

University of Nevada, Reno

**Pilot Testing of Multiple Behavioral Health Screening Devices in the Primary Care
Setting**

A dissertation submitted in partial fulfillment of the requirement for
the degree of Doctor of Philosophy in Psychology

By

Alexandros Maragakis

Dr. William T. O'Donohue/Dissertation Advisor

August, 2015



THE GRADUATE SCHOOL

We recommend that the dissertation
prepared under our supervision by

ALEXANDROS MARAGAKIS

Entitled

**Pilot Testing Of Multiple Behavioral Health Screening Devices In The Primary
Care Setting**

be accepted in partial fulfillment of the
requirements for the degree of

DOCTOR OF PHILOSOPHY

William T. O'Donohue, Advisor

Dan Ahearn, Committee Member

Jane E. Fisher, Committee Member

Anthony Papa, Committee Member

W. Larry Williams, Committee Member

Jeanne Wendel , Graduate School Representative

David W. Zeh, Ph. D., Dean, Graduate School

August, 2015

Abstract

The United States' healthcare system is currently the most expensive in the world. While there are many contributors to high healthcare costs, one of the major sources has been identified as comorbid behavioral health disorders. To address this, many healthcare systems are moving toward a more integrative approach that combines medical and behavioral health services in the same location. To ensure the success of these integrated care systems, the screening and detection of behavioral health concerns by medical providers has been the focus of much research. The purpose of this study was to pilot test two new behavioral health screening tools and examine how they influenced medical provider behavior in regards to detection, referral, and intervention of behavioral health concerns, as well as satisfaction of providers and participants who completed the screening tools. Two medical providers that operated in a community health center were recruited to use the screening tools in their practice for eight weeks. Data were collected for three time periods: a) one month prior to use of the screening tools, via electronic health records, b) during the eight weeks in which the screening tools were used, via self-reports and electronic health records, and c) for six weeks after the screening tools were discontinued, via self-reports and electronic health records. Results indicate that the screening tools had mixed results in regard to influencing provider behavior and satisfaction with the screening tools. Analyses suggest that behavioral health concerns may have been missed by medical providers, and that further investigation is needed within systems of care to better understand how medical providers respond to behavioral health concerns mentioned during an appointment.

Acknowledgments

I would like to thank my advisor, William T. O'Donohue, for his time, knowledge, and guidance during this project and throughout my graduate career. Through his guidance, I was able to create what was originally just a dream into a reality.

I would also like to thank my committee members, Dr. Anthony Papa, Dr. Jane Fisher, Dr. Larry Williams, Dr. Jeanne Wendel, and Dr. Dan Ahearn for all of the guidance, time, and support during this dissertation and throughout my doctoral program.

Finally, I would like to thank my family, Emmanuel, Mary, Antonios, Dimitra Panagiota, Ioanna, Eva Maria, and Dimitra Anastasia for shaping me into the person I am today.

Without you all, this work would have meant nothing.

Table of Contents

Abstract	i
Acknowledgements	74ii
Table of Contents	75iii
List of Tables	76iv
List of Figures	77v
List of Appenices	77vi
Chapter 1 Introduction	771
Chapter 2 Method	7722
Chapter 3 Results	7729
Chapter 4 Discussion	7755
References	7767-70
Appendices.....	7771-84

List of Tables

Table 1	Behavioral Health Screens' Strengths and Weaknesses	14
Table 2	Odds Ratios for Provider One.....	7430
Table 3	Odds Ratios for Provider Two	7531-32
Table 4	Diagnoses Given by Provider One.....	7633
Table 5	Diagnoses Given by Provider Two	7734
Table 6	Provider One's Off-Site Referral Behavior	7735
Table 7	Provider Two's Off-Site Referral Behavior.....	7735
Table 8	Provider One's Referral and Intervention Behavior	7737
Table 9	Provider Two's Referral and Intervention Behavior	7738
Table 10	Number of Items Endorsed on Pediatric Screening Inventory	7739-41
Table 11	Number of Items Endorsed on Adult Screening Inventory	7741-43
Table 12	Number of Concerns on the Adult Screening Inventory and Pediatric Screening Inventory and Number of Behavioral Health Concerns Discussed by Provider One.....	44
Table 13	Number of Concerns on the Adult Screening Inventory and Pediatric Screening Inventory and Number of Behavioral Health Concerns Discussed by Provider Two ..	7445
Table 14	Provider One's General Satisfaction Raw Scores.....	7547
Table 15	Provider One's Change Scores in Satisfaction	7647
Table 16	Provider Two's General Satisfaction Raw Scores.....	7547
Table 17	Provider Two's Change Scores in Satisfaction.....	7648
Table 18	Provider One's Responses After Intervention Phase	7750
Table 19	Provider Two's Responses After Intervention Phase	7751
Table 20	Provider One's Responses After Return to Baseline Phase.....	7751
Table 21	Provider Two's Responses After Return to Baseline Phase	7752
Table 22	Descriptive Statistics of Parent Rating of ASI and PSI.....	7752
Table 23	Comments Made by Parents Regarding the Use of the ASI and PSI	7752

List of Figures

Figure 1	Provider Satisfaction with ASI & PSI.....	50
Figure 2	Time Spent Completing the ASI & PSI	7453
Figure 3	Provider Productivity.....	7554

List of Appendices

Appendix A	Adult Screening Inventory	71-72
Appendix B	Pediatric Screening Inventory	7473-76
Appendix C	Outcome Measures	77-83

Chapter 1

Introduction

Healthcare spending in the United States has reached an unsustainable level. Currently, healthcare spending accounts for over 17% of the United States' Gross Domestic Product (GDP), making it the most expensive healthcare system in the world (OECD, 2009). If the trends of rising healthcare costs continue, healthcare will account for 25% of the nation's GDP by 2025 (Congressional Budget Office, 2008). To complicate the issue, massive resources are currently being spent on healthcare, yet the quality of this care is consistently an area of concern (Cummings, O'Donohue, & Cummings, 2011). Due to these facts, the healthcare system in the United States is in the process of significant change.

In 2001, the Institute of Medicine (IOM) published its seminal report, *Crossing the Quality Chasm*, that identified key issues with the healthcare system in the United States. In their report, the IOM targeted the following areas as needing emphasis to improve the quality of the healthcare system:

1. Access
2. Safety
3. Use of evidence based procedures
4. Timeliness and continuity
5. Equity
6. Being patient centric
7. Cost

Based on the reports published by the IOM, and the overall high cost of healthcare with questionable quality, the Affordable Care Act (ACA) was enacted to create new rules and regulations on how healthcare should be delivered. These new rules and regulations have now created pathways to care that stress the use of interprofessional teams to deliver high quality care (Rozenky, 2012). By using interprofessional teams, the medical setting turns into a “one-stop shop,” and allows patients easy access to care that has been traditionally provided in “silos.” By co-locating and integrating various health providers, patients receive the appropriate care immediately, which reduces burden issues such as having to follow through with referrals or experiencing long waits before accessing the appropriate health provider. One of the most successful examples of integrating health services has been between primary care providers and behavioral health specialists. These programs, referred to as integrated care (IC) programs, have produced high quality health outcomes and have been effective at reducing cost. Given their success, IC programs have a high probability of meeting the efforts of the ACA to reduce costs and improve overall healthcare quality. Therefore, efforts to improve and refine IC programs are of utmost importance.

Overview of Integrated Care

It is estimated that 60%-70% of adult visits to primary care physicians are complicated by behavioral health issues (Cummings, O'Donohue, & Cummings, 2011). These behavioral health issues create problems in the primary care setting (e.g., improper use of medical expertise, repeated visits to primary care providers or emergency rooms), due to the facts that patients do not receive the proper care to alleviate the underlying behavioral health problems and that physicians are not properly trained to either detect or

treat these problems. Also, in addition to not receiving proper care, primary care appointments with patients with behavioral health issues usually take 30 to 60 minutes, which is two to three times the length normally allotted for a typical primary care visit (Cummings, 2003). The extra time spent with these patients reduces the efficiency of the physicians and lowers physician job satisfaction (Meadows, Valleley, Haack, Thorson, & Evans, 2011). To not only handle the issue of proper care, but also to increase the efficiency of physicians, IC approaches that place behavioral health specialists inside the primary care setting as part of a primary care team are beginning to grow in popularity and practice (Christian & Curtis, 2012).

These IC approaches have been shown to be effective and efficient in handling the behavioral health issues that arise in the primary care setting. Patients who receive integrated care have higher satisfaction ratings with regard to the quality of care they are receiving, physicians report higher job satisfaction, and hospitals and clinics report savings due to medical cost offset from providing these behavioral health treatments on site (Christian & Curtis, 2012; Oser & O'Donohue, 2009). Integrated care also reduces the stigma of receiving mental health treatment by making treatment a seamless part of primary care treatment (Christian & Curtis, 2012).

For IC to be successful it is imperative that empirically supported assessments and treatments are used. A failure to use empirically supported behavioral health treatments will lead to a dramatic increase in healthcare spending with little to no positive effect on outcome (Cummings, O'Donohue, Cummings, 2011). The most famous example of this is the Fort Bragg study, where behavioral health services were offered for free to whomever wished to receive them, and there was no system to ensure that the behavior

health services consisted of evidence based care. This resulted in a 10-fold increase in healthcare cost and did not produce any results in regard to the quality of care for patients (Bickman, 1996).

Another important factor for the success of integrated care is the shift away from the traditional psychotherapy model. Behavioral care providers (BCPs) in the primary care setting do not have the luxury of the traditional 50 minute session every week, nor do they have the time to administer lengthy assessments that require hours for the patient to complete and the professional to score. Rather, BCPs have a few (usually two-three) 15-20 minute sessions to identify and treat behavioral health issues (Cummings, 2011). The goal is to practice a primary care psychology which is similar to and consistent with primary care medicine. One way this is described is “high volume, low touch,” where patients requiring more intensive behavioral health interventions are triaged to behavioral health specialty care just as medical patients who require specialty care (Strosahl, 2005). Therefore, a goal of successful integrated care is for BCPs to be as efficient and effective as possible, given the constraints of the primary care setting.

However, before behavioral health treatment can be administered, effective and efficient assessments and screening devices must be used (Byrd & Alschuler, 2009). There have been several successful measures that have been developed for primary care use. These measures usually are short (i.e., fit on one page) and do not require expertise in psychology or a lot of additional time or resources to score (e.g., if the total is above a certain number then further investigation is warranted) (Curtis & Christian, 2012). These short and easy to use measures are extremely useful for the primary care provider (PCP), in regard to detecting the potential presence of behavioral health issues without requiring

much time on the part of either the patient or the physician. In the primary care setting, this quick detection allows the PCP to either refer to a psychologist or, if in an integrated care setting, hand off to the BCP.

The Importance of Screening in the Primary Care Setting

Screening for behavioral health issues in both the adult and pediatric settings has been shown to have profound effects on the quality of care received, or in many cases, not received. Many physicians simply miss behavioral health concerns because either the patient does not mention any concerns (Briggs-Gowan, Horwitz, Schwab-Stone, Leventhal, & Leaf, 2000), or the physician is not properly trained to address these issues (Steele, Lochrie, & Roberts, 2010). This in turn effects of the quality of care in both settings.

For 25 years, behavioral health issues in the pediatric setting have been termed the “hidden morbidity” and are a major source of healthcare costs in the pediatric setting (Costello, et al., 1988). Due to the prevalence, severity, and cost of behavioral health issues in the pediatric setting, the American Academy of Pediatrics (AAP) issued a statement suggesting mandatory screening of all children and adolescents for behavioral health concerns in a pediatric setting (AAP, 2009). However, due to the fact that many screening devices are created with research, rather than practical, purposes in mind (Stancin & Palermo, 1997), many of these devices are too burdensome on the patients and the providers, and are often disregarded in practice. As a result of failing to screen, evidence suggest that over 46% of behavioral health concerns go undetected by pediatricians (Sheldick, Merchant, & Perrin, 2011).

A recent study examined the effects of mandating behavioral health screening in the pediatric setting. The results indicated that with more consistent pediatric screening (an increase from 16% of patients to 54% of patients screened), the number of children identified as “at risk” for behavioral health issues rose by over three-fold (Kuhlthau, et al., 2011). As a result, the total number of full behavioral health assessments rose in the area. This study demonstrated that screening in the pediatric setting has the potential to identify children who are at risk of behavioral health issues and provide them the proper care.

A recent review of studies examining the effects of screening for depression in the primary care setting found that screening had no detrimental effects on the patient (i.e., it did not increase suicidality or likelihood of depression). However, for quality of care to actually improve, support personnel (e.g., nurses, medical assistants, behavior care providers) were necessary in delivering components of the depression care (e.g., assessment and follow-up) (O'Connor, Whitlock, Beil, & Gaynes, 2009). Another important finding was that screening alone did not improve the quality of care for patients. Screening in conjunction with a system, such as integrated care, that was designed to address behavioral health issues was required to improve the quality of healthcare received by the patient and to improve health outcomes (O'Connor, Whitlock, Beil, & Gaynes, 2009). Therefore, screening for behavioral health issues, especially in an integrated care setting, has the potential to improve the quality of care patients receive.

Essential features of successful primary care screening devices

Due to the unique demands of a primary care setting, a successful behavioral health screening device must have certain characteristics that respect the constraints of a

primary care visit (e.g., time allotted for a visit, lack of behavioral health expertise), while simultaneously achieving its goal of screening for behavioral health issues. A failure to capture the characteristics listed in this section may make even the most psychometrically sound screening device inadequate for various reasons.

Broad in scope. Screening devices are designed to capture a wide array of potential areas of concern. A successful screening tool that yields the highest potential for improving a patient's quality of care should be an all-inclusive measure that assesses multiple domains (Byrd & Alschuler, 2009). While there are many screening devices that focus on one behavioral health issue (e.g., depression, anxiety, substance abuse), these screens create a potential issue in that it would require many screening devices to capture a wide array of behavioral issues. This in turn can produce too much of a burden in the primary care setting due to the sheer amount of paper required, causing a loss of potentially important screening information.

High sensitivity. As aforementioned, screening devices are not assessment tools upon which a diagnosis should solely be based. Instead, the primary function of a screening device is to detect a potential problem and focus on sensitivity, even if it results in a loss of specificity (i.e., an increase in false positives) (Byrd & Alschuler, 2009). To compensate for this loss of specificity, screening devices are designed to be followed up with other validated assessment strategies to confirm any initial flags (Curtis & Christian, 2012). For example, a single question such as "I am feeling sad" may be included on a screen and if this is indicated as a concern, the clinicians can follow up with a clinical interview or more specific measures such as the Beck Depression Inventory.

Safety. While a screening device is not a formal assessment, it is imperative that it captures any flags that would indicate that the patient's safety is at risk. Given that a successful screening device is usually the first line of assessment, its ability to detect any potentially life-threatening indicators allows for physicians or other providers to initiate an appropriate treatment to address these issues that may have otherwise been missed.

Timeliness. The average wait time for patients in the primary care setting is about 20 minutes (American Medical Association, 2003). A successful screen needs to be able to fit within those 20 minutes, while allowing sufficient time for other key personnel in the primary care setting (e.g., nurses, medical assistants) to accomplish their goals (e.g., obtaining vitals, brief assessment of patient's concerns) before a patient is seen by the physician. A screen that is longer than 20 minutes produces a new burden in the primary care setting that may make the screen inefficient and will decrease the likelihood that the screen will be used (Byrd & Alschuler, 2009).

A screen must take little time to score. A screen that requires complex scoring, even if it fits within the time frame of the primary care setting, places a burden on the physician that reduces productivity. Therefore, a successful screen must be able to fit within the time constraints of the primary care setting, allow for each member of the primary care team to perform their duties, and not take a lot of time to score and determine the results of the screening device (Curtis & Christian, 2012).

Ease of use. A screening device must be easy for patients to read and understand, and must not require much effort from the primary care staff in regard to administration. Patients who come into a primary care setting have a broad range of literacy levels. Therefore, a screening device must be able to meet the needs of patients with lower

literacy levels. Also, a screening device should be self-explanatory and require little to no effort in regards to administration. If a screening device requires too much effort to administer, then the screening device may place too big a burden on the primary care staff (Stancin & Palermo, 1997).

Patient and physician satisfaction. While timeliness and ease of use address parts of this characteristic, patient and physician satisfaction with a screening device is an extremely important feature of a successful screening device. Patients who do not find value in a screening device may refuse to fill it out or may just answer randomly. Physicians who do not value a screening device may either not look at the answers given by the patient or may discontinue use of the screening device altogether.

Cost efficient. Primary care settings see many patients every day. Due to this fact, for a screening device to be successful in the primary care setting it must be cost efficient. Unlike normative devices used in behavioral health that are extremely expensive, these screening devices must be affordable. Even if a screening device fits all of the aspects listed above, it could be considered unusable if it costs too much.

Promotes comprehensive care. Successful screening devices go beyond simply assessing “behavioral” concerns. A patient may be suffering from a wide variety of issues (e.g., financial concerns, dental problems, legal issues) that may present as a behavioral health concern (e.g., depression) on a screening device that only focuses on behavioral concerns. Being able to identify these life factors may enable a physician to initiate another referral outside of the behavioral care professional (e.g., a social worker to help navigate potential assistance programs).

Examples of successful behavioral health screening tools

Numerous well validated screening devices have been created for the primary care setting, capturing a wide range of behavioral health issues. This section provides an overview of those screening tools and their utility.

Patient Health Questionnaire. The Patient Health Questionnaire (PHQ) is one of the most recognized, utilized, and well-validated screening devices in the medical setting. In its original form, the PHQ was referred to as the Primary Care Evaluation of Mental Disorders (PRIME-MD) (Spitzer, et al., 1994). The PRIME-MD was a 2-stage system which required patients to complete a 26-item questionnaire that assessed for five common behavioral health problems: depression, anxiety, alcohol, somatoform, and eating disorder. After patients completed the self-administered portion, physicians would conduct an evaluation. This clinician evaluation portion averaged about 8.4 minutes for those who tested positively. Even though the PRIME-MD had high sensitivity and specificity in regards to detecting behavioral health problems, it was considered too lengthy to be practical for the 15 minute primary care appointment (Spitzer, Kroenke, & Williams, 1999). To address the length of administration, questions from the two stages of the PRIME-MD were combined to create a three page questionnaire that was entirely self-administered by the patient.

In their first study examining the PHQ, Spitzer et al. (1999) collected data on over 3,000 patients seen in a hospital or family medicine setting. In addition to the PHQ, patients were given the Medical Outcomes Study Short-Form General Health Survey (SF-20), and a satisfaction survey that evaluated their comfort level completing the PHQ and how valuable they thought the information would be to their providers. Mental health providers were also involved in the study, and conducted blinded interviews to assess

patients' mental health status. Physicians were also assessed for how useful they found the information provided by the PHQ. Spitzer et al. found that this shortened self-administered PHQ had similar diagnostic validity to the PRIME-MD, yielded high convergence with mental health provider interviews, and was high in perceived utility by both providers and patients.

While the PHQ succeeded at being more time-efficient while maintaining its diagnostic utility, there was a concern about untrained or unfamiliar providers utilizing the diagnostic algorithm incorrectly (Spitzer et al., 1999). To increase efficiency while maintaining diagnostic criteria, the PHQ-9 (Kroenke, Spitzer, & Williams, 2001) and the GAD-7 (Spitzer R. , Kroenke, Williams, & Lowe, 2006) were created as measures for depression and anxiety, respectively. The studies examining the utility of the PHQ-9 and GAD-7 used similar methods of determining diagnostic utility and consumer validity to those of the PRIME-MD and the PHQ. For both the PHQ-9 and the GAD-7, the measures were useful in detecting diagnoses of depression and anxiety, but they also provided information in regards to the severity of the diagnoses (Kroenke, Spitzer, & Williams, 2001; Spitzer R. , Kroenke, Williams, & Lowe, 2006).

As of 2010, measures derived from the PRIME-MD (i.e., PHQ-9 & GAD-7) have been used in over 670 studies. These measures have been translated and validated in over 15 languages, and are available for free to those who are interested in using them.

DUKE. The Duke Health Profile (DUKE) is another successful screening tool that is commonly used in the primary care setting. Like the PHQ, the DUKE originated from a longer, more comprehensive measure, the Duke-UNC Health Profile (DUHP) (Parkerson, et al., 1981). The DUHP was a "brief" 63-item instrument designed to be

used for research and daily clinical practices. The goal of the DUHP was to be a brief, yet broad in scope, measure that was easy to comprehend and administer, and was sensitive to small changes in health (Parkerson, et al., 1981). It focused on four main dimensions: symptom status, physical function, emotional function, and social function. The items were derived from other measures and expert review. In their original study, Parkerson and colleagues (1981) tested the DUHP with 395 patients in a family medicine clinic and concluded that there was evidence that supported the utility of the DUHP as a measure of health outcomes and the impact of primary care on those outcomes.

However, after further analyses, the DUHP was considered to be too lengthy for consistent primary care use, and suffered from certain conceptual problems (e.g., self-esteem as the sole indicator of emotional function) (Parkerson, Broadhead, & Tse, 1991). To reduce the length of the DUHP, the items were categorized into three classes: physical, mental, and social health function. After categorization, item-remainder analyses were conducted and only items that had high item-remainder correlation and were deemed to be clinically important were retained (Parkerson, Broadhead, & Tse, 1991). Through this process, the 17-item DUKE was created.

While studies have shown the DUKE to have good reliability, criterion validity, concurrent validity, and discriminate validity (Parkerson, Broadhead, & Tse, 1990), its most notable feature has been its predictive power in treatment outcomes. In a study by Parkerson, Harrell, Hammond, and Wang (2001), the DUKE, along with an illness severity estimate and diagnosis, was able to accurately predict one-year medical outcomes. These kinds of results may lead to the use of the DUKE as a predictor of long-

term health outcomes and as a tool for identifying patients at high risk of poorer health outcomes (Byrd & Alschuler, 2009).

The PHQ and DUKE, have demonstrated value for detecting behavioral health issues and are useful outcome measures in a medical setting. However, they both suffer from weaknesses. As mentioned earlier, the full PHQ is three pages long. Its lengthiness can become cumbersome in a medical setting. The newer, more specific screening devices, like the PHQ-9, do fit on one page, but their brevity is at the expense of comprehensiveness in detecting a wide range of behavioral health issues.

Both the PHQ and particularly the DUKE also suffer from complex scoring. The PHQ has diagnostic algorithms for somatoform disorder, major depressive syndrome, panic syndrome, bulimia nervosa, binge eating, and alcohol abuse that require the endorsement of a certain number of items. The DUKE's physical, mental, social, and general health scores, along with self-esteem, anxiety, depression, pain, disability, and perceived health score all involve summing different items from the DUKE and then multiplying or dividing that raw sum by a number given on the scoring sheet.

To address some of the weaknesses mentioned, two screening devices, one for the pediatric setting and one for the adult setting, have been created. These screening devices both focus on identifying a broad range of potential behavioral health issues, ease of use, low cost, and simple scoring procedures. Table 1 includes a list of behavioral health screening devices, along with their strengths and weakness.

Screening Device	Assess Multiple Behavioral Health Issues (e.g., eating habits, treatment compliance)	Assess Multiple Mental Health Issues (e.g., depression, anxiety)	Fits On One Page	Easy to Read (Below High School Reading Level)	Complex Scoring	Psychometric Data	Translated in Other Languages
Adult Screening Inventory	Yes	Yes	Yes	Yes	No	Yes	Yes
Duke Health Profile	No	Yes	Yes	Yes	Yes	Yes	Yes
General Anxiety Disorder-7	No	No	Yes	Yes	Yes	Yes	Yes
Patient Health Questionnaire	No	Yes	No	Yes	Yes	Yes	Yes
Patient Health Questionnaire-9	No	No	Yes	Yes	Yes	Yes	Yes
Pediatric Screening Checklist	No	Yes	Yes	Yes	Yes	Yes	Yes
Pediatric Screening Inventory	Yes	Yes	No	Yes	No	No	Yes

Table 1. Behavioral Health Screens' Strengths and Weaknesses

Importance of Behavioral Healthcare for Specific Populations

Beyond the systemic importance of IC and screening, there are specific populations that are prone to behavioral health problems. These populations present unique opportunities that allow for interventions to have both immediate and long term effects that may influence overall healthcare costs. Therefore, identifying and creating tools and interventions that may benefit these groups is a priority. While there are numerous groups, this section will focus on the pediatric, Hispanic, and low socioeconomic status populations.

Pediatric Population. It is estimated that approximately 10-25% of children and adolescents in the United States have a behavioral health disorder (CDC, 2013; Lavigne, et al., 1993). However, despite these numbers, many children do not receive any type of specialized behavioral health treatment. In turn, the primary care setting is where 75% of children diagnosed with a behavioral health concern receive any form of treatment (NIHCM, 2009). However, primary care providers may not be the ideal treatment providers for children with behavioral health concerns, because even if a problem is detected, it may not be adequately addressed by the provider (Steele, Lochrie, & Roberts, 2010).

Children who have behavioral health concerns are also high utilizers of healthcare services. Children with behavioral health concerns are more likely to use primary care and costly emergency healthcare services in comparison to children that do not have any behavioral health concerns (Grupp-Phelan, et al., 2009). Therefore, given the high utilization and need for specialized treatment beyond the skill set of the primary care provider, the creation of tools that promote detection and pathways to care are important for improving the quality of care.

Hispanic Population. It is estimated that in 2050, one in four individuals in the U.S. will be of Hispanic origin (Perez-Escamilla, 2010). This rapidly growing cultural group is of particular importance when considering improving behavioral health service, given their well-documented poor access to healthcare (Perez-Escamilla, Garcia, & Song, 2010). While Hispanic children are more likely to use expensive emergency care vs. primary care in comparison to their non-Hispanic counterparts (Durden, 2007), they are also more likely to seek mental health care from their primary care provider (Vega,

Kolody, Aguilar-Gaxiola, & Catalano, 1999). Given that some studies indicate diagnostic errors and misdiagnosis due to clinician bias (Muroff, Edelson, Joe, & Ford, 2008), it is important to capitalize on primary care visits for this population and create evidence-based decision tools that allow clinicians to make non-biased decisions that may impact care.

Low Socioeconomic Status Population. Correlational studies indicate that an individual's socioeconomic status (SES) may have a long standing and enduring relationship with overall mental health. Individuals who are identified as low SES have worse overall mental health than their higher SES counterparts (Drentea & Reynolds, 2012). Specifically, those who are identified as low SES report more acute stressful life events (Maisel & Karney, 2012), and these events are more problematic for those individuals, due to the fact that they do not have the resources that may alleviate some of the stress (e.g., childcare, pleasant activities).

Behavioral health disorders like depression and anxiety are associated with SES (Muntaner, Eaton, & Miech, 2004; Walsh, Levine, & Levav, 2012), even after controlling for various factors that include gender and race. The relationship between SES and behavioral health is also evident within the pediatric population. For example, one study indicated that economic hardship during childhood predicted the onset of 20 different DSM-IV disorders throughout one's life (McLuaghlin, et al., 2011). Other studies found that adolescents in low SES families were more likely to experience both externalizing (e.g., aggression) and internalizing (e.g., depression and anxiety) problems than their higher SES counterparts (Amone-P'Olak, et al., 2009; Walsh, Levine, & Levav, 2012).

These populations all share high rates of behavioral health concerns and the use of the primary care setting to provide behavioral health care may prove to be a valuable setting. With health insurance expansion, these populations will have increased access to primary care and other avenues of healthcare. Preparing both interventions and screening tools that address the unique needs of these populations is critical if healthcare providers are to deliver highly effective and efficient care. The current study was designed to target these populations and test the utility of a pair of behavioral health screening tools.

Study overview

This study had three goals. The study investigated the effects of introducing behavioral health screening devices that assessed both the child (the Pediatric Screening Inventory (PSI)) and the parent (the Adult Screening Inventory (ASI)) within a primary care setting and how the use of the devices affected 1) physician behavior (e.g., referral rates to behavioral specialists or performing behavioral interventions during the appointment), 2) patient and physician satisfaction, and 3) whether any differences in XXX occurred when delivering these new behavioral health screening devices in Spanish versus English.

Pilot Data

Overview of Adult Screening Device. Given the multitude of short screening measures that address specific behavioral health issues in the primary care setting, the ASI was developed in an attempt to capture multiple behavioral issues in one screen. Also, since the ASI was developed to be used in a primary care setting, questions addressing the relationship between the patient and the PCP were also included to capture

any concerns that may hinder treatment compliance due to interpersonal issues between patient and provider.

To further improve the ease with which the measure could be used in a primary care setting, the questions were designed to be answered by either endorsing “not a concern” or “concern.” This was chosen so that a PCP could simply look down the “concern” column and identify potential issues for the patient.

The development of the ASI began by consulting with three mental health professionals (William O’Donohue, Ph.D., William Follette, Ph.D., & Michelle Byrd, Ph.D.) who specialize in integrated care and assessment development. This initial phase involved identifying key behavioral health issues that present most frequently in a primary care setting and rationally constructing items that would be important in identifying those behavioral health issues. After this, mental health professionals who identified themselves as experts in the Hispanic/Latino culture, a community health clinic director, the medical director of a community health clinic, and two other primary care physicians were recruited to examine the ASI. Through this process, the initial screening device was adapted so that all 40 items could fit on one page. Also, through the feedback of the clinic director, circles were added in the boxes so that it was clear where patients were supposed to record their answers. Also, question #24, “thoughts of suicide,” was brought up as a concern by both the clinic and medical director, in regards to legal responsibility. However, both agreed that it was valuable information to have about a patient, and therefore requested that it remain on the screening device.

The ASI was pilot tested on a nonclinical college sample (Maragakis & O’Donohue, in preparation). The results of this test indicated that the ASI had a Pearson

correlation coefficient 0.83 after one week, indicating good test-retest reliability. When compared to other psychological screening measures (Depression Anxiety and Stress Scale 21-item (DASS-21), Drug Abuse Screening Test (DAST-10), and Alcohol Use Disorder Identification Test (AUDIT)), the ASI showed mixed results in regard to sensitivity and specificity. A receiver operating characteristic (ROC) analysis indicated that an ASI score of 6 or higher was the ideal cut-off score for achieving maximum sensitivity and specificity when comparing the ASI to the other measures. Specifically, when analyzing moderate levels of distress as defined by the DASS-21, an ASI score of 6 had an area under the curve (AUC) of 0.88, a sensitivity rate of 0.91, and a specificity rate of 0.70. When analyzing severe levels of distress, an ASI score of 6 had an AUC of 0.85, a sensitivity rate of 0.95, and a specificity rate of 0.62.

The ASI did not produce significant results in a ROC analysis when compared to the DAST-10 and the AUDIT. However, due to the sample population (college students), and the wording of “not a concern/concern,” it is hypothesized that participants did not endorse the items on the ASI due to the fact that those behaviors are relatively normal given the age group. In a post-hoc analysis, of the nine participants who endorsed “excessive drinking” on the ASI, seven met criteria for moderate concern on the AUDIT. Therefore, a follow up to see how the ASI would perform in a medical setting was warranted.

Overview of Pediatric Screening Device. The PSI was developed by using a rational method of test construction. Through this method, three main domains of interest were selected as the foundation for the PSI. These domains were: child behavior problems, parent practices, and physical health/medical treatment adherence.

For child behavioral problems, items were created to assess for both internalizing (e.g., anxiety, depression) and externalizing (e.g., aggression, screaming) types of behavioral health concerns given their different functions and topographies. A subset of domains was chosen to capture the domain of child behavioral problems, which included items assessing daily activities and behaviors, obedience/following the rules, coping with feelings, and biopsychosocial development.

For parenting practices, items were derived from two well-validated assessments, The Family Assessment Device (Epstein, Baldwin, & Bishop, 1983) and the Alabama Parenting Questionnaire (APQ; Essau, Sasagaw, & Frick, 2006). In addition, a subset of domains capturing the most relevant items for the screen were selected and included: self and family management, setting limits and use of discipline, and parent-child relationships.

Finally, due to the PSI's use in medical settings, items assessing issues that are relevant in the primary care setting were added. These issues include domains such as treatment adherence and indices of physical health.

After these domains were formulated, an initial item pool of 53 questions was developed. These initial items were then given to three types of focus groups (pediatric medical professionals, parents, and experts in behavioral pediatrics). Through these focus groups and reviews, 6 revisions of the PSI took place prior to testing it in a medical setting.

After the final version of the PSI was created, it was piloted in the pediatric setting (Byrd, O'Donohue, & Maragakis, in preparation). The PSI was given to multiple providers to test its effects on the detection of behavioral health issues, rates of behavioral intervention in the primary care setting or referral rates to behavioral health

specialists, and satisfaction rates of patients and physicians. The results from this study demonstrated that the use of the PSI increased the likelihood of the detection of a behavioral health issue in the pediatric setting by a factor of two, with no significant interaction in regard to provider. When the PSI was used, a behavioral intervention occurring in the primary care office was 1.6 times more likely, but there were no significant effects of the PSI on referral rates to outside sources. Due to the already high rates of patient and provider satisfaction, there were no differences in satisfaction when the PSI was used. The data from this study demonstrated the utility of the PSI in regard to increasing detection and treatment of behavioral health issues. However, this preliminary study did not take place in an integrated care setting. Therefore, further investigation of the PSI in an integrated care setting to assess its effects on physician referral was warranted.

Hypotheses

In the current study, it was hypothesized that:

1. Administering the ASI and PSI to parents/guardians will result in an increased detection of behavioral health problems in children, parents, and/or family functioning in comparison to baseline and withdrawal.
2. Use of the ASI and PSI will be associated with an increased rate of behavioral or parenting intervention during the primary care visit as well as an increased rate of behavioral health referrals.
3. Use of the ASI and PSI will lead to higher physician and patient satisfaction in comparison to withdrawal.

4. Use of the ASI and PSI will not lead to a decrease in physician productivity in comparison to baseline and withdrawal.

Chapter 2

Method

Participants

There were two groups of participants in this study. The first group of participants was comprised of the health providers at Community Health Alliance's (CHA) pediatric clinic at the Wells Street clinic (N=2). The second group of participants was comprised of the parents or guardians of children between the ages of one and twelve years who had medical appointments for their children at the pediatric clinic of CHA's Wells Street clinic (N=558).

CHA was chosen as the primary research site for several important reasons. First, the CHA clinic is currently a Patient Centered Medical Home in the Reno, NV area that serves approximately 3,000 adult patients and 1,600 pediatric patients a month. The feasibility testing of the Spanish versions of the screening devices was important due to the fact that the majority (over 60%) of the patients seen at CHA were Spanish speaking. As mentioned above, correlational studies show that children and adults of lower socioeconomic status (SES) have higher rates of behavioral health problems (Amoné-P'Olak, et al., 2009; McLuaghlin, et al., 2011; Walsh, Levine, & Levav, 2012). Given the demographics of the patients seen at CHA (i.e., low SES and Spanish individuals), identifying any behavioral health issues is extremely important. Finally, the CHA clinic has several behavioral specialists on staff: a clinical psychology doctoral-extern and multiple child psychiatrist fellows. With these specialists on staff, patients who are given referrals can have many of their behavioral health care needs met at the clinic itself. Given these features, CHA provided an environment that not only made this project

feasible, but also allowed for the potential to significantly impact the quality of care patients received.

Health providers were recruited during a meeting that was held after the monthly provider meeting. At that time, the details of what they would be required to complete during the duration of the study and what records from their patients' charts would be accessed was discussed. Signed informed consent was obtained from both health providers (1 Medical Doctor and 1 Nurse Practitioner).

Parents or guardians were recruited by medical assistants who were in charge of their children's care. After the appointment, medical assistants offered parents or guardians the opportunity to complete an anonymous appointment satisfaction survey. They were informed that completion of the survey was not required, and that their quality of care would not be affected by refusing to complete it or by their answers.

Procedure

To test the effects of these new behavioral health screening measures on physician behavior and patient and physician satisfaction in the pediatric setting, this study involved three distinct phases. Phase one was considered to be the "baseline" phase. Baseline involved historical data analyses of the data that were available through the electronic health records. The data used for this phase consisted of outside referrals made by health providers, number of ICD-9 behavioral health codes used, and productivity. Throughout the baseline phase, behavioral health screening only occurred in well child visits. During these visits, children were given various behavioral health screening tools based on their age. For this study's target age group, these measures included the Pediatric Screening Inventory (PSC; (Jellinek, Murphy, Little, Pagano, & Kelleher, 1999)

to screen for behavioral health issues, and the Ages and Stages Questionnaire (ASQ; Squires, Bricker, & Potter, 1997).

Phase Two was considered to be the “intervention” phase. During the intervention phase, all parents and guardians of patients seen in the pediatric setting who were between the ages of one and twelve years were given the PSI and ASI, regardless of appointment type. In order to maintain clinic practices and quality of care, the health providers requested that the ASQ continue to be used during well child visits in conjunction with the PSI and ASI through the intervention phase. After a health provider completed an appointment, a medical assistant provided parents and guardians with a satisfaction survey. This survey involved questions regarding overall experience with the appointment, and questions specific to the use of the PSI and ASI. At the end of the day, health providers would complete a sheet that recorded how many patients they saw between the ages of one and twelve years, whether they spoke English or Spanish, whether there was a behavioral health problem detected, and how the problem was treated (e.g., referral or within-appointment intervention). The intervention phase occurred over eight weeks.

Phase Three was considered to be the “return to baseline” phase. This phase involved the withdrawal of the use of the PSI and ASI. Health providers returned to only screening for behavioral health issues during well child visits using their standard protocol and tools. During this phase, parents or guardians were still asked to complete a satisfaction survey, which was modified and did not ask any questions about the use of the PSI and ASI. At the end of the day, health providers completed a sheet that recorded how many patients they saw between the ages of one and twelve years, whether they

spoke English or Spanish, whether there was a behavioral health problem detected, and how the problem was treated (e.g., referral or within-appointment intervention). In addition, health providers tracked how many well child visits they had for each day. Data were collected for eight weeks after the return to baseline.

Throughout the entirety of the project, to protect parents' and guardians' anonymity, no identifying information was collected on the patient satisfaction survey. Also, parents and guardians were asked to place surveys in a locked drop box to which only the experimenter had access.

Physician satisfaction was also measured throughout the duration of the study. Each period during which satisfaction was recorded involved the same basic questions regarding the health provider's satisfaction with work at CHA. However, after phase one, a new set of questions regarding provider satisfaction with the PSI and ASI, whether it was found clinically useful, as well as open-ended questions on how it could be improved were also administered.

Screening Measures

Adult Screening Inventory. The ASI is a 40-item behavioral health screening device that addresses multiple domains of an individual's life that may affect healthcare interventions. Items on this device are scored as either "not a concern" or "concern." (See Appendix A)

Pediatric Screening Inventory. The PSI is a 50-item behavioral health screening device that addresses multiple domains for both the child and the parent/guardian. The first 25 questions on this device focus on the child's behavior and the last 25 questions

focus on the parent/guardian. Items on this device are scored as either “not a concern” or “concern.” (See Appendix B)

Outcome Measures

Outcome measures for this project had two goals: 1) to test the four hypotheses; and 2) to assess the utility of the ASI and PSI in regard to the key aspects of a screening device listed earlier.

Adverse Events. To assess the safety of the ASI and PSI, adverse events were tracked through information obtained via electronic health records and reports from healthcare providers. An adverse event was considered as any suicide attempt, drug overdose, or accident attributable to behavioral health concerns (e.g., accident due to alcohol impairment).

Parent and Guardian Satisfaction. To assess ease of use, completion time, parent and guardian satisfaction a satisfaction questionnaire was given to the accompanying parent or guardian of each pediatric patient seen in the clinic throughout Phases 2 & 3. The parent and guardian satisfaction questionnaire assessed overall satisfaction with the appointment. Parents and guardians were also asked to rate how comfortable they were communicating with the physician, how satisfied they were with their physician’s answers, and if they felt that their needs were met during the appointment.

During Phase Two, patients were also asked to answer additional questions assessing their satisfaction with the PSI and ASI. These questions included how long it took them to fill out the PSI and ASI, the ease of using the measures, and how useful they thought it was in addressing some of their concerns.

Health Provider Satisfaction. To assess ease of use, completion time, physician satisfaction, a survey was given to health provider at the beginning of Phases 2 & 3, and at the end of Phase 3. Health provider satisfaction examined the health providers' overall satisfaction with providing services at a CHA clinic. Specifically, this measure examined satisfaction with patient treatment compliance, use of expertise, and burnout. At the beginning of Phase 3, health providers were also asked to rate the PSI and ASI in regard to ease of use and whether or not they found the measures useful in detecting behavioral health issues. At the end of Phase 3, health providers were asked whether or not they would recommend the ASI and PSI to other providers and if they would go back to using the measures themselves.

Detection of Behavioral Health Concerns. To test Hypothesis 1, rates of behavioral health concerns were tracked using multiple methods. 1) Every day, health providers were asked to report how many total children they saw between the ages of one and twelve years and the number of behavioral health concerns detected. 2) Use of ICD-9 behavioral health diagnoses were tracked via electronic health records across all three phases of the study.

Physician Behavior. To test Hypothesis 2, health providers' behavior was tracked. Health provider behaviors including delivering a behavioral health intervention, referring to a behavioral health specialist, or prescribing psychotropic medications were tracked using multiple methods: 1) Health providers were asked to record how they responded to any behavioral health concern (e.g., refer to clinical psychology extern or psychiatric fellow, outside referral source, or performed treatment within appointment); 2) A report of all referrals made by health providers within the time frame of the study was created

through the use of referral submitted through the electronic health records; 3) The number and types of prescriptions of psychotropic medications were collected via electronic health record reports throughout the time frame of the study. This included any medication considered to be an antidepressant, anxiolytic, stimulant, and antipsychotic.

Productivity. To assess cost efficiency and test Hypothesis 4, health provider productivity was examined. The average number of patients seen per hour throughout each phase of the project was examined through the analysis of electronic health records.

Chapter 3

Results

Because only two medical providers were included in the study, group analyses were not possible. Therefore, the results are presented for each provider, respectively. Also, while the return to baseline phase was originally designed to last for eight weeks, both providers stopped using the sheet that was designed to track their detection of behavioral health concerns and referrals after six weeks. Both providers reported they did not detect behavioral health concerns during these final weeks, and stopped tracking their behavior.

Behavioral Health Detection

Hypothesis 1: Administering the ASI and PSI to parents/guardians will result in an increased detection of problems in child, parents, and/or family functioning in comparison to baseline and withdrawal.

Behavioral Health Concerns. To test hypothesis 1, health providers were asked to track the number of behavioral health concerns they detected during patient visits throughout the intervention and return to baseline phases. For the purposes of this study, behavioral health concerns were calculated by using information provided on the daily tracking sheet completed by the health providers.

Provider 1: During the intervention phase, Provider 1 reported seeing 152 pediatric patients who were given the PSI and ASI. Of those 152 patients, 24 (15.8%; 13 English speaking and 11 Spanish speaking) patients were reported by Provider 1 to have a behavioral health concern. Also, during the intervention phase, Provider 1 indicated that

a total of 23 (8 English speaking and 15 Spanish speaking) parents and guardians of pediatric patients reported behavioral health concerns.

During the six weeks of the return to baseline phase, Provider 1 reported seeing 190 pediatric patients. Of all the visits that occurred in the return to baseline phase, Provider 1 reported detecting behavioral health concerns in eight (4.2%; three English speaking and five Spanish speaking) patients. Provider 1 reported zero behavioral health concerns for parents and guardians.

The odds ratio calculation for the likelihood of a behavioral health concern to be detected for a pediatric patient in the intervention phase in comparison to the return to baseline phase was calculated to be 4.26 (95% CI, 1.86, 9.80). Further breakdown of patients by primary language spoken indicated an odds ratio of 6.31 (95% CI, 1.73, 22.98) for English speaking patient and an odds ratio of 3.04 (95% CI, 1.00, 9.21) for Spanish speaking patients. Given that no parental behavioral health concerns were detected, an odds ratio could not be calculated. The table below contains the odds ratios and confidence intervals of the likelihood that a behavioral health concern was detected by Provider 1.

	Odds Ratio	Lower Confidence Interval	Upper Confidence Interval	Significant at 0.05 level
Total Behavioral Health Concerns in Pediatric Population	4.26	1.86	9.80	Yes
Behavioral Health Concerns for English Speaking Population	6.31	1.73	22.98	Yes
Behavioral Health Concerns for Spanish Speaking Population	3.04	1.00	9.21	No

Spanish Speaking Population

Table 2. Odds Ratios for Provider 1

Provider 2: During the intervention phase, Provider 2 reported seeing 178 pediatric patients who were administered the PSI and ASI. Of those 178 patients, six (3.4%; two English speaking and four Spanish speaking) patients were reported to have a behavioral health concern. Also, during the intervention phase, Provider 2 indicated that a total of three (two English speaking and one Spanish speaking) parents and guardians of pediatric patients endorsed behavioral health concerns.

During the six weeks of the return to baseline phase, Provider 2 reported seeing 262 pediatric patients. Of the visits that occurred in the return to baseline phase, Provider 2 reported detecting behavioral health concerns in eight (1.9%; three English speaking and five Spanish speaking) patients. Provider 2 reported zero behavioral health concerns for parents and guardians.

The odds ratio calculation for the likelihood of a behavioral health concern to be detected for a pediatric patient in the intervention phase in comparison to the return to baseline phase was calculated to be 0.99 (95% CI, 0.33, 2.89). Further breakdown of patients by primary language spoken indicated an odds ratio of 0.50 (95% CI, 0.08, 3.12) for English speaking patient and an odds ratio of 1.53 (95% CI, 0.40, 5.83) for Spanish speaking patients. Given that no parental behavioral health concerns were detected, an odds ratio could not be calculated. The table below contains the odds ratios and confidence intervals of the likelihood a behavioral health concern was detected by Provider 2.

	Odds Ratio	Lower Confidence Interval	Upper Confidence Interval	Significant at 0.05 level
Total Behavioral Health Concerns in Pediatric Population	0.99	0.33	2.89	No
Behavioral Health Concerns for English Speaking Population	0.50	0.08	3.12	No
Behavioral Health Concerns for Spanish Speaking Population	1.53	0.40	5.83	No

Table 3. Odds Ratios for Provider 2

Diagnoses. The number of behavioral health diagnoses given to patients (as documented in the electronic health record) were collected assuming that a diagnosis indicated that a behavioral health concern had been detected.

Provider 1: A chart review was conducted for Provider 1 to assess how many visits throughout the study involved a behavioral health code. These codes were taken from the International Classification of Diseases, Ninth Revision (ICD-9). These codes included all behavioral health diagnoses that fall within the following groups: Schizophrenia and other Serious Mental Illness Disorder, Personality Disorders, Mood Disorders, Anxiety Disorder, Attention Deficit Disorder (ADD) Behavior, Adjustment Disorders, and Autism Disorders.

Throughout the study, Provider 1 charted fifty visits with a behavioral health code. Of the fifty visits, thirty-six involved a code for ADD Behavior with hyperactivity, twelve involved a code for conduct disturbance not otherwise specified, and two involved

a code for bipolar disorder not otherwise specified. However, after removing duplicate visits of patients who had received a behavioral health diagnosis in a previous visit, Provide 1 had thirty-one visits with patients that were given a behavioral health diagnosis. Of those thirty-one visits, nine occurred during the baseline phase, thirteen occurred during the intervention phase, and ten occurred during the return to baseline phase. The table below lists how many times a disorder was diagnosed during each phase.

Diagnosis	Times Diagnosed in Phase 1	Times Diagnosed in Phase 2	Times Diagnosed in Phase 3
Attention Deficit Disorder with Hyperactivity	3	10	7
Conduct Disturbance NOS	5	3	1
Bipolar Disorder NOS	0	0	2

Table 4. Diagnoses Given by Provider 1

Provider 2: Throughout the study, Provider 2 charted eighteen visits with a behavioral health code. Of the eighteen visits, three involved a code for ADD Behavior with hyperactivity, eleven involved a code for conduct disturbance not otherwise specified, one involved a code for Disruptive mood Dysregulation Disorder, one code of Oppositional Defiant Disorder, and a code of Acute Stress Disorder. However, after removing duplicate visits of patients who had received a behavioral health diagnosis in a previous visit, Provide 2 had fifteen visits with patients that were given a behavioral health diagnosis. Of those fifteen visits, three occurred during the baseline phase, six occurred during the intervention phase, and six occurred during the return to baseline phase. The table below lists how many times a disorder was diagnosed during each phase.

Diagnosis	Times Diagnosed in Phase 1	Times Diagnosed in Phase 2	Times Diagnosed in Phase 3
Attention Deficit Disorder with Hyperactivity	1	2	1
Conduct Disturbance NOS	2	2	4
Disruptive Mood Dysregulation Disorder	0	1	0
Oppositional Defiant Disorder	0	1	0
Acute Stress Disorder	0	0	1

Table 5. Diagnoses Given by Provider 2

Referrals and Behavioral Interventions

Hypothesis 2. Administering the ASI and PSI will be associated with an increased rate of behavioral or parenting intervention during the primary care visit as well as an increased rate of behavioral health referrals.

To test this hypothesis, referrals and behavioral interventions for both providers were tracked using two methods: 1) a chart review of all the referrals made during each phase of the study, and 2) the tracking sheet given to health providers during phases 2 and 3 that was completed after each work day.

Off-Site Referral Behavior.

Provider 1: Examination of Provider 1's referrals made throughout the course of the study produced a total of 190 off-site referrals. Of the 190 off-site referrals made, 44 were made in the baseline phase, 66 in the intervention phase, and 80 in the return to baseline phase. Of the 44 external referrals made, zero were made to behavioral health

specialists. Of the 66 referrals made in the intervention phase, two were made to behavioral health specialists (one for general counseling and one for an autism evaluation). Of the 80 made in the return to baseline phase, zero were made to behavioral health specialists.

	Baseline	Intervention	Return to Baseline
External Health Referrals	44	64	80
External Behavioral Health Referrals	0	2	0

Table 6. Provider 1's Off-Site Referral Behavior

Provider 2: Examination of Provider 2's referrals made throughout the course of the study produced a total of 199 off-site referrals. Of the 199 off-site referrals, 19 were made in the baseline phase, 92 were made in the intervention phase, and 88 were made in the return to baseline phase. Of the 19 referrals external referrals made, zero were made to behavioral health specialists. Of the 92 made in the intervention phase, three were made to behavioral health specialists (all for general counseling). Of the 88 referrals made in the return to baseline phase, two were made to behavioral health specialists (both for autism evaluations).

	Baseline	Intervention	Return to Baseline
External Health Referrals	19	89	86
External Behavioral Health Referrals	0	3	2

Table 7. Provider 2's Off-Site Referral Behavior

On-Site Referral and Intervention Behavior. On-site referrals were made to the behavioral health providers working at CHA (i.e., the clinical psychology externs or the pediatric psychiatry fellows). The number of such referrals was determined by the tracking sheets the health providers completed at the end of each day.

Provider 1: Data in regard to on-site referrals to behavioral health specialists were not consistently tracked within the electronic health records. Therefore, there were no data available for the baseline phase of this study, because the tracking sheets were not introduced until the intervention phase.

During the eight weeks of the intervention phase revealed that Provider 1 made 34 patient referrals, and three patients were treated within the context of the appointment. Among the referrals, 32 referrals were made to the clinical psychology extern (11 pediatric patients and 21 parents/guardians) and two were made to the pediatric psychiatry fellows. The three patients who were treated within the context of the appointment received psychoeducation from the primary care provider.

Referrals were only consistently tracked for six weeks by Provider 1 during the return to baseline phase. During those six weeks, Provider 1 indicated making eight behavioral health referrals and treating zero patients within the context of the appointment. Of these referrals, five were made to the clinical psychology extern (all pediatric patients) and three were made to the pediatric psychiatric fellows.

Type of Referral	Baseline Phase	Intervention Phase	Return to Baseline Phase
Off-Site Referral	0	2	0
Clinical Psychology Extern (Pediatric Patient)	Data not available	11	5
Clinical Psychology Extern (Parent/Guardian)	Data not available	21	0
Pediatric Psychiatry Fellow	Data not available	2	3
Total Referrals Made	0	36	8
In-appointment Interventions	0	3	0

Table 8. Provider 1's Referral and Intervention Behavior

Provider 2: During the eight weeks of the intervention phase, Provider 2 reported making six patient referrals and treating zero within the appointment. Of these referrals, two were made to the clinical psychology extern (one pediatric patient and one parent/guardian) and four to the pediatric psychiatry fellows.

Referrals were consistently tracked by Provider 2 for only six weeks during the return to baseline phase. During those six weeks, Provider 2 indicated making seven patient referrals, and treating zero within the context of the appointment. Of these referrals, five were made to the clinical psychology extern (all pediatric patients) and one to the pediatric psychiatry fellows.

Type of Referral	Baseline Phase	Intervention Phase	Return to Baseline Phase
Off-Site Referral	0	3	2
Clinical Psychology Extern (Pediatric Patient)	Data not available	1	5
Clinical Psychology Extern (Parent/Guardian)	Data not available	1	0
Pediatric Psychiatry Fellow	Data not available	4	1
Total Referrals Made	0	9	8
In-appointment Interventions	0	0	0

Table 9. Provider 2's Referral and Intervention Behavior

Descriptive Statistics of the Adult Screening Inventory and Pediatric Screening Inventory

To ensure that parents and guardians had similar response patterns across both providers and to analyze how parents responded to the screening tools in general, 120 (60 from each provider) completed ASI and PSI were randomly selected from the electronic health record for a descriptive analysis. While neither the ASI nor the PSI provide a numeric value to responses, for these analyses an answer of “not a concern” was valued as 0 and an answer of “concern” was valued as 1. The mean score for the ninety items in the ASI and PSI (N=120) was 8.7 (SD=12.6), with a median of 2, and a mode of 6. The t-test comparing the scores of parents between the two providers indicated that there was not a significant difference between overall scores ($t(118)=0.123$, $p=0.902$). The tables below provide a list of the frequency of endorsement of each item as a “concern” from the ASI and PSI.

Item Number on PSI	Number of Individuals Who Endorsed Item (N=120)
1. Sleeping	10
2. Using the toilet	18
3. Eating	15
4. Being too active	17
5. Having “bad” habits	10
6. Doing as they are told	22
7. Talking back	15
8. Using “bad” words	5
9. Having temper tantrums	27
10. Hurting themselves or others	6
11. Pouting	14
12. Not being liked by other children	11
13. Getting used to life changes	11
14. Being worried or nervous a lot	10
15. Being grouchy	10
16. Being too afraid	10
17. Being moody in general	13
18. Crying too much	12
19. Learning	16
20. Getting along with others	10

21. Doing things other children their age do	10
22. Talking	10
23. Not growing big enough or growing too big	8
24. Physical coordination	6
25. Paying attention	12
26. Knowing where my child is	12
27. Having a stable place to stay	7
28. My own emotional well-being	5
29. Using drugs/alcohol in the home	16
30. Having an unsafe home	5
31. Having enough money	14
32. Finding childcare	9
33. Having violence or abuse in the home	4
34. Balancing relationships	11
35. Being too strict	8
36. Not knowing what to do when my child misbehaves	19
37. Agreeing on discipline with other caregivers	7
38. Setting limits	10
39. Losing my temper	12
40. Being too “easy”	19
41. Not always disciplining when I should	24
42. Spending time with my child	17

43. Knowing what to expect from my child	12
44. Showing affection or love	13
45. Needing more space away from my child	9
46. Following up with doctor's appointments	14
47. Getting my child to take their medication	13
48. Knowing when my child feels sick	14
49. Having enough money to get medical care for my child	25
50. Getting my child to follow doctors' instruction	13

Table 10. Number of Items Endorsed on Pediatric Screening Inventory

Item Number on ASI	Number of Individuals Who Endorsed Item (N=120)
1. Needing prescriptions to get through the day	7
2. Ability to communicate with my doctor	12
3. Following doctors instructions	8
4. Understanding my treatment plan	8
5. Side effects	8
6. Knowing when to seek medical attention	13
7. Dental problems	22
8. Stomach problems	10
9. Headaches	12
10. Shortness of breath	6
11. Sex life	3

12. Memory	5
13. Weight	15
14. Pain treatment	2
15. Drinking in excess	2
16. Smoking	6
17. Illegal or excessive drug use	4
18. Excessive caffeine use	6
19. Falling and staying asleep	5
20. Healthy eating habits	17
21. Health issues hinder work and family	5
22. Exercise	20
23. Legal issues	5
24. Thoughts of suicide	2
25. Having enough energy	14
26. Feeling depressed or hopeless	12
27. Feeling stressed or overwhelmed	15
28. Loss of interest in things that were enjoyable	10
29. Feeling constantly worried	12
30. Feeling afraid	4
31. Feelings of loneliness	7
32. Having control over my life	5
33. Getting enough rest	14

34. My child's behavior or health	14
35. Previous trauma	5
36. Anger issues	7
37. Having enough money	16
38. Getting in trouble at work	5
39. Spiritual concerns	2
40. Quality of my relationships	5

Table 11. Number of Items Endorsed on Adult Screening Inventory

Providers' Response to Adult Screening Inventory and Pediatric Screening Inventory Scores

Provider 1: The 60 charts randomly selected from Provider 1's schedule that were used for the descriptive analyses were further analyzed to assess the number of concerns endorsed. Provider 1 had 14 of the 60 screens with zero areas marked as a "concern." Twenty-two individuals checked between one and four items, nine checked between five and nine items, four checked between 10 and 14, and 11 endorsed over 15 items.

Provider 1 indicated that a behavioral health referral was made for 13 (22%) of the 60 cases. The average number of items endorsed for these individuals was 30 (SD 15.4). A further analysis indicated that zero individuals were within one standard deviation of this average and did not have a behavioral health concern mentioned.

The 13 behavioral health concerns were further broken down in more detail by whether a referral was made or intervention took place. Ten of the 13 involved referrals to behavioral health providers, and the other three involved providing psychoeducation for ADHD, bedwetting, or asthma.

Range of Items Endorsed as a Concern	Number of Individual Who Endorsed within Range	Number of Individual Who Had a Behavioral Health Concern Discussed
Zero Concerns	14	0
One through Four Concerns	22	0
Five through Nine Concerns	9	0
Ten through Fourteen Concerns	4	2
Fifteen Concerns or More	11	11

Table 12. Number of Concerns on the Adult Screening Inventory and Pediatric Screening Inventory and Number of Behavioral Health Concerns Discussed by Provider 1

Provider 2: The 60 charts from Provider 2's schedule that were randomly selected for the descriptive analyses were analyzed assess the number of concerns endorsed. Provider 2 had 12 of the 60 screens with zero areas marked as a concern. Twenty-two individuals checked between one and four items, six checked between five and nine items, seven checked between 10 and 14, and 13 endorsed over 15 items.

The review of Provider 2's patient charts revealed that a behavioral health referral was made or concerns were discussed for five (8%) of the 60 charts that were selected. The average number of items endorsed for these individuals was 28 (SD 17). A further analysis indicated that 14 individuals within one standard deviation the mean did not have a behavioral health concern mentioned.

An analysis of the physician's response to the five reported behavioral health concerns revealed that three of the five involved the provider recording that there was no concern and that parents/guardians misunderstood the screen. Of the remaining two concerns one resulted in a referral to a behavioral health provider, and one involved recording a follow-up appointment to discuss "speech problems."

Range of Items Endorsed as a Concern	Number of Individual Who Endorsed within Range	Number of Individual Who Had a Behavioral Health Concern Discussed
Zero Concerns	12	0
One through Four Concerns	22	0
Five through Nine Concerns	6	0
Ten through Fourteen Concerns	7	2
Fifteen Concerns or More	13	3

Table 13. Number of Concerns on the Adult Screening Inventory and Pediatric Screening Inventory and Number of Behavioral Health Concerns Discussed for Provider Two

Psychotropic Medications. Another method for testing hypothesis 2 was analyzing the number of psychotropic medications prescribed by providers, given that they are a form of intervention.

Provider 1: A review of electronic medical records was conducted for Provider 1 to assess how many psychotropic medications were prescribed during the course of this study. This process involved searching for medications that were classified as one of the following: antipsychotic agent, atypical antipsychotic agent, miscellaneous antipsychotics, psychotherapeutic agents (anti-depressants and anxiolytics), and miscellaneous psychotherapeutic agents. Throughout the five months of the study, Provider 1 prescribed psychotropic medications to two patients. Both prescriptions were for antipsychotics. Both of these patients were receiving these medications prior to the start of the current study. Therefore, Provider 1 prescribed zero psychotropic medications to new behavioral health problems detected during the study.

Provider 2: A chart review was conducted for Provider 2 to assess how many psychotropic medications were prescribed during the course of this study. This process

involved searching for medications that were classified as the one of the following: antipsychotic agent, atypical antipsychotic agent, miscellaneous antipsychotics, psychotherapeutic agents (anti-depressants and anxiolytics), and miscellaneous psychotherapeutic agents. Throughout the five months of the study, Provider 2 prescribed psychotropic medications to two patients. Both prescriptions were for antipsychotics. One of these patients was receiving these medications before the study. Therefore, Provider 2 prescribed psychotropic medications to one patient. This prescription occurred during the return to baseline phase of the study.

Adverse Events. Adverse events as defined earlier were recorded in the electronic health record, and would result in an immediate visit by a behavioral health provider. There were zero adverse events reported during the course of this study.

Satisfaction

Hypothesis 3: Administering the ASI and PSI will lead to higher physician and patient satisfaction in comparison to baseline and withdrawal.

To test this hypothesis, data from satisfaction surveys completed by health providers and parents and guardians during the intervention and return to baseline phases were analyzed.

Provider General Satisfaction. To assess a provider's satisfaction, a survey containing six items that assessed a provider's general satisfaction with work at CHA was given at three time points (see appendix 9 for survey).

Provider 1: Provider 1 completed a satisfaction survey at all three time points. The tables below provide the raw data and the change score between phases.

	Patient Adherence	Quality of Care	Support from Admin	Overall Use of Time	Patient Load	Overall Satisfaction
After Baseline	5	5	4	4	2	4
After Intervention	5	5	4	4	3	4
After Return to Baseline	4	5	4	5	3	3

Table 14. Provider 1's General Satisfaction Raw Scores

	Patient Adherence	Quality of Care	Support from Admin	Overall Use of Time	Patient Load	Overall Satisfaction
After Intervention	0	0	0	0	1	0
After Return to Baseline	-1	0	0	1	0	-1

Table 15. Provider 1's Change Scores in Satisfaction

Provider 2: Provider 2 completed a satisfaction survey at all three time points.

The tables below provide the raw data and the change score between phases.

	Patient Adherence	Quality of Care	Support from Admin	Overall Use of Time	Patient Load	Overall Satisfaction
After Baseline	4	5	5	4	5	5
After Intervention	4	4	4	4	4	4
After Return to Baseline	4	4	4	4	4	4

Table 16. Provider 2's General Satisfaction Raw Scores

	Patient Adherence	Quality of Care	Support from Admin	Overall Use of Time	Patient Load	Overall Satisfaction
After Intervention	0	-1	-1	0	-1	-1
After Return to Baseline	0	0	0	0	0	0

Table 17. Provider 2's Change Scores in Satisfaction

Parent and Guardian General Satisfaction. During the intervention phase, 171 parents and guardians completed general satisfaction surveys. Provider 1 was rated by 73 parents and guardians and Provider 2 was rated by 98. During the return to baseline phase, 380 parents and guardians completed general satisfaction surveys. Provider 1 was rated by 180 parents and guardians and Provider 2 was rated by 200.

Provider 1: Descriptive statistics were calculated for the four questions that asked about overall visit satisfaction. During the intervention phase, parents and guardians reported an average satisfaction score of 4.8/5 (SD=0.42) for the question “My doctor’s ability to listen to my concerns,” an average score of 4.8/5 (SD=0.47) for “The ease in which I can express my concerns with my doctor,” a score of 4.8/5 (SD=0.43) for “My doctor’s thoroughness throughout the appointment,” and a score of 4.8/5 (SD=0.67) for “My overall satisfaction with my appointment.”

During the return to baseline phase, parents and guardians reported an average satisfaction score of 4.8/5 (SD=0.63) for the question “My doctor’s ability to listen to my concerns,” an average score of 4.8/5 (SD=0.67) for “The ease in which I can express my concerns with my doctor,” a score of 4.8/5 (SD=0.63) for “My doctor’s thoroughness throughout the appointment,” and a score of 4.7/5 (SD=0.79) for “My overall satisfaction

with my appointment.” Given lack of data variability and ceiling effects, further statistical analyses could not be conducted, as this would violate basic assumptions of normality.

Provider 2: Descriptive statistics were conducted for the four questions that asked about overall visit satisfaction. During the intervention phase, parents and guardians reported an average satisfaction score of 4.7/5 (SD=0.69) for the question “My doctor’s ability to listen to my concerns,” an average score of 4.7/5 (SD=0.69) for “The ease in which I can express my concerns with my doctor,” a score of 4.7/5 (SD=0.43) for “My doctor’s thoroughness throughout the appointment,” and a score of 4.7/5 (SD=0.8.7) for “My overall satisfaction with my appointment.”

During the return to baseline phase, parents and guardians reported an average satisfaction score of 4.8/5 (SD=0.41) for the question “My doctor’s ability to listen to my concerns,” an average score of 4.8/5 (SD=0.50) for “The ease in which I can express my concerns with my doctor,” a score of 4.8/5 (SD=0.50) for “My doctor’s thoroughness throughout the appointment,” and a score of 4.8/5 (SD=0.38) for “My overall satisfaction with my appointment.” Given lack of data variability and ceiling effects further statistical analyses could not be conducted, as this would violate basic assumptions of normality.

Provider Satisfaction with Adult Screening Inventory and Pediatric Screening Inventory. Providers were asked to rate the use of the ASI and PSI after the intervention and return to baseline phases. After the intervention phase, providers were asked to rate the ASI and PSI using a Likert-scale survey. Provider 1 rated the ease of using and scoring the screens as a 3/5, the utility from the information obtained a 4/5, its ability to

help detect behavioral health issues a 4/5, and ability to help a provider be more productive a 3/5. Provider 2 rated the screens a 1/5 for all four questions.

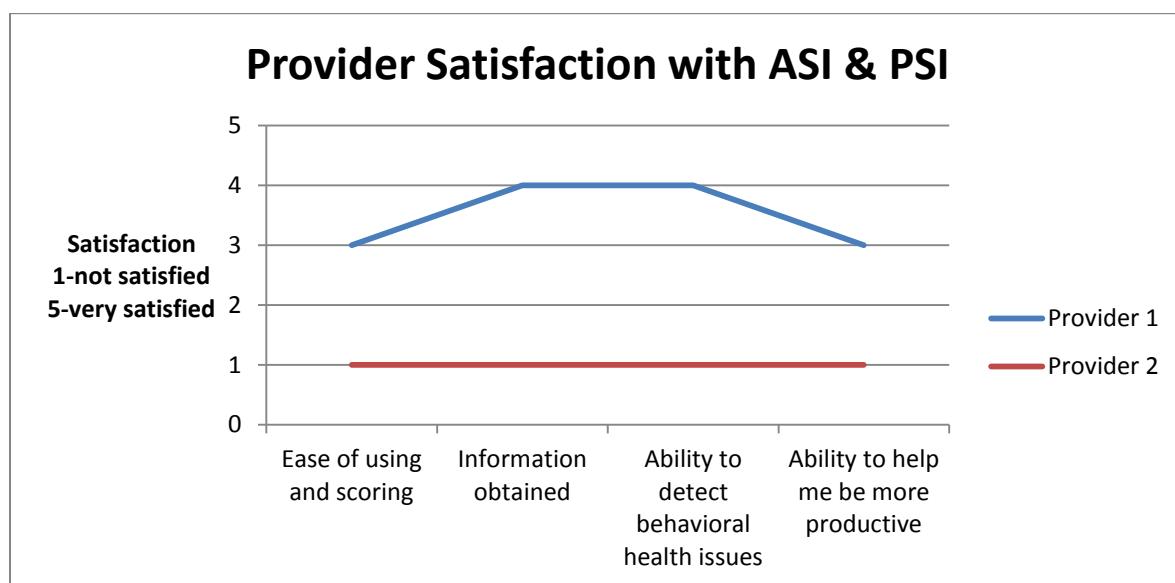


Figure 1. Provider Satisfaction with ASI & PSI

Providers were also asked to respond to short answer questions about their use of the ASI and PSI after the intervention and return to baseline phases. The tables below indicate how each provider responded to the questions in the satisfaction surveys.

On average, how long did it take you to interpret both the Adult and Pediatric Screening Inventory	“Less than five minutes.”
What would you see improved with the Adult and Pediatric Screening Inventory?	“It needs to be shortened. Translation also needs to be improved. My Spanish speaking parents had problems with it.”

Table 18. Provider 1’s Responses After Intervention Phase

On average, how long did it take you to interpret both the Adult and Pediatric Screening Inventory	“Less than one minutes.”
What would you see improved with the Adult and Pediatric Screening Inventory?	<p>“I think the inventory is not a good tool in our predominately Hispanic population, because of cultural, literacy, and translational issues. Many times, it was overly sensitive. I really question the validity of the tools.”</p> <p>“Whatever tool is used needs to be very brief and single!”</p>

Table 19. Provider 2’s Responses After Intervention Phase

When you use the Adult and Pediatric Screening Inventory, did you find them useful in detecting behavioral health problems?	“Yes.”
Please, briefly explain your answer.	<p>“I detected more problems I was not aware of since we don’t do such a thorough screen.”</p> <p>“It also helped me realize that some parents are completing other screening devices without actually understanding what they are responding to.”</p>
Did, the removal of the Adult and Pediatric Screening Inventory effect your ability to detect behavioral health problems?	“Yes.”
Please, briefly explain your answer.	“I am not detecting as many problems now.”
Would you recommend the use of the Adult and Pediatric Screening Inventory for other health providers?	“No, because it was very lengthy. If it were shortened and translation was improved, then I would.”

Table 20. Provider 1’s Responses After Return to Baseline Phase

When you use the Adult and Pediatric Screening Inventory, did you find them useful in detecting behavioral health problems?	“No.”
Please, briefly explain your answer.	“It was too sensitive.”
Did, the removal of the Adult and Pediatric Screening Inventory effect your ability to detect behavioral health problems?	“No.”
Please, briefly explain your answer.	“I am still able to detect behavioral health concerns.”
Would you recommend the use of the Adult and Pediatric Screening Inventory for other health providers?	“No, because it was too long, and the Spanish translation was problematic.”

Table 21. Provider 2’s Responses After Return to Baseline Phase

Parent and Guardian Satisfaction with ASI and PSI. During the intervention phase, 171 (106 English speaking and 65 Spanish speaking) parents completed both Likert-scale and short answer questions in regard to the use of the ASI and PSI. The average rating for the ease of using the ASI and PSI was a 4.6/5 (SD=0.71) and the average rating was 4.7/5 (SD=0.64) for the screens’ ability to help a parent mention a certain concern.

	Ease of using the ASI and PSI (1-not satisfied at all to 5-very satisfied)	Ability of the ASI and PSI in reminding me to mention certain concerns
Mean (N=171)	4.6	4.7
Mode (N=171)	5	5
Min (N=171)	2	2
Standard Deviation (N=171)	0.71	0.64

Table 22. Descriptive Statistics of Parent and Guardian Rating of ASI and PSI

“It would be better if it was a scale rather than yes/no.”
“This is way too long.”
“It was too confusing.”
“I don’t think I need to answer all these questions.”

Table 23. Comments Made by Parents Regarding the Use of the ASI and PSI

Time Spent Completing the ASI and PSI. During the intervention phase, 120 (77 English speaking and 43 Spanish speaking) parents and guardians also indicated how much time it took them to complete both the ASI and PSI. Answers were categorized into three groups: 1-10 minutes needed to complete, 11-20 minutes needed to complete, and over 21 minutes needed to complete. A total of 71 (59%; 50 English speaking and 21 Spanish speaking) parents and guardians endorsed needing 1-10 minutes. A total of 31 (26%; 15 English speaking and 16 Spanish speaking) endorsed needing 11-20 minutes. A total of 18 (15%; 12 English speaking and six Spanish speaking) parents and guardians endorsed needing over 21 minutes to complete both the ASI and PSI.

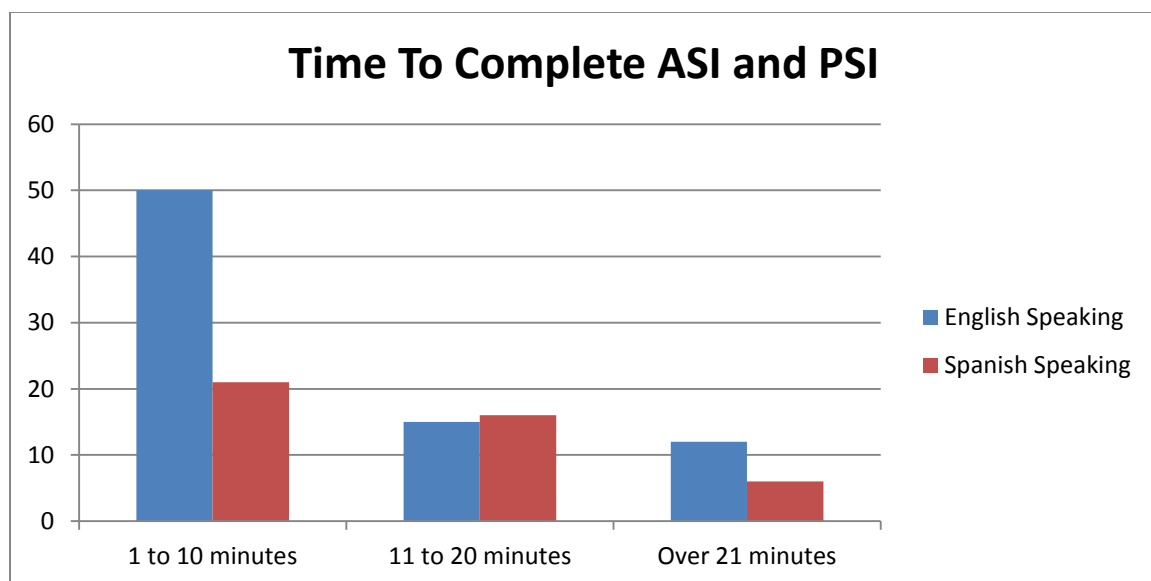


Figure 2. Time Spent Completing the Adult Screening Inventory and Pediatric Screening Inventory

Productivity

Hypothesis 4: Administering the ASI and PSI will not lead to a decrease in physician productivity in comparison to baseline.

To test this hypothesis, productivity data were analyzed from CHA's database. Productivity at CHA is measured by number of billable visits divided by number of productive hours. This formula provides a "patients per hour" metric.

Provider 1's productivity averaged at 2.43 patients per hour throughout the course of the study. The high was 2.58 patients per hour during the month of August, and the low was 2.07 patients per hour during the month of May. Provider 2's productivity averaged 2.05 patients throughout the course of the study. The high was 2.46 per hour during the month of May and the low was 1.6 patients per hour during the month of March.

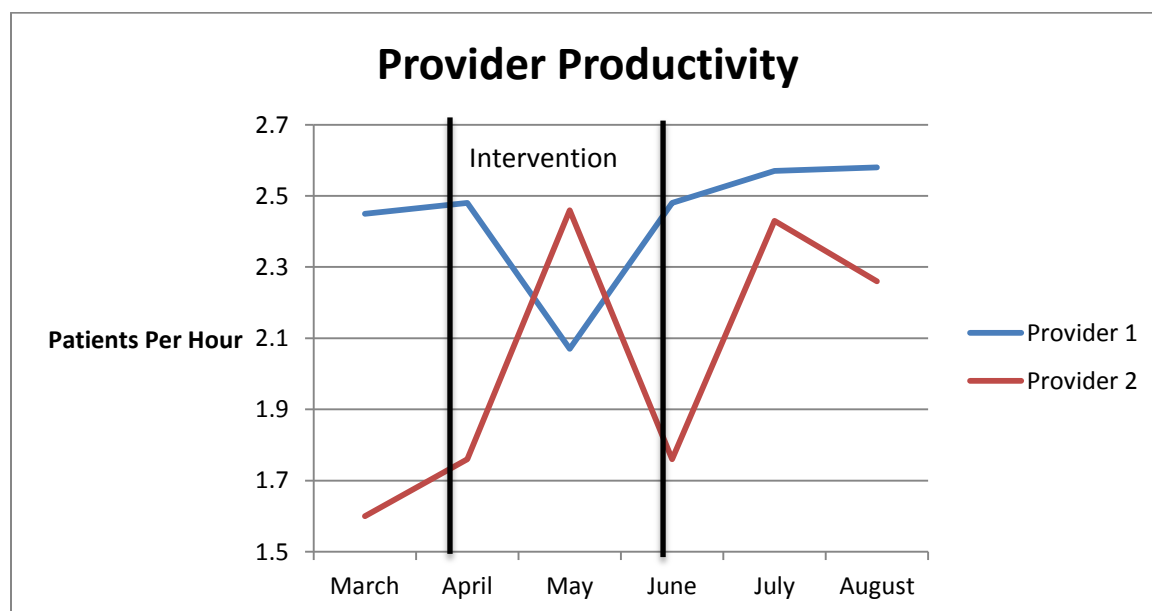


Figure 3. Provider Productivity

Chapter 4

Discussion

General Findings

The purpose of this study was to pilot test the utility of the ASI and PSI in a pediatric primary care setting. The study was designed to assess whether the ASI and PSI influenced provider behavior in regard to behavioral health detection, referral, and intervention. The study also evaluated provider satisfaction with the screening tools, and whether or not they are useful and appropriate to use with a Spanish speaking population. The current study found some mixed results in regards to the ASI and PSI's ability to impact provider behavior. The findings provide valuable data on how to modify the screening tools to increase their utility in the primary care setting.

Hypothesis 1: It was hypothesized that the ASI and PSI to parents/guardians would result in increased detection of behavioral health problems in children, parents, and/or family functioning in comparison to baseline and withdrawal. For the purposes of this study, behavioral health problems were measured by whether or not the *provider* believed a behavioral health concern was present. The data in regard to this hypothesis were mixed. Provider 1 showed a statistically significant difference in the likelihood that a behavioral health concern was detected between the intervention and return to baseline phases. In contrast, Provider 2's data indicated there was no difference between the likelihood of detecting a concern in the intervention and return to baseline phases.

While this study focused on whether or not the providers believed there was a behavioral health problem present, the exclusive reliance on a single provider's judgment and the lack of data evaluating the validity of those judgments may have been

problematic. Further, the conceptualization of behavioral health status as being reflected in ICD diagnoses may be a limited view on behavioral health concerns and not in line with the patient-centered care model. Given that the vast majority of parents and guardians endorsed some behavioral health concerns on the ASI and PSI, behavioral health concerns may be better measured by patient experience rather than provider judgment. This should be considered in the design of future studies. This shift from provider detection to patient experience may increase the likelihood of accessing preventive behavioral health care, before a pervasive behavioral health problem emerges.

Hypothesis 2: Administering the ASI and PSI will be associated with an increased rate of behavioral or parenting intervention during the primary care visit as well as an increased rate of behavioral health referrals. The data in regard to this hypothesis were also mixed. Neither provider engaged in a high rate of in-appointment interventions during the course of the study. In regard to referrals, Provider 1 reported making five times as many referrals to behavioral health providers in the intervention phase in comparison to the return to baseline phase. However, while this increase in referral behavior did occur for Provider 1, data indicate that many parents and guardians that had concerns did not receive any behavioral health referral, and there were no indications in encounter notes that concerns were addressed during the appointment.

Hypothesis 3: It was hypothesized that administering the ASI and PSI would lead to higher physician and patient satisfaction in comparison to baseline and withdrawal. Findings revealed mixed levels of satisfaction across parent/guardians and between the two providers. Parent satisfaction in regard to appointments remained consistently high across providers and phases. The only complaints made by parents and guardians were in

regard to wait times, an issue not addressed in the current study. This is consistent with other studies indicating that satisfaction with medical providers remains consistently high and is usually influenced by factors unrelated to the specific appointment itself such as what was happening in their day prior to the appointment (Bleich, Ozaltin, & Murray, 2009). While the appointment satisfaction results data were not informative for evaluating the utility of the ASI and PSI, data in regard to satisfaction with the ASI and PSI and how long the screening tools took to complete were useful. Parents and guardians ratings averaged in the “satisfied” to “very satisfied” range (4.6/5) for ease of use and a 4.7 for the ability of the ASI and PSI to help remind them of concerns. These data indicate that the ASI and PSI was well-received by those who rated the screening tools. However, the finding of high satisfaction with the ASI and PSI may be confounded in that not all parents/guardians completed the satisfaction questionnaire and it is possible that parents and guardians who chose to rate the screens were those who found them to be useful.

Relevant data were also returned for how long it took for parents and guardians to complete the ASI and PSI. Eighty five percent of parents and guardians who responded to questions about the ASI and PSI reported that it took less than 20 minutes to complete the measures. This is very important, because measures need to be short enough that they do not delay or hinder the workflow of the setting, yet comprehensive enough to screen for a wide variety of problems. Given the average wait time in primary care settings, a measure that requires less than 20 minutes would be appropriate. Also, given the short time needed by providers to scan the screening devices, time did not seem to be a worrisome factor for the utility of the ASI and PSI.

In contrast to parents and guardians, providers were not as satisfied with the utility of the ASI and PSI. Provider 2 rated the ASI and PSI a 1, “not satisfied at all”, across all four questions pertaining to satisfaction with the screening tools. Provider 2 reported finding the screen to be “too sensitive” to behavioral health concerns, and indicated a tendency to “question the validity of the tools.” Provider 2 also reported that the screens were not culturally sensitive to the Hispanic population, which was found to be problematic. While Provider 1 provided a more favorable overall rating of 3.5 across the satisfaction questions asked, problems were also noted with the Spanish translated versions of the screen. In the current forms, both providers indicated that they would not recommend the screens be used.

Hypothesis 4: Giving the ASI and PSI will not lead to a decrease in physician productivity in comparison to return to baseline and withdrawal. Mixed results were also indicated for his hypothesis. The current study used CHA’s standard metric of patients seen divided by the number of productive hours in the month. Provider 1 had a decrease in productivity during one of the months of using the ASI and PSI, while Provider 2 had an increase in productivity during that time. While these changes in productivity occurred during the use of the screening tools, it is important to note that Provider 1 took a week and a half vacation during the month of May, where their productivity decreased. This vacation may have influenced the increased rate in Provider 2’s productivity, by covering for Provider 1’s patients. Due to this confound, it is unclear whether or not the use of the ASI and PSI influenced provider productivity in any negative way.

It is also important to note that in future research, productivity may not be the most meaningful variable to measure. As healthcare systems switch from emphasizing

volume to emphasizing more preventative care, productivity may decrease in order to address more complex patients. In return, this decrease in productivity may actually lead to future cost-savings by addressing concerns in a proactive, rather than reactive, fashion.

Discussion of Provider Behavior

While all of the data collected throughout this study provide some useful information in regard to how the ASI and PSI function in a primary care setting, the most interesting and useful data (for practical purposes as well as the design of future studies) relate to the discrepancy between provider behavior in comparison to how parents and guardians responded to the ASI and PSI. When analyzing the random sample of 120 completed screening tools, only 26 parents and guardians (22%) marked no concerns. This means that 78% of parents had checked at least one item as a concern. However, of those 120 cases, only 18 (15%) had any mention of a referral to a behavioral health specialist or discussion of the screen in the encounter note. All 18 appointments that had any mention of behavioral health concerns being address had scores of 10 or more concerns, with 14 of these 18 having over 15 items checked. This means that 63% of the parents in the current study had some sort of concern, but did not have their concerns addressed in a formal way (e.g., a behavioral health referral, an indication in their encounter note that a concern was addressed).

The discrepancy between provider detection and parent/guardians' reports of behavioral health concerns found in this study warrants further investigation. Providers may have become somewhat habituated to behavioral health screens that have "at-risk" cut-off scores. This could lead to providers believing that a certain (lower) number of concerns is not indicative of clinical distress, and therefore could be ignored or

dismissed. While this hypothesis may be correct in that a low number of concerns may fail to meet the clinical threshold for a behavioral health diagnosis, it is not consistent with the proactive nature of integrated care. Moreover, the measures assessed in the current study are not designed to be used with reference to a cut off score—each item checked as a concern is a positive screen and requires further inquiry. Perhaps this shows a training deficit that needs to be corrected, as well as a need for a system to be put in place for addressing each item marked as a concern.

Another hypothesis is that providers may have become overwhelmed with behavioral health concerns and did not have time to address them as well as the physical issues presented in an appointment. The feeling of being overwhelmed may have lead providers to ignore the positive indications on screening devices all together in order to complete their role as a medical provider and address somatic symptoms. This could lead to possibly preventable behavioral health concerns (e.g., weight gain, emotional concerns, treatment compliance) going unnoticed until they become the pervasive issue.

Regardless of why a provider did not respond to concerns marked on a screen (e.g., did not think the concern was important, was too overwhelmed), the finding of low intervention rates for marked concerns is indicative of a problem with the healthcare system and not individual providers. Even in an integrated care system, like CHA, where multiple care providers are on site and free of charge to patients, concerns were brought up by parents and guardians that were not addressed. These data may be indicative that simply screening for behavioral health problems and having behavioral health providers on site may not be enough to influence provider behavior to maximally address these concerns.

Limitations

Although the present findings provide some data that speak to the utility of the ASI and PSI in a pediatric setting, further research is required before many conclusions can be drawn. There were several limitations in the present study that should be addressed in future research.

First, while the current study provided interesting data on how providers and parents rated the utility of the ASI and PSI, as well as preliminary data on how the screens may influence provider behavior, the current study used only two providers, who were working in the same setting. Also, the population served at CHA is very specific and fairly limited demographically (e.g., ethnicity, socioeconomic status). This could create a possible demographic bias, in that behavioral health rates may not be indicative of those in a general medical clinic. These limitations reduce the external validity of the study.

Second, while the ASI and PSI have been pilot tested in various ways, neither of them has undergone a proper psychometric analysis. Due to this, providers were not given important information regarding pathways for how to address a positive indication for a screening item. This lack of information could have contributed to Provider 2's dissatisfaction in regard to the utility of the screening tools. Further psychometric studies that compare the ASI and PSI with well validated behavioral health screening devices (e.g., Patient Health Questionnaire, Pediatric Screening Checklist) are necessary next steps in determining the utility of these measures.

Methodologically, this study also had some limitations. While the use of electronic health records were used as reliability checks, the study primarily relied on

self-report of both the providers and the parents and guardians that completed the screening tools. Numerous factors, such as how the measure was presented to parents, if providers checked the screen before or after the visit, and how providers presented information obtained on the screens, were not directly assessed. Providers may have also addressed parent and guardian concerns during appointment without documenting the discussion in the encounter note.

However, while this study had a number of limitations that may effect the conclusions that can be drawn, the goal of this study was to pilot the potential utility of these new screening devices. Despite these limitations, relevant and important information was collected that may prove useful in creating more refined versions of the ASI and PSI, as well as in informing future studies.

Future Directions

At this stage of the development of both the ASI and PSI, it would be premature to recommend dissemination for primary care use. However, useful information was gathered from this study that can help potentially modify and improve the utility and usability of both screens. Given that one provider's behavior was significantly impacted by the use of these screens, it is reasonable to suggest that both screens continue to be used in a primary care clinic within the context of instrument development. This development would consist of several steps.

First, rigorous psychometric studies in the primary care setting are required for both measures. While the ASI's preliminary analysis involved psychometrics, it was within the context of undergraduate students and used a relatively small sample size in comparison to most psychometric studies. As for the PSI, there still have been no

psychometric studies conducted, and these are needed to ensure that the measure captures what it is hypothesized to assess.

These psychometric studies should ideally capture the test-retest reliability of the measures. Also, given the length of both measures (50 and 40 items), each item should be carefully examined independently to ensure that all items are contributing to the sensitivity and specificity of the screens. Acquiring an adequate sample size to conduct an exploratory and confirmatory factor analysis or to use an item response theory approach could greatly benefit the construction of the ASI and PSI and lead to the elimination of items that do not augment the screens' ability to detect behavioral health concerns.

It would also be useful to compare the ASI and PSI to other well validated behavioral health screening devices used in the primary care setting. For example, comparing the ASI to measures like the PHQ, the DUKE, the AUDIT, and the DAST-10, could be invaluable in assessing the ASI's ability to detect behavioral health concerns in comparison to those well validated measures. If the ASI proved successful, it would further augment the utility of the measure (i.e., using one 40 item screen is more efficient than using four or five 10 item screens). It is important to note that both the ASI and the PSI theoretically capture information related to treatment compliance and the ASI also captures the relationship between patient and provider. These subscales do not have well-validated measures available for comparison, and would require other means of testing.

Second, the Spanish translation of both the ASI and PSI were mentioned by providers as areas of concern. While both measures were separately translated by two fluent Spanish speakers, and were then "reverse" translated by a third, none of these

individuals were official translators or interpreters of Spanish. Given that this was brought up as a concern, it is reasonable to suggest that both measures be translated by individuals who are certified in the translation and interpretation of Spanish.

The total number of questions asked to parents when using both the ASI and PSI was mentioned by both providers as an area of concern. If questions pertaining to the parent/guardian's behavioral health add significantly to the quality of care and the detection of behavioral health concerns in the family, then the creation of a measure that captures areas from both screening tools may be warranted. The creation of a hybrid screening tool would allow settings, like CHA, that have access to both pediatric and adult behavioral health services, to detect problems and offer more specialized care to both parents and children. This shorter hybrid screen would also require many of the same psychometric and utility studies that the ASI and PSI still require, but could result in the availability of three distinct screening tools that would cover many of the patients seen in primary care.

Finally, a systems study that investigates the protocols needed in an integrated care system to properly maximize data obtained from behavioral health screens would be beneficial. As seen in the current study, even when presented with concerns, providers may not react until the number of concerns reaches a specific cutoff. Future studies could utilize the ASI and PSI and evaluate various care pathways that may be initiated based on concerns brought up by parents and guardians. In these studies, multiple systems could be tested and evaluated in regard to how they impact quality of care, clinical outcomes, and healthcare costs. For example, a system may want to create a pathway that utilizes a behavioral "well-child" checkup, regardless of the number of concerns checked. With

this pathway in place, the medical provider would be relieved of the pressure of having to address items identified on the screen, and parents and children would have access to a behavioral health provider immediately. Another pathway may involve creating informational pamphlets that could address all of the possible concerns listed on the ASI and PSI (e.g., information on depression, anxiety, exercise, sleep hygiene, disciplining). This would allow for medical providers to have instant access to relevant information that they could use and give to parents and guardians for any concern that could be marked, and would allow for parents and guardians to access some sort of care if a behavioral health provider is not available. A final pathway would involve systematic rules of care and referral. In this pathway, the number of concerns endorsed by the parent/guardian would influence how the system responded to the need. A set number of concerns (e.g., less than 5) would involve the medical provider addressing those needs and providing information specific to those concerns. Anything over that set number would trigger an immediate appointment with a behavioral health provider, so those multiple needs could be addressed in more detail.

These types of system studies could provide evidence not only for the continued use of the ASI and PSI, but for the overall utility of integrated care. Furthermore, having more broad behavioral health screening tools, like the ASI and PSI, could allow healthcare systems to address concerns in a more proactive way, rather than the traditional reactive model of care.

Conclusion

In summary, there were mixed results for the hypotheses of this study. Provider 1's detection and referral of behavior health concerns with the ASI and PSI was

statistically different in comparison to the return to baseline phase, while Provider 2 demonstrated no difference at all. Satisfaction of providers was also mixed, given that Provider 1 had some increases in satisfaction during the course of the study, while Provider 2 had a decrease. Also, satisfaction in regard to the utility of the ASI and PSI was mixed in that providers rated its utility relatively low, while parents rated it relatively high.

The data collected from this study suggest that there may be some utility in using the ASI and PSI in a pediatric primary care setting, but that the screens require revisions and additional research before dissemination. After some revisions in regard to the length of the screens and the translation of the screens in Spanish, further research into the psychometric properties will be required to ensure that these screening devices are accurately capturing behavioral health problems.

These data also suggests that giving providers a screening tool that assesses many domains of well-being may not be sufficient to change provider behavior. Future studies investigating various pathways that influence providers' ability to detect, intervene on, and refer behavioral health concerns would prove useful for future healthcare systems that are interested in integrated care.

References

- American Medical Association. (2003). *Physician Socioeconomic Statistics, 2003*. Chicago: AMA.
- Amone-P'Olak, K., Burger, H., Ormel, J., Huisman, M., Verhulst, F. C., & Oldehinkel, A. J. (2009). Socioeconomic position and mental health problems in pre- and early-adolescents: The TRIALS study. *Social Psychiatry & Psychiatric Epidemiology*, *44*, 231-238.
- Bickman, L. (1996). A continuum of care: More is not always better. *American Psychologist*, *51*, 689-701.
- Briggs-Gowan, M., Horwitz, S., Schwab-Stone, M., Leventhal, J., & Leaf, P. J. (2000). Mental health in pediatric setting: Distribution of disorders and factors related to service use. *Journal of the American Academy of Child and Adolescent Psychiatry*, *39*(7), 841-849.
- Byrd, M. R., & Alschuler, K. N. (2009). Behavioral Screening in Adult Primary Care. In L. C. James, & W. T. O'Donohue (Eds.), *The Primary Care Toolkit: Practical Resources for the Integrated Behavioral Care Provider* (pp. 121-130). New York: Springer.
- Centers for Disease Control and Prevention. (2013). *Mental health surveillance among children---Unites States, 2005-2011*. Atlanta.
- Christian, E., & Curtis, R. (2012). Introduction to Integrated Care. In R. Curtis, & E. Christian (Eds.), *Integrated Care: Applying Theory to Practice* (pp. 3-20). New York: Routledge.
- Costello, E., Edelbrock, C., Costello, A., Dulcan, M., Burns, B., & Brent, D. (1988). Psychopathology in primary care: The new hidden morbidity. *Pediatrics*, *82*(3), 415-424.
- Cummings, N. A. (2003). Advantages and Limitations of Disease Management- A Practical Guide. In N. A. Cummings, O. W. T., & K. E. Ferguson (Eds.), *Behavioral Health as Primary Care: Beyond Efficacy to Effectiveness* (pp. 31-44). Reno: Context Press.
- Cummings, N. A. (2011). Our 50-Minute Hour in the Nanosecond Era. The Need for a THird "E" in Behavioral Healthcare Efficiency. In N. A. Cummings, & W. T. O'Donohue (Eds.), *Understanding the Behavioral Healthcare Crisis: The Promise of Integrated Care and Diagnostic Reform* (pp. 19-32). New York: Routledge.
- Cummings, N. A., O'Donohue, W. T., & Cummings, J. L. (2011). The Financial Dimension of Integrated Behavioral/Primary Care. In N. A. Cummings, & W. T. O'Donohue (Eds.), *Understanding the Behavioral Healthcare Crisis: The Promise of Integrated Care and Diagnostic Reform* (pp. 33-54). New York: Routledge.
- Curtis, R., & Christian, E. (2012). A Screening and Assessment Primer. In R. Curits, & E. Christian (Eds.), *Integrated Care: Applying Theory to Practice* (pp. 35-58). New York: Routledge.
- Drentea, P., & Reynolds, J. R. (2012). Neither a Borrower Nor a Lender Be: The Relative Importance of Debt and SES for Mental Health Among Older Adults. *Journal of Aging and Health*, *24*(4), 673-695.
- Durden, E. (2007). Usual source of health care among hispanic children-The implications of immigration. *Medical Care*, *45*(8), 753-760.

- Epstein, N., Baldwin, L., & Bishop, D. (1983). The McMaster Family Assessment Device. *Journal of Marital and Family Therapy*, 9(2), 171-180.
- Essau, C., Sasagaw, S., & Frick, P. (2006). Psychometric properties of the Alabama Parenting Questionnaire. *Journal of Children and Family Studies*, 15(5), 597-616.
- Grupp-Phelan, J., Mahanja, P., Foltin, G., Jacobs, E., Tunik, M., & Sonnett, M. (2009). Referral and resource use patterns for psychiatric-related visits to pediatric emergency departments. *Pediatric Emergency Care*, 25(4), 217-220.
- Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the twenty-first century*. Washington, DC: National Academy Press.
- Jellinek, M., Murphy, J., Little, M., Pagano, M. C., & Kelleher, K. (1999). Use of the Pediatric Symptom Checklist to screen for psychosocial problems in pediatric primary care: a national feasibility study. *Archives of Pediatric and Adolescent Medicine*, 153(3), 254-260.
- Kroenke, K., Spitzer, R., & Williams, J. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16, 600-613.
- Kuhlthau, K., Jellinek, M., White, G., VanCleave, J., Simons, J., & Murphy, M. (2011). Increases in behavioral health screening in pediatric care for Massachusetts Medicaid patients. *Archives of Pediatric and Adolescent Medicine*, 165(7), 660-664.
- Lavigne, J., Binns, H., Christoffel, K., Rosenbaum, D., Arend, R., Smilth, K., . . . Group, t. P. (1993). Behavioral and emotional problems among preschool children in pediatric primary care: Prevalence and pediatrician's recognition. *Pediatrics*, 91(3), 649-655.
- Maisel, N. C., & Karney, B. R. (2012). Socioeconomic Status Moderates Associations Among Stressful Events, Mental Health, and Relationship Satisfaction. *Journal of Family Psychology*, 26(4), 654-660.
- McLuaghlin, K. A., Breslau, J., Green, J. G., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2011). Childhood socio-economic status and the onset, persistence, and severity of DSM-IV mental disorders in a US national sample. *Social Science & Medicine*, 73, 1088-1096.
- Meadows, T., Valleley, R., Haack, M., Thorson, R., & Evans, J. (2011). Physician "costs" in providing behavioral health in primary care. *Clinical Pediatrics*, 50(5), 447-455.
- Muntaner, C., Eaton, W. W., & Miech, R. O. (2004). Socioeconomic position and major mental disorders. *Epidemiologic Reviews*, 26, 53-62.
- Muroff, J., Edelsohn, G., Joe, S., & Ford, B. (2008). The role of race in diagnostic and disposition decision making in pediatric psychiatric emergency service. *General Hospital Psychiatry*, 30, 269-276.
- National Institute for Health Care Management. (2009). *Strategies to support the integration of mental health into pediatric primary care*.
- O'Connor, E. A., Whitlock, E. P., Beil, T. L., & Gaynes, B. N. (2009). Screening for depression in adult patients in primary care settings: A systematic evidence review. *Annals of Internal Medicine*, 151(11), 793-803.
- Oser, M., & O'Donohue, W. T. (2009). How to Determine the Need: A Readiness Assessment System. In L. C. James, & W. T. O'Donohue (Eds.), *The Primary*

- Care Toolkit: Practical Resources for the Integrated Behavioral Care Provider* (pp. 3-13). New York: Springer.
- Parkerson, G., Broadhead, W., & Tse, C. (1990). The Duke health profile: A 17-item measure of health and dysfunction. *Medical Care*, 28, 1056-1072.
- Parkerson, G., Broadhead, W., & Tse, C.-K. (1991). Development of the 17-item Duke Health Profile. *Family Practice*(8), 396-401.
- Parkerson, G., Gehlbach, S., Wagner, E., James, S., Clapp, N., & Muhlbaier, L. (1981). The Duke-UNC Health Profile: An adult health status instrument for primary care. *Medical Care*, 19(8), 806-828.
- Parkerson, G., Harrell, F., Hammond, W., & Wang, X. (2001). Characteristics of adult primary care patients as predictors of future health services charges. *Medical Care*, 39, 1170-1181.
- Perez-Escamilla, R. (2010). Health care access among Latinos: Implications for social and health care reforms. *Journal of Hispanic Higher Education*, 9(1), 43-60.
- Perez-Escamilla, R., Garcia, J., & Song, D. (2010). Health care access among hispanic immigrants: Alguien esta escuchando? (Is anybody listening?). *NAPA Bulletin*, 34, 47-67.
- Rozensky, R. (2012). Health care reform: Preparing the psychology workforce. *Journal of Clinical Psychology in Medical Settings*, 19, 5-11.
- Sheldick, R., Merchant, S., & Perrin, E. C. (2011). Identification of developmental-behavioral problems in primary care: A systematic review. *Pediatrics*, 128(2), 356-363.
- Spitzer, R., Kroenke, K., & Williams, J. (1999). Validation and utility of a self-report version of PRIME-MD: The PHQ Primary Care Study. *Journal of the American Medical Association*, 282, 1737-1744.
- Spitzer, R., Kroenke, K., Williams, J., & Lowe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of Internal Medicine*, 166(10), 1092-1097.
- Spitzer, R., Williams, J., Kroenke, K., Linzer, M., Verloin deGruy, F., Hahn, S., . . . Johnson, J. (1994). Utility of a new procedure for diagnosing mental disorders in primary care: the PRIME-MD 1000 study. *Journal of the American Medical Association*, 272, 1749-1756.
- Squires, J., Bricker, D., & Potter, L. (1997). Revision of a parent-completed developmental screening tool: Ages and Stages Questionnaires. *Journal of Pediatric Psychology*, 22(3), 313-328.
- Stancin, T., & Palermo, T. (1997). A review of behavioral screening practices in pediatric settings: Do they pass the test? *Journal of Developmental Behavioral Pediatrics*, 18(3), 183-194.
- Steele, M. M., Lochrie, A. S., & Roberts, C. M. (2010). Physician identification and management of psychosocial problems in primary care. *Journal of Clinical Psychology in Medical Settings*, 17(2), 103-115.
- Strosahl, K. (2005). Training behavioral health and primary care providers for integrated care: A core competencies approach. In W. O'Donohue, M. Byrd, N. Cummings, & D. Henderson (Eds.), *Behavioral integrative care: Treatments that work in the primary care setting* (pp. 15-52). New York: Brunner-Routledge.

- Vega, W., Kolody, B., Aguilar-Gaxiola, S., & Catalano, R. (1999). Gaps in service utilization by Mexican Americans with mental health problems. *American Journal of Psychiatry*, *156*, 928-934.
- Walsh, S. D., Levine, S. Z., & Levay, I. (2012). The association between depression and parental ethnic affiliation and socioeconomic status: a 27-year longitudinal US community study. *Social Psychiatry and Psychiatric Epidemiology*, *47*, 1153-1158.

Appendix A

Adult Screening Inventory

Many health issues have multiple causes. Please check if the following common issues are a concern for you or anyone who knows you well.

	Not a concern	A concern
1. Needing prescription medications to get through the day, go to work, or fall asleep	0	0
2. My ability to communicate with my doctor	0	0
3. Following my doctor's medical instructions	0	0
4. Understanding my health problems or treatment plan	0	0
5. Side effects from current medications	0	0
6. Knowing when to seek medical attention	0	0
7. Dental problems	0	0
8. Stomach or bowel problems	0	0
9. Headaches	0	0
10. Feeling short of breath	0	0
11. My sex life	0	0
12. My memory	0	0
13. My weight	0	0
14. My pain treatment	0	0
15. Drinking in excess	0	0
16. Smoking	0	0
17. Illegal or excessive drug use	0	0
18. Excessive caffeine use	0	0
19. Falling and staying asleep	0	0
20. Healthy eating habits	0	0
21. Health related issues getting in the way of my family and job	0	0
22. Getting enough exercise	0	0
23. Legal issues	0	0
24. Thoughts of suicide	0	0
25. Having enough energy	0	0
26. Feeling depressed or hopeless	0	0
27. Feeling stressed or overwhelmed	0	0
28. Loss of interest in things that were enjoyable	0	0
29. Feeling constantly worried	0	0
30. Feeling afraid	0	0
31. Feelings of loneliness	0	0
32. Having control over my life	0	0
33. Getting enough rest and relaxation	0	0
34. My child's behavior or health	0	0
35. Previous trauma	0	0
36. Anger issues	0	0
37. Having enough money	0	0
38. Getting in trouble at work	0	0
39. Spiritual or religious concerns	0	0
40. The quality of my relationships	0	0

Adult Screening Inventory

Indique si los siguientes problemas son una preocupación para usted:

	No es una preocupación	Si es una preocupación
1. Necesidad de medicamentos recetados para poder pasar el día, ir al trabajo, o quedarse dormido	0	0
2. Mi habilidad de comunicarme con mi médico/doctor	0	0
3. Seguir las instrucciones médicas de mi médico	0	0
4. Entender mis problemas de salud o plan de tratamiento	0	0
5. Efectos secundarios de mis medicamentos	0	0
6. Saber cuándo buscar atención médica	0	0
7. Problemas dentales	0	0
8. Problemas estomágales o intestinales	0	0
9. Dolores de cabeza	0	0
10. Sensación de falta de aliento (dificultad para respirar)	0	0
11. Mi vida sexual	0	0
12. Mi memoria	0	0
13. Mi peso	0	0
14. Mi tratamiento de dolor	0	0
15. Beber demasiado alcohol	0	0
16. Fumar	0	0
17. Uso de medicamentos o drogas que no son recetados	0	0
18. Cafeína excesiva (por ejemplo el café o la Coca Cola)	0	0
19. Quedarse o permanecer dormido	0	0
20. Comer saludablemente	0	0
21. Dificultades con mi salud que impactan mi familia o mi trabajo	0	0
22. Hacer suficiente ejercicio	0	0
23. Estrés relacionado con tener que ser un cuidador	0	0
24. Pensamientos suicidios	0	0
25. Tener bastante energía	0	0
26. Sentirme deprimido o sin esperanza	0	0
27. Sentirme con estrés o sentirme abrumado (sobre cargado)	0	0
28. Pérdida de interés en cosas que son agradables o que me gustan	0	0
29. Sentirme constantemente preocupado	0	0
30. Sentirme con miedo o pánico	0	0
31. Sentimientos de soledad	0	0
32. Sentirme con control sobre mi vida	0	0
33. Tener suficiente descanso y relajación	0	0
34. El comportamiento de mi hijo(s) o la salud de mi hijo(s)	0	0
35. Trauma físico o psicológico que ocurrió anteriormente	0	0
36. Manejo del coraje	0	0
37. Tener suficiente dinero	0	0
38. El abuso (físico, sexual)	0	0
39. La calidad de mis relaciones, como el matrimonio	0	0
40. Preocupaciones espirituales o religiosas	0	0

Appendix B

Child's Name: _____ Date: _____

Pediatric Screening Inventory (For children ages 1-12)

Most parents have some concerns about raising their family. Please check if the following common problems are a concern for you or anyone else who helps to take care of your child. This page deals with common concerns about children and the back side deals with common concerns about parenting.

Child Behaviors	Not a concern	A concern
Daily Activities and Behaviors		
1. Sleeping (how much, where, when)		
2. Using the toilet/toilet training		
3. Eating		
4. Being too active/having too much energy		
5. Having "bad" habits (e.g. thumb sucking)		
Obedience/Following the Rules		
6. Doing as they're told		
7. Talking back		
8. Using "bad" or rude words		
9. Having temper tantrums		
10. Hurting themselves or others		
Coping with Feelings		
11. Pouting		
12. Not being liked by other children		
13. Getting used to life changes (e.g. divorce, moving)		
14. Being nervous or worried a lot		
15. Being grouchy or irritable		
16. Being too afraid		
17. Being moody in general		
18. Crying too much		
Development		
19. Learning		
20. Getting along with others (parents, siblings, etc.)		
21. Doing things other children their age do		
22. Talking or communicating		
23. Not growing big enough or growing too big		
24. Being physically coordinated		
25. Paying attention (for their age)		

Parenting Behaviors	Not a concern	A concern
Managing the Family & Myself		
26. Knowing where my child is		
27. Having a stable place to stay		
28. My own emotional well-being		
29. Using drugs/alcohol in the home		
30. Having an unsafe home environment		
31. Having enough money		
32. Finding childcare		
33. Having violence or abuse in the home		
34. Balancing my responsibilities (work, home)		
Setting Limits and Using Discipline		
35. Being too strict		
36. Not knowing what to do when my child misbehaves, such as using spanking or time-outs		
37. Agreeing on discipline with my child's other parent or other caregivers		
38. Setting limits		
39. Losing my temper		
40. Being too "easy" or lenient		
41. Not always disciplining when I should		
My Relationship with My Child		
42. Spending time with my child		
43. Knowing what to expect from my child		
44. Showing affection or love to my child		
45. Needing more space away from my child		
Following Medical Directions		
46. Following up with doctor's appointments for my child (remembering the appointment, finding a ride, finding childcare for other children, etc.)		
47. Getting my child to take their medicine even if they don't like it		
48. Knowing when my child feels sick or needs medical attention		
49. Having enough money to get medical care for my child (paying for office visits, buying medicine, etc.)		
50. Getting my child to follow doctors' instructions, such as taking all of their medication, eating certain foods or doing certain activities		

Nombre del niño(a): _____ Fecha de nacimiento: _____

Inventario Pediátrica (Niños de 1 a 12 años)

La mayoría de los padres tiene algunas preocupaciones sobre cómo criar a su familia. Por favor comprueba si los siguientes problemas comunes son una preocupación para usted o cualquier otra persona que ayuda a cuidar a su hija/o. Esta página aborda preocupaciones comunes acerca de los niños y la parte posterior se ocupa de las preocupaciones comunes acerca de la crianza.

Uste se preocupa de los siguientes comportamientos de su niña/o:	No me preocupa	Si me preocupa
Comportamientos y actividades diarias		
1. Dormir (cuánto, dónde, cuando)		
2. Usar el baño/aprender a usar el baño		
3. Comer		
4. Es demasiado activo o enqueto		
5. Tiene "vicios" (e.g. chuparse el dedo, morderse las uñas)		
Ser Obediente / seguir las reglas		
6. Hace lo que digo		
7. Es rezongón(a) o majadero/a		
8. Usa palabras "malas" o groseras		
9. Hace berrinche		
10. Se hace daño a el (o ella) misma		
Lidiar con sus sentimientos		
11. Hace puchero		
12. No le cae bien a otros niños		
13. Reacciona demasiado a los cambios de la vida (e.g. divorcio, mudarse)		
14. Es nervioso/a o se preocupa demasiado		
15. Siempre esta de mal humor o es irritable		
16. Tiene demasiado miedo		
17. Es caprichoso en general		
18. Llorar demasiado		
Desarrollo		
19. Aprendizaje		
20. Relacionándose con otros (padres, hermanos, etc.).		
21. Hace las cosas que hacen otros niños de su edad		
22. Hablar o comunicarse		
23. No crecer lo suficientemente o crecer demasiado		
24. Coordinación física (ejemplo correr sin caerse)		
25. Habilidad de prestar atención (para su edad)		

Conductas de los padres <i>Uste se preocupa de:</i>	No me preocupa	Si me preocupa
Lidiar con la familia y con si mismo		
26. Saber donde esta mi hijo/a		
27. Tener un lugar estable para quedarnos		
28. Mi propio bienestar emocional		
29. El consumo de drogas/alcohol en el hogar		
30. Tener un ambiente peligroso en el hogar		
31. Tener suficiente dinero		
32. Encontrar cuidado para mi hijo/a		
33. Violencia o maltrato en el hogar		
34. Balancia entre mis responsabilidades (trabajo, casa)		
Establecer límites y disciplina		
35. Ser demasiado estricto		
36. No saber qué hacer cuando mi hijo se porta mal, como ponerle nalgadas o poner lo en "time out"		
37. Estar de acuerdo de la disciplina de mi hijo que usa mi pareja o otros cuidadores		
38. Ponerle limites a mi hijo		
39. Perder la calma/la paciencia		
40. Ser demasiado "fácil" o no ser duro con mi hijo		
41. No usar la disciplina cuando debo de usarla		
Relación con mi hijo		
42. Pasar tiempo con mi hijo		
43. Saber qué esperar de mi niño		
44. Demostrar afecto o amor a mi niño		
45. Necesitar tiempo aparte de mi niño		
Seguir Direcciones o Ordenes Médicas		
46. Seguir con las citas médica para mi hijo (recordar la cita, encontrar transportación al la cita, encontrar cuidado para mis otros niños etc.)		
47. Asegurarme que mi hijo se tomar su medicamento aun que no les gusta		
48. Saber cuando mi hijo se siente enfermo o necesita atención médica		
49. Tener suficiente dinero para obtener atención médica para mi hijo (pagar por consultas, comprar medicamentos, etc.)		
50. Asegurarme que mi hijo sigue las instrucciones de los médicos por ejemplo tomarse sus medicamentos, comer los alimentos que receta el medico, participar en las actividades que recomienda el médicos		

Appendix C
Patient Satisfaction Scale

Questions	Rating (1-not satisfied at all to 5-very satisfied)					
1. My doctor's ability to listen to my concerns.	5	N/A	1	2	3	4
2. The ease in which I can express my concerns with my doctor.	5	N/A	1	2	3	4
3. My doctor's thoroughness throughout the appointment.	5	N/A	1	2	3	4
4. My overall satisfaction with the appointment	5	N/A	1	2	3	4
5. The ease of using the Adult and Pediatric Screening Inventory	5	N/A	1	2	3	4
6. The ability of the Adult and Pediatric Screening Inventory in reminding me to mention certain concerns I have had lately.	5	N/A	1	2	3	4

On average, how long did it take you to fill out both the Adult and Pediatric Screening Inventory?

What would you like to see improved with the Adult and Pediatric Screening Inventory?

Escala de Satisfacción del Paciente

Preguntas	Clasificación (1-nada satisfecho al 5-muy satisfecho)					
1. La capacidad de mi médico para escuchar mis preocupaciones.	5	N/A	1	2	3	4
2. La facilidad con la que puedo expresar mis preocupaciones con mi médico.	5	N/A	1	2	3	4
3. La rigurosidad de mi médico durante la cita.	5	N/A	1	2	3	4
4. Mi satisfacción general con la cita.	5	N/A	1	2	3	4
5. La facilidad de usar el ___ Inventario de Detección Pediátrico y Adulto.	5	N/A	1	2	3	4
6. La capacidad del ___ Inventario de Detección Pediátrico y Adulto__ en recordarme que mencionara ciertas preocupaciones que he tenido últimamente.	5	N/A	1	2	3	4

En promedio, ¿cuánto tiempo le tomo para llenar el Inventario de Detección Adulto y el Pediátrico?

¿Qué le gustaría ver mejorado con el Inventario de Detección Adulto y Pediátrico?

Patient Satisfaction Scale

Questions	Rating (1-not satisfied at all to 5-very satisfied)					
1. My doctor's ability to listen to my concerns.	5	N/A	1	2	3	4
2. The ease in which I can express my concerns with my doctor.	5	N/A	1	2	3	4
3. My doctor's thoroughness throughout the appointment.	5	N/A	1	2	3	4
4. My overall satisfaction with the appointment	5	N/A	1	2	3	4

Escala de Satisfacción del Paciente

Preguntas	Clasificación (1-nada satisfecho al 5-muy satisfecho)				
1. La capacidad de mi médico para escuchar mis preocupaciones.	N/A	1	2	3	4
2. La facilidad con la que puedo expresar mis preocupaciones con mi médico.	N/A	1	2	3	4
3. La rigurosidad de mi médico durante la cita.	N/A	1	2	3	4
4. Mi satisfacción general con la cita.	N/A	1	2	3	4

Physician Satisfaction Scale (Baseline)

Questions	Rating (1-not satisfied at all to 5-very satisfied)					
1. My patients' adherence to my medical treatments	5	N/A	1	2	3	4
2. The quality of care my patient receives	5	N/A	1	2	3	4
3. The support I receive from administrators and management	5	N/A	1	2	3	4
4. The overall use of my time and expertise in this clinic	5	N/A	1	2	3	4
5. My patient load throughout the week	5	N/A	1	2	3	4
6. My overall satisfaction with being a physician at HAWC	5	N/A	1	2	3	4

Physician Satisfaction Scale (Return to Baseline)

Questions	Rating (1-not satisfied at all to 5-very satisfied)					
1. My patients' adherence to my medical treatments	5	N/A	1	2	3	4
2. The quality of care my patient receives	5	N/A	1	2	3	4
3. The support I receive from administrators and management	5	N/A	1	2	3	4
4. The overall use of my time and expertise in this clinic	5	N/A	1	2	3	4
5. My patient load throughout the week	5	N/A	1	2	3	4
6. My overall satisfaction with being a physician at CHA	5	N/A	1	2	3	4
7. The ease of using and scoring the Adult and Pediatric Screening Inventory	5	N/A	1	2	3	4
8. The information obtained from the Adult and Pediatric Screening Inventory	5	N/A	1	2	3	4
9. The ability of the Adult and Pediatric Screening Inventory to detect behavioral health issues	5	N/A	1	2	3	4
10. The ability of the Adult and Pediatric Screening Inventory to help me be more productive with my patients	5	N/A	1	2	3	4

On average, how long did it take you to score both the Adult and Pediatric Screening Inventory?

What would you like to see improved with the Adult and Pediatric Screening Inventory?

Physician Satisfaction Scale (After Study)

Questions	Rating (1-not satisfied at all to 5-very satisfied)					
1. My patients' adherence to my medical treatments	5	N/A	1	2	3	4
2. The quality of care my patient receives	5	N/A	1	2	3	4
3. The support I receive from administrators and management	5	N/A	1	2	3	4
4. The overall use of my time and expertise in this clinic	5	N/A	1	2	3	4
5. My patient load throughout the week	5	N/A	1	2	3	4
6. My overall satisfaction with being a physician at CHA	5	N/A	1	2	3	4

When you used the Adult and Pediatric Screening Inventory, did you find them useful in detecting behavioral health problems?

Please, briefly explain your answer.

Did the removal of the Adult and Pediatric Screening Inventory effect your ability to detect behavioral health problems?

Please, briefly explain your answer.

Would you recommend the use of the Adult and Pediatric Screening Inventory for other health providers?