (Mehrotra & Lave, 2012; Reid et al., 2013).

Utilization of Retail Clinics

The three largest retail clinic operators reported 8.9 million visits between 2007 and 2009 and predict that total retail clinic visits will exceed 11 million per year by 2017, highlighting the rapid growth of utilization (Accenture, 2015; Mehrotra & Lave, 2012; Uscher-Pines, Harris, Burns, & Mehrotra, 2012). It's believed that as many as 1 in 5 PCP visits and 1 in 10 emergency room visits can be treated in retail clinics in more cost-effective ways. With these data in mind, a better understanding of who is using retail clinics, for what presenting problems, and why they are choosing retail clinics is important.

Patient Characteristics

A few trends have emerged from the limited research about the characteristics of patients utilizing retail clinics. Generally speaking, utilization has been higher among women and those younger in age. They also tend to be patients who either lack a regular healthcare provider or do not have insurance (Ashwood et al., 2011; Leppel, 2010; RAND Corperation, 2016). Some evidence suggests that patients with concerns about misdiagnosis and provider qualifications are less likely to utilize retail clinics (RAND Corperation, 2016). In a study limited to commercially insured patients the top predictors of retail clinic use were distance to retail clinic, age, chronic illness, income, and gender (Ashwood et al., 2011).

A 2008 study by Mehrotra et al. examined early utilization of retail clinics from 2000 to 2007, which support these findings. They found that across 1.3 million visits, 43% were by young adults (aged 18-44) compared to just 23% of patients seen in primary care. Patients were less likely to have a personal doctor with 61% reporting

that they didn't have a usual source of care and only two-thirds of the visits were paid

for by insurance. In contrast, national rates of having a usual source of care and

insurance usage for this time period were 80% and 90% respectively. Interestingly,

similar answers were found across different ethnicities and socioeconomic statuses

(Hunter et al., 2009).

Presenting Problems Treated

As indicated earlier, presenting problems are generally limited to acute issues

with well-established treatment guidelines. Indeed, 95% of all presented cases fall

into categories of upper respiratory infections, sinusitis, bronchitis, sore throat,

immunizations, inner ear infections, swimmer's ear, conjunctivitis, urinary tract

infections, and screening blood tests with the other 5% being referred to other

providers (RAND Corperation, 2016). This is in notable contrast to rates seen for these

issues in primary care (18%) and in emergency rooms (12%). Approximately 40

percent of all visits to retail clinics are for immunizations, which seem driven by

customer demand, convenience, and profitability. However, more research is needed

to better understand these services and how well they are integrated into health

department immunization registries (Arthur et al., 2015; Uscher-Pines et al., 2012).

Reasons for Utilization

A 2005 survey completed by the Wall Street Journal and Harris examined

retail clinic utilization to better understand why patients are choosing them over more

traditional providers (Gullo, 2005). Not surprisingly, the results mirror many of the

issues discussed in this review. At the time, only 7% reported that they had used a retail clinic, but interestingly 42% stated that they would if they had access to one. A study by Wilson et al. reported that 90% of those who had used retail clinics lived within 10 miles of a clinic (Wilson et al., 2010). Wang and colleagues (2010) also explored this question by directly asking patients, "what is it about this clinic that brought you in today?"(Wang, Ryan, McGlynn, & Mehrotra, 2010). The most commonly recorded responses were short travel distance, reasonable pricing, and fast service. These findings support the importance of availability, access, and cost for utilization (Hunter et al., 2009; Wilson et al., 2010).

The Wall Street Journal survey also reported that 92% of patients were satisfied with the convenience, 89% with the quality of care, 88% with the staff qualification, and 80% with the cost. Reasons cited for using a retail clinic were lack of a PCP, being uninsured, unable to schedule a convenient or timely appointment with their PCP, and a desire to avoid issues of wait times in emergency rooms related to triage. Other factors highlighted in this research were walk-in availability, short wait times, hours of operation and interestingly, a desire among some respondents to shop at the retail store in conjunction with their healthcare visit (Hunter et al., 2009; Mehrotra & Lave, 2012). The overall theme seems to be that retail clinics can provide at least adequate care as a cost effective, convenient solution to consumers' healthcare needs.

TTM Overview

15

The Transtheoretical Model (TTM) is an integrative model of intentional behavior change that describes why, how, and when people change their behavior (Prochaska & DiClemente, 1983; Prochaska & Velicer, 1997). The TTM frames behavior change as something that happens over time and across a series of stages referred to as the stages of change. These stages include Precontemplation (not ready), Contemplation (getting ready), Preparation (ready), Action (reached criteria for change) and Maintenance (criteria reached for 6 months or more) (Prochaska & DiClemente, 1983; Prochaska, Redding, & Evers, 2008). Movement through the stages is not always linear and it is common for individuals to relapse to earlier stages throughout the change process (Prochaska et al., 2008). Clinically, interventions to change behavior can be tailored and matched to stage of change, which has been shown to be effective across a range of different health behaviors (Krebs, Prochaska, & Rossi, 2010; Noar, Benac, & Harris, 2007; Prochaska et al., 2008; Velicer, Brick, Fava, & Prochaska, 2013).

A second construct of the TTM is Self-efficacy, which conceptualizes a person's perceived ability to perform a task as a mediator of performance on future tasks (Bandura, 1977). In the context of the TTM, this construct describes confidence individuals have to cope with situations that might be considered high risk for relapse. (Velicer, Diclemente, Rossi, & Prochaska, 1990). As one might imagine, self-efficacy generally increases as people move through the stages of change. Cross sectional studies have observed that people in Precontemplation have relatively lower self-efficacy that those in the later stages of Action and Maintenance (Prochaska, DiClemente, Velicer, Ginpil, & Norcross, 1985; Velicer et al., 1990)

Based originally on the decision-making model of Janis and Mann (Janis & Mann, 1977), the Decisional Balance construct captures the relative weighing of pros (benefits) and cons of changing (Velicer, DiClemente, Prochaska, & Brandenburg, 1985). Decisional balance patterns vary with the stages of change and has been useful in predicting movement through the stages (Prochaska, 1994; Prochaska et al., 1994; Velicer et al., 1985). The cross-sectional relationship between the stages of change and the pros and cons typically shows a pattern with cons being greater than Pros in PC, tied in C, and Pros increasingly higher than Cons for PR, A, and then M. From PC to A, the pros increase 1 SD while from C to A the cons decrease by one half of a SD (Hall & Rossi, 2008; Prochaska, 1994; Prochaska et al., 1994).

The final core TTM construct is the processes of change. Process of change differs from the stages of change in that the stages describe shifts in the intent to change, while the processes of change are independent variables that describe how people implement progress from one stage to the next (Prochaska & Velicer, 1997). The variables are covert and overt strategies and techniques people use to alter their experiences and environment to progress through the stages of change (Prochaska, Velicer, DiClemente, & Fava, 1988; Prochaska, Velicer, Guadagnoli, Rossi, & DiClemente, 1991). The TTM theorizes that there are ten processes of change, which are typically divided into the higher order constructs of experiential (5 processes) and behavioral (5 processes) (Prochaska et al., 1988). People who have been successful in changing behavior have been shown to utilize different processes at each individual stage of change (Prochaska et al., 1991).

Aims

There are no measures based on the TTM for the constructs of Stage of Change, Decisional Balance or Self-Efficacy for patient readiness to utilize retail health clinics. Using the TTM as a guide, this study conducted a survey to assess patients' readiness to utilize retail health clinics, including measures of core TTM constructs. Specifically, the aim was to develop TTM measures for the Stage of Change, Decisional Balance and Self-Efficacy for patients' readiness to utilize retail health clinics. The processes of change were not developed or included in this study due to concern about the amount of time participants may be willing to spend on the survey.

It was hypothesized that the Decisional Balance and Self-efficacy measures developed in this study would be structurally similar to other TTM measures. It was further hypothesized that the measures would vary across the Stages of Change in patterns predicted by the TTM. That is, the Pros and Cons would show typical patterns across the Stages of Change as seen in previous TTM research. Self-Efficacy was also hypothesized to predictably show higher endorsement across the Stages of Change. The development of valid and reliable TTM measures for retail health clinic utilization can aid future research into understanding what drives patients to these clinics and towards a better understanding of healthcare consumerism in a consistently evolving healthcare environment.

CHAPTER 3

METHODOLOGY

Measurement Development

The study followed the sequential approach to measurement development (DeVellis, 2012; Jackson, 1970; Redding, Maddock, & Rossi, 2006).

Item Development

The preliminary steps in development of the measures began with defining the constructs for this application followed by the generation of a large pool of items for potential inclusion in the final scale (DeVellis, 2012). The current literature on the TTM and retail health clinic utilization in addition to previous TTM scales were used to develop the initial items for Stage of Change, Decisional Balance, and Self-Efficacy. Items were refined in consultation with experts in TTM scale development and edited for clarity based on focus group testing. The main objective of this step was to develop clear items that were also as concise as possible while accurately reflecting constructs. Other considerations included response format, scale length, and potential response bias (DeVellis, 2012; Noar, 2003; Redding et al., 2006).

An algorithm was determined to be the best way to assess Stage of Change. Multiple versions of the algorithm were created utilizing the current literature on both healthcare utilization as well as the limited data on retail health clinic utilization. The final version (described below) was the result of multiple rounds of revisions in consultation with TTM experts. The items for Self-Efficacy and Decisional Balance

were written with the goal of creating at least twice as many items as expected in the final scale (Comrey, 1988; DeVellis, 2012). All items for Self-Efficacy and Decisional Balance utilized Likert scales similar to previous TTM research.

Measures

Demographics: Single item assessment of age, gender, race, ethnicity, education level, and household income.

Travel Time to Nearest Retail Clinic: Single Item accessing estimated travel time to the participants' nearest retail health clinic from their home.

Physical Health: Single item assessment of height/weight (used to calculate BMI), smoking status, number of current prescription medications, common chronic disease status including heart disease, cancer, diabetes, arthritis, respiratory conditions, elevated cholesterol (hyperlipidemia), hypertension, and mental health status.

Mental Health: PHQ-2 depression screener (Maurer, 2012), GAD-2 anxiety screener (Kroenke, Spitzer, Williams, Monahan, & Lowe, 2007), single item assessment of lifetime mental health treatment utilization.

Insurance Data: Single item assessments of the presence of coverage, presence of deductible and amount, and perceived satisfaction with coverage.

Stage of Change: The TTM frames behavior change as a process that happens over time and across a series of stages referred to as the stages of change. These stages include Precontemplation (not ready), Contemplation (getting ready), Preparation (ready), Action (reached criteria for change) and Maintenance (criteria reached for 6 months) (Prochaska & DiClemente, 1983). An algorithm was used to stage participants in this study.

The nature of retail health clinic usage presents a unique challenge for the stages of change and there are currently no established criteria. The traditional usage of set time frames presents an issue due to health clinic usage being dependent on need. Thus, alternative criteria are needed. Americans are visiting a physician's office 3 times per year on average and it's estimated that 1 in 5 visits to a primary care office and 1 in 10 visits to an emergency department can be treated at retail clinics (Ashman, Hing, & Talwalkar, 2015; RAND Corperation, 2016). Given these data, it seems reasonable that a patient in the Action stage of retail health clinic utilization would have at least a single use in one calendar year. Patients with a history of utilization and plans for continued use would define Maintenance. For patients who have not used a retail health clinic in the past year, we would assess their intention to use one. If they planned to use one the next time they are in need they would be in Preparation, and if they did not intend to use one the next time, but open to using one in the future, they would be in the Contemplation stage. Patients showing no intention using a retail clinic at this time or in the future would be staged in Precontemplation.

Self-Efficacy: Self-Efficacy conceptualizes a person's perceived ability to perform a task as a mediator of performance on future tasks (Bandura, 1977). Measurement of self-efficacy focuses on the confidence one has to maintain a desired behavior change in situations that often lead to a return to previous behavior.

In this study, participants were asked to rate how confident they are that they would utilize a retail health clinic in certain situations. Responses were on a 5-point Likert scale including not at all confident, a little confident, moderately confident, very confident, or extremely confident. Items were developed from the existing literature relevant to the utilization of retail health clinics and TTM experts reviewed and refined the items prior to distribution to participants.

Decisional Balance: Based on the decision-making model of Janis and Mann (Janis & Mann, 1977), the decisional balance construct captures the relative weighing of pros and cons of changing (Velicer et al., 1985). In this study, participants were asked how important specific issues are in their decision about whether or not to utilize a retail health clinic. Similar to the Self-Efficacy measure, items describing the pros and cons of utilizing a retail health clinic were developed based on existing literature on retail health clinics and subsequently reviewed and revised by TTM experts.

Retail Clinic Utilization: Single item assessment for number of visits; single item assessment for satisfaction with services; single item assessment noting the reason for their visit.

Medical Mistrust: Mistrust in healthcare is an important barrier to getting medical treatment (LaVeist et al., 2003). To assess this construct, we used The Medical Mistrust Index 2.1, which is a 7-item scale that uses Likert-type responses with the following response codes: "strongly disagree", "disagree" "agree", and "strongly agree" (Laveist, Isaac, & Williams, 2009). Items have a range of 1-4 and the range of the total score is 7-28.

Recruitment and data collection

Following the development of items pertinent to the measure development, all study materials and procedures were approved by the University of Rhode Island Institutional Review Board for human subjects. Once approved, the survey was turned over to Cint for management of distribution and data collection. Cint maintains an online insights exchange platform that connects community members to researchers, agencies and brands, for the sharing and accessing of consumer data. Cint proactively identified and invited subjects to take the survey based on present parameters including a balanced sample in sex and the geographic targeting of areas with known access to retail health clinics. The latter was accomplished by obtaining lists of common retail health clinic chains and identifying areas with at least 5 retail clinics within a 50-mile radius. The final list included Atlanta, GA MSA, Austin-San Marcos, TX MSA, Charlotte-Gastonia-Rock Hill, NC-SC MSA, Cleveland-Akron, OH CMSA, Columbus, OH MSA, Detroit-Ann Arbor-Flint, MI CMSA, Houston-Galveston-Brazoria, TX CMSA, Minneapolis-St. Paul, MN-WI MSA, Orlando, FL MSA,

Phoenix-Mesa, AZ MSA, Raleigh-Durham-Chapel Hill, NC MSA, Washington-Baltimore, DC-MD-VA-WV CMSA, and West Palm Beach-Boca Raton, FL MSA.

There is moderate agreement in the field that a sample of 300-500 is sufficient for measure development as it allows the sample to be randomly split in sufficiently large halves for exploratory (N=150) and confirmatory (N=150) samples (DeVellis, 2012; Noar, 2003). Given this, our goal was to recruit no less than 300 participants and our budget ultimately allowed for the recruitment of between 500 and 600 participants. The survey was distributed by Cint to a community sample and was accessible on PCs, laptops, tablets, and mobile phones. Cint also managed incentives for participants through their incentive points program and estimated that each participant's incentive was equal to less than $3.

Analyses

Multiple steps were conducted for the analysis and development of the TTM measures for retail health clinic utilization. First, the sample was randomly divided into two samples (exploratory and confirmatory) to allow for psychometric analyses. Initial descriptive statistics were assessed in the exploratory half of the sample to understand the normality of the data. Next, we tested and confirmed the best fitting structural model for both the Self-Efficacy and Decisional Balance scales. The final step evaluated the hypothesized relationships between the scales and the Stages of Change using the entire sample.

<u>Exploratory Analyses</u>

After randomly dividing the sample, initial descriptive statistics were assessed in the exploratory half to understand the normality of the data. Next, item means,

standard deviations, and frequencies were evaluated in the Decisional Balance and Self-Efficacy scales (Redding et al., 2006). This process was used to assist in the identification and removal of items that reduced alpha or did not discriminate well among participants.

Following the initial item analysis, the remaining items were entered into a principal component analysis (PCA) to determine the number of factors measured by each scale. Based on previous TTM research, decisional balance factors are expected to be orthogonal, suggesting the use of varimax rotation for that scale (Hall & Rossi, 2008; Harlow, 2014)To determine the final number of factors to be retained we employed a Parallel Analysis method (Horn, 1965; Lautenschlager, 1989)as well as Minimum Average Partial (MAP) (Zwick & Velicer, 1986). Factor loadings in the retained items were analyzed and those with loadings of less than .40 or that load greater than .40 on more than one factor were removed from the scale (Redding et al., 2006). This process was done in stages with one item removed at a time and both the PCA and item-level analysis were repeated to assess the new distribution of variance (Widaman & Floyd, 1995). Cronbach's coefficient Alpha was used to test the internal consistency reliability of each factor (Cronbach, 1951). Additional items were removed to avoid redundancy and create the shortest possible scale while maintaining statistical integrity. The final step in this process was to run an exploratory CFA (Noar, 2003).

Confirmatory Analyses

Structural equation modeling using confirmatory factor analysis (CFA) was completed on the confirmatory half of the sample using the lavaan package for 'R'

(Rosseel, 2012) for the final Decisional Balance and Self-Efficacy scales. Several fit

indices were used to evaluate the CFA including Chi-square, Comparative Fit Index

(CFI), Root Means Square Error of Approximation (RMSEA) and Standardized Root

Mean Square Residual (SRMR). If the models appeared to be a good fit based on these

indices, coefficient alpha, factor loadings, and effect size estimates were evaluated as

well as how well the models fit the theoretical predictions (Noar, 2003).

Also known as the Bentler Comparative Fit Index, CFI ranges from 0 to 1 is

useful in evaluating the fit of a model with values closer to 1 indicating a better fit

(e.g., .93 is acceptable, .95 is a great fit) (Bentler, 1990). Both RMSEA and SRMR

also range from 0-1, but unlike CFI, values closer zero indicate a better fit.

Specifically, RMSEA values of .05 or less are considered a good fit, while values of .1

or greater are considered a poor fit (Bentler, 1990). For SRMR, a value less than .08 is

generally considered a good fit (Hu & Bentler, 1999). Chi-square was utilized to

evaluate the models with non-significant findings signaling an acceptable fit because

the predicted covariance matrix does not differ from the observed. Chi-square will also

be used to assess the differences between the correlated and uncorrelated models of

the decisional balance scale.

External Validation

Expert reviewers and a detailed review of extant literature on retail health

clinics were critical in developing the scales to ensure the scales were built on face and

content validity. The process of replicating the factor from the exploratory sample

with the confirmatory sample was used to demonstrate construct validity.

Additionally, in order to assess the external validation of the Decisional Balance and

Self-Efficacy scales, each were examined across Stage of Change using multivariate analyses of variance (MANOVAs) to assess the functional relationships using the entire sample. This method was guided by previous TTM research with criterion-related and known-groups validity being demonstrated by the scales varying as expected across the Stages of Change. Typically, previous studies have demonstrated an increase in Self-Efficacy and a crossover pattern for the Pros and Cons across the stages from pre-contemplation to maintenance (Hall & Rossi, 2008; Prochaska, 1994; Redding et al., 2006).

CHAPTER 4

FINDINGS

<u>Overview</u>

Participants: The overall sample included 551 participants recruited from a

population sample in areas with at least 5 retail health clinics in a 50-mile radius. The

sample of 551 was randomly split into two halves (n^1=276 and n^2 =275) for

exploratory and confirmatory measurement development respectively. However,

sample size differed for each analysis based on how many complete cases were

available.

Demographics: *General demographic variables are reported in Table 1.* The

mean age of the sample was 45.8 years old (sd =16.7) and ranged from 18 to 79 years

old. The sample was controlled for sex via recruiting procedures with a final make up

of 48.8 % female (n=269) and 49.7% male (n=274) with 1.5% identifying as other or

preferring not to answer. The majority identified as being white 71.9% (n=396) and

the remainder of the sample identified as Black 19.4%, Asian 5.4%, Native Hawaiian

or other Pacific islander 0.4%, Native American or Alaskan Native 1.5% and 1.5%

identified as Other. Nine percent of the sample reported being of Hispanic origin.

Highest education level varied significantly across the sample with the largest group

being those holding a bachelor's degree representing 26% of the sample. The rest of

the sample included 4.2% with less than high school, 21.4% with a high school

diploma or equivalent, 19.3% reporting some college, but no degree, 13.3%

graduating with an associate degree or from a trade school, 12.5% holding a master's and 3.3% holding a doctoral or professional degree.

Health and Retail Clinic Related Variables: Health and retail clinic related variables are presented in Table 2. The majority of the sample had utilized a retail health clinic at least one time, representing 69.5% with an average number of visits at 4.26 and a range of 0-200. In terms of accessibility to clinics, 68.1% of the sample reported that they lived within 15 minutes of a retail health clinic. Of the 31.9% of the sample that was further than 15 minutes away, 11% reported being 15-19 minutes away, 8.7% were 20-29 minutes away, 4.5% were 30-60 minutes, and just .7% were over an hour. An additional 7% of the sample either didn't know or wasn't sure how far their closest retail health clinic was. The vast majority of the sample reported having health insurance (87.0%) and a regular primary care provider (82.5%).

The health status of the sample was generally representative of the US population. The average number of prescription medications was 2.84 (sd = 3.1) and the average BMI was 28.2 (sd = 8.4). The majority of the sample were "never smokers" (50.9%) with another 26.4% reported as "former smokers". Current smokers made up 22.8% of the sample, which is higher than population data of 15.5% (U.S. Department of Health and Human Services, 2014). The sample reported a number of chronic conditions including Cancer (7.3%), Cardiac conditions (9.8%), Diabetes (12.0%), Respiratory conditions (13.6%), Arthritis (22.9%), elevated Cholesterol (25.2%), Anxiety and/or Depression (28.1%), and high blood pressure (32.7%).

Table 1. General Demographics

Demographics		N	Mean (sd)	Min-Max
Age		545	45.8(16.7)	18-79

Gender			Frequency	Percent
	Female		269	48.8
	Male		274	49.7

			Frequency	Percent
Race	Native American /Alaskan Native		8	1.5
	Asian		30	5.4
	Black		107	19
	White		396	71.9
	Native Hawaiian/Pacific Islander		2	0.4
	Other		8	1.4

			Frequency	Percent
Education Level	Less than high school diploma		23	4.2
	High school diploma or GED		116	21.1
	Some college, but no degree		105	19.1
	Associate degree or trade school		72	13.1
	Bachelor's degree		141	25.6
	Master's degree		68	12.3
	Doctoral or professional Degree		18	3.3

Income level	Less than $20,000 (per year)		100	18.6
	$20,000 to $34,999		76	14.1
	$35,000 to $49,999		90	16.7
	$50,000 to $74,999		100	18.6
	$75,000 to $99,999		71	13.2
	$100,000 to $149,999		65	12.1
	$150,000 to $199,999		20	3.7
	$200,000 or more		16	3.0

Table 2. Health and Retail Clinic Related Variables

		N	M (sd)	Min-Max
Retail Clinic Visits		482	4.26(12.24)	0-200
# of current Rx Medications		551	2.84(3.1)	0-20
BMI		511	28.2(8.4)	9.3-109.7

		Frequency	**Percent**
Time to nearest Retail Clinic	Less than 5 minutes	110	20.8%
	5-9 minutes	136	25.7%
	10-14 minutes	114	21.6%
	15-19 minutes	58	11.0%
	20-29 minutes	46	8.7%
	30-60 minutes	24	4.5%
	over 60 minutes	4	0.7%
	Don't know / Unsure	37	7.0%

		Frequency	**Percent**
Health Insurance	Yes	454	87.0
	No	68	13.0

		Frequency	**Percent**
Smoking Status	Never Smoker	266	50.9
	Former Smoker	138	26.4
	Current Smoker	119	22.8

		Frequency	**Percent**
Chronic Conditions	Cancer	40	7.3
	Cardiac	54	9.8
	Diabetes	66	12.0
	Respiratory	75	13.6
	Arthritis	126	22.9
	Cholesterol	139	25.2
	Anxiety/Depression	155	28.1
	High Blood Pressure	180	32.7

		Frequency	**Percent**
Primary Care Provider	Yes	421	82.5
	No	89	17.5

Stage of Change Distribution: Demographics by Stage of change are presented in Table 3. Health and healthcare utilization by Stage of Change are presented in table 4. The stage of change distribution for the sample was: Precontemplation 24.4%, Contemplation 14.2%, Preparation 20.3%, Action 5.8% and Maintenance 35.3%.

Table 3. Demographics and Stage of Change for Retail Clinic Use.

Variable by Stage	PC		C		PR		A		M	
Gender	N	%	N	%	N	%	N	%	N	%
Female	61	23.6	47	18.1	47	18.1	15	5.8	89	34.4
Male	66	25.2	27	10.3	59	22.5	15	5.7	95	36.3
	PC		**C**		**PR**		**A**		**M**	
Race	N	**%**	N	**%**	**N**	**%**	N	**%**	N	**%**
Native American /Alaskan Native	2	28.6	0	0.0	4	57.1	0	0.0	1	14.3
Asian	7	23.3	1	3.3	10	33.3	0	0.0	12	40.0
Black	26	25.7	15	14.9	13	12.9	7	6.9	40	39.6
Native Hawaiian/Pacific Islander	0	0.0	0	0.0	0	0.0	0	0.0	2	100
White	92	24.2	58	15.2	79	20.7	23	6.0	129	33.9
	PC		**C**		**PR**		**A**		**M**	
Education Level	N	%	N	%	N	%	N	%	N	%
Less than high school diploma	7	33.3	5	23.8	4	19.1	0	0.0	5	23.8
High school diploma or GED	37	33.0	12	10.7	24	21.4	10	8.9	29	25.9
Some college, but no degree	26	26.2	21	21.2	17	17.2	8	8.1	27	27.3
Associate degree or trade school	16	23.2	6	8.7	18	26.1	5	7.2	24	34.8
Bachelor's degree	28	20.9	16	12.0	26	19.4	5	3.7	59	44.0
Master's degree	10	14.7	12	17.7	13	19.1	2	2.9	31	45.6
Doctoral or professional Degree	3	16.7	2	11.1	4	22.2	0	0.0	9	50.0

Income Level (per year)	PC		C		PR		A		M	
	N	%	N	%	N	%	N	%	N	%
Less than $20,000	26	27.7	16	17.0	22	23.4	2	2.1	28	29.8
$20,000 to $34,999	21	28.0	10	13.3	16	21.3	6	8.0	22	29.3
$35,000 to $49,999	24	27.9	18	20.9	16	18.6	8	9.3	20	23.3
$50,000 to $74,999	23	24.2	12	12.6	16	16.9	6	6.3	38	40.0
$75,000 to $99,999	15	22.1	6	8.8	13	19.1	3	4.4	31	46.6
$100,000 to $149,999	7	11.3	8	12.9	15	24.2	2	3.2	30	48.4
$150,000 to $199,999	5	25.0	0	0.0	3	15.0	1	5.0	11	55.0
$200,000 or more	4	25.0	4	25.0	3	18.8	1	6.2	4	25.0

Table 4. Health and healthcare utilization variables by Stage of Change for Retail Clinic Use.

Variable by Stage	**PC**		**C**		**PR**		**A**		**M**	
Health Conditions:	N	%	N	%	N	%	N	%	N	%
Cancer	16	12.7	5	6.8	6	5.7	1	3.3	12	7.6
Cardiac**	19	15.1	3	4.1	4	3.8	1	3.3	25	13.7
Diabetes	18	14.4	7	9.5	7	6.7	3	10.0	30	16.7
Respiratory	15	11.9	9	12.3	12	11.3	4	13.3	35	19.2
Arthritis	36	29.0	18	24.3	20	18.9	6	21.4	43	24.0
Cholesterol	36	28.6	18	24.3	26	24.6	7	23.3	49	26.9
Anxiety/Depression	26	20.8	25	34.2	30	28.3	12	40.0	60	33.0
High Blood Pressure	55	44.0	23	31.1	28	26.4	10	33.3	63	34.2
Smoking Status:	N	%	N	%	N	%	N	%	N	%
Never Smoker	66	53.7	42	56.8	57	53.8	16	55.2	80	44.2
Former Smoker	31	25.2	17	40.5	26	24.5	9	31.0	50	27.6
Current Smoker	26	21.1	15	35.7	23	21.7	4	13.8	51	28.2
No PCP**	26	21.3	14	19.2	28	26.4	4	15.4	16	8.8
No Insurance*	21	16.5	11	15.1	20	19.0	3	10.0	12	6.6
	PC		C		PR		A		M	
	M	sd	M	sd	M	sd	M	sd	M	sd
Medical Mistrust†	19.0	4.9	18.8	4.6	19.2	4.1	18.4	5.0	19.2	4.8
Distance from nearest RHC‡	2.5	1.4	2.7	1.3	2.9	1.5	2.3	1.3	2.9	1.5
Frequency of medical provider visits ‡‡**	2.86	1.4	2.7	1.1	2.5	1.2	3.0	1.2	3.4	1.2
# of Rx meds	3.3	3.3	2.7	2.7	2.3	3.4	3.4	3.4	3.1	3.0

* $p < .05$; ** $p < .01$; †Total score of the Medical Mistrust Index 2.1; 7-items with a total range of 7-28; higher scores indicate higher levels of mistrust in healthcare organizations ‡ 1=Less than 5 minutes; 2=5-9 minutes; 3=10-14 minutes; 4=15-19 minutes; 5=20-29 minutes; 6=30-60 minutes; 7=over 60 minutes ‡‡ 1=One time per week; 2=One time per month; 3=Once every 2 months; 4=Once every 6 months; 5=Once a year; 6=Less than once a year

Decisional Balance Scale: The Decisional Balance scale exploratory factor loadings and final items are shown in Table 5. The initial decisional balance scale included a total of 19 items, 9 representing the Pros and 10 representing the Cons. Initial parallel analyses suggested a 2-component solution, but MAP procedure suggested the potential for a 3-component solution. All 19 items were entered into the exploratory principle component analysis (PCA) with varimax rotation to determine the factor structure of the measure using the 3-component solution. Items with loadings of .40 or greater on multiple factors were removed one at a time through subsequent PCAs. Five items were removed through this process and the factor structure of the resulting scale was rechecked using parallel analyses and MAP, with both confirming a 2-component solution. A further reduction in items was done in consultation with TTM experts to limit redundancy in the items resulting in a final scale of 8 items, with 4 items representing the Pros and 4 items representing the Cons.

All item loadings were .71 or greater and the internal consistency was good for both the Pros (α = .88) and Cons (α = .85). The two factors accounted for 71% of the total variance including 37% and 34% for the Pros and Cons respectively. As a final step to the exploratory phase, we ran a Confirmatory Factor Analysis (CFA) on the decisional balance scale using the exploratory sample. For this step we initially used a 2-factor, uncorrelated model resulting in a relatively poor fit $\chi^2 (20) = 128.168, p<$ .001, CFI=.898, SRMR= .235, RMSEA=.140. However, a second correlated model was run, resulting in a good fit $\chi^2 (19) = 32.744, p <.05$, CFI=.981, SRMR= .038, RMSEA=.051. The correlation between the pros and cons factors was .55.

Table 5. Exploratory Factor Loadings and Reliability Analysis for Decisional Balance

Pros and Cons Items	Component Loadings	Mean (sd)
Pros		
Extended weekday hours and regular weekend hours	0.80	3.59 (1.19)
Typically lower costs compared to traditional providers such as primary care, urgent care, and emergency rooms	0.86	3.67 (1.18)
No requirement to make an appointment	0.80	3.55 (1.17)
Quality of care the same as with traditional providers	0.83	3.95 (1.07)
Cons		
Privacy concerns related to seeking healthcare in a retail setting	0.75	3.3 (1.26)
Your closest retail health clinic is further than other providers	0.71	3.21 (1.25)
Concerns about your regular doctor not knowing about care received at a retail health clinic	0.82	3.24 (1.27)
Receiving treatment at a retail clinic might cause confusion with your other providers	0.87	2.92 (1.33)

Note. Exploratory alphas were: Pros α = .88 and Cons α = .85.

Self Efficacy Scale: The Self Efficacy scale exploratory PCA factor loadings

for the final items are shown in Table 6. The initial Self-Efficacy scale included 13

items and all were included in the preliminary exploratory principle components

analysis. Both MAP and Parallel Analysis confirmed a one component solution on the

initial scale. Items were removed one at a time based on loadings, construct breadth,

and redundancy reduction, with subsequent PCAs run after the removal of each item.

The final five-item Self-Efficacy scale accounted for 62% of the total variance. All

loadings were greater than .73 and the scale had good internal consistency ($\alpha = .83$). A

final CFA was run on the exploratory sample $\chi^2 (5) = 5.406$, $p > .05$, CFI=.999,

SRMR= .019, RMSEA=.018.

Table 6. Exploratory Factor Loadings and Reliability Analysis for Self-Efficacy

Self-Efficacy Items	Component Loadings	Mean (*sd*)
When I am unaware of the cost for services	0.74	2.47 (1.24)
When a nurse practitioner or physician's assistant rather than a medical doctor provides treatment	0.81	2.96 (1.20)
When I am unsure if my condition can be treated at a retail health clinic	0.84	2.57 (1.22)
When I have a good relationship with my primary care provider	0.78	3.10 (1.29)
When I have an upset stomach or diarrhea	0.77	2.98 (1.27)

Note. Exploratory alpha α = .85.

Confirmatory Procedure

With the exploratory procedures completed, we sought to replicate the findings with the confirmatory half of the sample as means to cross-validate the factor structures. Only subjects with complete data were used for this procedure (n=236).

Decisional Balance Models. The two-factor correlated model including items and factor loadings is shown in Figure 1. Fit indices for the three comparison models can be viewed in table 7. Based on previous TTM research, we tested 3 models for the decisional balance scale: (1) null model, (2) two-factor correlated model, (3) two-factor uncorrelated model (Hall & Rossi, 2008; Prochaska, 1994). Both the 2-factor uncorrelated model $\chi^2 (20) = 135.118$, *p*< .001, CFI=.866, SRMR= .237, RMSEA=.156 and the 2-factor correlated model $\chi^2 (19) = 55.097$, *p*< .001, CFI=.958, SRMR= .055, RMSEA=.090 outperformed the null model. A chi-square difference test was conducted to compare these models with significant results $\chi^2 (1) = 80.021$, p < .001. As such, the best fitting model was the 2-factor correlated model for the decisional balance scale.

Factor loadings ranged from .63 to .88 and the internal consistency was good for both the Pros (α = .87) and Cons (α = .83). The two factors accounted for 70% of the total variance including 36% and 34% for the Pros and Cons respectively. The correlation between the pros and cons factors was .55.

Figure 1. Confirmatory Decisional Balance CFA model.
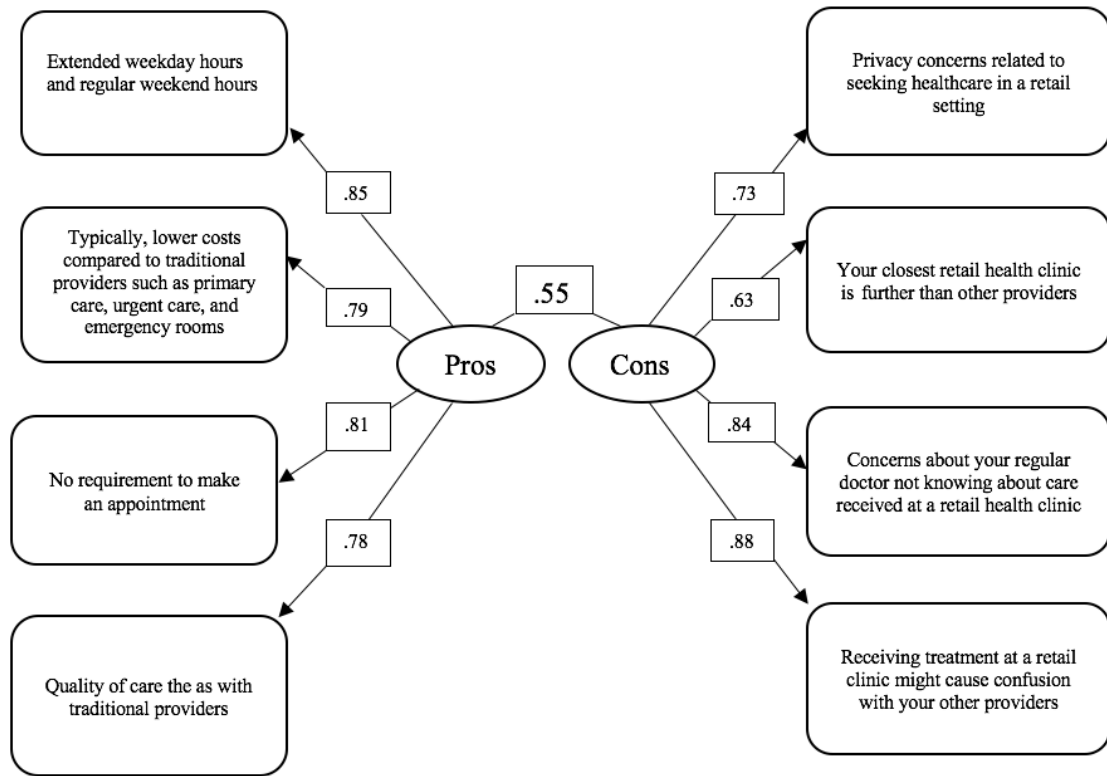
Table 7. Fit indices for Tested Decisional Balance Confirmatory Models.

Model	$\chi 2$	df	χ^2/df ratio	AIC	RMSEA	CFI	SRMR
Model 1: Null Model	889.260*	28	31.76				
Model 2: Uncorrelated Two Factor Model	135.118*	20	6.76	5333.0	0.15	0.87	0.24
Model 3: Correlated Two factor Model	55.097*	19	2.90	5255.0	0.09	0.96	0.05

Note: N=236, $\chi 2$ = chi square; df = degrees of freedom; AIC= Akaike's information criterion. *p<.001.

Self-Efficacy Models. The one-factor Self-efficacy model including items and factor loadings is shown in Figure 2. Fit indices for the comparison models are shown in Table 8. For the Self-Efficacy scale, we compared 2 models including the (1) null model and (2) the one-factor model based on previous TTM research. The 1-factor model was the best fit $\chi^2(5) = 5.406$, $p > .05$, CFI=.999, SRMR= .019, RMSEA=.018. Factor loadings were greater than .73 and coefficient alpha was $\alpha = .80$.

Figure 2. Confirmatory Self-Efficacy CFA model.
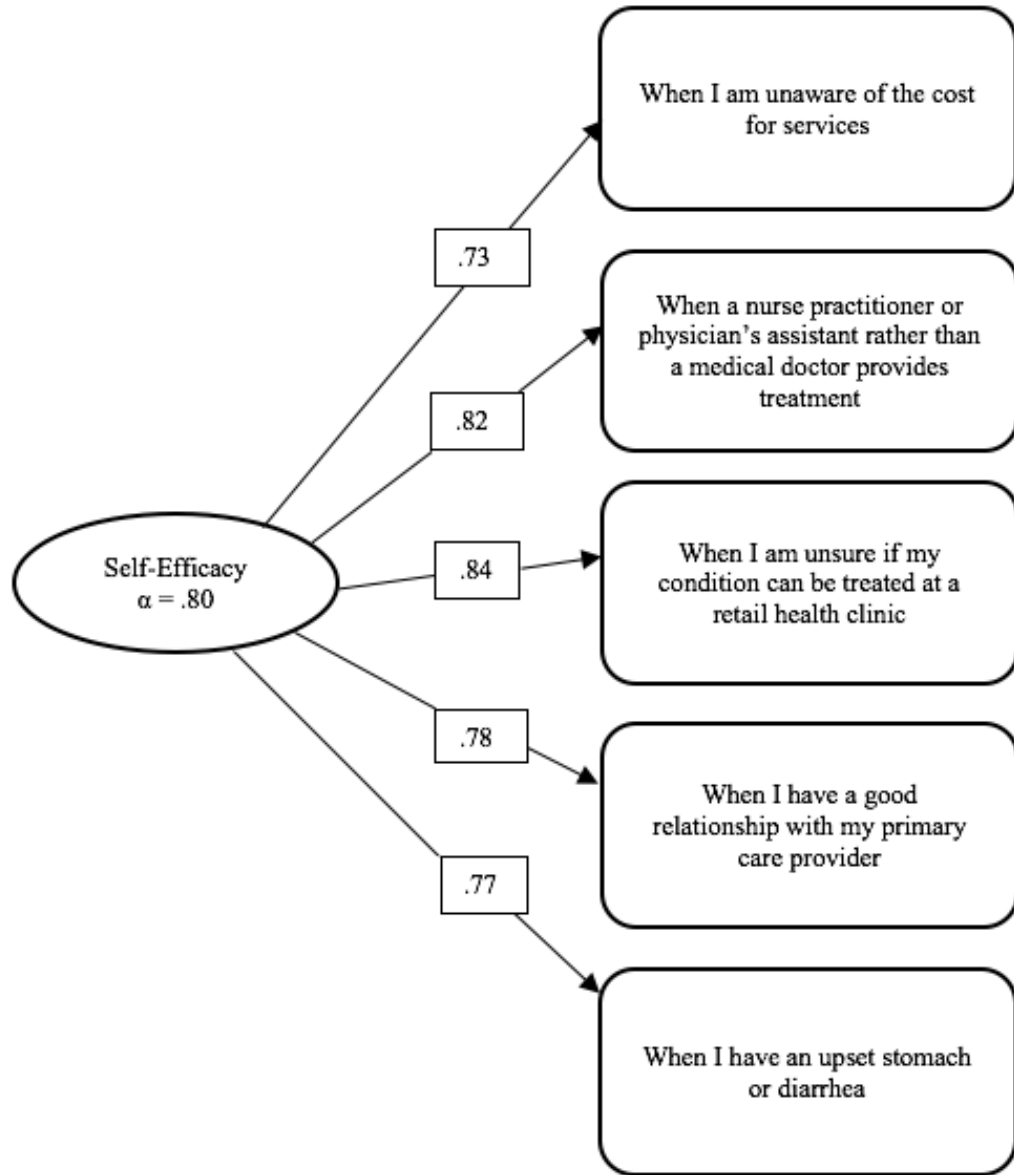
Table 8. Fit indices for Tested Self-Efficacy Confirmatory Models

Model	X²	DF	X²/DF RATIO	AIC	RMSEA	CFI	SRMR
Model 1: null model	345.704*	10	34.57				
Model 2: one factor model	5.406	5	1.08	3608.028	0.018	0.999	0.019

Note: N=160, $\chi 2$ = chi square; df = degrees of freedom; AIC= Akaike's information criterion. *p<.001.

External Validation.

Raw score scale means and standard deviations for each scale by Stage of Change are given in Table 9. Figure 3 demonstrates the T-scores for the Pros, Cons, and Self-efficacy by Stage of Change. The functional relationships between the Stage of Change and the Decisional Balance (i.e. Pros and Cons) and Self-Efficacy scales were evaluated to assess their external validity. For these analyses, we included participants from the full sample data (n=489).

A MANOVA was conducted to determine if the Pros, Cons and Self-Efficacy, scales differed by Stage of Change. As predicted, there was a significant main effect for Stage of Change, Wilk's Λ= .79, $F(4,484)$= 9.85 , $p<.001$, multivariate η^2=.076. The follow up ANOVA and Tukey tests for Self-efficacy was also significant, F (4, 484) = 20.65, $p<.001$, η^2= .124, with multiple significant differences between stages. Precontemplators reported significantly lower confidence to utilize a retail health clinic compared to those in Preparation, Action, and Maintenance. Contemplators had significantly lower confidence than those in Preparation and Maintenance. The ANOVA found that the Pros significantly differed by stage, $F (4, 484) = 16.68$, $p<.001$, η^2=.121. Precontemplators reported significantly lower Pros than those in all other stages. The ANOVA for the Cons was also significant, F (4, 484) = 4.00, $p<.01$, η^2= .032. Interestingly however, Precontemplators reported significantly lower Cons as compared to those in Maintenance.

Table 9. Raw score M (sd) and Follow-up ANOVA results of Decisional Balance and Self- Efficacy by Stage of Change.

	Stage of Change					Follow up ANOVA	
	PC (n=116)	C (n=71)	PR (n=100)	A (n=26)	M (n=176)	F	η^2
Pros	12.37 (4.7)	15.35 (3.5)	14.97 (3.4)	15.46 (2.7)	15.84 (3.3)	16.68	0.121
Cons	11.48 (5.0)	12.56 (3.7)	12.69 (3.7)	12.96 (4.0)	13.44 (4.0)	4.00	0.032
SE	9.34 (4.3)	9.66 (2.9)	11.82 (3.4)	11.65(3.0)	12.55 (3.7)	20.65	0.124

Note. SE= Self-efficacy

Figure 3. Pros, Cons, and Self-Efficacy T-scores by Stage of Change
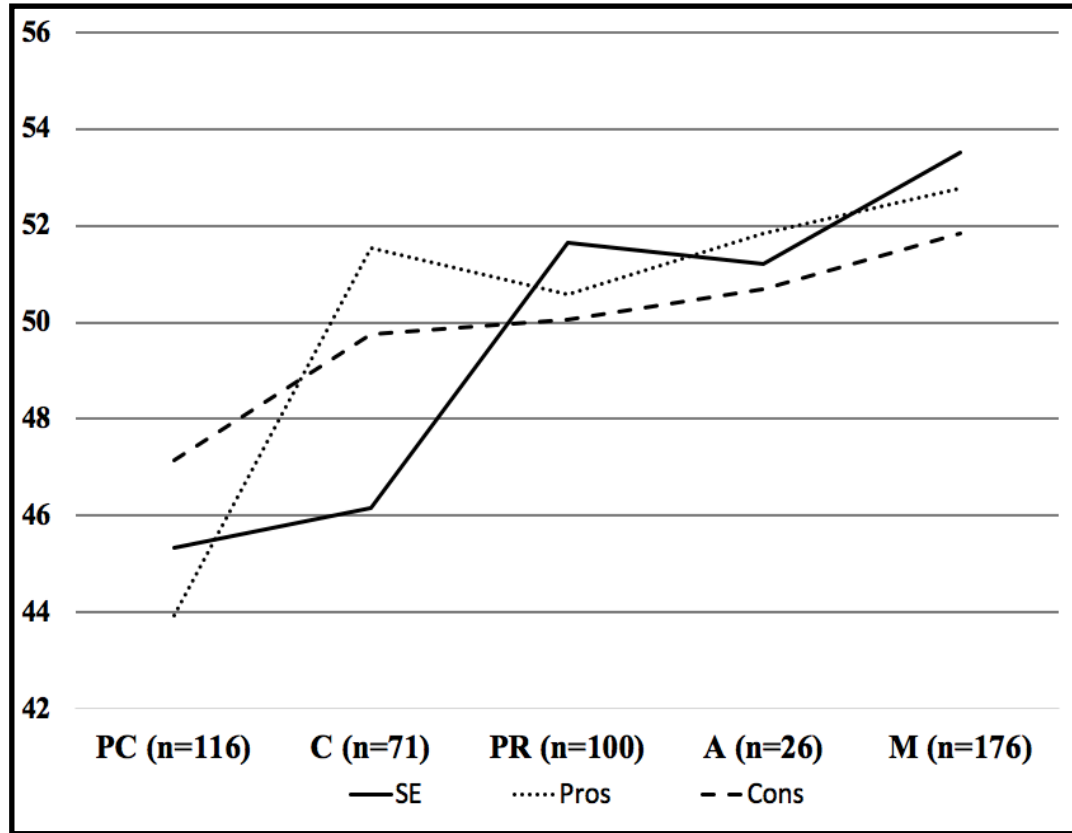
Differences between Precontemplators and Maintainers

To further explore possible differences between those who utilized retail health clinics and those who did not, we evaluated various participant characteristics for differences between Precontemplators and Maintainers. We chose to focus on the most extreme Stages of Change for these comparisons as a means to most easily identify differences between those utilizing and not utilizing retail health clinics. That is, Precontemplators represent the portion of the sample who have not utilized a retail clinic in the past year and do not plan to, while Maintainers represent those who have utilized a retail health clinic in the past year and plan to again the next time they need an available service. We conducted t-tests for continuous variables, Mann-Whitney U tests for ordinal, and chi-square for categorical. For these analyses, we used the full sample and included all participants staged in either Precontemplation (n=127) or Maintenance (n=184). Results are presented in Table 10.

Table 10. Differences between Precontemplators and Maintainers

	Precontemplation		Maintenance			
	N	%	N	%	X^2	p-value
Health Conditions:						
Cancer	16	12.7	12	6.6	2.660	0.103
Cardiac	19	15.1	25	13.7	0.034	0.853
Diabetes	18	14.4	30	16.7	0.140	0.708
Respiratory	15	11.9	35	19.2	0.119	0.119
Arthritis	36	29.0	43	24.0	0.712	0.399
Cholesterol	36	28.6	49	26.9	0.036	0.850
Anxiety/Depression	26	20.8	60	33.0	4.853	.0276*
High Blood Pressure	55	44.0	63	34.2	2.605	0.107
Smoking Status:					2.958	0.228
Never Smoker	66	53.7	80	44.2		
Former Smoker	31	25.2	50	27.6		
Current Smoker	26	21.2	51	28.2		
No Insurance	21	16.5	12	6.6	6.833	0.009**
No PCP	26	21.3	16	8.8	8.593	0.003**

	Precontemplation (n=127)		Maintenance (n=184)			
	M	sd	M	sd	t	p-value
Age	52.49	16.9	41.07	15.00	-6.096	< .001***
# of Rx meds	3.32	3.31	3.14	3.01	-0.507	0.612
BMI	29.02	10.5	25.81	9.6	-2.726	0.007**
Medical Mistrust	18.97	4.85	19.19	4.83	0.3885	0.698

	M	M	U	p-value
Education†	3.49	4.26	14886.5	< .001***
Household Income††	3.33	3.96	13799	0.002**
Distance from nearest RHC‡	2.45	2.94	11586	0.004**
Frequency of medical provider visits ‡‡	2.86	3.35	13490.5	< .001***

* p < .05; ** p < .01; *** p < .001 † 1 = Less than high school diploma; 2=High school diploma or GED; 3=Some college but no degree; 4=Associate degree or trade school; 5=Bachelor's degree; 6=Master's degree; 7=Doctoral or professional degree †† 1=Less than $20,000; 2=$20,000 to $34,999; 3=$35,000 to $49,999: 4=$50,000 to $74,999; 5=$75,000 to $99,999; 6=$100,000 to $149,999; 7=$150,000 to $199,999; 8=$200,000 or more ‡ 1=Less than 5 minutes; 2=5-9 minutes; 3=10-14 minutes; 4=15-19 minutes; 5=20-29 minutes; 6=30-60 minutes; 7=over 60 minutes ‡‡ 1=One time per week; 2=One time per month; 3=Once every 2 months; 4=Once every 6 months; 5=Once a year; 6=Less than once a year

<u>Perceptions of mental health screening and treatment in retail health clinics</u>

Patients were asked how likely they would be to utilize a retail health clinic for mental health screening and mental health services to gauge the acceptability and likelihood that patients would utilize retail health clinics for these services if offered. Results are displayed in Table 11 and broken into 3 categories, those with negative PHQ2 and GAD2 screeners, those with a positive screen on either or both, and the full sample.

Table 11. Perceptions of mental health screening and treatment in retail health clinics

Mental Health Screening	Extremely unlikely	Somewhat likely	Neutral	Somewhat likely	Extremely likely
	N (%)	N (%)	N (%)	N (%)	N (%)
Negative MH screen (n=362)	119 (32.9)	79 (21.8)	78 (21.5)	51 (14.1)	35 (9.7)
Positive MH screen (n=140)	31 (22.1)	27 (19.3)	23 (16.4)	25 (17.9)	34 (24.3)
Full sample (n=502)	154 (30.6)	108 (21.5)	101 (20.1)	76 (15.1)	69 (13.7)
Mental Health Treatment	Extremely unlikely	Somewhat likely	Neutral	Somewhat likely	Extremely likely
	N (%)	N (%)	N (%)	N (%)	N (%)
Negative MH screen (n=361)	116 (32.1)	85 (23.6)	75 (20.8)	56 (15.5)	29 (8.0)
Positive MH screen (n=139)	29 (20.9)	31 (22.3)	24 (17.3)	23 (16.5)	32 (23.0)
Full sample (n=506)	149 (29.5)	117 (23.1)	100 (19.8)	79 (15.6)	61 (12.0)

CHAPTER 5

CONCLUSION

This is the first study to develop and validate Decisional Balance and Self-efficacy scales for retail health clinic utilization. Results from the exploratory analyses demonstrated psychometric properties that were consistent with previously validated TTM measures and indicated a good fit of the model. The confirmatory analyses confirmed these results by testing alternative models in a split half analysis and verified good internal consistency. The results on external validity however, were mixed. The Self-Efficacy and the Pros scale of the Decisional Balance measure replicated results of previous TTM scales across the Stages of Change for a range of other behaviors. The Cons scale of the Decisional Balance measure however, did not replicate the expected pattern across the Stages of Change. Despite this, the resulting measures appear to offer a good breath of content in very brief scales that can serve as an initial step in developing future scales and TTM applications.

The application of the TTM to retail health clinic utilization is novel in a number of ways. The TTM has largely been applied to health behavior change (Prochaska & Velicer, 1997), but has also been applied to more broad areas including provider populations (Blaney et al., 2018; Park et al., 2003) and consumer education (Xiao et al., 2004). The direct application to healthcare consumerism is novel and especially unique as applied to retail health clinic utilization. Unlike traditional applications to health behavior change, it's possible that consumers may not be aware

of the Pros of Cons of retail health clinic utilization unless they have utilized them and personally experienced them. This is especially true when compared to health behavior areas like smoking cessation and increased exercise that have widely understood and accepted health benefits, regardless of one's experience with them. In fact, as a new addition to the healthcare marketplace, it's likely that there are pros and cons of utilization that are yet to be considered or even discovered. Another unique aspect of the application of the TTM for retail clinic utilization is that unlike health behavior change that can be initiated at any time once a person is ready, healthcare is something only sought when there is a need.

Demographics.

The utilization of a survey company for the recruitment of participants for this study allowed us to recruit nationally and target areas with known retail health clinic availability. This process ensured that the sample included participants who at least had the option of going to a retail clinic given the primary goal of measure development. The alternative, to recruit a general population sample, would have run the likely risk of including a high number of participants who would not have access to retail clinics or even know what they are. Indeed, 87.7% of the sample reported that they lived within 30 minutes of their nearest retail clinic. Because retail health clinics currently tend to be clustered in metropolitan areas, the sample is weighted to metropolitan statistical areas, which includes the metro area and surrounding suburbs. Unfortunately, the inclusion of more rural populations was not feasible for this study due to a lack of retail health clinics in those areas.

The average age of the sample (45.8, sd=16.7) and the distributions of gender (48.8% female) and race were representative of a population sample based on the 2010-2015 American Community Survey (U.S. Census, 2016). Various education levels were broadly represented, ranging from less than high school to doctoral degrees. Income levels were generally distributed on a bell curve centered on $50,000 - $74,999/year with a slight right-skew do to 18.6% of the sample reporting an income of less than $20,000/year. Some of this may be explained by nearly 15% of the sample being of retirement age as well as the inclusion of current college students. Overall, our sample selected from a range of metropolitan statistical areas was largely representative of the general US population on demographic variables.

Health and Retail Clinic Related Variables.

Data on retail health clinic utilization is limited, with the majority of research focused on those already using retail health clinics making it difficult to know how our sample performs in terms of rates of use. Of those who have utilized a retail clinic at least once (69.5%), the average number of lifetime visits was 4.26 (sd = 12.24). However, this distribution was highly skewed with a median number of visits of two. Only a quarter of the sample reported utilizing a retail health clinic more than 6 times in their lifetime to date. This may be explained by the nature of retail clinics being a service often used when primary providers are unavailable. Retail clinics are also relatively new additions to the healthcare marketplace and we may hypothesize that lifetime utilization rates will increase as they become more established and people accrue more years of utilization.

Levels of chronic health conditions, smoking, and a range of BMIs were broadly represented in the sample. Interestingly, 82.6% of the sample reported taking at least one prescription medication and 40.6% reported taking 3 or more prescription medications, which is substantially higher than the 48.9% and 23.1% respectively reported by the CDC in 2016 based on data obtained from 2011-2014 (National Center for Health Statistics, 2017). It is unclear what accounts for this difference but may signal physical proximity to pharmacies and medical care (i.e. metropolitan sample) are related to the number of prescription medications a person takes. The high level of prescription medication use also provides added support for pharmacy-based retail clinics as regular healthcare points of contact for many individuals and highlights the potential for assessment and treatment of some population behavioral medicine needs in these settings (e.g. smoking cessation, chronic disease management, weight loss programs, exercise interventions, routine screenings, mental health screening, etc.).

Our sample was largely covered by insurance with 87% reporting that they had health insurance. Of those with insurance, 24.5% reported no deductible, 51.5% reported a deductible, and a surprising 24% reporting either not knowing if they had a deductible or the amount of the deductible if they had one. While a full understanding of the role insurance coverage plays in healthcare consumer decisions with regard to retail health clinics is outside the scope of this paper, future analyses of these data may provide additional insight in this area. Also noted is that 82.5% of the sample reported having a regular primary care provider.

Stage of Change

As previous described, this is the first study to apply the TTM to retail health clinic utilization, which is a novel application. While identifying patients who were not using retail clinics (Precontemplation) and those who reported using them regularly when needed (Maintenance) was intuitive, the intermediate stages were more difficult to conceptualize and discriminate between. The final algorithm developed following multiple consultations with TTM experts, resulted in a relatively good distribution across all stages. The majority of the sample were staged into Precontemplation and Maintenance representing 24.4% and 35.3% respectively, with Action being the least represented at just 5.8%. The staging for Action was difficult given that traditionally, this stage is defined within a time-frame (i.e. has made change for less < 6 months). As an alternative, we chose to ask about "the next time you need services provided by a retail clinic". Further research into staging for retail health clinics would be beneficial to test alternative algorithms, however, we believe the current algorithm largely captured the construct given our results.

Decisional Balance

This study replicated previous TTM research in demonstrating a two-factor Decisional Balance model representing the Pros and Cons of behavior change. However, unlike previously validated TTM measures, we did not find the expected patterns across stages for the Cons of Retail Clinic Use. It's expected that as people progress through the Stages of Change, their perception of the benefits for making the change (Pros) would increase while their perceptions of the negatives (Cons) would

57

decrease. In the initial Stage (PC), the Cons were higher than the Pros (T-score = 47.15 vs. 43.94 as expected and the Pros exceeded the Cons in the subsequent Contemplation stage. However, the Cons did not decrease as expected and actually continued to increase almost in parallel with the Pros through the final stage of Maintenance. These differences also proved to be significant during the external validation MANOVA analysis.

There are several hypotheses to account for this. First, it's possible that those not utilizing retail clinics regularly have simply not experienced or may not even be aware of the Cons of utilization. For example, one concern for retail clinic utilization is the potential for poor communication between the clinic and a patient's regular provider. This may not seem important to someone who has never used a retail clinic, but may become very important for someone who has utilized them and encountered an issue related to information not being adequately communicated to their primary provider. Thus, as people utilize retail clinics more, they also increase their exposure to the negative aspects of retail clinic care. This stands in contrast to common health behaviors like smoking, where most smokers can readily identify the Cons of quitting without having to quit first to recognize them.

Second, this is a potential signal that there is on-going ambivalence among those utilizing retail clinics and might predict that people will not continue to use them. It's possible that some are using them only when their primary providers are unavailable. Thus, they may acknowledge and experience the Cons, but feel that the alternative of either waiting to receive treatment or to present at more expensive options (e.g. urgent care, emergency room, etc.) is less favorable. While the healthcare

marketplace is constantly evolving, the current model of retail clinics is not to fully replace primary care providers, but rather offer a situationally more convenient option. We might assume that these data suggest that people remain connected to their primary providers but are willing to accept the cons of retail clinic utilization in exchange for convenience in certain situations.

Third, despite building the Pros and Cons scales from the existing literature, it's possible that alternative items may have produced a different result. Retail clinics are a very new addition to the healthcare marketplace, so we are still learning about their costs and benefits at the patient, provider, and systems levels. Indeed, the majority of the extant research on retail health clinics that surveys patients, has focused on understanding why people utilize these clinics. As a result, there is little existing patient-level data describing why they aren't utilizing retail clinics. The majority of this previous data comes from industry insiders, providers, and policy makers, who may have different concerns than a healthcare consumer. For example, a consistent concern expressed in the literature by these stakeholders is the potential break in the continuum of care due to the systems implications. However, patients may not share the same concerns unless they have experienced a specific issue related to the continuum of care. These findings suggest that further research is needed to better understand the Cons of utilizing retail health clinics for patients. Qualitative studies addressing this may be of particular interest.

Self-Efficacy

This study replicated previous TTM research in demonstrating a one-factor Self-Efficacy model for retail health clinic utilization. The results also replicated the underlying structure found in previous TTM self-efficacy measure development studies (Velicer et al., 1990). Self-Efficacy generally varied across the stages as expected, consistent with previous TTM research (Prochaska et al., 1985; Velicer et al., 1990). Patient's confidence to utilize retail health clinics was lowest for Precontemplators and increased through Contemplation to Preparation. There was a slight decrease in SE between Preparation (T-score = 51.65) and Action (T-score = 51.22), before reaching the highest levels in Maintenance (T-score = 53.51).

It is unclear what may explain the slight reduction in confidence between Preparation and Action, although it may be the result of the staging algorithm. The question used for Action was to ask those who have used a retail clinic in the past year if they plan to use one "the next time they need services offered by a retail health clinic". The wording of this question may have unintentionally captured patients who used a retail clinic, but do not plan to use them going forward. Thus, some participants staged in Action, may have actually relapsed into earlier stages. However, the Pros scale did not find the same dip in the Action stage, which might be expected if this was the case. Participants in the Action stage constituted the smallest group in the analyses (n=26), increasing the likelihood that a small number of patients with lower SE scores (possibly those who relapsed to earlier stages) may have pulled down the average of the group.

Differences between Precontemplators and Maintainers

Exploring the differences between participants in the most extreme stages, Precontemplation and Maintenance may help to further identify what might impact the decision to utilize a retail clinic. Based on our results, Maintainers reported significantly more medical provider visits than Precontemplators and were significantly more likely to have insurance and a regular primary care provider. They also differed significantly in that Maintainers reported higher levels of education and income. Taken together, these findings suggest that these people may have better access to care and are more likely to utilize the care available to them. Interestingly, we did not find a difference on the medical mistrust scale and while there was a significant difference in the distance from retail health clinics, Maintainers actually reported being slightly further from their closest retail clinic, not closer.

When we examine the rates of common health conditions, Maintainers did not appear to be more "ill" than their counterparts in Precontemplation. In fact, of the eight health condition categories examined, prevalence rates were higher among Precontemplators for five of them including cancer, cardiac, arthritis, high cholesterol, and high blood pressure. This may partially be explained by an age discrepancy with Precontemplators having an average age of 52.49 and Maintainers significantly younger at 41.07 years of age, a trend consistent with previous research on retail health clinic utilization (Ashwood et al., 2011; Leppel, 2010; RAND Corperation, 2016). It's likely that some of the discrepancy in the prevalence of these health conditions is attributable to the Precontemplators being older and more likely to experience higher rates of these conditions.

There were a few exceptions where Maintainers did report higher rates of specific health conditions including diabetes, respiratory conditions, smoking, and anxiety/depression. While the findings for diabetes, respiratory conditions, and smoking were not statistically significant, it's worth noting that they approached significance and had small sample sizes in these groups. The difference in anxiety/depression was significant with 33% of Maintainers endorsing anxiety and/or depression compared to only 20.8% for Precontemplators. These are interesting findings considering that some retail clinics are beginning to expand into chronic disease management for conditions like diabetes and asthma and instituting pharmacy-based programs for smoking cessation. It's possible that these findings are reflective of this trend.

The finding on mental health is especially of interest considering the need for expanded access to screening and treatment for mental health. When asked how likely they would be to visit a retail clinic for mental health screening, 48.9% of the entire sample reported they would be extremely likely, somewhat likely, or neither likely or unlikely, suggesting they might be open to doing so. When the same question was asked of those scoring above clinical thresholds for anxiety, depression, or both based on the PHQ2 and GAD2 screeners (n=140), that portion increased to 58.6%. With regard to utilizing retail health clinics for mental health treatment (if it were offered), 47.4% of the full sample were open to this service while 56.8% of those above clinical cutoffs on the depression and/or anxiety screeners were open to treatment.

These data suggest a potential area for expansion of services into mental health screening and possibly mental health treatment. Integrating mental health treatment

62

into primary care settings has received a lot of attention in recent decades and has been a goal for many primary care practices. Co-locating mental health services with other services have been shown to increase referral rates, reduced wait-times for appointments, and a reduction in the stigma associated with seeking mental health services from a specialty provider (Bartels et al., 2004; Blaney et al., 2018; Clement et al., 2015; Durbin et al., 2012; Hampton-Robb, Qualls, & Compton, 2003). Retail clinics offer a point of contact for mental health screening and treatment that is easily accessible.

Physical space is one of the largest barriers to integrating care, which may also be an issue for retail clinics, given their small physical space housed in retail settings. However, advances in telemedicine options may be one way to provide these services without an onsite mental health provider. Some retail clinics are already set up for medical telemedicine visits with a large video screen in a small private room and medical devices such as a stethoscope and otoscope for the patient to use on themselves with the direction of a live physician on the screen. It seems reasonable to believe that if medical appointments can be conducted remotely via such technology, that there is potential to conduct mental health treatment, which requires no physical contact, in a similar manner. Future research should anticipate the potential for this expansion.

Limitations and Future Directions

Some limitations of this study should be noted. First, the data for the study was cross-sectional and future research would benefit from longitudinal data to evaluate

change over time. Second, the development of these measures was largely built on limited research, that mostly focused on provider and systems level data. Many of the items, especially for the Pros and Cons scales, were not entirely based on data directly from patients or in some cases, even the perspective of a patient. Third, as previously discussed, this unique application of the TTM required adjustments to the common TTM staging algorithms that may require further refinement. Fourth, the Processes of Change (POC) were not included in this study due to concern about response burden on participants. Future studies should consider the development of a POC measure to further explore the covert and overt behaviors required to move through the Stages of Change. Taken together, this study should be viewed as an initial step in gaining a better understanding of how the TTM can be applied retail health clinic utilization and healthcare consumerism.

Summary

Overall, this study supports the application of the TTM to retail health clinic utilization and the initial development of specific TTM measures for Self-Efficacy and Decisional Balance. As retail health clinics continue to grow in numbers and expand in scope, learning about patients' perceptions about them, including their benefits and costs, will be vital information not only to these clinics and their operators, but to the healthcare system as a whole. While there remains a lot of debate in the healthcare field about the risks of the addition of these retail clinics, they are here to stay, and providers may benefit from understanding which of their patients are more likely to utilize them and why. The TTM provides one possible framework to assist in that

understanding. Future research can expand on the application of the TTM to retail

health clinic utilization to assist in this understanding.

Retail Health Clinics

Start of Block: Introduction

James Prochaska, PhD
Department of
Psychology
Transtheoretical Model Development for Retail Health Clinic Utilization

Thank you for your interest in participating in this study! Please read the following informed consent document before proceeding. You are being asked to take part in a research study. The purpose of the research study is to better understand the utilization of retail health clinics. Please read the following before agreeing to be in the study. If you agree to be in this study, it will take you approximately 20 minutes to complete this survey. Questions will be asked about your health, your healthcare providers, and attitudes about healthcare delivery. There are no known risks, benefits or compensation provided by the investigators or the University of Rhode Island. You may receive compensation in accordance with your agreement with CINT. Your responses will be strictly anonymous. The responses may be used in research papers and related presentations (e.g. posters, talks, etc). The decision to participate in this study is entirely up to you. You may refuse to take part in the study at any time without affecting your relationship with the investigators of this study or the University of Rhode Island (URI). Your decision will not result in any loss of benefits to which you are otherwise entitled. You have the right not to answer any single question, as well as to withdraw completely from the survey at any point during the process; additionally, you have the right to request that the researchers not use any of your responses. You have the right to ask questions about this research study and to have those questions answered by me before, during or after the research. If you have questions about the study, at any time feel free to contact James Prochaska at 401.874.2830 or Stephen Matsko at smatsko@my.uri.edu or 401-338-3126 from the Department of Psychology at the University of Rhode Island (URI). Additionally, you may contact the URI Institutional Review Board (IRB) if you have questions regarding your rights as a research participant. Also contact the IRB if you have questions, complaints or concerns which you do not feel you can discuss with the investigator. The University of Rhode Island IRB may be reached by phone at (401) 874-4328 or by e-mail at researchintegrity@etal.uri.edu. You may also contact the URI Vice President for Research and Economic Development by phone at (401) 874-4576. If you would like to keep a copy of this document for your records, please print or save this page now. You may also contact the researcher to request a copy. By clicking below to be taken to the survey, you indicate that you have read and understood the above and volunteer to participate in this study.

○ I have read the above information and agree to participate

- -

T1 This survey will ask for information about you, your health, and retail health clinics. Retail health clinics are walk-in clinics located in retail stores, supermarkets, and pharmacies that treat minor illness and provide services like vaccines and

physicals. They are usually staffed by Nurse Practitioners and Physician Assistants and may not have a doctor on-site. Examples include CVS Minute Clinic, Healthcare clinic at Walgreens, The Little Clinic, RediClinic, Fast Care, etc.

✳

Q3 Age?

_____

Q4 Sex/Gender?

○ Male

○ Female

○ Other / prefer not to answer

Q5 Race?

○ Native American or Alaska native

○ Asian

○ Black or African American

○ Native Hawaiian or other Pacific Islander

○ White

Q6 Ethnicity?

○ Hispanic origin

○ NOT of Hispanic origin

Q7 What is the highest degree or level of school you have completed?

○ Less than a High School diploma

○ High School diploma or GED

○ Some college, but no degree

○ Associate degree or trade school

○ Bachelor's degree

○ Master's degree

○ Doctoral or professional degree

- -

Q8 Household income per year?

○ Less than $20,000

○ $20,000 to $34,999

○ $35,000 to $49,999

○ $50,000 to $74,999

○ $75,000 to $99,999

○ $100,000 to $149,999

○ $150,000 to $199,999

○ $200,000 or more

Q9 How long would it take you to travel from your home to the nearest retail clinic?

○ Less than 5 minutes

○ 5-9 minutes

○ 10-14 minutes

○ 15-19 minutes

○ 20-29 minutes

○ 30-60 minutes

○ Over 60 minutes

○ I don't know where the closest retail clinic is

Q10 How many medications do you currently have prescriptions for?

○ 1

○ 2

○ 3

○ 4

○ 5

○ 6

○ 7

○ 8

○ 9

○ 10

○ 11

○ 12

○ 13

○ 14

○ 15

○ 16

○ 17

○ 18

○ 19

○ 20

Q12 How tall are you? (please selected the closest value)

○ 4'6" or less

○ 4'7"

○ 4'8"

○ 4'9"

○ 4'10"

○ 4'11"

○ 5'0"

○ 5'1"

○ 5'2"

○ 5'3"

○ 5'4"

○ 5'5"

○ 5'6"

○ 5'7"

○ 5'8"

○ 5'9"

○ 5'10"

○ 5'11"

○ 6'0"

○ 6'1"

○ 6'2"

○ 6'3"

○ 6'4"

○ 6'5"

○ 6'6"

○ 6'7"

○ 6'8"

○ 6'9"

○ 6'10"

○ 6'11"

○ 7' or taller

✱

Q13 How much do you weigh (in pounds)

_____

Q15 Smoking status (tobacco)

○ never smoker

○ former smoker

○ current smoker

Q16 General Health / Chronic Disease: Please indicate if you have ever had any of these conditions:

	YES	NO
Cardiovascular disease, heart disease, or stroke	○	○
Cancer	○	○
Diabetes	○	○
Arthritis	○	○
Respiratory Disease (COPD, Asthma, Etc)	○	○
Hyperlipidemia / High Cholesterol	○	○
Hypertension / high blood pressure	○	○
Anxiety or depression	○	○

Q19 Over the past 2 weeks, how often have you been bothered by any of the following problems?

Little interest or pleasure in doing things

○ Not at all

○ Several days

○ more than half the days

○ Nearly every day

Q20
 Over the past 2 weeks, how often have you been bothered by any of the following problems?

Feeling down, depressed, or hopeless

○ Not at all

○ Several days

○ More than half the days

○ Nearly every day

Q21 Over the past 2 weeks, how often have you been bothered by any of the following problems?

Feeling nervous, anxious, or on edge?

○ Not at all

○ Several days

○ More than half the days

○ Nearly every day

Q22 Over the past 2 weeks, how often have you been bothered by any of the following problems?

Not being able to stop or control worrying?

○ Not at all

○ Several Days

○ More than half the days

○ Nearly every day

End of Block: Block 3

Start of Block: Block 4

Q23 Do you have health insurance?

○ Yes

○ No

Q24 How much is your health insurance deductible?

○ I don't have insurance

○ I have insurance, but no deductible

○ Less than $4,000 for my plan/$8,000 for my family plan

○ More than $4,000 for my plan/$8,000 for my family plan

○ I have insurance, but don't know my deductible

- -

Q25 How satisfied with your insurance are you?

○ Extremely satisfied

○ Somewhat satisfied

○ Neither satisfied nor dissatisfied

○ Somewhat dissatisfied

○ Extremely dissatisfied

End of Block: Block 4

Start of Block: Block 5

Q26 Have you used a retail health clinic in the past year?

○ Yes

○ No

- -

Q27 Do you plan to seek services from a retail clinic again?

○ Yes

○ No

Q28 Do you plan to use a retail health clinic the next time you need services offered by retail clinics (minor illness or injury, immunization, physical exam, allergy/health screening, etc.)

○ Yes

○ No

Q29 Do you think you may use a retail health clinic in the future?

○ Yes

○ No

End of Block: Block 5

Start of Block: Block 6

Q30 Please rate how CONFIDENT you are that you would utilize a retail health clinic, even in the following situations, using the following response choices:

	Not at all confident	A little confident	Moderately confident	Very confident	Extremely confident
When I do not have health insurance	○	○	○	○	○
When I am unaware of the cost for services	○	○	○	○	○
When it's located in a store frequented by people I know	○	○	○	○	○
When a nurse practitioner or physician 's assistant rather than a medical doctor provides treatment	○	○	○	○	○
When I am unsure if my condition can be treated at a retail health clinic	○	○	○	○	○
When they are walk-in only (When they do not accept appointments)?	○	○	○	○	○
When I have never been to a retail health clinic before	○	○	○	○	○
When I have concerns about communication between the	○	○	○	○	○

retail clinic and my regular doctor	○	○	○	○	○
When I have a good relationship with my primary care provider, such as a Nurse Practitioner or Medical Doctor	○	○	○	○	○
When I need an immunization	○	○	○	○	○
When I have a cold	○	○	○	○	○
When I have an upset stomach or diarrhea	○	○	○	○	○
When my child or I need a physical exam	○	○	○	○	○

Q31 How important are the following in your decision about whether or not to utilize a retail health clinic?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Extended weekday hours and regular weekend hours	○	○	○	○	○
Convenient parking	○	○	○	○	○
The ability to combine a health visit and a shopping trip at the same location	○	○	○	○	○
Clear, transparent pricing for services	○	○	○	○	○
Typically lower costs compared to traditional providers such as primary care, urgent care, and emergency rooms.	○	○	○	○	○
Being in the same building as a pharmacy	○	○	○	○	○
No requirement to make an appointment	○	○	○	○	○

Wait times averaging 20 minutes or less	○	○	○	○	○
Quality of care being the same as with traditional providers	○	○	○	○	○
Being treated by a Nurse Practitioner or Physician's Assistant opposed to a Medical Doctor	○	○	○	○	○
Limited number of problems that can be treated	○	○	○	○	○
Privacy concerns related to seeking healthcare in a retail setting	○	○	○	○	○
Clinics not located in a convenient location	○	○	○	○	○
Your closest retail health clinic is further than other providers	○	○	○	○	○
Concerns about your regular doctor not knowing	○	○	○	○	○

about care received at a retail health clinic	○	○	○	○	○
Your regular doctor might be upset that you received treatment at a retail health clinic	○	○	○	○	○
Receiving treatment at a retail clinic might cause confusion with your other providers	○	○	○	○	○
The retail health clinic may not know your medical history as well as your regular provider	○	○	○	○	○
That you might be treated by different providers on different visits at retail clinics	○	○	○	○	○

✱

85

Q32 How many times in your life have you used a retail health clinic?

_____

Q33 How satisfied have you been with the service you received at retail clinics?

○ Extremely satisfied

○ Somewhat satisfied

○ Neither satisfied nor dissatisfied

○ Somewhat dissatisfied

○ Extremely dissatisfied

○ I have never used a retail health clinic

Q34 **Have you used a retail health clinic for:**

	Yes	No
An illness / feeling sick	○	○
Preventative care (e.g., immunization, testing or screening, physical exam)	○	○
Treatment related to a chronic condition (e.g. high blood pressure, Asthma, Diabetes, Obesity, COPD, Arthritis, etc.)	○	○

Q35 How often to you see a medical provider (your primary doctor, retail clinic, urgent care, emergency room, etc)?

○ 1 time per week

○ 1 time per month

○ Once every 2 months

○ Once every 6 months

○ Once a year

○ Less than once a year

- -

Q42 Do you have a regular Primary Care Provider (i.e. doctor or nurse practitioner) that you usually go to)?

○ Yes

○ No

Q36 Do you know the difference between a nurse practitioner(NP), physician's assistant(PA), and a medical doctor (MD or DO)

○ Yes

○ No

- -

Q37 Do you know if insurance covers retail health clinic visits

○ Yes

○ No

Q38 Do you know people who have used retail health clinics

○ Yes

○ No

Q39 Do you believe there is a noticeable benefit to being seen by the same provider over time?

○ Yes

○ No

Q40 Do you know think that retail health clinics are generally more readily available than your regular doctor's office?

○ Yes

○ No

Q41 Do you know enough about retail clinics to feel confident enough to use them (i.e., costs, services provided, where they are located, etc.)?

○ Yes

○ No

End of Block: Block 9

Q43 Next, I would like to ask you a few questions about how you feel about healthcare organizations. When I say healthcare organizations, I am not asking about an individual doctor or nurse or any other person like that. I am asking about organizations where you might get healthcare, like a hospital or a clinic, the healthcare system in general. Please read to the statements carefully. For each one, tell me whether you strongly disagree, disagree, agree or strongly agree

Q44 Click to write the question text

	Strongly Disagree	Disagree	Agree	Strongly Agree
You'd better be cautious when dealing with health care organizations	○	○	○	○
Patients have sometimes been deceived or misled by health care organizations	○	○	○	○
When health care organizations make mistakes they usually cover it up	○	○	○	○
Health care organizations have sometimes done harmful experiments on patients without their knowledge	○	○	○	○
Health care organizations don't always keep your information totally private	○	○	○	○
Sometimes I wonder if health care organizations really know what they are doing	○	○	○	○
Mistakes are common in health care organizations	○	○	○	○

Q45 Please rate how LIKELY you would be to visit a retail health clinic for the following services if they were offered?

	Extremely likely	Somewhat likely	Neither likely nor unlikely	Somewhat unlikely	Extremely unlikely
To get a vaccine	○	○	○	○	○
For a physical exam	○	○	○	○	○
Sick visit (cold, sore throat, etc)	○	○	○	○	○
Health behavior change (quit smoking, weight loss, etc)	○	○	○	○	○
Screening for Depression and Anxiety	○	○	○	○	○
Treatment for mild Depression or Anxiety	○	○	○	○	○

BIBLIOGRAPHY

Accenture. (2015). US Retail Health Clinics Expected to Surge by 2017 According to
Accenture Analysis.

Ahmed, A., & Fincham, J. E. (2011). Patients' view of retail clinics as a source of
primary care: Boon for nurse practitioners? *Journal of the American Academy of
Nurse Practitioners*, *23*(4), 193–199. https://doi.org/10.1111/j.1745-
7599.2010.00577.x

Appleby, J. (2013). Walgreens becomes 1st retail chain to diagnose, treat chronic
conditions.

Arthur, B. C., Fisher, A. K., Shoemaker PharmD, PhD, S. J., Pozniak PhD, A.,
Stokley, S., & Cochran DSc, RN, FACHE, K. (2015). Business Models,
Vaccination Services, and Public Health Relationships of Retail Clinics: A
Qualitative Study/PRACTITIONER APPLICATION. *Journal of Healthcare
Management*, *60*(6), 429–441. Retrieved from
http://search.proquest.com/docview/1747594753?accountid=10755%5Cnhttp://sf
x.bib-bvb.de/sfx_uben?url_ver=Z39.88-
2004&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&genre=article&sid=ProQ:ProQ
%3Aabiglobal&atitle=Business+Models%2C+Vaccination+Services%2C+and+P
ubl

Ashman, J. J., Hing, E., & Talwalkar, A. (2015). Variation in Physician Office Visit

Rates by Patient Characteristics and State, 2012. *NCHS Data Brief*, (212), 1–8. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/26375379

Ashwood, J. S., Reid, R. O., Setodji, C. M., Weber, E., Gaynor, M., & Mehrotra, A. (2011). Trends in retail clinic use among the commercially insured. *American Journal of Managed Care*, *17*(11). https://doi.org/10.1016/j.freeradbiomed.2008.10.025.The

Bacharach, D., Frohlich, J., Garcimonde, A., & Nevitt, K. (2015). Building a Culture of Health: The Value Proposition of Retail Clinics.

Bandura, A. (1977). Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Bartels, S. J., Coakley, E. H., Zubritsky, C., Ware, J. H., Miles, K. M., Areán, P. A., … Levkoff, S. E. (2004). Improving access to geriatric mental health services: A randomized trial comparing treatment engagement with integrated versus enhanced referral care for depression, anxiety, and at-risk alcohol use. *American Journal of Psychiatry*, *161*(8), 1455–1462. https://doi.org/10.1176/appi.ajp.161.8.1455

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*(2), 238–246. https://doi.org/10.1037/0033-2909.107.2.238

Blaney, C. L., Redding, C. ., Paiva, A. L., Rossi, J. S., Prochaska, J. O., Blissmer, B., … Bayley, K. D. (2018). No Title. *Families, Systems and HEalth*, *36*(1), 97–107.

Brown, T. J., Todd, A., O'Malley, C. L., Moore, H. J., Husband, A. K., Bambra, C., … Summerbell, C. D. (2016). Community pharmacy interventions for public health priorities: a systematic review of community pharmacy-delivered smoking,

alcohol and weight management interventions. *Public Health Research*, *4*(2), 1–162. https://doi.org/10.3310/phr04020

Carney Moore, J. M., Dolansky, M., Hudak, C., & Kenneley, I. (2015). Care coordination between convenient care clinics and healthcare homes. *Journal of the American Association of Nurse Practitioners*, *27*(5), 262–269. https://doi.org/10.1002/2327-6924.12167

Cassel, C. K. (2012). Retail clinics and drugstore medicine. *JAMA - Journal of the American Medical Association*. https://doi.org/10.1001/jama.2012.3966

Chang, J. E., Brundage, S. C., & Chokshi, D. A. (2015). Convenient Ambulatory Care — Promise, Pitfalls, and Policy. *New England Journal of Medicine*, *373*(4), 382–388. https://doi.org/10.1056/nejmhpr1503336

Clement, S., Schauman, O., Graham, T., Maggioni, F., Evans-Lacko, S., Bezborodovs, N., … Thornicroft, G. (2015). What is the impact of mental health-related stigma on help-seeking? A systematic review of quantitative and qualitative studies. *Psychological Medicine*. https://doi.org/10.1017/S0033291714000129

Comrey, A. L. (1988). Factor-Analytic Methods of Scale Development in Personality and Clinical Psychology. *Journal of Consulting and Clinical Psychology*, *56*(5), 754–761. https://doi.org/10.1037/0022-006X.56.5.754

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, *16*(3), 297–334. https://doi.org/10.1007/BF02310555

CVS Health. (2015). CVS Health to partner with direct-to-consumer telehealth providers to increase access to physician care.

Dalen, J. E. (2016). Retail Clinics: A Shift From Episodic Acute Care to Partners in

Coordinated Care. *American Journal of Medicine*, *129*(2), 134–136.

https://doi.org/10.1016/j.amjmed.2015.08.019

Daniel, H., & Erickson, S. (2015). Retail Health clinics: A policy position paper from

the American college of physicians. *Annals of Internal Medicine*, *163*(11), 869–

870. https://doi.org/10.7326/M15-0571

DeVellis, R. F. (2012). Scale Development : Theory and Applications 3 rd ED . Vol .

26. *Applied Social Research Methods*, *26*, 31. Retrieved from

http://books.google.com/books?id=Rye31saVXmAC&lpg=PR1&ots=YHXbaKk

zn1&dq=affective writing scale validity

examples&lr&pg=PR1#v=onepage&q&f=false

Dugdale, C., Zaller, N., Bratberg, J., Berk, W., & Flanigan, T. (2014). Missed

opportunities for HIV screening in pharmacies and retail clinics. *Journal of

Managed Care & Specialty Pharmacy*, *20*(4), 339–345.

https://doi.org/10.18553/jmcp.2014.20.4.339

Durbin, J., Barnsley, J., Finlayson, B., Jaakkimainen, L., Lin, E., Berta, W., &

McMurray, J. (2012). Quality of communication between primary health care and

mental health care: An examination of referral and discharge letters. *Journal of

Behavioral Health Services and Research*. https://doi.org/10.1007/s11414-012-

9288-9

Gullo, K. (2005). Many agree on potential benefits of onsite clinics in major retail

stores that can provide basic medical services, yet large numbers are also

skeptical. *Wall Street Journal Online Health-Care Poll*, p.

http://www.prnewswire.com/news-releases/many-agree.

Hall, K. L., & Rossi, J. S. (2008). Meta-analytic examination of the strong and weak

    principles across 48 health behaviors. *Preventive Medicine*.

    https://doi.org/10.1016/j.ypmed.2007.11.006

Hampton-Robb, S., Qualls, R. C., & Compton, W. C. (2003). Predicting first-session

    attendance: The influence of referral source and client income. *Psychotherapy*

    Research, *13*(2), 223–233. https://doi.org/10.1080/713869641

Harlow, L. L. (2014). *The essence of multivariate thinking: Basic themes and methods,*

    second edition. *The Essence of Multivariate Thinking: Basic Themes and*

    Methods, Second Edition. https://doi.org/10.4324/9781315832746

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis.

    Psychometrika, *30*(2), 179–185. https://doi.org/10.1007/BF02289447

Horrocks, S. (2002). Systematic review of whether nurse practitioners working in

    primary care can provide equivalent care to doctors. *BMJ*, *324*(7341), 819–823.

    https://doi.org/10.1136/bmj.324.7341.819

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure

    analysis: Conventional criteria versus new alternatives. *Structural Equation*

    Modeling: A Multidisciplinary Journal, *6*(1), 1–55.

    https://doi.org/10.1080/10705519909540118

Hunter, L. P., Weber, C. E., Morreale, A. P., & Wall, J. H. (2009). Patient satisfaction

    with retail health clinic care. *Journal of the American Academy of Nurse*

    Practitioners, *21*(10), 565–570. https://doi.org/10.1111/j.1745-

    7599.2009.00447.x

Institute of Medicine & Committee on Quality of Health Care in America, & The

Institute of Medicine. (2001). *Crossing the Quality Chasm: A New Health System for the 21st Century. BMJ : British Medical Journal* (Vol. 323). https://doi.org/10.1136/bmj.323.7322.1192

Jackson, D. N. (1970). A sequential system for personality scale development. In *In C.D. Spielberger (Ed.), Current topics in clinical and community psychology* (p. pp.61-96).

Janis, I. L., & Mann, L. (1977). *Decision Making. Decision Making: A Psychological Analysis of Conflict, Choice, and Commitment*.

Krebs, P., Prochaska, J. O., & Rossi, J. S. (2010). A meta-analysis of computer-tailored interventions for health behavior change. *Preventive Medicine*. https://doi.org/10.1016/j.ypmed.2010.06.004

Kroenke, K., Spitzer, R. L., Williams, J. B. W., Monahan, P. O., & Lowe, B. (2007). Anxiety disorders in primary care: Prevalence, impairment, comorbidity, and detection. *Annals of Internal Medicine*, *146*(5), 317–326. https://doi.org/10.7326/0003-4819-146-5-200703060-00004

Lautenschlager, G. J. (1989). A Comparison of Alternatives to Conducting Monte Carlo Analyses for Determining Parallel Analysis Criteria. *Multivariate Behavioral Research*, *24*(3), 365–395. https://doi.org/10.1207/s15327906mbr2403_6

Laveist, T. A., Isaac, L. A., & Williams, K. P. (2009). Mistrust of health care organizations is associated with underutilization of health services. *Health Services Research*, *44*(6), 2093–2105. https://doi.org/10.1111/j.1475-6773.2009.01017.x

Lee, T. H., Bodenheimer, T., Goroll, A. H., Starfield, B., & Treadway, K. (2008).
Redesigning Primary Care. *New England Journal of Medicine*, *359*(20), e24.
https://doi.org/10.1056/NEJMp0809050

Leppel, K. (2010). Factors influencing willingness to use convenient care clinics
among baby boomers and older persons. *Health Care Management Review*,
35(1), 13–22. https://doi.org/10.1097/HMR.0b013e3181be80a1

Levine, D. M., & Linder, J. A. (2016). Retail Clinics Shine a Harsh Light on the
Failure of Primary Care Access. *Journal of General Internal Medicine*, *31*(3),
260–262. https://doi.org/10.1007/s11606-015-3555-4

Martsolf, G., Fingar, K. R., Coffey, R., Kandrack, R., Charland, T., Eibner, C., …
Mehrotra, A. (2017). Association Between the Opening of Retail Clinics and
Low-Acuity Emergency Department Visits. In *Annals of Emergency Medicine*
(Vol. 69, p. 397–403.e5). https://doi.org/10.1016/j.annemergmed.2016.08.462

Maurer, D. (2012). Screening for depression. *American Family Physician*, *85*(2), 139–
144. Retrieved from citeulike-article-
id:12899174%5Cnhttp://view.ncbi.nlm.nih.gov/pubmed/22335214

McKinlay, J. B., & Marceau, L. D. (2012). From cottage industry to a dominant mode
of primary care: Stages in the diffusion of a health care innovation (retail clinics).
Social Science and Medicine, *75*(6), 1134–1141.
https://doi.org/10.1016/j.socscimed.2012.04.039

Mehrotra, A., Gidengil, C. A., Setodji, C. M., Burns, R. M., & Linder, J. A. (2015).
Antibiotic prescribing for respiratory infections at retail clinics, physician
practices, and emergency departments. *American Journal of Managed Care*,

21(4), 294–302.

Mehrotra, A., & Lave, J. R. (2012). Visits to retail clinics grew fourfold from 2007 to 2009, although their share of overall outpatient visits remains low. *Health Affairs*, *31*(9), 2123–2129. https://doi.org/10.1377/hlthaff.2011.1128

Mehrotra, A., Wang, M. C., Lave, J. R., Adams, J. L., & McGlynn, E. A. (2008). Retail clinics, primary care physicians, and emergency departments: A comparison of patients' visits. *Health Affairs*, *27*(5), 1272–1282. https://doi.org/10.1377/hlthaff.27.5.1272

National Center for Health Statistics. (2017). Health, United States, 2016. *Center for Disease Control*, 314–317. Retrieved from https://www.cdc.gov/nchs/data/hus/hus16.pdf#019

Noar, S. M. (2003). The role of structural equation modeling in scale development. *Structural Equation Modeling*. https://doi.org/10.1207/S15328007SEM1004_8

Noar, S. M., Benac, C. N., & Harris, M. S. (2007). Does Tailoring Matter? Meta-Analytic Review of Tailored Print Health Behavior Change Interventions. *Psychological Bulletin*, *133*(4), 673–693. https://doi.org/10.1037/0033-2909.133.4.673

Park, E. R., DePue, J. D., Goldstein, M. G., Niaura, R., Harlow, L. L., Willey, C., … Prokhorov, A. V. (2003). Assessing the transtheoretical model of change constructs for physicians counseling smokers. *Annals of Behavioral Medicine*, *25*(2), 120–126. https://doi.org/10.1207/S15324796ABM2502_08

Polinski, J. M., Barker, T., Gagliano, N., Sussman, A., Brennan, T. A., & Shrank, W. H. (2016). Patients' Satisfaction with and Preference for Telehealth Visits.

Journal of General Internal Medicine, *31*(3), 269–275.

https://doi.org/10.1007/s11606-015-3489-x

Pollack, C. E., & Armstrong, K. (2009). The geographic accessibility of retail clinics

for underserved populations. *Archives of Internal Medicine*, *169*(10), 945–949.

https://doi.org/10.1001/archinternmed.2009.69

Pollack, C. E., Gidengil, C., & Mehrotra, A. (2010). The growth of retail clinics and

the medical home: Two trends in concert or in conflict? *Health Affairs*.

https://doi.org/10.1377/hlthaff.2010.0089

Prochaska, J. O. (1994). Strong and Weak Principles for Progressing From

Precontemplation to Action on the Basis of Twelve Problem Behaviors. *Health*

Psychology, *13*(1), 47–51. https://doi.org/10.1037/0278-6133.13.1.47

Prochaska, J. O., & DiClemente, C. C. (1983). Stages and processes of self-change of

smoking: Toward an integrative model of change. *Journal of Consulting and*

Clinical Psychology, *51*(3), 390–395. https://doi.org/10.1037/0022-

006X.51.3.390

Prochaska, J. O., DiClemente, C. C., Velicer, W. F., Ginpil, S., & Norcross, J. C.

(1985). Predicting change in smoking status for self-changers. *Addictive*

Behaviors, *10*(4), 395–406. https://doi.org/10.1016/0306-4603(85)90036-X

Prochaska, J. O., Redding, C. A., & Evers, K. E. (2008). The Transtheoretical Model

and Stages of Change. In *Health Behavior and Health Education* (pp. 99–120).

Prochaska, J. O., & Velicer, W. F. (1997). The transtheoretical model of health

behavior change. *American Journal of Health Promotion*, *12*(1), 38–48.

https://doi.org/10.4278/0890-1171-12.1.38

Prochaska, J. O., Velicer, W. F., DiClemente, C. C., & Fava, J. (1988). Measuring

    Processes of Change: Applications to the Cessation of Smoking. *Journal of*

    Consulting and Clinical Psychology, *56*(4), 520–528.

    https://doi.org/10.1037/0022-006X.56.4.520

Prochaska, J. O., Velicer, W. F., Guadagnoli, E., Rossi, J. S., & DiClemente, C. C.

    (1991). Patterns of Change: Dynamic Typology Applied to Smoking Cessation.

    Multivariate Behavioral Research, *26*(1), 83–107.

    https://doi.org/10.1207/s15327906mbr2601_5

Prochaska, J. O., Velicer, W. F., Rossi, J. S., Goldstein, M. G., Marcus, B. H.,

    Rakowski, W., … Rossi, S. R. (1994). Stages of Change and Decisional Balance

    for 12 Problem Behaviors. *Health Psychology*, *13*(1), 39–46.

    https://doi.org/10.1037/0278-6133.13.1.39

Professional Pulse. (2016). Retail Health Care Clinic Growth Predicted. *PT in Motion*,

    8(2), 43.

RAND Corperation. (2016). The Evolving Role of Retail Clinics.

Redding, Maddock, & Rossi. (2006). The sequential approach to measurement of

    health behavior constructs: Issues in selecting and developing measures.

    Californian Journal of Health Promotion, *4*(1), 83–101.

Reid, R. O., Ashwood, J. S., Friedberg, M. W., Weber, E. S., Setodji, C. M., &

    Mehrotra, A. (2013). Retail clinic visits and receipt of primary care. *Journal of*

    General Internal Medicine, *28*(4), 504–512. https://doi.org/10.1007/s11606-012-

    2243-x

Rohrer, J. E., Angstman, K. B., & Bartel, G. A. (2009). Impact of retail medicine on

standard costs in primary care: a semiparametric analysis. *Population Health Management*, *12*(6), 333–335. https://doi.org/10.1089/pop.2009.0007

Rosseel, Y. (2012). lavaan : An R Package for Structural Equation. *Journal of Statistical Software*, *48*(2), 1–36. https://doi.org/10.18637/jss.v048.i02

Rudavsky, R., Pollack, C. E., & Mehrotra, A. (2009). The geographic distribution, ownership, prices, and scope of practice at retail clinics. *Annals of Internal Medicine*, *151*(5), 315–320. https://doi.org/10.7326/0003-4819-151-5-200909010-00005

Shrank, W. H., Krumme, A. A., Tong, A. Y., Spettell, C. M., Matlin, O. S., Sussman, A., … Choudhry, N. K. (2014). Quality of care at retail clinics for 3 common conditions. *American Journal of Managed Care*, *20*(10), 794–801. https://doi.org/85744 [pii]

Thygeson, M., Van Vorst, K. A., Maciosek, M. V., & Solberg, L. (2008). Use and costs of care in retail clinics versus traditional care sites. *Health Affairs*, *27*(5), 1283–1292. https://doi.org/10.1377/hlthaff.27.5.1283

Tu, H. T., & Cohen, G. R. (2008). *Checking up on retail-based health clinics: is the boom ending? Issue Brief* (Vol. 48).

U.S. Census. (2016). American Community Survey 1-year estimates. Retrieved from https://censusreporter.org/profiles/04000US06-california/

Uscher-Pines, L., Harris, K. M., Burns, R. M., & Mehrotra, A. (2012). The growth of retail clinics in vaccination delivery in the U.S. *American Journal of Preventive Medicine*, *43*(1), 63–66. https://doi.org/10.1016/j.amepre.2012.02.024

Velicer, W. F., Brick, L. A. D., Fava, J. L., & Prochaska, J. O. (2013). Testing 40

Predictions From the Transtheoretical Model Again, With Confidence. *Multivariate Behavioral Research*, *48*(2), 220–240. https://doi.org/10.1080/00273171.2012.760439

Velicer, W. F., DiClemente, C. C., Prochaska, J. O., & Brandenburg, N. (1985). Decisional Balance Measure for Assessing and Predicting Smoking Status. *Journal of Personality and Social Psychology*, *48*(5), 1279–1289. https://doi.org/10.1037/0022-3514.48.5.1279

Velicer, W. F., Diclemente, C. C., Rossi, J. S., & Prochaska, J. O. (1990). Relapse situations and self-efficacy: An integrative model. *Addictive Behaviors*, *15*(3), 271–283. https://doi.org/10.1016/0306-4603(90)90070-E

Wang, M. C., Ryan, G., McGlynn, E. A., & Mehrotra, A. (2010). Why do patients seek care at retail clinics, and what alternatives did they consider? *American Journal of Medical Quality*, *25*(2), 128–134. https://doi.org/10.1177/1062860609353201

Weinick, R. M., Burns, R. M., & Mehrotra, A. (2010). Many emergency department visits could be managed at urgent care centers and retail clinics. *Health Affairs*, *29*(9), 1630–1636. https://doi.org/10.1377/hlthaff.2009.0748

Widaman, K., & Floyd, F. J. (1995). Factor Analysis in the Development and Refinement of Clinical Assessment Instruments Assessment Instruments. *Psychological Assessment ·*, *7*(3), 286–299. https://doi.org/10.1037/1040-3590.7.3.286

Wilson, A. R., Zhou, X. T., Shi, W., Rodin, H., Bargman, E. P., Garrett, N. A., & Sandberg, T. J. (2010). Retail clinic versus office setting: Do patients choose

appropriate providers? *American Journal of Managed Care*, *16*(10).

Woodburn, J., Smith, K., & Nelson, G. (2007). Quality of care in the retail health care setting using national clinical guidelines for acute pharyngitis. *Journal of Medical Quality*, *22*(6), 457–462.

Xiao, J. J., Newman, B. M., Prochaska, J. M., Leon, B., Bassett, R. L., & Johnson, J. L. (2004). Applying the Transtheoretical Model of Change to Consumer Debt Behavior. *Change*, *15*(2), 89–100.

Zwick, W. R., & Velicer, W. F. (1986). Comparison of Five Rules for Determining the Number of Components to Retain. *Psychological Bulletin*, *99*(3), 432–442. https://doi.org/10.1037/0033-2909.99.3.432