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EXAMINING PREFERENCE OF HOME-BASED TELEMENTAL HEALTH AMONG RURAL VETERANS

by

PAIGE DIXON

Under the Direction of K. Bryant Smalley

ABSTRACT

Rural veterans face significant disparities to health care that have resulted in lower physical and mental health related quality of life when compared to their urban counterparts (Weeks et al., 2006). Such disparities are further complicated by the six-fold increase in prevalence of mental health diagnoses among Operation Enduring Freedom and Operation Iraqi Freedom veterans (Seal et al., 2009). These rising rates are particularly relevant to rural veterans as they represent 41% of the overall Veteran Health Administration enrollees, but only 19% of the general population (U.S., Department of Veterans Affairs, 2012; U.S. Census Bureau, 2014). Rural veterans face three barriers that affect their access and utilization of Veterans Affairs mental health services including distance, stigma, and a lack of mental health providers. Home based telemental health (HBTMH) services were developed to address the barriers that rural veterans face by providing them with clinical video teleconferencing in real time with a remote mental health provider while in their homes via their personal computer's webcam and Internet connection (Shore et al., 2012). To examine preference of HBTMH among veterans and active duty military personnel, the current study's hypotheses were: 1) rural veterans would be more likely than their urban counterparts to prefer HBTMH services over telemental health delivered at a VA facility and traditional face-to-face mental health services; 2) the relationship between rurality and preference for HBTMH would be moderated by both age and level of comfort with technology, such that rural veterans who report a younger age and a higher degree of comfort

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with technology would prefer the option of HBTMH health over VA telemental health delivered at a facility and traditional face-to-face mental health services compared to older veterans who report a low degree of comfort with technology; and 3) rural veterans who report more financial, transportation, and stigma barriers to receipt of care would be more likely to prefer HBTMH over telemental health delivered at a VA facility and traditional face-to-face mental health services. However, the results for each hypothesis were non-significant. Future research should ensure that veterans have a robust understanding of what HBTMH is and use sampling strategies that recruit a diverse range of veterans and/or active duty service members.

INDEX WORDS: Rural, Veterans, Veterans Affairs, Mental health, Stigma, Home based Telemental Health, Technology, Barriers to care

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by

PAIGE DIXON

B.A., The University of North Carolina at Charlotte, 2013

A Thesis Submitted to the Graduate Faculty of Georgia Southern University in Partial Fulfillment of the Requirements for the Degree

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CHAPTER 1

INTRODUCTION

Rural Veterans and Mental Health

Rural veterans face significant disparities to health care that have resulted in lower physical and mental health related quality of life when compared to their urban counterparts (Weeks et al., 2006). In general, the disparity in health care is most commonly characterized by the distance that rural veterans must travel to access private sector and Veteran Affairs (VA) hospital services as the majority of Veteran Affairs Medical Centers (VAMCs) are located in urban areas (Weeks et al., 2006). In addition, there is a lack of local health services, particularly primary care services, in the medically underserved areas of the rural United States (Douthit, Kiv, Dwolatzky, & Biswas, 2015). The average distance that rural veterans must travel to access VA health care services is fifty miles and has thus resulted in under-utilization (Weeks et al., 2006). The problems posed by distance and lack of healthcare services are further complicated by the large number of rural veterans, which represent 41% of the overall Veteran Health Administration (VHA) enrollees, but only 19% of the general population (U.S., Department of Veterans Affairs, 2012; U.S. Census Bureau, 2014). Further, the wide variability of ages within the veteran population leads to distinct subgroups requiring different health care needs (Heady, 2011). The composition of the rural veteran population is distinct in that roughly two-thirds of rural veterans are men over the age of fifty-five while another significant portion are men under the age of thirty-five who served in the recent Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn (OEF/OIF/OND) eras (U.S., Department of Veterans Affairs, 2012; Heady, 2011). Many of the older veterans have significant, chronic health needs that often require specialized care, such as orthopedic and geriatric care, and diagnostic services, which

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require laboratories and imaging, that are not available in rural areas (Douthit et al., 2015). While younger rural veterans also require access to specialized care and diagnostic services not available in rural areas, as described below, they also have recently demonstrated an increased need of mental health services.

Prevalence of Mental Health Diagnoses

The prevalence of mental health diagnoses in OEF/OIF veterans increased six-fold between 2002 and 2008, and as of December 2014, 57% of OEF/OIF/OND veterans had received at least a provisional mental health diagnosis, compared to the pre-deployment rates of only 2.4% (Seal et al., 2009; Pickett et al., 2015). The largest prevalence rate increase is that of the OEF/OIF/OND eras' "trademark" diagnosis of Posttraumatic Stress Disorder (PTSD), which is present among 5% to 20% of the combat veterans (depending on the measure used), and accounts for 55% of the OEF/OIF/OND veterans' mental health diagnoses (Seal et al., 2009; Pickett et al., 2015; U.S. Department of Veterans Affairs, 2015). Following PTSD, the prevalence rates of depressive disorders have seen the second largest increase accounting for 45% of the OEF/OIF/OND mental health diagnoses, followed by anxiety disorders other than PTSD accounting for 43% of the diagnoses, and finally substance use disorders and adjustment disorders each accounting for roughly 20% of the recent eras' diagnoses (Seal et al., 2009; Pickett et al., 2015; U.S. Department of Veterans Affairs, 2015). These rising rates are particularly relevant to rural veterans as 37% of OIF/OEF veterans reside in rural areas, despite the fact that only 19% of the general population resides in rural areas (Draper, 2015; U.S. Census Bureau, 2014). Additionally, it is important to note that 29% of the new diagnoses between 2002 and 2008 were comorbid, and as time went on after the veterans' post-deployment return, the

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rates of mental health diagnoses for the same cohorts continued to increase up to four years later (Seal et al., 2009). Therefore, not only are a higher proportion of veterans receiving a mental health diagnosis, but for many individuals, mental health problems may not manifest until years after the veteran has returned stateside. Drastically complicating the process is the fact that up to one-third of veterans have more than one diagnosable mental health problem (Seal et al., 2009).

One of the reasons for the increase in mental diagnosis is attributed to the Department of Defense and Veteran Affairs implementation of mandatory mental health screening within six months of post-deployment during VA primary care check-ups; such screening was not required prior to the OEF/OIF/OND war eras (Seal et al., 2009; Pickett et al., 2015). The requirement of mental health screenings was put into place as a part of the VHA's efforts of integrating mental health into the primary care setting (Seal et al., 2009; Pickett et al., 2015). The primary care-mental health (PC-MH) integration has allowed primary care providers to screen all veterans in order to improve detection and potential treatment outcomes by carrying out brief treatment interventions in primary care or by recommending follow-up screenings and referrals to mental health providers (Crawford et al., 2015). Overall, the PC-MH integration is a part of the VHA's larger collaborative care model to incorporate co-located mental health professionals into the primary care team that is now mandatory and implemented at all VA Medical Centers and large VA Community Based Outpatient Centers (CBOCs; United States of America, 2008; Draper, 2015). Following this implementation, OEF/OIF veterans now have a 66.5% higher likelihood of having at least one VA mental health follow-up visit in comparison to only 30% of Vietnam-era veterans who reported ever seeking any mental health treatment in their lifetime (Seal et al., 2010). A second reason for the increase in rates is due to the utilization of warfare that lacks a definable "front-line" and instead is characterized by unexpected roadside bombs and improvised

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explosive devices (IEDs; Seal et al., 2009). These unexpected threats and the overall nature of the recent war eras have resulted in high levels of combat experiences, as demonstrated by the 90% of OEF/OIF veterans that reported being shot at, along with the 50% or more of the same era veterans that reported handling dead bodies, knowing others who have been killed or injured, or killing an enemy fighter (Hoge et al., 2004). The high levels of the previous descriptions of combat experiences have all been found to be associated with higher prevalence rates of PTSD, with the higher number of firefights experienced being most closely correlated in a linear manner with PTSD (Hoge et al., 2004). Such associations suggest that a relationship exists between this different style of unexpected and combative warfare used in the OEF/OIF/OND eras, and the overall increased prevalence rates of PTSD and the general increase in mental health diagnoses (Hoge et al., 2004).

When further examining the increased number of mental health diagnoses after exposure to combat, there are particular risk factors to mental health pathology that have become more salient. One such risk factor is age as veterans that are twenty-five years or younger are at a higher risk for PTSD and alcohol use disorders than older veterans (Seal et al., 2009). Some have attributed the increased risk for young military personnel to their average lower rank and subsequent greater combat exposure (Seal et al., 2009). Additionally, for young veterans and many military service members in the OEF/OIF/OND eras, being deployed more than once was also associated with a higher risk of mental health pathology, particularly for PTSD (Seal et al., 2009). As these recent military conflicts are now the longest sustained military operation in U.S history, over two million veterans have been deployed with each service member serving an average of more than one deployment, and roughly one-third serving two or more deployments (Bonanno et al., 2012; Pickett et al., 2015). With the significant majority of veterans serving

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more than once, and still at least one-third of that group who served additional deployments, this suggests that based on the association between deployments and mental health pathology, there is a substantially large number of veterans that could be at risk for mental health pathology (Bonanno et al., 2012; Pickett et al., 2015). In addition to the risk factors of age and multiple deployments, injury and being wounded during war were also linked with higher rates of PTSD and general mental health problems as well (Hoge et al., 2007). Overall, it is clear that these risk factors for mental health pathology are applicable to many of the veterans that experienced combat in the context of the unexpected nature of the OIF/OEF/OND warfare.

With the requirement of mental health screenings and the subsequent rise in mental health diagnoses, in 2008 the VA and DoD responded by extending free military service-related health care from two years to five years after service separation (Seal et al., 2010). After this five-year period, veterans remain eligible for VA health care services with a copayment or without charge, and can continue to utilize these benefits while enrolled in private insurance or Medicare services (Seal et al., 2010). While future changes within the VA could extend eligibility and expand payment coverage options, for those in rural areas, the specific problems that heavily impact rural veterans' use of VA health services remain regardless of benefits and eligibility as demonstrated by the lack of mental health service utilization following screening and/or diagnosis (Schlichting et al., 2016).

While rural veterans still go through the mandated screening process upon their return to the United States, many rural veterans do not return for follow up appointments upon positive screenings for a mental health diagnosis (Hoge et al., 2007). Of those newly diagnosed with depression, anxiety, or PTSD, rural veterans were two times less likely than urban veterans to attend psychotherapy during the first year after diagnosis, and were significantly less likely to

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receive any psychotherapy including individual and group counseling (Douthit et al., 2015; Cully et al., 2010). Rural veterans who received new PTSD diagnoses and who lived more than 25 miles away from a VA facility were found to be more likely to not receive the recommended PTSD treatment, thus supporting a relationship between distance and accessing health care for rural veterans (Cully et al., 2010). While this finding provides support for a relationship between distance and accessing health care for rural veterans, there are two other significant barriers that further complicate the use of mental health services for rural veterans consisting of stigma and a lack of mental health providers (Cully et al., 2010). The overarching aim of this study is to explore the potential therapeutic solution of Home-Based Telemental Health to meet the mental health needs of rural veterans, however it is necessary to describe the nature of these barriers and the effect that each has on this underserved population in order to understand how the proposed solution of Home-Based Telemental Health can serve as a realistic therapeutic option for rural veterans.

Barriers to Care

Distance

Distance has long been an issue that has affected rural veterans, and has been studied in order to understand what aspects of distance and travel are most influential on an individual's decision to seek physical and mental health care services. Overall, there is not a specific distance that is used to indicate what is an insufficient spatial access to care; however, the VA drive time standards suggest that according to RUCA, or the Rural-Urban Commuting Area, definitions of urban, rural, and highly rural, urban and rural veterans should be within thirty minutes of primary care and within sixty minutes for those in highly rural areas (Weinhold & Gurtner, 2014; Berke,

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West, Wallace, & Weeks, 2009). However, as previously indicated, the average distance that rural veterans live from a VAMC is 50 miles (Seal et al., 2010; Hoge et al., 2007). This is well outside the recommended distance for general rural areas, and likely to be outside of the recommended distance for highly rural areas (as it is unlikely that 50 miles in a highly rural area can be traversed within 60 minutes).

The barrier of distance is moderated by other factors that further complicate this problem such as the relationship between the veteran and the health provider, the veteran's age, time required away from work or school, access to transportation, and long wait times for appointments. In a survey of rural veterans, 25% reported that travel highly impacted their decision to attend a VA medical appointment particularly when the appointment was routine, for a chronic condition, or for a prescription refill (Weeks et al., 2006; Schooley, Horan, Lee, & West, 2010). Additionally, if the veteran is new to the VA or is just initiating their services, they are less likely to attend and complete the prescribed services when they both lack an established relationship with a provider and have to travel long distances (Friedman et al., 2015). The problem of non-attendance is particularly high among younger veterans compared to older veterans (Friedman et al., 2015). In general, distance can negatively impact decisions to attend VA medical appointments when the variables of youth, and the initiation of medical services are included. In the context of mental health, distance, and completion of recommended services, e.g., psychotherapy or medication management, a rural veteran is less likely to attend mental health appointments and finish treatment if the individual needs to travel to a distant VA facility multiple times within a short period and is relatively young.

In addition to traveling long distances, rural veterans must also schedule appointments within the limited hours of operation offered at VA health facilities that typically correspond

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with the five-day work week (Pieh-Holder, Callahan, & Young, 2012). It is only within the larger VA outpatient facilities, which are predominantly located in more densely populated regions and not in rural areas, that have requirements for offering extended night hours at least once a week, while other facilities are only recommended to offer extended night and weekend hours (United States of America, 2008). On top of the limited hours available for appointments, many report difficulties setting up appointments, having to wait long periods for the appointment after the initial request, and then, having to wait for hours in the VA facility to see the health provider on the day of the appointment (Huttlinger, Scaller-Ayers, Lawson, & Ayers, 2003; Pieh-Holder et al., 2012). When an individual has to travel long distances and wait hours in the health facility prior to seeing the provider, the overall time spent away from everyday responsibilities adds up quickly. As a result, many report having to take an entire day off of work in order to go to a health-related appointment (Huttlinger, Scaller-Ayers, Lawson, & Ayers, 2003). By taking away time from the veteran's daily responsibilities, going to a VA appointment can be a costly decision based on the price of gas and lost wages. For many of the younger male veterans, one of the reasons that they report not seeking physical or mental health care, or following through with treatment is that they lack the time to attend such appointments, which indicates how much the limited hours, long waits, and large distances deter from accessing health care (Garcia et al., 2014).

The barrier of distance is further exacerbated by challenges to transportation. Seventy-six percent of rural veterans drive their own vehicles to medical appointments, and if the veteran has a license, they are twice as likely to attend their VA appointments as those without a driver's license (Schooley et al., 2010; Douthit, Kiv, Dwolatzky, & Biswas, 2015). Therefore, for the majority of rural veterans that have their own vehicle and a driver's license, they already have an

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increased likelihood of accessing VA health care, but there are still many veterans that remain without a car and/or a driver's license that hinders their ability to access their VA appointments for health services. For 12.5% of rural veterans, they rely on friends or family to take them to their appointments (Schooley et al., 2010). However, for those without a license or someone to drive them to their appointments, they must rely on other forms of transportation. In urban areas, there are abundant opportunities for public transportation, but in rural areas, public transportation is severely limited (Pieh-Holder, Callahan, & Young, 2012). The Disabled American Veterans organization (DAV) offers a free ride service for injured and ill veterans to VA medical facilities that about 10% of rural veterans depend on for transportation (DAV – Disabled American Veterans Assistance Organization, n.d.; Schooley, Horan, Lee, & West, 2010). Unfortunately, as the service is provided by volunteers, it is only offered in limited areas throughout the United States and is subject to volunteer availability (DAV – Disabled American Veterans Assistance Organization, n.d.).

To varying degrees, each of the factors related to the logistical barriers of distance to VA health services impacts most rural veterans. For younger veterans from the OEF/OIF eras, transportation may not be as large of a barrier as it is for older veterans who may no longer have a license or the ability to drive long distances (Friedman et al., 2015; Garcia et al., 2014). On the other hand, younger veterans are more likely to report time away from work as a major barrier to attending services compared to older veterans who are more likely to be retired (Garcia et al., 2014). Nevertheless, the overall problem of distance to services and the highly publicized wait times for appointments in the VA system appear to impact rural veterans' ability to access mental health services (Draper, 2015).

Stigma

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In addition to the negative influence of logistical barriers to mental health treatment, issues related to the stigma of mental health treatment for rural veterans may be an additional force behind the imbalance between the prevalence of mental health diagnoses and rural veterans' mental health seeking behaviors (Garcia et al., 2014). Stigma occurs from the negative connotation of "mental illness," as a deviation from the societally defined ideal identity which results in the individual with mental health challenges attempting to avoid exposing their differences from social norms to others in their community (Crawford and Brown, 2002). The stigma of mental illness stems from historical stereotypes that those with mental illness are dangerous, violent, incompetent, and personally responsible for their illness, which leads to the tendency for others to socially distance themselves from those labeled as mentally ill **(**Dickstein, Vogt, Handa, & Litz, 2010; Corrigan et al., 2000; Phelan, Link, Stueve, & Pescosolido, 2000; Link, Phelan, Bresnahan, Stueve, Pescosolido, 1999). While general knowledge and education of mental health has made strides in reducing the once heavily accepted stereotypes of mental illness, many of the negative beliefs remain common today as evident through the unrealistic and exaggerated television and film portrayals in Western pop culture (Dickstein et al., 2010; Sieff, 2003). Through these heavily influential mediums of culture, individuals with mental illness continue to be portrayed as aggressive and mental health treatment as melodramatic and characterized more often by images of electroconvulsive therapy than of receiving more commonly utilized evidence-based practices or proper psychiatric medication prescription **(**Dickstein et al., 2010; Pirkis, Blood, Francis, & McCallum, 2006). While in the general population, mental health and those affected by it remain subject to stigma, the specific sub-populations of rural areas and the military are each comprised of their own cultural norms that structurally reinforce stigma. Despite the fact that the two subsets are different entities, they

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share very similar cultural values and characteristics that make seeking mental health treatment a substantial social barrier for the rural veterans that identify with both of these groups (Bennett, Crabtree, Schaffer, & Britt, 2011; Dickstein et al., 2010).

The small, remote towns that make up rural America have many of the same overall qualities despite their geographic differences. One of the most common characteristics of rural areas is a sense of strong communities that has developed through the longstanding families' lineage in the local area dating back many years, their allegiance to the region, and the common notion of neighbors as family despite a blood relationship (Huttlinger et al., 2003). Rural communities hold a collectivist orientation such that they take great pride in their regional location and place value on independence, family responsibilities, faith, and self-reliance, characterized by their do-it-yourself attitude (Gore, Sheppard, Waters, Jackson, & Brubaker, 2016). This within-group culture coupled with the commitment to their responsibilities in their individual families and to the progression of the community, is often followed by the reluctance to divulge family problems and trust outsiders (Bennett et al., 2011).

Military culture shares many comparable qualities to rural areas such as loyalty, in respect to their military branch and service, a general skepticism of outsiders, and self-reliance that is characterized in military culture by the group norm attitude of "suck it up" in order to persevere through overwhelming circumstances (Bennett et al., 2011, p. 116). Military culture is known for the sense of comradery among their personnel based on their relationships that develop with their close-knit units and their respect and loyalty to their service and country that creates a collectivist sense of community (Lunasco, Goodwin, Ozanian, Loflin, 2010). While rural culture is shaped by their allegiance to a geographic region, military culture is centralized

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by the training and preparation to thrive and survive in combat (Lunasco et al., 2010). It is shaped by the attitudes and beliefs instilled for combat readiness such as toughness, mission focus, self- and group-based sufficiency, and subsequently strength, a tolerance for pain, emotional suppression, and self-sacrifice (Dickstein et al., 2010; Lunasco et al., 2010). These strength-based attitudes and belief systems are maintained by a skepticism of outsiders, developed from necessity in combat to protect their in-group from danger, and promote self-reliance to meet their individual responsibilities necessary for the group, mission, and country as a whole (Lunasco et al., 2010).

Overall, rural and military culture both emphasize allegiance and loyalty to their respective in-group, the individual's role and responsibility within the group, and the role of the group as a collectivist unit. However, for all of the shared positive cultural attributes of both groups, they tend to also share many of the same negative attitudes and beliefs that specifically relate to the stigma of mental health and mental health treatment. The emphasis on self-reliance and allegiance to in-group beliefs and goals in both cultures are in contrast to actively seeking mental health treatment, which leaves rural veterans specifically in a cultural and social obstacle towards seeking treatment.

One in three OEF/OIF veterans reported that they would face public stigma by others for seeking mental health treatment, which reflects the worry of discrimination from their own rural and military groups, including their friends and family (Vogt, Fox, & Di Leone, 2014; Hoge et al., 2004). Additionally, there is a fear of being labeled, specifically as a, "crazy vet," by others if a veteran acknowledges having a mental health problem (Stecker et al., 2013, p. 282). These worries of discrimination and labeling by others represent the fears of judgment and social distance from other members of their in-group that are common characteristics of public-stigma

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(Vogt, Fox, & Di Leone, 2014). When examining beliefs of self-stigma towards seeking mental health treatment, OEF/OIF veterans reported that "going to treatment would mean that I was weak," and that they would feel down on themselves for going and instead needed to "man up" (Elbogen et al., 2013; Stecker et al., 2013, p. 282). This common sentiment of attending treatment as a sign of weakness suggests that the negative beliefs of mental illness and seeking treatment, as a violation of the values of pride and self-reliance, have become a part of their internalized personal belief system, which underlies the difficulty in asking for help (Vogt, 2011). When examining public stigma and self-stigma, one study found that the individual's own mental health beliefs were a greater barrier to mental health treatment than the public stigma from others (Vogt, Fox, & Di Leone, 2014).

While self-stigma may perhaps be the most powerful, stigma also occurs at the institutional level and involves the fear of higher level economic consequences, which for military personnel could be losing security clearance, loss of future deployments, limitations on future employment opportunities, adverse actions from superior officers, and loss of respect from subordinates and peers (Stecker et al., 2013; Hoge et al., 2007). For the individuals that remain active in the military, many of the concerns related to consequences are very real as military officers have access to all VA mental health records of the individuals that they have rank over and the authority to deny employment opportunities and deployments based on the individual's perceived mental health status (Hoge et al., 2007). While veterans who are no longer active duty are not subject to the potential loss of future deployments, over one-third of OEF/OIF veterans were concerned with stigma in the workplace and over half believed that their career options in the workplace would be limited if others knew that they had a mental health problem (Vogt et al., 2014).

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The concerns related to public-, self-, and institutional-level stigma become more complicated for rural veterans based on gender, war era, and the potential lack of privacy in rural areas. The stigma of mental health treatment is more common in men and is particularly relevant for rural veterans as the overwhelming majority are male (Garcia et al., 2014). It is also concerning for rural veterans of the OEF/OIF eras as they are the least likely of all previous war eras to seek mental health treatment followed by the Gulf war era, and the Vietnam era, and comprise a large portion of rural veterans under the age of 35, (Lamp, Maieritch, Winer, Hessinger, & Klenk, 2014). In addition to the different levels of stigma, the strong community ties between neighbors, which is typically a positive attribute of rural culture, in combination with the isolated geographic makeup of rural areas that restricts the proximity of workplace environments, limit the degree of anonymity for rural veterans to conceal their mental illness from others (Douthit et al., 2015). As gender, war era, and privacy limitations in rural areas further contribute to the existing concerns of public-, self-, and institutional stigma for rural veterans, many will delay treatment efforts in attempts to deal with it on their own and wait until it goes away (Judd et al., 2006; Lamp et al., 2014).

From the rural and military cultural perspectives, by attempting to deal with their mental health problems on their own, the rural veteran would be less of a burden and this would therefore be better for the community (Elam, 2012). By delaying treatment in an attempt to wait out their mental health problems, this results in a commonly held sentiment that their symptoms would have to be very severe before they would consider seeking help. Thus, individuals will attempt to deal with their internal symptoms on their own permitting the concealment of their mental health problems as it is not affecting their social environment, or the community (Gore et al., 2016). However, research has found that as mental health symptoms increase in severity and

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perhaps reach the point where they are externally impacting their social environment, only then will many veterans seek treatment (Lamp et al., 2014). While the VA and the DoD have acknowledged the problem within the military of the perpetuation of the stigma of mental illness, the longstanding beliefs still remain (United States, 2007). Therefore, rural veterans continue to face the barrier of the stigma of mental health treatment on top of the complex geographic barrier, which are then further challenged by the lack of mental health providers.

Lack of Mental Health Providers

The problems of distance to VA health services and stigma of mental health treatment are further complicated by the lack of mental health providers in rural areas. Throughout the country there has been a shortage of general health providers and mental health providers (Draper, 2015). Unfortunately, the lack of health providers is not a novel issue in rural areas as many have been considered Health Professional Shortage Areas for many years and remain so to this day (Slifkin, 2002). However, as mental health is considered a specialized service, there is a particular lack of mental health providers compared to primary care health providers. One of the principle reasons for the longstanding shortages of mental health providers in rural areas can be attributed to the lack of financial security for providers that is characterized by high provider turnover rates and higher workload (Douthit, Kiv, Dwolatzky, & Biswas, 2015).

High turnover is a major concern for mental health providers when considering practicing in rural areas as many rural patients are under-insured or uninsured, which can create a financial burden for the clinic to provide services for multiple individuals with little or no insurance (Douthit et al., 2015; Shen & Hsia, 2010). Over time, the burden often becomes too large resulting in the facility being forced to close, and the mental health provider to lose their

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job; thus, resulting in the loss of financial security (Shen & Hsia, 2010). As the fear of job loss due to clinic closure is a common concern for a mental health provider who is considering working in a rural area, many of the providers that do end up working in rural areas leave after a short period for more promising positions in urban areas and then avoid risking their financial security (Huttlinger et al. 2003). Therefore, rural providers are left fearing the complete loss of their job and facility, and with the decision to search for more financially secure positions in other places. Since many areas throughout the U.S. are in need of mental health providers, rural providers who may be questioning their future financial security could have multiple secure opportunities outside of rural areas. However, the problems of turnover are not only a career concern for individual practicing providers, but instead become two-fold as the rural clinic is then left even further depleted of resources after a rural provider leaves their position. This revolving door phenomena of mental health providers coming and then leaving rural areas further contributes to the high turnover problems as it leaves gaps in services and the continuity of treatment for patients, and the mental health providers that remain in rural areas with a much higher workload (Huttlinger et al., 2003).

A commonly expressed notion by rural health providers is a feeling of being 'overburdened and underpaid' in comparison to their urban counterparts because they are faced with an overwhelming demand for services with limited resources (Douthit et al., 2015). For the providers who remain in rural areas, the sense of being 'overburdened' occurs as a product of the high provider turnover rates, and the continuously increasing demand for mental health providers and mental health services that leaves the limited number of the remaining current rural mental health providers attempting to meet the demand for services. In rural VA CBOCs, mental health providers have had to shorten therapy appointments from 45-60 minutes to 30 minutes, schedule

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longer intervals between treatment sessions, and increase reliance on telemental health where it is available (Draper, 2015). Not only does this leave rural veterans who have overcome the distance and stigma barriers to seek mental health treatment without receiving the prescribed evidence-based treatment contiguously, it can lead to mental health provider burnout and negatively impacts the likelihood of a provider remaining in a rural area (Douthit et al., 2015).

In addition to the sentiment of overburden, many providers express being underpaid as the demand for rural mental health providers' increases, but the supply of rural mental health providers remains limited, which prevents the creation of a market for competitive salaries of current providers (Huttlinger et al., 2013). Therefore, even with the established rural mental health providers, high vacancy rates remain driving the demand higher and without the intent of other mental health providers to increase the supply, the imbalance prevents provider salaries to be competitive (Huttlinger et al., 2013).

When examining the threat of high provider turnover in clinics and the increased workload in relation to the mental health provider's financial security, it is difficult to look at the two issues separately. These threats often overlap as rural mental health providers are working in clinics where there are not enough providers available to offer the needed services so they must work harder without receiving a salary that is equivalent to the work that they are producing, and yet they still must fear the problems related to facility closure and turnover of their current fellow providers that could ultimately result in them losing their position.

While the problems of high turnover and increased workloads seem to function in a cyclical pattern creating concerns of financial security, in general, the problems seem to negatively impact the likelihood of a mental health provider beginning or continuing to offer services in rural areas. Therefore, the lack of mental health providers shall continue to be a

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problem for those in need of mental health services in rural areas. In response to the mental health professional shortage within the VA that ranged from 9%-28% vacancies in 2015, the Veterans Health Administration set forth a mental health professional hiring initiative in the CBOCs (Draper, 2015). While there was a 24% increase in hiring between fiscal year 2010 and fiscal year 2014, the number of veterans in need of mental health services increased as well leaving the shortage of mental health providers intact despite hiring growth, and the underlying fears of financial security for rural mental health providers (Draper, 2015).

As it is essential to understand the nature and specific impact of each of the three primary barriers, distance, stigma, and lack of mental health providers, in relation to rural veterans' mental health access and use, it is also necessary to consider the overall combined effect that these barriers have on rural veterans' in general, and the parameters that must be met in order to overcome the barriers and provide a realistic and effective mental health treatment option for this underserved population. In the recent decades, health providers have looked to technology as a means to reach such individuals through the development of telehealth, and more specifically telemental health.

Telemental Health

In response to the barriers of health care for rural populations, across multiple disciplines, health providers have begun to use live interactive videoconferencing known as telehealth as a means to deliver health care services to reach underserved populations (Jones et al., 2014; Shore, Brooks, Savin, Manson, & Libby, 2007). The Veterans' Health Administration began its exploration with telehealth in 1999 supporting needs-based pilot programs at the local level (Darkins, 2014). Today in the VHA, telehealth has evolved into a nationally supported

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telecommunication tool used by health providers throughout the VA, who is now the industry leader in Clinical Video Telehealth (CVT) (Darkins, 2014). Mental health services are delivered through Clinical Video Telehealth, commonly referred to as telemental health (TMH) services, and are often utilized in VA Community Based Outpatient Clinics (CBOCs) as a means to allow rural veterans and rural VA providers to communicate with health professionals at the larger VAMCs (Hoffmann, 2015; Chapko et al., 2012). TMH services allow veterans to communicate with licensed mental health providers while at their local CBOC via clinical video teleconferencing in real time for intakes, medication management, psychotherapy, or specialized therapy, such as cognitive behavior therapy, in an individual or group setting (Chapko et al., 2012). To ensure the best outcomes for the veteran, VA TMH services are designed around an integrated team consisting of the veteran's local primary care provider, a registered nurse or nurse practitioner, administrative staff, and the mental health provider at the VAMC (Lu, Woodside, Chisholm, & Ward, 2014). Then, by using the VA My Health-E Vet electronic medical record, each of the team members are able to communicate amongst themselves and with the veteran (Lu et al., 2014). The team approach and the shared medium of communication permit continuity of care and efficiency for the veteran because they do not have to attend multiple locations for services or relay their medical information between providers. (Pruitt, Luxton, & Shore, 2014).

The use of telemental health services has been shown to be non-inferior to in-person mental health diagnostics and treatment while also being cost effective for the veteran and the VA (Shore et al., 2007; Lu et al., 2014). VA TMH has been found to not only be a successful medium for the treatment of adults with mental health disorders, but also to be as effective as face-to-face treatment for diagnoses such as panic disorder, obsessive-compulsive disorder,

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depression, and PTSD among others (Bouchard et al., 2004; Wootton, 2016; Osenbach, O'Brien, Mishkind, & Smolenski, 2013; Morland et al., 2015). With the increased prevalence of PTSD in the OEF/OIF/OND veterans, the VA and DoD have increased efforts towards evaluating different forms of PTSD treatment via TMH such as, individual exposure-based treatment, individual cognitive processing treatment (CPT), group CPT, group cognitive behavior therapy, and anger management (Yuen et al., 2015). In general, these different types of treatment were found to have comparable outcomes to each of their respective in-person treatments, however the efficacy of each specific treatment type is still under investigation and goes beyond the scope of this research (Yuen et al., 2015, Morland et al., 2015). The clinical advantages of TMH are further expanded by the financial gains that TMH affords to the veteran and the VA, which has resulted in increased funding for TMH services in rural areas nationally (Shore, 2011). Using a distance cut-off of 30 miles to the nearest VA facility from the veterans' home to determine eligibility for TMH services, travel for veterans could decrease by 50% depending the particular Veteran Integrated Service Network (VISN) (Musdal et al., 2014). In Shore and colleagues (2007) economic evaluation, TMH saved veterans roughly $9,000.00 per year, on top of VA personnel savings of $6,400-$13,000 per year, per VA facility.

However, VA telemental health services are not without their flaws. First, TMH is only offered at a limited number of CBOCs because the program requires a private and confidential space for services along with funding for set up, equipment, and a mental health provider (Chapko et al., 2012). The specific VA requirements of the mental health services that must be provided vary on the size of the CBOC and the number of veterans that it serves (United States of America, 2008). A mid-sized CBOC which serves 1,500-5,000 veterans is required to provide general mental health services, which excludes local offering of specific treatments such as

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specialized PTSD or substance use services (United States of America, 2008). While a mid-sized CBOC is more likely to be located in a rural area, the smaller CBOCs serving 1,500 veterans or less have fewer requirements for services on-site and are instead only "encouraged" to provide evaluation and treatment planning on site or by TMH (United States of America, 2008). Therefore, the smaller, more rural VA CBOCs may not have TMH services available.

It should be noted that in an effort to further reach veterans in their communities, Vet Centers have been established throughout the country with an emphasis on issues related to readjustment to civilian life and family (United States of America, 2008). However, these facilities are not available in all rural areas, and the mental health services provided there are not meant to extend beyond readjustment issues that would be better treated in an outpatient mental health setting, which reiterates the reliance on rural CBOCs to provide mental health services that often require the use of TMH that still remain unavailable (United States of America, 2008).

One of the reasons that TMH services may also not be offered in a rural CBOC is that the physical structure of the facility may not have the space necessary for confidential and private mental health treatment. The space for the delivery of TMH should resemble a therapy room, or should at least be a designated area for mental health services (Yuen et al., 2015). However, in many previously established facilities that were built without the designated space for TMH, such services may be provided in a multi-purpose area that may be more difficult to ensure confidentiality for the veteran during the check-in process for treatment and during the treatment period itself (Yuen et al., 2015; Chapko et al., 2012). In addition to physical space, the CBOC must also have the necessary equipment such as a computer, a webcam, and the proper software and encryption capability of Cisco Jabber in order to meet the Health Insurance Portability and Accountability Act (HIPPA) requirements, and also funding for clinician services and personnel

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costs (Yuen et al., 2015). As mental health is becoming more integrated into health services with primary providers across VA facilities, many of the smaller CBOCs still lack the integrated team approach that ensures the continuity of care for the veteran using TMH services, and often struggle to ensure compensation for a TMH liaison at the remote CBOC who is responsible for setting up the TMH equipment for each veteran's appointment, and who is knowledgeable about the TMH process, the software and any technical trouble-shooting necessary (United States of America, 2008; Yuen et al., 2015). While the VA and DoD have supported the funding necessary for the telehealth growth, many older and smaller facilities still do not have the means necessary to makes the updates required in order to provide adequate TMH services (Hoffmann, 2015).

Further complicating the delivery of TMH services is that the primary barriers to care continue to pose problems for rural veterans and health providers. The barrier presented by the lack of mental health providers endures as the demand for mental health professionals remain high and results in therapeutic services often being offered together in a group setting which is not beneficial or desirable for all veterans, such as those who are concerned with stigma one of the other primary barriers (Douthit, Kiv, Dwolatzky, & Biswas, 2015). Then, for many rural veterans, the distance to the nearest CBOC can still be up to thirty or more miles away from their homes and thus may require too much time and money to attend weekly mental health services (Chapko et al., 2012). Therefore, the issues that commonly serve as barriers to mental health treatment for rural veterans all seemingly remain when examining the proposed solution of telemental health despite the evidence of its effectiveness and intention to alleviate such barriers. In continued efforts to overcome the barriers and provide services for rural veterans, traditional telemental health has expanded and refined into the promising mental health treatment option, and focus of this study, home-based telemental health.

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Home Based Telemental Health

In response to barriers that rural veterans face to seek mental health treatment and the limitations of VA telemental services, the option of home based telemental health (HBTMH) developed where patients could use their personal computer's webcam and Internet connection in their own homes to communicate in real time via clinical video teleconferencing with a remote mental health provider instead of having to travel to a clinic to receive telemental health services (Shore et al., 2012). In the beginning, the home based option was used with telehealth in many hospitals, and then went on to be successful in the management of conditions such as diabetes with home-based testing tools and the home delivery of physical therapy (Lynch, Strom, & Egede, 2011; Levy, Silverman, Huanguang, Geiss, & Omura, 2015). Following the success in telehealth came the development of the home based option for mental health, and was found to be effective within the general population for the treatment of bipolar disorder, obsessive-compulsive disorder, substance abuse, PTSD, panic disorder, and depression of which many reported maintenance of clinical gains between three months and two years (Choi, Hegel, Marinucci, Sirrianni, & Bruce, 2013; Pruitt et al., 2014). Additionally, there has been extensive success with the use of cognitive-behavioral therapies, including those that examined exposure-based components (Pruitt et al., 2014). As the use of telehealth has grown over time within the VA, the third phase of the telehealth expansion includes the use of telemental health in the home in an effort to reach veterans who live far from VA facilities, specifically targeting rural veterans, those that are limited by mobility problems, those who avoid mental health treatment due to stigma, and those whose mental health conditions may impede attending mental treatment in a clinic, such as social anxiety, fear of driving, or those who avoid anxiety triggers (Darkins, 2014; Pruitt et al., 2014). While the home based telemental health options remain in the pilot

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testing stage, VA mental health providers continue to find similar positive results in veteran population as previous studies have reported with the general population.

Research within the VA on HBTMH has been explored through various single site initiatives throughout the country. One such line of research carried out by the Oregon Rural Mental Health Initiative used HBTMH for mental health treatment specifically focused on suicide prevention with rural veterans (Lu et al., 2014). Other VA research utilized efficacy studies on forms of treatment that are typically used with particular mental health diagnoses through the HBTMH medium, including Prolonged Exposure (PE) therapy for PTSD treatment and Behavioral Activation Treatment for Depression (BACT) (Yuen et al., 2015; Luxton et al., 2014). Both the Oregon Rural Mental Health Initiative research and the VA efficacy studies have all reported favorable findings for HBTMH, such as increased HBTMH appointments between FY 2010 and FY 2013 and similar outcomes of PE and BACT between in-person and home based clinical videoconferencing (Lu et al., 2014; Yuen et al., 2015; Luxton et al., 2014). However, the largest VA HBTMH initiative began in 2009 as a part of a three-part pilot study in the northwestern United States and was designed with the goal to develop into a long-term, multisite program (Shore, Goranson, Ward, & Lu, 2014).

The HBTMH program was developed in order to reach veterans that were limited by logistics, anxiety, or mobility, and found that in the first cohort of 40 rural veterans presenting with predominately PTSD diagnoses, that at least 80% or more of the participants were satisfied with their treatment, felt safe, would not have engaged in treatment had it not been in the home, and would recommend HBTMH to other veterans (Shore et al., 2014). Also, rural veterans in the first cohort of the pilot study saved an average of $197.23 per appointment and VA travel reimbursement saved $54 per visit, which indicates not only the clinical benefits of the home

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based option, but also the economical benefits for the veteran and the VA (Shore et al., 2014). In addition to the promising results of the first pilot HBTMH analysis, the HBTMH program was also designed methodically to ensure the veterans' safety, the training and qualifications of the providers, and strategic growth to support future expansion of the program.

Before veterans and mental health providers reach the point of the computer-to-computer clinical interaction, safety measures for the veteran and objective guidelines for HBTMH provider training were established. In order to set a baseline level of safety for the veteran, eligibility requirements were set forth that prohibited veterans with dementia, those abusing substances who refuse to discontinue substance use during the treatment period, those with complicated psychotic mental health diagnoses, or those with report suicidal or homicidal ideations for HBTMH program consideration (Shore, 2011). In addition to the basic elements of a computer, webcam, and broadband Internet necessary for the videoconferencing interaction, the encrypted Cisco TelePresence software known as MOVI, which is in accordance with Federal Information Processing Standards and HIPPA requirements, must also be accessed (Shore, 2011). The veteran can access the software via email from the VA mental health provider and requires minimal set-up on the veteran's part (Shore, 2011). However, if assistance is necessary, the program was built with the optional inclusion of Telehealth Clinical Technicians (TCTs), who can make house calls if necessary, or can interact with the user via telephone (Shore, 2011). Additionally, for the veterans' safety, a Patient Support Person (PSP) is designated who agrees to be available during the patient's session in case of an emergency, but does not have to live with the person or be related (Shore, 2011). The PSP must simply be able to access the individual in case of an emergency, and may also be trained on technical troubleshooting if a problem arises with the software or computer. For each individual veteran,

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local emergency services contacts are collected along with the veterans' telephone number that can be utilized in emergency situations, and also if the connection during a treatment session or appointment were to be disrupted or lost (Shore, 2011). In the home, the veteran is advised to choose a location that is private and confidential where distractions, such as other people, pets, cellphones, televisions, etc., do not interfere with the clinical interaction along with the inhibition of stress reducing habits, such as smoking or drinking (Shore, 2011).

In addition to the precautions necessary for the veteran and their home, the mental health provider must complete training on telehealth, practice using HBTMH, and demonstrate specific levels of expertise with the program before working with more clients and clients with more complicated diagnoses. The first major part of provider training focuses on using the telehealth application in HBTMH services, which includes providing evidence-based treatments via VTC, recognition of observable client facial and body language cues via video, how to troubleshoot potential technology problems with the veteran, and role playing various clinical, safety, and technical scenarios. Also, it is very important that mental health providers should are aware of the rural culture and customs in order to provide the best treatment possible (Shore, Savin, Novins, & Manson, 2006). In the VA HBTMH pilot program, mental health providers must complete treatment with eight different veterans before they can conduct cognitive processing therapy (CPT) for veterans with PTSD, veterans with comorbid diagnoses, or substance use disorders (Shore, 2011). According to the HBTMH Standard Operating Manual, once providers complete treatment with another eight veterans, then they are able to train other mental health providers interested in offering HBTMH services as a means to ensure that HBTMH trainers are properly qualified and that more mental health providers can access training in a variety of locations (Shore, 2011). While the primary purpose of HBTMH is to provide mental health

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treatment to veterans that may be unable to receive services in an outpatient clinic or in a VAMC, the safety of the veteran is the greatest concern and the reason why the eligibility requirements, encrypted software, PSP, back up emergency contacts, and the extensive clinical and technological training of mental health providers are standards in HBTMH services.

While most available support refers to client and provider satisfaction with clinic based TMH services, there is growing evidence to support client and provider satisfaction with HBTMH (Yuen et al., 2015; Pruitt et al., 2014; Shore et al., 2014). In the original HBTMH pilot cohort, not only was high satisfaction reported, but over 80% would recommend the home based services to other veterans (Shore et al., 2014). Also, in comparison to clinic based TMH, the HBTMH option was seen as more convenient for rural veterans, and that without the home based option a high percentage of veterans reported that they would not have been able to receive mental health treatment (Shore et al., 2014). The reports of convenience and access with HBTMH demonstrate that many of the barriers that rural veterans face can be overcome through this option, and that it may increase overall treatment compliance (Shore et al., 2014; Pruitt et al., 2014). In the HBTMH pilot, out of 350 scheduled appointments, there were only 3 no-shows (0.8%) in comparison to the higher average number of no-shows for VA mental health appointments, and the cohort on average received eight treatment sessions thus meeting the minimal requirements for evidence-based treatment completion (Shore et al., 2014). The high rates of compliance indicate not only that HBTMH is cost-efficient, but that it could also be particularly useful for veterans as less than 10% of veterans with new PTSD diagnoses attend the minimum number of prescribed PTSD evidence based treatment sessions and between 38%-68% of veterans that initiate evidence-based psychotherapy prematurely discontinue (Cully et al., 2010; Gros, et al., 2011; Gros et al., 2013; Shore et al., 2014; Pruitt et al., 2014). By offering

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veterans the HBTMH option, treatment compliance may improve substantially and provide many veterans that avoid or delay mental health treatment to receive the services that they need.

As HBTMH services require the veteran to have a computer, webcam, and Internet access, the majority of individuals (80-90%) have a computer or smart device and most of those individuals already have the technology necessary to make a video call, such as a webcam (Gardner et al., 2015). Most veterans have broadband Internet access in their homes with 50% of rural veterans using high speed DSL to connect (Gardner et al., 2015; Allen et al., 2013). Of rural veterans under the age of 50, over 80% report using the Internet, and of those between 51 and 64 years of age, about 45% use the Internet, which supports the finding that most (86%) of veterans feel moderately to extremely comfortable using their computer (Allen et al., 2013; Yuen et al., 2015). Additionally, of veterans under 65 years of age that use the Internet, roughly 50% use it to seek health information for themselves already suggesting that veterans, particularly those from the OEF/OIF/OND eras, have the technical skills necessary to operate and access HBTMH services (Allen et al., 2013). While previous use with video calling via computer is a significant predictor of engaging in future video calling for a health appointment or telehealth appointment above and beyond age, and is necessary for clinical video teleconferencing, those that are younger (under 60 years old), and those that live far from a health clinic have been found to be more likely to engage in a telehealth appointment (Gardner et al., 2015). Therefore, it is arguable that rural veterans from OEF/OIF/OND eras would be the ideal population to engage in mental health treatment through the HBTMH option.

Home-Based Telemental Health - A Solution

As the returning OEF/OIF/END era rural veterans are younger in comparison to other previous war eras, reside in areas that are distant to VA facilities, and report a high level of

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comfort with computer and Internet use, these individuals would benefit the most from mental health treatment delivered through HBTMH. For individuals who may still perceive their technological skills as inept to engage in HBTMH, there is evidence demonstrating that with minimal training on the telemental health equipment and software, comfort and feasibility with HBTMH is possible within a relatively short period of time (Pruitt et al., 2014). Therefore, with the ongoing development of technology throughout the world, many rural veterans already possess the skills or can easily attain the skills, equipment and comfort necessary to utilize HBTMH.

In addition to high rates of satisfaction and many rural veterans already possessing the equipment and skills necessary for HBTMH, this option combats the three principal barriers to rural veterans' mental health of distance, stigma, and the lack of mental health providers in rural areas, along with providing social benefits as well. The HBTMH program was designed to overcome the barriers that encompass rurality which has resulted in cost savings for veterans based on the reduction of drive time necessary and costs associated with traveling, but also finances that could be lost due to time away from work. Not only has the pilot program been able to overcome the barriers associated with distance, it has made receiving mental health care convenient (Shore et al., 2014). The strong associations between stigma, and rural and military culture are significantly reduced when receiving mental health in the home by circumventing the risk of judgment and labeling, and can provide mental health services to those that would refuse to engage in traditional in-person mental health treatment (Shore et al., 2014; Vernig, 2016). By utilizing HBTMH, veterans have greater access to their mental health provider which permits shorter intervals between sessions and a closer assessment of symptoms and monitoring (Pruitt et

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al., 2014). In addition to overcoming the barriers to mental health treatment for rural veterans, HBTMH also provides social support by creating a therapeutic alliance, decreasing isolation, and an understanding of the patient's home context (Lu et al., 2014; Pruitt et al., 2014).

Current Study and Hypotheses

As the number of mental health diagnoses continues to rise as OEF/OIF/OND veterans return, those veterans in rural areas still face barriers to receiving mental health treatment in their communities. With the long distances to VA facilities, the stigma of mental health treatment prevalent within rural and military culture, and the shortage of mental health providers, many rural veterans remain isolated with their mental health diagnoses. Based on the treatment success of the home based telemental health pilot program in one region of the United States, along with the successful development of other home based telemental health services that serve small isolated populations, it is necessary to explore the propensity of the home based option to rural veterans nationally. By examining veterans' attitudes and beliefs throughout the United States related to the barriers of accessing mental health treatment in rural areas, and the feasibility of utilizing HBTMH, national interest could be gathered in an effort to prepare for widespread dissemination that could inform potential VA policy. The future of HBTMH may be able to fill in the gaps of health and mental health quality of life disparities for rural veterans and ensure that all veterans have access to the mental health support that they deserve from serving their country. Given the current literature, the current study's hypotheses were: 1) rural veterans will be more likely than their urban counterparts to prefer home based telemental health services over telemental health delivered at a VA facility and traditional face-to-face mental health services; 2) the relationship between rurality and preference for home-based telemental health will be moderated by both age and level of comfort with technology, such that rural veterans who report

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a younger age and a higher degree of comfort with technology will prefer the option of home based telemental health over VA telemental health delivered at a facility and traditional face-to-face mental health services compared to older veterans who report a low degree of comfort with technology; and 3) rural veterans who report more financial, transportation, and stigma barriers to receipt of care will be more likely to prefer HBTMH over telemental health delivered at a VA facility and traditional face-to-face mental health services.

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CHAPTER 2: Methodology

Participants

Eligible participants had to be 18 years and older, and identify as a United States veteran, active duty, or reserve service member. No other eligibility criteria were included. A total of 423 participants were recruited into the parent study through online convenience sampling via Amazon Mechanical Turk (MTurk) throughout the United States in the study. There were 298 male participants, or 70.4% of the sample participants, and 124 female participants, or 29.3% of the sample. In response to current residence in a rural area, which was used to determine rurality, 131 participants (31%) identified as living in a rural area, while 291 (69%) of the participants did not identify as living in a rural area. For the breakdown of ethnicity, education, employment status, socioeconomic status, household income, and marital status, see Table 1. The majority of participants (55.6%) were Army active duty, followed by Air Force active duty (17.5%) and Army reserve (15.8%). The common service eras reported were Iraq (34%), Afghanistan (27.9%), and the Gulf War (10.9%). For the full breakdown of participants by military branch and era of service, see Table 2. Each participant received the same recruitment message to minimize group variance. Recruitment through Amazon MTurk was facilitated by posting job tasks on the website to invite eligible MTurk workers to participate in the online study.

Procedure

Within the job task post, there was a link to the private, secure data collection website, Qualtrics, that hosted the survey. Upon reaching the survey website, interested individuals were automatically directed to an informed consent page that included the purpose, risks, benefits, requirements to receive financial compensation, notification of attention check questions, confidentiality, administrators' contact information, and the ethical parameters of participation in

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the study (similar to methods described in Warren, Smalley, & Barefoot, 2015). Participants' consent was given by clicking on a yes/no question asking if he or she voluntarily agreed to participate in the survey. Two attention check questions were included within the survey located one-third of the way through the survey and three-fourths of the way through the survey. The questions indicated that the participant should choose the answer option, "slightly agree," for the first attention check question, and to choose the answer choice, "slightly disagree," for the second attention check question. The data of any participant failing an attention check question were removed from the final dataset. After completing the questionnaires, participants were directed to a debriefing page along with links to veterans' mental health resources, and compensated $0.50 compensation through MTurk.

Measures

The parent study included an extensive survey battery assessing a wide variety of veterans' health-related information. For the purposes of the current sub-study, the relevant portions of the survey were the demographic/social factor questions, questions related to comfort with technology that were designed and used previously by two of the investigators, K.B. Smalley and J. Warren, and one formal questionnaire, the Inventory of Attitudes Toward Seeking Mental Health Services (IATSMHS; Mackenzie et al., 2004).

Demographics and Social Factors The 38 demographic and social factor questions were based on basic characteristics. This demographic sheet included questions about gender and age, military service experience (e.g., military era(s) of service, number of tours, and military branch), VA health-related services use (e.g., VHA services enrollment and utilization, private health insurance utilization, health services preference, type of VHA facility used), rurality (e.g., self-identification of currently residing in rural or non-rural area), transportation barriers (e.g.,

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possessing a driver's license, access to a vehicle, access to public transportation, convenience of drive time to access health services), financial barriers to health services (e.g., time away from work, gas), Internet access (e.g., Internet access in the home, type of Internet connection), ownership of technology and type (e.g., desktop computer, laptop, tablet, cell phone).

Comfort with Technology. This portion of the survey investigated previous experience using technology, comfort levels using technology, and technology preference. Technologies investigated included: computer, Internet, email, voicemail, cell phone for phone calls, cell phone for texting, smartphone, home phone/land line, television, DVD player, tablet, and webcam. All questions related to comfort with technology were scored, such that a higher score is indicative of higher comfort and a lower score indicative of less comfort.

Inventory of Attitudes Toward Seeking Mental Health Services (IATSMHS; Mackenzie et al., 2004). The Inventory of Attitudes Toward Seeking Mental Health Services was used to assess psychological openness, help seeking propensity, and indifference to stigma (Mackenzie et al., 2004). The assessment includes 24 items and participants responded to statements based on a 5-point Likert-type scale where 0 is strongly disagree, 1 is disagree, 3 is neutral, 3 is agree, and 4 is strongly agree. All 24 items were summed together to create a range of 0 very low to 130 very high.

Psychological openness examined 8 responses to statements such as "*People with strong characters can get over psychological problems by themselves," "There are experiences in my life I would not discuss with anyone,"* and *"Psychological problems, like many things, tend to work out by themselves"* (Mackenzie et al., 2004). Another eight statements examined help-seeking propensity based on responses to statements such as, *"If I were experiencing a serious psychological problem at this point in my life, I would be confident that I could find relief in*

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psychotherapy," "If I believed I were having a mental breakdown, my first inclination would be to get professional attention," and, *"It would be relatively easy for me to find the time to see a professional for psychological problems."* (Mackenzie et al., 2004). The final eight statements addressed indifference stigma and include items such as, "*I would be embarrassed if my neighbor saw me going into the office of a professional who deals with psychological problems," "Having been mentally ill carries with it a burden of shame,"* and, *"Important people in my life would think less of me if they were to find out that I was experiencing psychological problems."* (Mackenzie et al., 2004).

Data Analytic Plan

Because of the central focus of the project on preference for HBTMH services, the outcome question of preferred mental health services (HBTMH, telemental health delivered at a VA facility, and traditional face-to-face mental health services) was collapsed into a binary outcome of prefers HBTMH versus prefers another modality. This variable became the outcome variable for all analyses.

After standard data cleaning procedures, frequency distributions and means/standard deviations were calculated for all demographic and other descriptive variables. Data were then analyzed through a series of binary logistic regressions, each using preference of mental health services (HBTMH, standard VA TMH, traditional face-to-face services) as the dependent variable. Hypothesis 1 was tested using rurality as the independent variable of interest (rural or non-rural location), and the outcome variable of preference of mental health services, home based telemental health and other mental health services with gender, age, comfort with technology, and IATSMHS total score entered as covariates. For hypothesis 2, interaction variables of rurality x age and rurality x comfort with technology were added to the regression

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used in Hypothesis 1. For Hypothesis 3, the sum score of reported barriers was added to the regression used in Hypothesis 1. Statistical significance of the predictors was tested using the Wald χ^2 and determined by p values set of .05 or less.

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CHAPTER 3: Results

When examining the first hypothesis, the regression model revealed that rurality was not a significant predictor of preference for HBTMH, *Wald* χ^2 (1, 1) = 1.602, p = .206. This finding suggests that rurality of veterans alone did not significantly predict preference of home based telemental health, and thus hypothesis 1 was not supported. Full details on the regression for Hypothesis 1can be found in Table 4. The second hypothesis expected that the relationship between rurality and preference for home based telemental health would be moderated by both age and level of comfort with technology, such that rural veterans who reported a younger age and a higher degree of comfort with technology would prefer the option of home based telemental health over other forms of mental health services compared to older veterans who report a low degree of comfort with technology, was analyzed in a separate logistic regression. Despite the non-significant effect revealed in the initial analysis, the interaction was still tested. The second regression model revealed a non- significant interaction effect between the variables of rurality and age or rurality in terms of preference for HBTMH, *Wald* χ^2 (1, 1) = .268, p =.673 for rurality and age. Additionally, the interaction effect of the variables of rurality and comfort with technology was also found to be non-significant in terms of preference for HBTMH, *Wald* χ^2 (1, 1) = .007, p = .604. Thus, Hypothesis 2 was also not supported. For the summed scores of comfort with technology, see Table 3, and the details of the regression for Hypothesis 2 are listed in Table 5. Hypothesis 3 was developed on the assumption that Hypothesis 1 would be significant and asserted that rural veterans who reported more financial, transportation, and stigma barriers to receiving care would prefer HBTMH over other forms of mental health services compared to urban veterans. Given that Hypothesis 1was not supported, both rural and urban veterans were combined and assessed to determine if, overall, the variables of financial,

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transportation, and stigma related barriers would predict preference of HBTMH among veterans. The third regression model revealed that barriers were not a significant predictor of preference for HBMTH among rural and urban veterans, $Wald\ \chi^2$ (1, 1) = .923, p = .337; therefore, the third hypothesis was not supported. Full details on the regression for Hypothesis 3 can be found in Table 6.

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CHAPTER 4: Discussion

The finding that rurality did not predict preference of home based telemental health was surprising given previous research of rural veterans who reported that the home based telemental health option was more convenient than clinic based TMH, and that the majority of veterans who participated in the HBTMH pilot program indicated that without HBTMH they would not have received mental health services (Shore et al., 2014). Despite previous research illustrating the efficacy and success of HBTMH's use with a variety of treatments, such as prolonged exposure and Behavioral Activation Treatment, and with different clinical diagnoses such as depression and PTSD, in addition to the VA's intention of HBTMH to specifically target rural veterans, the results of the study did not support an increased preference of HBTMH among rural veterans when compared to their urban counterparts (Lu et al., 2014; Yuen et al., 2015; Luxton et al., 2014). Additionally, it should be noted that the outcome of preference of mental health services, which was used as the dependent variable in each of the three hypotheses, was collapsed from the options of home based telemental health, VA telemental health at a clinic, and traditional face-to-face treatment to the dichotomous variable of home based telemental health and other forms of mental health services. Part of the purpose for collapsing the variables was that VA telemental health at a clinic was only preferred by 11% of the sample, compared to 42.9% of the sample that preferred HBTMH and 45.4% of the sample that preferred traditional face-to-face mental health services. The lack of support for VA TMH at a clinic was also unexpected, but could be examined in further detail in future research. It is important to note, however, that HBTMH was preferred by nearly half of veterans – both urban and rural – indicating that this method is highly acceptable and should be supported and encouraged for veterans regardless of geographic location. To reiterate, these findings do not refute the use of HBTMH with rural

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veterans; in fact, it supports that it is preferred by a very large portion of veterans in both geographies.

The second hypothesis predicted that age and comfort with technology would moderate the relationship between rurality and preference of mental health services. The results from the second model were not statistically significant, suggesting that for this sample, age and comfort with technology did not moderate the relationship between rurality and preference of HBTMH. There are several reasons why this finding may not have revealed significant effects. First, the sample was collected online, implying an inherent level of comfort with technology; individuals with very low levels of comfort with technology likely would not be accessible via online recruitment methods. In fact, the mean comfort with technology score was 42.30 when the highest possible score was 52. Additionally, 68% of the scores fell between 32.38, somewhat comfortable, and 52.00, very comfortable, which was again the highest score possible. These exceptionally high levels of comfort with technology suggest that the sample may have been more comfortable with technology than the overall population. Despite the fact that this is a concern from a distribution standpoint, it does not diminish the position that for veterans who are comfortable with technology, HBTMH is a very attractive option for many. While generational effects will increasingly drive up levels of comfort with technology, these findings may also support the development of more programs to increase veterans' level of comfort with technology in an effort to increase desirability of HBTMH (particularly for veterans with limited geographic transportation, or financial access to VHA services).

The other major variable of interest in the second hypothesis was age. The average age of the sample was 37 years old and 75% of the sample was between the ages of 25 and 49 years of age. Based on the national distribution of veterans in the United States, 1.2% veterans are

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between the ages of 17-24 years, 30% of veterans are between the ages of 25 and 54 years, and the majority of veterans, 52%, are 65 years of age and older (National Center of Veterans Analysis and Statistics, 2017). Although the youngest participant was 19 and the oldest was 75, the majority of participants in the sample were between the ages of 25 and 45 years of age, which suggests that the sample was not representative of the veteran population since so few of the participants were over the age of 50 and few were below 25 years. This discrepancy could be attributed to the predominance of active duty service members in the sample compared to veterans discharged from service as active duty service members have a different age distribution than veterans such that 39.8% of active duty service members are 25 years of age and younger, 46.3% are 26 to 40 years of age, and only 13.9% of active duty service members are 41 years of age and older (Defense Manpower Data Center, 2014). Therefore, it is difficult to make an accurate comparison of rurality, age, and comfort with technology based on discrepancies between the age groups of veterans and active duty service members within the sample and that of veterans and active duty service members in the population.

The third hypothesis was that rural veterans who reported more financial, transportation, and stigma related barriers would prefer home based telemental health over VA telemental health at a clinic, and traditional face-to-face mental health services. As the third hypothesis was based around the assumption that the first hypothesis would be significant, but the model was not statistically significant, we examined rural and urban veterans together. Even so, the model for the third hypothesis did not show a significant relationship between barriers to care and preference for HBTMH. The three primary barriers of interest in this sub-study, financial, transportation, and stigma, were chosen not only because they are problems that impact health and mental health care access for rural veterans, but also because the HBTMH program was

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designed to address these barriers (Shore et al., 2014). While all of the barrier scores were summed for an overall total, some information can be gathered from looking at the data of both rural and non-rural together about financial, transportation, and stigma barriers individually.

In relation to financial barriers, roughly 62% of the study sample did not have any barriers to accessing care due to insurance, which could also be related to the 66% of participants who reported having a full-time job. As many full-time employees receive insurance coverage through their employers, this may have alleviated problems related to not having insurance coverage and the subsequent difficulties associated with paying for health care without insurance for this particular sample. In line with the financial benefits of insurance coverage, 53% reported that cost of seeing a provider was not a barrier for accessing health care services. However, roughly 24% of participants did report problems related to not having insurance coverage and 31% reported the cost of seeing a provider as a problem, which suggests that financial barriers to receiving care did affect a portion of the total sample's ability to access care.

As to be expected with the age distribution of the sample and previous reports that three-quarters of veterans drive their own vehicles to health appointments, 70% of the sample did not have any problems with transportation (Schooley et al., 2010). While access to transportation tends to be a larger barrier for individuals who do not have a license and those who may no longer be able to drive due to age or disability, the primary factor that tends to impact the age group of the current sample (25-49 years of age) is time from work due to travel and wait times for appointments (Schooley et al., 2010; Garcia et al., 2014; Douthit et al., 2015).

Most of the sample did not have trouble getting an appointment for health services, but it should be noted that over one-third of the sample did report problems with getting an appointment. The sample was also divided when determining if wait times being too long was a

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barrier as 37% did not have problems with wait times, but 38.8% reported that the wait times either somewhat or very much so affected their ability to access health services. The distribution of responses to the questions related to VA wait times and access to providers may reflect the shift by the VA to decrease the difficulties associated with the highly publicized wait times for VA appointments (Draper, 2015). Nevertheless, the results suggest that the issues related to availability of VA health services appointments still remains a problem for many.

Lastly, the items related to participants' evaluations of public-stigma suggested that it was not a problem for the majority of the sample, yet there was roughly 20% of the population that did report barriers related to stigma**.**

Overall, when evaluating the barriers to receiving physical and mental health services, for the majority of the sample, over 50%, the total summed barriers did not impact the relationship between rural and non-rural participants and their preferences of mental health services. Yet, it is still important to acknowledge that while the barriers did not significantly impact preference of mental health services, there was roughly 20% of respondents who did report problems related to financial, transportation, and stigma barriers to receipt of care. Therefore, future research should attempt to explore the characteristics of the 20% of veterans and active service members who report these barriers, how to decrease those barriers, and how the sub-set relates to preference of mental health services.

Another factor that may contribute to the current study's results is that while the age of the sample may have been skewed to reflect the age group of 25-49 year olds predominantly, this age group is also still of working age and ineligible for retirement compared to the majority of older veterans in the U.S. population. The large number of participants of working age together with the perceived higher degree of comfort with technology based on previously mentioned

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medium of survey access, Amazon Mechanical Turk, seems to reflect the Pew Research Center finding that 68% of office-based workers between the ages of 30-59 years reported that the Internet is very important to do their jobs (Purcell and Raine, 2014). The same office-based workers reported using their computers for work and cell phones to do their jobs (Purcell and Raine, 2014). The high percentage of office-based workers who report Internet usage as important to do their jobs and the age range that the study reported is highly similar to the range of age and employment status of the sample used in the survey (Purcell and Raine, 2014). Overall, the Pew Research and this study's findings suggest that individuals of the predominant age range of the study (25-49) would already have a higher degree of comfort with technology than may be expected of older veterans that were not represented in this study, which may have impacted the results of the second hypothesis (Purcell and Raine, 2014).

After examining all three hypotheses, it is worth noting that in all of the hypotheses that the closest trending variable to statistical significance was gender. Although not significant, gender did have an appreciable trend in each of the hypotheses ($p = 0.123$ in Hypothesis 1; $p = 0.134$ in Hypothesis 2, and $p = 0.210$ in Hypothesis 3), and was by far the most significant variable in each of the regressions. While these trends do not indicate statistical significance, they do indicate that future research should investigate specific gender differences in relation to rural and non-rural preference for home based telemental health services.

Limitations

In addition to previously mentioned limitations, the findings of this study should be considered within the context of the design and sampling. While the study was conducted at the national level, it is limited by the use of convenience sampling through Amazon Mechanical Turk. Due to the form of sampling used, the sample may not be representative of veterans as demonstrated by the limited age distribution and requirement that veterans must already have

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some degree of comfort with technology to access the survey, and had a high representation of active-duty service members. The convenience sampling and lack of representativeness may make it difficult to generalize to the overall veteran population. Additionally, there is always the potential for self-report bias in any study that uses self-reported questionnaires. Also, given the cross-sectional nature of the study, these data are only a glimpse into participant responses at one point in time, and results may differ if assessed longitudinally.

Implications for Future Research

The results of this study suggest that, based on this sample and study design, rurality did not statistically predict preference of home based telemental health among active duty service members and veterans. However, this does not mean that there is no relationship of preference for home based telemental health among rural veterans, but that based on these methods, design, and variables we did not find a relationship.

Therefore, future implications for research on rurality and home based telemental health should focus on determining which variables are most important to veterans when deciding on a medium of mental health service delivery since financial costs, transportation, and stigma did not appear to differentiate preference among rural and non-rural individuals. Additionally, future research should focus on the impact of different age groups and preference of mental health services in addition to further examining potential differences between genders. As the sample used in this sub-study consisted primarily of veterans and active-duty service members who were younger than the average age of veterans, and thus likely had higher levels of comfort with technology, future research should include a wider range of participants to permit a better understanding of the variables that interact to impact preference of mental health services. One of the ways that future research could reach a diverse pool of active duty and veteran service

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members would be to use mail surveys or random digit dialing phone interviews. By using other surveying means to reach participants, this would overcome the shortcoming that we experienced by recruiting online.

As previously indicated, we surveyed participants to rate their preference for Home Based Telemental Health. Therefore, we inherently relied on the assumption that participants are aware of what HBTMH is and how it differs from other modalities. Future research on HBTMH should include a more robust description of what it is, the benefits of HBTMH, what makes it different from other options, and types of mental health conditions and forms of therapy that HBTMH is designed to address to ensure that participants can make an informed decision about their mental health services preference. In addition to the alternative methods of recruiting survey participants through mail and phone, future research designs could recruit and share information about HBTMH by providing information sources within rural and urban VA health clinics via pamphlets or providers verbally discussing what HBTMH is. While this would potentially require additional funding, it would ensure that veterans are exposed to the information in a more natural setting. Another benefit of providing HBTMH information in VA clinics is that it would allow direct comparisons of rural and urban veteran and active duty service members' preference since preference of mental health services between the two groups was comparable within this study. However, recruiting in VA clinics would also naturally oversample individuals who seek out care at in-person locations.

Within the current study, all veteran and active service members were eligible for entrance, but future research could focus on recruiting a clinical population as those individuals may have a greater need for mental health services than the overall veteran and active service member population. By using a clinical sample of veterans, the results may provide more

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meaningful differences in preference of mental health services between HBTMH, TMH delivered at a VA facility, and traditional face-to-face services. A final area where future research could focus would be on permitting rural veterans to try the HBTMH modality for free to encourage veterans to test out the service without any long-term commitments to continued use. By offering a free trial, this would allow veterans to get familiar and increase comfort with the technology, and ultimately, to facilitate greater discussion and awareness of the option via the user's social network.

It is important that research continues on this topic as there were a large number of veterans and active duty service members who indicated that they did prefer HBTMH, and it is up to future researchers to understand how and why this group prefers the medium of HBTMH compared to other forms of mental health services since the numbers of veterans and active service members continue to increase, and unfortunately, as does the number of veterans in need of mental health services (Seal et al., 2009; Pickett et al., 2015).

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Table 1

Demographic Characteristics

Characteristic			*n* = 423
Age		Socio-Economic Status	
Gender		Lower Class	21.50%
Male	70.40%	Middle Class	74.70%
Female	29.30%	Upper Class	2.60%
Other	0.20%	Household Income	
Race/Ethnicity (Chose all that apply)		Under $20,000 per year	10.90%
Hispanic/Latino	8.70%	$20,000 to $39,999 per year	25.50%
Black/African American	11.80%	$40,000 to $59,999 per year	21.70%
White/Caucasian	84.20%	$60,000 to $79,999 per year	16.10%
Asian	6.60%	$80,000 to $99,999 per year	11.80%
Native American	3.10%	$100,000 or more per year	13.90%
Indian (Origins in India)	0.50%	Employment Status	
None of these	1.20%	Full-Time Job	65.50%
Highest Level of Education		Part-Time Job	11.60%
Some High School	0.20%	Same as Full-Time Job through More than One Part-Time Job	0.20%
High School Diploma	8.70%	Day Laborer	0.70%
GED	1.20%	Student with No Job	4.00%
Some College or Vocational School	28.40%	Unemployed and Looking for Work	5.20%
Vocational Degree	5.00%	Unemployed but not Looking for Work	3.10%
College Degree	43.30%	On Disability	3.30%
Master's Degree	11.80%	Seasonal Worker	0.70%
Doctoral Degree	1.20%	Retired	5.20%
Marital Status		Grew up in Rural Area	
Single, never married	30.30%	Yes	37.60%
Married	54.60%	No	62.20%
Separated	2.80%	Currently Resides in a Rural Area	
Divorced	10.20%	Yes	31.00%
Widowed	1.90%	No	68.80%

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Table 2

Military Service

Branch		Service in Military Conflict	
Army Active Duty	55.60%	Korean War	0.90%
Army Reserve	15.80%	Vietnam War	4.50%
Navy Active Duty	12.50%	Grenada	0.90%
Navy Reserve	2.80%	Panama	1.40%
Marine Active Duty	7.30%	Gulf War	10.60%
Marine Reserve	0.70%	Bosnia	2.80%
Air Force Active Duty	17.50%	Kosovo	3.30%
Air Force Reserve	4.30%	Afghanistan	27.90%
Coast Guard Active Duty	2.10%	Iraq	34.00%
Coast Guard Reserve	0.50%	Other	15.10%
Army National Guard	7.10%		
Air National Guard	1.40%		

Table 3

Comfort with Technology Scores Summed

Valid		Frequency	Percent	Valid Percent	Cumulative Percent
	0-9	18	4.20%	4.30%	4.50%
	10 -19	9	2.10%	2.10%	6.70%
	20-29	21	4.90%	5.10%	12.00%
	30-39	59	14.00%	14.70%	26.70%
	40-49	145	34.30%	36.10%	62.80%
	50+	149	35.20%	37.10%	100.00%
Total		401	94.80%	100.00%	
Missing		22	5.20%		
Total		423	100%		

Note: Lower scores indicate lower levels of comfort with technology and higher scores indicate higher levels of comfort with technology.

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Table 4

Regression Coefficients: Hypothesis 1

	B	*Standard Error*	*Wald*	*df*	*p*	Odds Ratio
Rurality	0.322	0.255	1.602	1	0.206	1.38
Gender	0.402	0.26	2.385	1	0.123	1.494
IATSMHS	-0.012	0.02	0.327	1	0.567	0.989
Age	0.007	0.01	0.523	1	0.469	1.007
Comfort with Technology	0.014	0.01	1.886	1	0.17	1.014
Constant	-0.758	0.768	0.975	1	0.323	0.469

Table 5

Regression Coefficients: Hypothesis 2

	B	*Standard Error*	*Wald*	*df*	*p*	Odds Ratio
Rurality	0.209	1.105	0.036	1	0.85	1.232
Gender	0.388	0.259	2.245	1	0.134	1.474
IATSMHS	-0.009	0.2	0.212	1	0.645	0.991
Rurality by Age	-0.009	0.2	0.179	1	0.673	0.991
Rurality by Comfort with Technology	0.01	0.019	0.268	1	0.604	1.01
Constant	0.5	0.579	0.007	1	0.932	1.051

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Table 6

Regression Coefficients: Hypothesis 3

		B	*Standard Error*	*Wald*	*df*	*p*	Odds Ratio
Rural							
	Gender	0.076	0.441	0.03	1	0.863	1.079
	IATSMHS	-0.02	0.034	0.331	1	0.565	0.981
	Financial, Transportation, & Stigma Barriers	0.04	0.042	0.921	1	0.337	1.041
	Constant	0.221	1.033	0.046	1	0.831	1.247
Non-Rural							
	Gender	0.436	0.299	2.124	1	0.145	1.547
	IATSMHS	0.005	0.024	0.045	1	0.831	1.005
	Financial, Transportation, & Stigma Barriers	0.013	0.029	0.219	1	0.64	1.013
	Constant	-0.502	0.721	0.485	1	0.486	0.605

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