

**Tipping the Scales: Improving Utilization of  
Mental Health Care in Military Veterans**

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### Abstract

Veterans frequently endorse symptoms of mental illness while not utilizing mental healthcare to its full extent. Previous studies have focused on barriers to veteran mental healthcare, but have lacked analysis of what leads to the barriers themselves, as well as enroll sampling frames both longitudinal and representative of the veteran population. This study contributes to the literature in all of these ways, through multivariate regression and mediation analysis of a sample of 1090 veterans randomly selected from a database of over one million US veterans. The sample was gathered in two waves, and consisted of a survey that asked a wide variety of questions.

Analyses revealed that PTSD symptoms (parameter estimate= 4.220,  $p < .0001$ ), good social support (parameter estimate= -1.344,  $p < .0001$ ), and perceptions “it’s up to me to handle my own problems” (parameter estimate= -.541,  $p < .0001$ ) were strong indicators of number of visits to a mental health professional in the next year. Mediation analysis showed PTSD to have a direct, positive effect ( $\beta = 5.679$ ,  $t = 9.702$ ,  $p < .0001$ ) on number of visits, but also an indirect, negative effect on number of visits when the “its up to me” barrier was used as a mediator. Additionally, social support was also shown to have a direct, negative effect ( $\beta = -.372$ ,  $t = -4.081$ ,  $p < .0001$ ) on number of visits, but an indirect, positive effect when the “its up to me” barrier was used as a mediator. These results suggest a dual pathway in both PTSD and social support and their effects on number of visits when the “it’s up to me” barrier is considered. Implications include clinicians and policy makers addressing the importance of belief systems and the role of social support to increase mental health utilization.

## **Tipping the Scales: Improving Utilization of Mental Health Care in Military Veterans**

### **Prevalence of Mental Health Problems in Military Veterans**

As part of their career, veterans of the United States military are often times exposed to potentially traumatizing events in combat. It is not surprising, then, that they are vulnerable to suffering from PTSD, depression, substance abuse, and their respective symptomology. This vulnerability to mental illness has been well documented, as research shows deployments and combat to be predictive of high rates of mental illness (Kok, Herrell, Thomas, & Hoge, 2012; Seal, Bertenthal, Miner, Sen, & Marmar, 2007; Hoge et al., 2004; Kang & Hyams, 2005; Lapierre, Schwegler, & Labauve, 2007; Milliken, Auchterlonie, & Hoge 2007).

Hoge and colleagues at Walter Reed Army Institute of Research studied a sample of three thousand members in four U.S. combat infantry units and reported that 17.1% of those deployed to Iraq and 11.2% of those deployed to Afghanistan met criteria for PTSD, while 14% met criteria for MDD (Hoge et al., 2004). The same research group, studying the issue of TBI, found that among US Army and Marine military personnel, 4.9% endorsed an injury with loss of consciousness and 10.3% an injury with altered mental status (Hoge et al., 2008). The RAND study, which involved a telephone survey of nearly two thousand Iraq and Afghanistan US veterans from 24 geographic areas, found 20% screened positive for PTSD or depression and 19% reported probable TBI during deployment (Tanielian & Jaycox, 2008).

In a large VA sample of veterans, it was found that 25% of the sample was given a mental health diagnosis by VA's across the country. Additionally, of the sample diagnosed with a mental health need, more than half (56%) were given at least 2 separate, distinct mental health

diagnoses (Seal, Bertenthal, Miner, Sen, & Marmar, 2007). In a follow up study, another study authored by a similar research group found 36.9% of veterans from 2002-2008 in a VA sample were given a mental health diagnosis, with 21.8% showing PTSD and 17.4% MDD (Seal, Metzler, Gima, Bertenthal, Maguen, Marmar, 2009).

### **Veterans' Rates of Accessing and Utilizing Mental Healthcare**

Considering the frequency of the appearance of mental illness diagnoses in veterans, one would think that veterans would be utilizing treatment options fully. This, however, does not seem to be true, as studies have shown veterans to be under accessing mental healthcare (Kim, Thomas, Wilk, Castro, & Hoge, 2010; Sareen et al., 2007; Hoge et al., 2004; Sudom, Zamorski, & Garber, 2012; Milliken et al., 2007). Kim et al. (2010), for example, found that while 44% of active duty soldiers reported at least one mental health problem 12 months after deployment, only 13% reported receiving treatment in the last month.

Additionally, even when veterans do access mental healthcare, they seem to not utilize in it for long enough periods. Hoge et al. (2014) found that among those who screened positive for PTSD and had pursued treatment, only 52% went enough times to be classified as receiving minimally adequate care. In a VA sample, Seal et al. (2010) found that only 9.5% of veterans with a recent diagnosis of PTSD utilized treatment fully (9 or more sessions in a 15 week period) within the first year of diagnosis. Also, Lu, Duckart, O'Malley, and Dobscha (2011) found that only 33% of an 852 veterans sample received minimally adequate treatment (nine visits within a year of screening positive for PTSD). It should be noted that being a women or enlisted (McKibben et al., 2013), as well as living in an urban location (Lu et al., 2011), have been identified as predictors of higher rates of treatment use.

It is critical to note that this is similar to the civilian population. One study found that among individuals from the general population in 2001-2003 who showed a mental disorder, only 33% accessed treatment (Kessler et al., 2005). Another study found an almost identical rate of accessing care in victims who suffered anxiety from Hurricane Katrina (Wang et al., 2007). Similar to veterans, mental healthcare in the general population is also not utilized fully, as one study showed 40% of people with a serious mental health illness were not receiving treatment. In the same study, 20% of patients who did access treatment stopped receiving it prematurely, with over 70% of those people refusing care after the first or second session (SAMHSA, 2012).

### **Efficacy of Treatment for Veterans**

Despite low access and utilization, treatment for mental health disorders has in fact been shown to be effective for veterans. In a survey of 1,659 active duty service members, Wong et al. (2013) found that, of the veterans who had used mental healthcare, 73% reported that treatment helped “a lot or some” while nobody rated it as “not at all” helpful. Additionally, since the VA system began to emphasize empirically tested treatment techniques, the literature as a whole has decidedly supported the effectiveness of treatment. For example, Eftekhari et al. (2013) studied the effect of prolonged exposure therapy on veterans, finding that of the 87.6% of 1931 veterans who pretreatment screened positive for PTSD, only 46.2% continued to show a PTSD diagnosis following treatment. Similarly, many other studies have found positive outcomes for the use of empirically supported treatment with veterans (Tuerk et al., 2011; Goodson, Lefkowitz, Helstrom, & Gawrysiak, 2013; Mott, Sutherland, Williams, Lanier, Ready, 2013; Alvarez et al., 2011).

### **Definitions of Barriers to Care for Current Study**

If treatment is effective and a large proportion of veterans need it, then why don't they get it? There have been many empirical studies attempting to answer this question. In particular, research has sought to identify robust 'barriers to care' in military and veteran populations. Before reviewing this research, one should note that there are different types of barriers. Corrigan, Druss, and Perlick (2014) describes two broad sets of barriers that may undermine care seeking and service participation:

- “(a) *Person-level barriers* are attitudes and behaviors that affect health decisions, including stigma leading to avoiding treatment or dropping out prematurely, poor mental health literacy, beliefs of treatment ineffectiveness, lack of a support network that promotes care seeking, and perceived cultural irrelevance of many treatments;
- (b) *Provider and system-level barriers* include lack of insurance, financial constraints, staff cultural incompetence, and workforce limitations.” (p.37-38)”

As such, the former set of barriers refer to what this study will term 'internal barriers to care', meaning perceptions an individual has that encourage or discourage him/her from obtaining mental health care. The latter set of barriers refer to what this study will term 'external barriers to care', which refer to obstacles in the environment (e.g., lack of transportation, cost of care, inability to get time off work) that encourage or discourage an individual from obtaining mental health care.

It is also conceptually important to recognize there are different types of treatment utilization; specifically, barriers to care can be divided into 2 categories: barriers to accessing care and barriers to continued utilization of care. Aday and Anderson (1974) remark on



accessing care simply being determined by who uses the health care system, and more importantly, who does not. On the other hand, the authors also reflect on the importance of continuing the use of care after accessing it, often referred to as utilization in studies. It is important to make the distinction because as Donabedian (1972) states “one must distinguish two components in use of service: ‘initiation’ and ‘continuation.’ This is because different factors influence each, though any one factor could influence both.” (p. 111). Correspondingly, this study categorizes extant research on veterans’ barriers to care into ‘barriers to accessing care’ and ‘barriers to utilizing care,’ noting within each whether these barriers are external or internal.

### **Barriers to Veterans Accessing Mental Healthcare**

Table 1 lists the studies used in reviewing the literature. There are many studies that have looked at barriers to veterans accessing care. In terms of internal barriers to care, negative attitude towards mental health treatment as a whole is one of the more documented barriers. In fact, Pietrzak, Johnson, Goldstein, Malley, and Southwick (2009) found negative attitude towards mental health to be the biggest predictor of barriers to care. Other studies have found similar results (Sudom et al., 2012; Kim, Britt, Klocko, Riviere, Adler, 2011; Brown, Creel, Engel, Herrell, Hoge, 2011). Being emotionally ready for treatment is also a seemingly well-accepted barrier, as some studies have shown items like “not being able to ask for help”, “not being able to admit to a problem” (Stecker, Fortney, Hamilton, Ajzen, 2007), “not being able to explain self” (Drapalski, Milford, Goldberg, Brown, Dixon, 2008), and just overall not being emotionally ready (Stecker, Shiner, Watts, Jones, Conner, 2013) to be indicators of barriers to care. Somewhat similarly, other studies have shown general concern about treatment to be a potential barrier in veterans accessing mental healthcare (Stecker et al., 2013; Zinzow et al.,

2013). Another study by Elbogen et al. (2013) found that veterans did not access care because they believed that they could handle problems on their own.

The other potential internal barrier to accessing care that has been well studied is perceived stigma. It is important to note that, despite the attention stigma receives with respect to healthcare barriers, empirical studies of veterans have yielded mixed results. Some studies have shown stigma to be a possibly major barrier to mental health care in veterans (Kim et al., 2010; Zinzow et al., 2013). Along similar lines, veterans have also reported career concerns (Zinzow et al., 2013) and lesser perceived unit support (Pietrzak et al., 2010) to be perceived barriers to care. Other studies have found stigma to be a barrier as well, but more so in the veterans who should be seeking treatment (Hoge et al., 2004). On the other hand, some other studies have shown stigma to be only a small to moderate perceived barrier (Stecker et al., 2013; Oiumette et al., 2011). To complicate matters even further, a study done by Sudom et al. (2012) found stigma to have no relationship with the intent to access treatment. To what effect stigma has on affecting veterans' desire to access care, then, is somewhat uncertain.

While internal barriers seem to play a larger role, there are still several external barriers that are often times identified. Factors related to location are one of the more studied ones, as living in an isolated location (Sudom et al., 2012), geographical distance (McCarthy et al., 2007), and transportation (Washington, Bean-Mayberry, Riopelle, & Yano, 2011) have all been shown to be perceived barriers. Additionally, barriers related to a lack of awareness of resources have also been a reason for not accessing care, such as not being service connected (McCarthy et al., 2007) and not knowing where to go (Hamilton, Poza, Hines & Washington, 2012). Unfortunately, practical concerns, such as wait time, also are a seemingly large preventer of care (Zinzow et al., 2013; Owens, Herrera, Whitesell, 2009; Hamilton et al., 2012). Affordability

(Lehavot, Der-Martirosian, Simpson, Sadler, Washington, 2013), especially in younger veterans (Washington et al., 2011) also may be a barrier to care, though this is probably more likely true in a non active duty sample. Finally, conflicts with work were regarded as a barrier in one study (Washington et al., 2011).

It should be noted that these are not unique to veterans, as these results are similar to the general population. Among the people who did identify a need for treatment, the desire to handle problems on their own has been shown to be a reason for not accessing or utilizing care in the general population (Mojtabai et al., 2011; Kessler et al., 2001). In another study that interviewed patients who had already dropped out of mental healthcare, perceiving treatment to be ineffective or embarrassing was significant in predicting dropouts (Edlund et al., 2002). Additionally, stigma has been found to have a small to medium sized negative effect on determining whether to seek treatment (Clement et al., 2014). Corrigan et al. (2014) also support stigma as a major barrier to mental health treatment, having an effect on both the individual and system as a whole.

### **Barriers to Veterans Utilizing Mental Healthcare**

There are far fewer studies detailing barriers to veterans utilizing in treatment than accessing care (please compare left and right columns of Table 1). Most identified barriers to treatment utilization are internal. General issues with the procedure of treatment seem to be a common cause of dropout, as trust issues with the mental health professional (Hoerster et al., 2012; Hoge et al., 2014) and concerns about confidentiality (Hoge et al., 2014) have been identified as factors related to a lack of engagement. Though the effects of perceived stigma were somewhat unclear in barriers to veterans accessing care, this does not seem to be the case with utilization of care, as multiple studies have found it to be a major factor in a veteran's choice to

leave treatment (Hoerster et al., 2012; Hoge et al., 2014). Finally, concerns over the effectiveness of treatment and believing that they could handle their problems on their own were also shown to be barriers to engagement in care (Hoge et al., 2014).

The amount of external barriers found to veterans utilizing care is small. Hoge et al. (2014) found two such barriers: work interference and not having enough time with a mental health professional. When considering that veterans will have already accessed care, this lack of external barriers makes sense as factors like distance have already been overcome.

Once again, these barriers are not unique to veterans. One study of non-veterans found that a belief that their problems could be handled independently to be the greatest reason for dropping out of treatment (Kessler et al., 2001; Mojtabai et al., 2011). Another study found that embarrassment attached to seeing a mental health provider as well as treatment ineffectiveness to be the most commonly cited causes of dropout for civilians (Edlund et al., 2002).

### **Limitations in Current Research**

While much research has been conducted on barriers to veteran mental health as a whole, there are still methodological limitations in the current literature. First, while many studies have looked at the barriers to veterans accessing mental health care, there does not seem to be as much research on the barriers to utilizing in mental health care. Second, the majority of studies on barriers to care in veteran populations have been cross-sectional rather than longitudinal, thus restricting causal interpretation of the effect of these barriers on use of mental health care. Third, to our knowledge, none of the existing studies on barriers to accessing or utilizing care have enrolled samples representative of the veteran population; for example, some samples look at only one branch of the military, while others may only exclusively use reservist or active duty

soldiers. Fourth, little work has focused on what factors are associated with barriers themselves; specifically, other variables, such as mental health conditions or demographics, may mediate or moderate perceived barriers. Fifth, the role of social support has received little attention in this literature, and this variable may both alleviate symptoms for veterans as well as affect their perceived need for care.

### **Conceptual Model for Study**

Moreover, though studies have showed correlations for the prevalence of barriers to veterans accessing mental healthcare, no study to our knowledge has provided any kind of conceptual framework which would help clearly define the importance of an individual barrier or facilitator, and better explain veterans' treatment decision-making process. This study will use the framework of The Health Belief Model (HBM), a model created in the 1950's that details the factors that go into whether a patient decides to engage in a health promoting behavior (Rosenstock, Stretcher, & Becker, 1988). Seen in Figure 1, the HBM takes into many factors in determining the probability of utilizing in healthy behaviors. First, a patient's perceived susceptibility and perceived seriousness are taken into account to determine a patient's perceived threat. Additionally, cues to action, defined as ways to activate readiness and includes things like reminders from others, are factored in when determining perceived threat. Next, perceived benefits minus perceived barriers are measured. Furthermore, modifying variables, such as demographics and personality, are taken into account when determining both perceived susceptibility, perceived benefits, and perceived barriers. Finally, self-efficacy was added to the model in 1988, defined as believing in one's own abilities to reach ones goals (Rosenstock et al., 1988), and is the last variable in determining the likelihood of one engaging in a healthy activity.

HBM has been researched and tested extensively across many decades, and though some limitations have been noted (Carpenter, 2010), studies have supported it (Janz & Becker, 1984; Rosenstock et al., 1988; Carpenter, 2010). Taken together, both the empirical research listed in Table 1 regarding barriers to care in veterans and the conceptual model of HBM illustrated in Figure 1 point to the need to focus on a specific barrier to care: veterans' perceived need for care and belief they do not need help. As such, the current study aims to better understand what factors relate to perceived need for care in veterans and to investigate more systematically than in previous research how this particular variable may affect veterans' later utilization of mental health care. Similarly, given that the HBM includes cues to action, which may come from family members or friends of the patient, this study will also examine how (or whether) social support plays a role in veterans' use of mental health care.

### **Aims and Hypotheses of Current Study**

This current study will contribute to the literature by using a conceptual model and addressing many of the methodological limitations in research previously mentioned. This study will investigate what correlates may exist that might explain the perceived barriers veterans face. Specifically, a path analysis model will be created to clearly show how certain variables correlate with significant barriers. Importantly, this path analysis will use longitudinal data, displaying the correlations over an extended period of time. This will be crucial in better understanding exactly how perceived barriers emerge.

Furthermore, this study will observe whether barriers actually affect treatment in the long run. It is possible that barriers may affect treatment initially, but their treatment effect may disappear once the patient becomes engaged. Alternatively, some barriers may emerge as

significant later on in treatment as well. This study has the advantage of using longitudinal data to better clarify perceived barriers effects on treatment efficacy. The study thus makes the following main three hypotheses:

1. Based on past research and the HBM, we hypothesize that veterans with greater PTSD symptoms (i.e., in greater need of treatment) will be significantly more likely to utilize treatment in the next year.
2. Conversely, based on the HBM and existing research, we hypothesize that lack of *perceived* need for treatment (i.e., think they need to solve problems on their own) will predict reduced treatment utilization in the next year.
3. Based on HBM, we hypothesize that veterans who perceive greater social support will endorse fewer barriers to utilizing care and demonstrate higher levels of treatment utilization.

By testing these hypotheses, this study will contribute to the current literature by being the first to our knowledge to provide longitudinal data on barriers to veterans' mental healthcare.

Additionally, this data will overcome two other limitations by selecting for veterans with mental health disorders and being representative of the veteran population.

## **Methods**

### **Study design and participants**

Conducted as part of a US National Institute of Mental Health funded grant to develop risk assessment tools for veterans and drawn by the US Department of Veterans Affairs (VA) Environmental Epidemiological Service in May 2009, the study sample was taken from the

National Post-Deployment Adjustment Study (Elbogen et al., 2013). The sample randomly selects 3000 veterans from a database of over one million US military service members who: 1) served after September 11, 2001 in Operation Iraqi Freedom (OIF) or Operation Enduring Freedom (OEF) and 2) either had left from active duty service or were in the Reserves/National Guard. The sample was stratified by gender, and female veterans were oversampled for the purposes of adequate representation. Specifically, 1000 female veterans were randomly selected from all female OEF/OIF veterans and 2000 male veterans were selected from all male OEF/OIF veterans.

After Institutional Review Board approval was obtained, veterans were surveyed using Dillman survey methodology (Dillman, Smyth, & Christian, 2009), utilizing multiple and varied contacts to maximize response rate. This study implemented two waves of data collection one-year apart with parallel procedures, with participants being reimbursed after completing each wave. At Wave 1, participants were initially sent an introductory letter about the upcoming survey. Four days later, they were sent an invitation by mail, which used commemorative postage stamps as an incentive and instructions on how to complete a 35-minute confidential web-based survey. Sixteen days after the invitations were mailed, potential participants were sent postcards thanking them for completing the survey or reminding them to do so. Two weeks after the postcard mailing, those who had neglected to take the survey received a paper version with a postage-paid return envelope. Two months after the print survey had been mailed, a final letter was sent encouraging participation and stating that the survey would close the following week.

Wave 1 was conducted July 2009 to April 2010, yielding a 47% response rate and 56% cooperation rate, with 'response rate' referring to the number of surveys completed divided by the number of surveys sent out whereas the 'cooperation rate' refers to the number of survey



completed divided by the number of surveys received by participants (i.e., not returned by mail) (Dillman et al., 2009). These achieved rates are comparable to, or greater than, that achieved in other national surveys of veterans in the US (Vogt et al., 2011; Tanielian & Jaycox, 2008; Beckham et al., 2008). Details can be found elsewhere (Elbogen et al., 2013) regarding generalizability of the sample of 1388 veterans whom completed Wave 1 of the NPDAS, detailing the proportion of veterans using services at VA and non-VA facilities and showing little difference on age, gender, and geographic region between responders vs. non-responders. Additionally, there was little difference on available demographic, military, and clinical variables between those who took the survey after the first invitation vs. after subsequent reminders and between paper vs. web survey completers.

At Wave 2, participants were queried exactly one year after completing the Wave 1 survey over the period from July 2010 to April 2011. At conclusion, N=1090 veterans completed Wave 2 yielding a 79% retention rate, with the median time lapse between completion of wave 1 and wave 2 being 12.8 months. Of the entire sample, 75% had completed both waves between 12-14 months apart, while 90% of the sample completed waves 1 and 2 between 11-15 months apart. Very few were outside this range: less than 1% took the two surveys 10-11 months apart, 8% between 15-19 months apart, and less than 1% between 19-20 months apart.

In terms of retention, multivariate analyses showed younger age and lower income accounted for 4% of the attrition-related variance attrition at Wave 2; other Wave 1 variables specified below- including PTSD and violence - were non-significant. It's likely that the residential stability of younger and less-financially able participants as a subgroup affected re-interview efforts. Aside from the latter two measures, attrition analyses did not show any substantial bias associated with primary study outcomes. Regarding Wave 2 participation, we

would emphasize that no other national studies of the OEF/OIF cohort have attained equivalent rates of retention.

The military branch breakdown of the final sample (55.21% Army, 19.92% Air Force, 14.88% Navy, 9.64% Marines, and 0.35% Coast Guard) approximated the actual composition of the US Armed Forces and approximated the composition of the armed forces (48% Army, 22% Air Force, 17% Navy, 11% Marines, and 2% Coast Guard) at the time of the survey. The sample consisted of 27% participants of color and 48% National Guard/Reserves participants, similar to 30% ethnically diverse and 37% National Guard/Reserves in the military at the time (Defense Equal Opportunity Management Institute, 2010). The majority of respondents (82%) had been deployed to Iraq or Afghanistan with a range in time from last deployment of between 1 to 8 years with a median time of 4 years. The remainder of the sample consisted of OIF/OEF veterans that were not stationed in either of the two combat theatres. Geographically, the final sample accurately corresponded to known military demographics with the 50 US states, Washington DC, and 4 territories represented in close approximation to reported military statistics (Defense Equal Opportunity Management Institute, 2010). To our knowledge, the National Post-Deployment Adjustment Study enrolled one of the most representative samples of US Iraq and Afghanistan Veterans to date.

### **Measures**

At Wave 1, data attained included age, gender, race/ethnicity, marital status, employment, education, military branch, number/length/dates of deployments, and military rank. Additionally, service connection disabilities, or injuries that occurred over military service that normally warrant compensation and treatment, were also recorded.

Combat exposure was measured by a subscale within the Deployment Risk and Resilience Inventory (DRRI) (King, King, & Vogt, 2003). The Quality of Life Index was used to measure social support (“the emotional support you get from family/friends”) as measured using the Psychometric Assessment of the Quality of Life Index (1=moderately or very satisfied; 0=other) (Ferrans & Powers, 1992).

Probable PTSD was measured with the Davidson Trauma Scale (DTS) (Davidson et al., 1997) which uses rating past-week frequency and severity of DSM-IV PTSD symptoms of re-experiencing, avoidance/numbing, and hyperarousal related to a specific trauma. This study utilized a DTS cut-off score of 48, which has demonstrated .82 sensitivity, .94 specificity, and .87 diagnostic efficiency with a Structured Clinical Interview of Diagnosis (SCID) diagnosis of PTSD in Iraq and Afghanistan War Veterans (McDonald, Beckham, Morey, & Calhoun, 2009). Probable major depression was assessed with the Patient Health Questionnaire (PHQ9), a cut-off score over 10 indicating sensitivity and specificity of 88% (Kroenke, Spitzer, & Williams, 2001). An Alcohol Use Disorder Identification Test (AUDIT) cut-off of 8 was used to identify probable alcohol misuse (Bradley & Bush, 1998).

For perceived need for care, participants were asked: “Veterans may face obstacles getting or using mental health services for a number of reasons. Please rate how much you agree or disagree with each statement as it applies to you” and then prompted to rate perceptions based on empirical research in military personnel (Hoge et al., 2004) such as “It’s up to me to work out my own problems” on a 4 point Likert Scale (1=Strongly Disagree, 2=Somewhat Disagree, 3=Somewhat Agree; 4=Strongly Agree).

At Wave 2, we attained mental health utilization data on past year visits to a psychiatrist, psychologist, counselor, or other mental health professional.

### **Statistical analyses**

Analyses were weighted by gender to adjust for oversampling. Women represented 33% of the NPDAS sample in contrast to 15.6% (approximately one-seventh) of the military based on September 2009 Defense Manpower Data Center figures (Defense Equal Opportunity Management Institute, 2010). Data were weighted to reflect the latter proportion, adjusting the sampled  $N=1090$  to a weight-adjusted  $n=866$ . Chi-square analyses were used to analyze categorical data for differences in diagnosis, treatment use, and perceptions about treatment (which for bivariate analyses purposes were dichotomized at 0=disagree; 1=agree).

To examine associations between treatment utilization, psychiatric symptoms, and perceived problems with mental health treatment, this study used multiple logistic regressions in which variables were included if they were statistically significant ( $p<.05$ ). For multivariable analyses, symptoms were continuous (DTS, PHQ9, AUDIT) and perceptions about treatment were also continuous (per Likert scale described above) in order to retain variability. The magnitude of effect such as  $OR=1.01$  would be interpreted to mean that the relative odds of a veteran having accessed treatment in the past year is 1% higher based on a one-point increase on the mentioned measure.

Mediation analysis was conducted using SAS PROCESS MACRO developed by Hayes (2012). Statistics frequently looks at the direct effect one variable X has on variable Y. However, often times phenomenon are more complicated than this because of the existence of multiple casual variables and thus multiple casual pathways. Mediation analysis explores this concept by testing for an indirect effect that some variable may have on another variable, namely that one variable is influencing another through a third variable. For example, while variable X may have a direct effect on variable Y, variable X may also an indirect effect on variable Y by influencing

a mediator variable M that affects variable Y (Hayes & Scharkow, 2013). In addition, this procedure provides bootstrapping on the sample, a resampling method that relies on random sampling with replacement to increase validity.

## Results

Table 2 shows the descriptive data of the sample used in this study. Of the total sample, 84.05% (665) were male with 26.37% (208) identifying themselves as ethnically diverse and 81.86% (648) receiving an education past high school. About half of the sample reported high combat experience, with 34.17% reporting a service connected disability and 70.08% (554) showing good social support. About a quarter of the sample said it had been a year since deployment, with 26.46% (209) indicated they had completed multiple deployments when in the military. About half of the sample was reservists, while 18.68% (148) were officers. Clinically, 23.75% (188) met criteria for alcohol misuse and 17.88% (141) met the standards for PTSD. Finally, when veterans were asked whether they think its up to them to handle their problems on their own, 21.95% strongly agreed (170), 20.58% (159) somewhat agreed, 40.92% (316) somewhat disagreed, and 16.55% (128) strongly disagreed. Of those that accessed care (n=253), the mean number of visits was 9 with a standard deviation of 9. The complete data for veterans utilizing mental healthcare can be seen in Figure 2.

Correlational data between the internal barrier “it’s up to me to work out my own problems” and various factors are listed Table 3. Clinically, PTSD symptoms and alcohol misuse were significantly positively correlated with this barrier, indicating that as these symptoms increase, so to does the likelihood of a veteran believing that their problems are their own to handle. High combat experience and being an officer were also both positively correlated,

though being an officer was not particularly impactful as the correlation coefficient was low. Finally, good social support was the only factor to have a significantly negative correlation, meaning that, as individuals had better social support, they were more likely to indicate that it wasn't necessary for them to deal with their problems on their own.

Correspondingly, shown in Table 4, multivariate analysis of veterans believing they need to handle their problems on their own with various factors was conducted. PTSD symptoms was a strong indicator of this barrier, as was alcohol misuse. In terms of strength of coefficients, these two factors were both particularly strong indicators of the barrier being studied. Additionally, being white and being an officer were also positively associated with veterans handling problems on their own. Likewise, undergoing high combat experience was an indicator of this barrier, though it had the lowest strength of the significant barriers. Finally, having a service connection and good social support were negative indicators of veterans' belief in handling their problems singlehandedly, indicating that those without a service connection or good social support were more likely to report this belief.

Table 5 reports correlational data between the same factors and veterans' number of visits to a mental health professional. PTSD symptoms and alcohol misuse were both significantly positively correlated with visits, indicating that worse clinical PTSD or alcohol misuse symptoms were associated with more visits. PTSD symptoms was the most strongly correlated factor with visits. Additionally, over a year since deployments and multiple deployments were both positively correlated with number of visits, though neither value was particularly strong. High combat experience and service connection, however, proved to have a stronger, positive correlation, meaning that having high combat experience and a service connection was associated with an increase in visits to a mental health professional. On the other hand, gender

and age were negatively associated with visits, implying that visits decrease with an increase in age and in the male gender. Finally, good social support was negatively correlated with visits, suggesting that with good social support comes less mental health visits.

Similarly, Table 6 shows a multivariate analysis of a number of factors and their ability to predict the number of visits to a mental health professional. PTSD symptoms was the strongest predictor of visits to mental health professionals. Service connection was also significantly positively associated with visits to mental health professionals. Contrastingly, good social support was negatively significant to visits. Relevant to this study, the “it’s up to me to work out my own problems” barrier was a negative predictor of visits to a mental health professional.

Finally, a mediation analysis was run to analyze the connection between the “it’s up to me” barrier and social support with PTSD as a predictor of the number of visits. Seen in Figure 3, PTSD showed a positive direct effect on the number of visits ( $\beta=5.679$ ,  $t=9.702$ ,  $p<.001$ ), with an increase in PTSD symptomology leading to an increase in visits. In regards to the association between the “it’s up to me” barrier and this previously described connection, PTSD also showed a positive connection ( $\beta=.354$ ,  $t=4.126$ ,  $p<.0001$ ) with the “it’s up to me barrier,” meaning that an increase in PTSD showed an increase in the frequency at which veterans declared themselves as not needing treatment since they believed they could handle it on their own. Finally, there was a negative associations between the “it’s up to me” barrier and utilizing care longitudinally ( $\beta=-.623$ ,  $t=2.848$ ,  $p=.0045$ ), indicating that with an increase in the “it’s up to me to work out my own problems” barrier there was a decrease in the number of visits. Looked at holistically, this means that while PTSD directly increase the number of visits to a mental health professional, an increase in PTSD symptoms also indirectly leads to a decrease in the number of visits through more veterans dealing with the “its up to me” barrier.

PTSD and social support were inversely corrected ( $\beta = -1.873$ ,  $t = 9.461$ ,  $p < .0001$ ), with the latter predicting fewer visits ( $\beta = -.372$ ,  $t = 4.081$ ,  $p < .0001$ ). In this way, it appears veterans with greater social support may have less of a need for treatment. Conversely, veterans with more social support were less likely to endorse “it’s up to me to work out my own problems” ( $\beta = -.0491$ ,  $t = 3.677$ ,  $p = .0002$ ), which, as already mentioned, was found itself to relate to less treatment ( $\beta = -.623$ ,  $t = 2.848$ ,  $p = .0045$ ). In other words, better social support directly lessened number of visits, but indirectly increased visits by increasing perceived need.

## **Discussion**

In sum, this study found data to support some of our hypotheses. First, as predicted by HBM (Rosenstock, Stretcher, & Becker 1988) and previous literature (Hoge et al., 2014), this study found veterans who had greater need for treatment (e.g., PTSD symptoms) were more likely to utilize treatment. Second, this study identified that a lack of perceived need for treatment, shown to be a key barrier to accessing care in veterans (Elbogen et al., 2013), actually related to lower treatment use in the future. To our knowledge, this is the first study to find this effect. Third, this study found a complex relationship between social support and treatment use in veterans. Specifically, social support had a direct negative association with future treatment use but also had a positive indirect association with treatment use via reducing veterans’ beliefs they could handle problems on their own.

## **Clinical Implications of the Dual Role of PTSD**

This study has multiple implications for the role of PTSD on mental health treatment use in veterans. On the one hand, greater PTSD symptoms led to actual greater need and therefore



directly more visits. This is to be expected as the symptoms of PTSD are debilitating and impair daily social and occupational functioning. On the other hand, greater PTSD symptoms were associated with lower perceived need (i.e., greater likelihood a veteran thought they could handle their problems on their own) and therefore indirectly reduced visits. This would suggest that PTSD might have a dual path on treatment use by affecting a veterans' outward symptomology and belief system differently.

While this study does not explore the exact casual nature of this pathway, one can certainly make conjectures as to the why PTSD has such different effects. PTSD is a complex disorder, affecting individuals differently. One of the symptoms of PTSD is emotional numbness, which can make individuals feel isolated from society. It's possible that veterans who feel this symptom more significantly may react to this isolation from support by endorsing the "it's up to me" barrier. In other words, if a veteran feels more secluded from the rest of society, they may take more upon themselves to handle their own problems. Additionally, many studies (Hoerster et al., 2012; Hoge et al., 2014; Hoge et al., 2004; Kim et al., 2010; Stecker et al., 2007) have found a correlation between PTSD and stigma, and stigma's negative effect on treatment use. It's possible that stigma and perceived need may interact, in that negative stigma convinces veterans that they do not have anywhere to go with their issues. Finally, the culture of the military can be thought of as fostering toughness and not seeming weak; as a result, veterans may be less willing to acknowledge need for help. The results of this study point to these conjectures and at least show the effects of PTSD on treatment use to be more complicated than what clinicians may currently be aware of.

Another set of implications of these findings concerns provision of mental health care for veterans. Clinicians may be concerned with how to get their veterans with PTSD or other mental

health disorders to return to care. The current findings attest to the need for clinicians to address patients' belief systems, preferably in the very first meeting. This could potentially help ensure that veterans do not drop out of treatment because they do not believe they need help. Focusing on this barrier, in addition to other internal barriers such as stigma, could significantly assist veterans in overcoming whatever obstacles may prevent them from treatment and increase treatment use rates.

### **Clinical Implications of Social Support**

Greater social support was associated with less need for services and therefore had a direct, negative effect on number of visits. However, greater social support also led to a lower endorsement of the "it's up to me" barrier, and therefore indirectly increased visits. Similar to the pathway with PTSD, this suggests that social support also has multiple effects on the number of visits a veteran has to a mental health professional.

In terms of social support leading to less need for services, it's possible that social support may serve as a substitute for treatment or as a proxy for veterans who simply were functioning better and did not need additional mental health attention. It's also entirely possible that those who have stronger social support are consequently mentally healthier and actually don't need care as frequently. Contrastingly, having a greater social support could lead to others encouraging you to seek out help, thus increasing perceived need and explaining the indirect increase in visits. Somewhat similarly, having a greater social support network by its very nature could make one understand the value of leaning on others for support, thus decreasing the notion that one has to handle their issues on their own. Both of these latter two explanations

would be in line with the Health Belief Model, which has a “cues to action” factor that includes items like social support.

In terms of implications, this means that efforts should be made to incorporate social support into mental health care of veterans. Once in the door, the findings do suggest that clinicians should be more aware of the role social support can play in getting veterans to treatment, and be more candid in talking about its importance. Similar to with PTSD, this should also be a subject that is broached upon in the first session. In this way, a clinician will be able to better assist with equipping their veteran patient to harness their social support, thus leading them back to treatment.

### **Policy Implications for Tipping the Scales**

The results of this study may suggest that research with veteran mental health use should possibly shift to other focuses, with emphasis on issues in addition to stigma. Put differently, it is important that policymakers do not solely pay attention to whether a veteran feels embarrassed by mental illness, but also aim to encompass more of the cognitive schema within veterans’ decision making to use mental healthcare, especially in accordance with HBM. The current data points to two such schemas to focus on in veterans’ perceived need and the impact of social support.

This study also has implications for policy makers within the veteran mental health community as well. For one, policy makers should consider belief systems and social support to be important to policy. While fighting against other issues like stigma is important, policy makers also should attempt to convince veterans that it’s OK if they are suffering from mental illness and that they do not need to handle it on their own. Additionally, in line with the findings

relating social support to perceived need, another focus, especially within the active duty population, should be on encouraging veterans to adopt an attitude that helps convince other veterans to use clinical care. In sum, the findings imply that military policy makers would do well to not only address stigma as they currently do, but also add campaigns to specifically focus on veterans' belief systems and engaging veteran's support network in a way that facilitates veterans seeking the help they may need.

### **Limitations of Study**

While this study has multiple significant findings and implications, it is not without limitations. First, the effect sizes for the mediation analysis were not always large, and never large enough to come close to fully mediating the direct effect between PTSD and number of visits. For this reason, one should not look at these results and believe that the indirect effects found lessen the importance of the direct effect between PTSD and number of visits. Rather, they are meant to supplement that already well-established direct effect.

Next, other variables related to number of visits were not extensively studied in this paper. Gender and service connection were significant on the multivariate analysis in Table 6, while age and the combat factors were also significantly correlated in Table 5. None of these variables were thoroughly examined in the way that social support and the "it's up to me" barrier were. Additionally, the multivariate analysis in Table 4 shows other factors related to the "it's up to me" barrier, such as being an officer, and these were not explored as well.

Finally, the results of these findings are not necessarily casual in nature. For example, while greater social support was found to directly lead to less treatment usage, it is also possible

that those who use treatment less simply have greater social support. This study cannot confirm the casual nature of relationships, only that they do exist.

### **Future Directions and Conclusion**

One of the major findings in this study was the dual, contrasting effect of PTSD on number of mental health visits. While this study found these results and proposed some possible causes for this duality, there are other additional questions that need to be answered. For example, whether veterans simultaneously endorse both of PTSD's effects on treatment use, or just one effect at a time, is not known. On a similar note, future research could also explore whether PTSD affects other belief systems (e.g., therapeutic alliance, locus of control), not just how it relates to treatment use.

As previously mentioned, other variables not extensively investigated were found to be related to number of visits. Future research should possible examine these in more detail, in an attempt to better understand all of the factors that relate to treatment use and perceived need. The same applies to the variables that were not heavily analyzed and related to the "it's up to me" barrier, such as being an officer.

While this study conducted a literature review on veterans' both accessing and utilizing treatment, it did not differentiate between veterans who utilize treatment for an extended period of time and become engaged in the process, and those that do the same thing but do not benefit from it and therefore are never fully engaged in it. To clarify, it is quite possible that a veteran may access treatment, go to as many treatment sessions necessary to be classified as utilizing treatment fully, and not ever becoming truly engaged in the treatment. Perhaps a veteran only goes to treatment multiple times because his or her spouse urges or compels them, or maybe the

veteran is mandated to go a certain amount of times by higher authorities. The point being that it is entirely possible that a veteran can utilize mental healthcare without ever buying into the treatment and becoming fully engaged, and the barriers therefore may differ in type and effect. Future research could differentiate between accessing, utilizing, and engaging in care to better understand how specific barriers interact.

This study presented new ideas on the effect of PTSD on treatment use, through the mediation of social support and perceived need. These results have widespread implications that affect both clinical treatment and policy making. Ultimately, to improve the mental healthcare of veterans, research should continue to empirically investigate barriers to care in order to tip the scales and ensure veteran utilize needed mental health treatment.

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Table 1

Articles that reference barriers to veterans accessing and utilizing in mental health care			
Articles Examining <u>Accessing</u> Treatment	Barriers Found	Articles Examining <u>Utilizing</u> Treatment	Barriers Found
Brown et al., 2011	Negative perception towards mental health	Hoerster et al., 2012	Stigma and trust issues with mental health.
Drapalski et al., 2008	Personal issues, which included things like personal crisis, not being able to explain self, and forgetting when appointment was.	Hoge et al., 2014	Feeling that they could handle problems on their own, work interference, not enough time with the health professional, stigma, treatment ineffectiveness, worries about confidentiality, not being comfortable with the therapist.
Elbogen et al., 2013	Belief in being able to handle problems by themselves and not believing in medication		
Hamilton et al., 2012	Lack of knowledge on where to receive treatment, limited access to care, and lack of coordination across service in homeless women		
Hoge et al., 2004	Perceived stigma, more prominent among those who needed treatment		
Kim et al., 2010	Stigma in active duty soldiers		
Kim et al., 2011	Negative attitude toward treatment		
Lehavot et al., 2013	Affordability/not having health coverage in women veterans		
McCarthy et al., 2007	Not having a service connection and geographical distance.		
Ouimette et al., 2011	Stigma to a moderate degree		



Owens et al., 2009	Long waiting periods and bad prior experiences in female veterans	
Pietrzak et al., 2009	Negative beliefs about mental health care, decreased perception of unit support correlated with an increase in stigma perception and barriers to care as a whole	
Stecker et al., 2007	Stigma, pride, not being able to ask for help, and not being able to admit to a problem	
Stecker et al., 2013	Four types of barriers were found, from most common to least common they were: concerns about treatment, emotional readiness for treatment, stigma, and logistical issues	
Sudom, et al., 2012	Isolated location and a higher willingness to seek treatment was associated with perceives structural barriers	
Washington et al., 2011	Unaffordable healthcare, work conflicts, and transportation difficulties	
Zinzow et al., 2013	Stigma, treatment concerns, leadership issues, and practical barriers	

**Table 2**

Sample Description

	Weighted % ( <i>n</i> ) or <i>median</i>
<i>Sample Characteristics</i>	
<b>Demographics</b>	
Male gender	84.05% (665)
Female gender	15.95% (126)
Race non-white	26.37% (208)
Education beyond high school	81.86% (648)
Reserves	49.30% (390)
Officer	18.68% (148)
<b>Clinical</b>	
Alcohol Misuse (AUDIT>7)	23.75% (188)
PTSD (DTS>48)	17.88% (141)
<b>Social</b>	
Good Social Support	70.08% (554)
Service Connected Disability	34.17% (268)
<b>Combat</b>	
High Combat Experience	49.28% (390)
Over a Year Since Deployment	25.63% (203)
Multiple Deployments	26.46% (209)
<b>“It’s up to me to work out my own problems”</b>	
• Strongly Agree	21.95% (170)
• Somewhat Agree	20.58% (159)
• Somewhat Disagree	40.92% (316)
• Strongly Disagree	16.55% (128)

**Table 3**

Bivariate Correlations with “It’s up to me to work out my own problems”

	Correlation Coefficient	p-values
<i>Factors</i>		
<b>Demographics</b>		
Gender (0=female/1=male)	.038	.2280
White	.060	.0628
Reserves	-.028	.3840
Officer	.066	.0410*
Age	-.050	.1182
<b>Clinical</b>		
PTSD (DTS>48)	.169	<.0001*
Alcohol Misuse (AUDIT>7)	.134	<.0001*
<b>Social</b>		
Good Social Support	-.120	.0001*
Service Connection	-.045	.1586
<b>Combat</b>		
High Combat Experience	.120	.0002*
Over a Year Since Deployment	.027	.3921
Multiple Deployments	.029	.3711

\* denotes significance at .05 level

**Table 4**

Multivariate Analysis of “It’s up to me to work out my own problems” by Factors

<i>Variable</i>	Parameter Estimate		
	(SE)	t-value	p-value
<b>Demographics</b>			
Gender (0=female/1=male)	.054 (.090)	.06	.5506
White	.147 (.074)	1.98	.0476*
Reserves	-.046 (.068)	-.68	.4960
Officer	.261 (.090)	2.90	.0038*
Age	-.001 (.003)	-.17	.8679
<b>Clinical</b>			
PTSD (DTS>48)	.360 (.093)	3.87	.0001*
Alcohol Misuse (AUDIT>7)	.221 (.078)	2.83	.0047*
<b>Social</b>			
Good Social Support	-.197 (.073)	-2.70	.0071*
Service Connection	-.196 (.073)	-2.69	.0074*
<b>Combat</b>			
High Combat Experience	.146 (.074)	1.97	.0488*
Over a Year Since Deployment	-.078 (.094)	-.83	.4083
Multiple Deployments	.026 (.089)	.29	.7681

F-value=5.53, *df*=14, *p*<.0001, R<sup>2</sup>=.07

\* denotes significance at .05 level

**Table 5**

Bivariate Correlations with Number of Visits by Factors

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	Correlation Coefficient	p-values
<i>Factors</i>		
<b>Demographics</b>		
Gender (0=female/1=male)	-.094	.0031*
White	.001	.9749
Reserves	-.014	.6669
Officer	-.062	.0504
Age	-.080	.0118*
<b>Clinical</b>		
PTSD (DTS>48)	.309	<.0001*
Alcohol Misuse (AUDIT>7)	.088	.0057*
<b>Social</b>		
Good Social Support	-.165	<.0001*
Service Connection	.160	<.0001*
<b>Combat</b>		
High Combat Experience	.124	<.0001*
Over a Year Since Deployment	.099	.0018*
Multiple Deployments	.084	.0081*

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\* denotes significance at .05 level

**Table 6**

Multivariate Analysis of Number of Visits by Factors

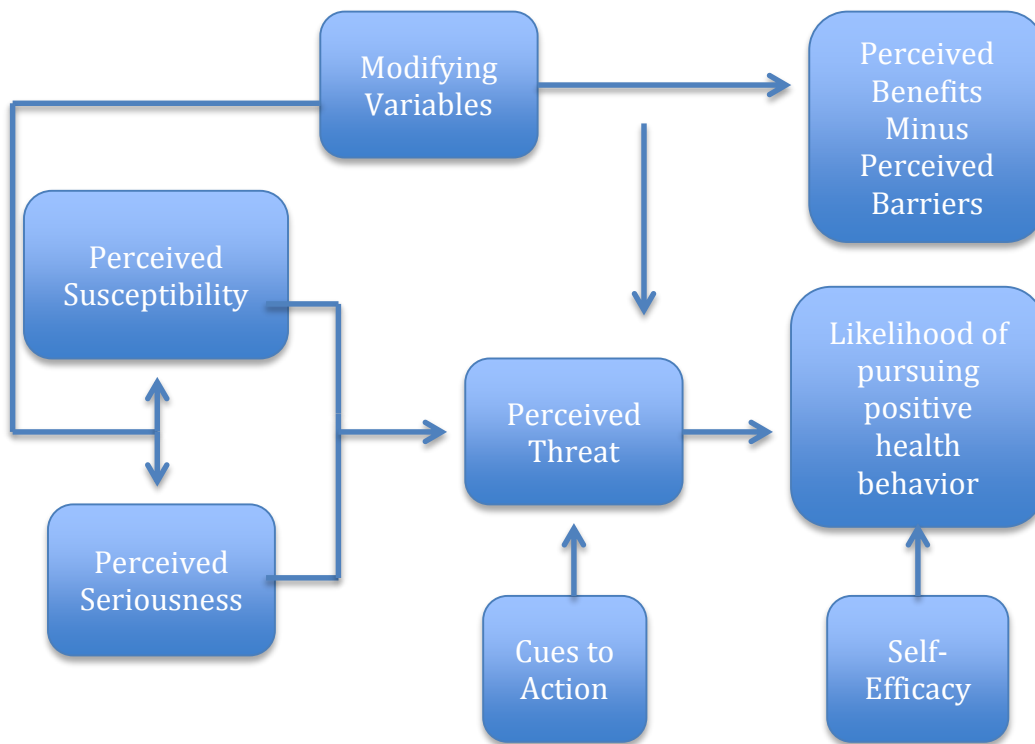
<i>Variable</i>	Parameter Estimate		
	(SE)	t-value	p-value
<b>Demographics</b>			
Gender (0=female/1=male)	-1.697 (.564)	-3.01	.0027*
White	.629 (.461)	1.36	.1731
Reserves	.750 (.421)	1.78	.0755
Officer	.403 (.561)	.72	.4726
Age	-.030 (.021)	-1.41	.1584
<b>Clinical</b>			
PTSD (DTS>48)	4.220 (.581)	7.26	<.0001*
Alcohol Misuse (AUDIT>7)	.346 (.487)	.71	.4773
<b>Social</b>			
Good Social Support	-1.344 (.454)	-2.96	.0032*
Service Connection	1.286 (.453)	2.84	.0047*
“It’s Up To Me” Barrier	-.541 (.203)	-2.67	.0077*
<b>Combat</b>			
High Combat Experience	.299 (.458)	.65	.5149
Over a Year Since Deployment	.589 (.585)	1.01	.3145
Multiple Deployments	.600 (.555)	1.07	.2829

F-Value =10.15, R<sup>2</sup>=.14, df=15, p<.0001

\* denotes significant by .05 p-value

Figure 1

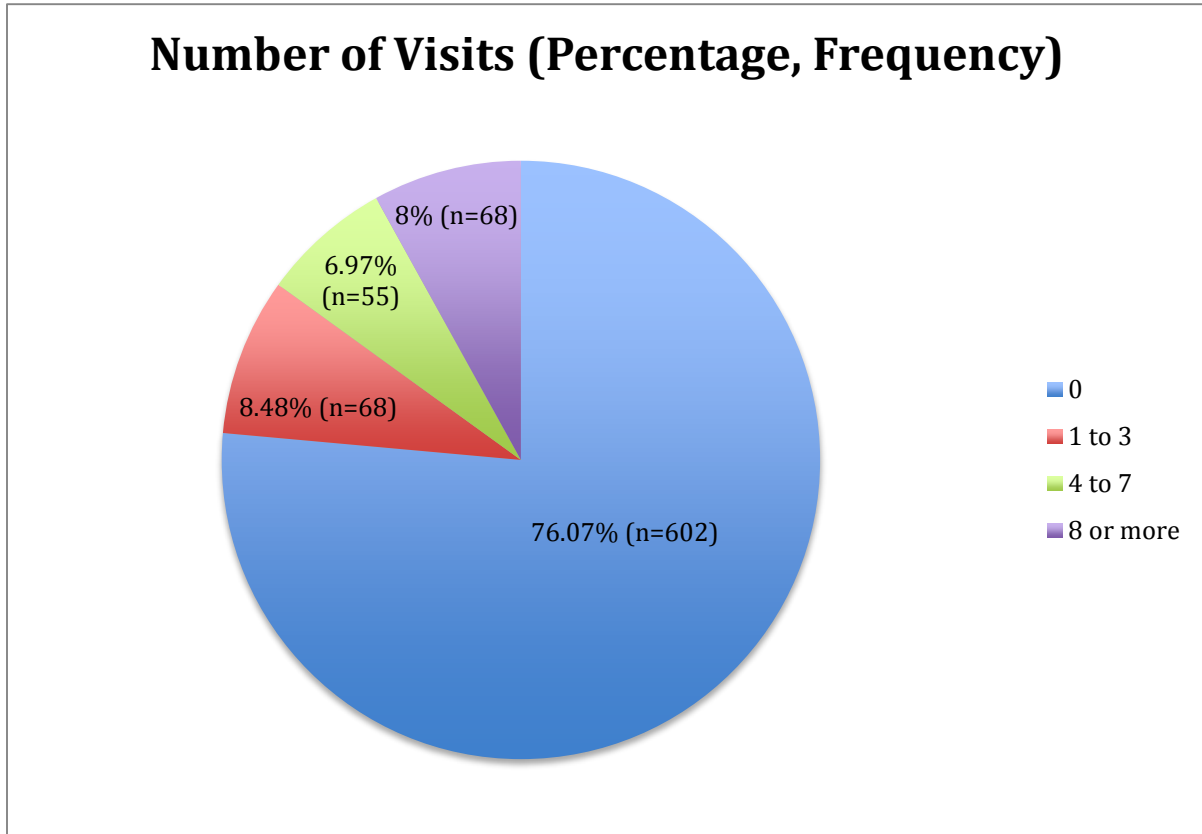
**The Health Belief Model (Rosenstock et al., 1988)**



<b>Variable</b>	<b>Definition</b>
Modifying Variables	Includes things like demographics (age, sex, ethnicity), personality, and knowledge
Perceived Susceptibility	One’s belief of their vulnerability to the health problem that the positive health behavior is countering
Perceived Seriousness	One’s belief of how serious the health problem is that the positive health behavior is countering
Perceived Benefits	One’s belief of how helpful the positive health behavior will be to countering the health problem
Perceived Barriers	One’s belief about the barriers (internal and external) of pursuing the positive health behavior
Cues to Action	Includes things like peer influence, mass media campaigns, physician’s recommendations
Self- Efficacy	The belief one has in their ability to achieve their goals independently

**Figure 2**

Pie Chart of number of visits over a one-year span

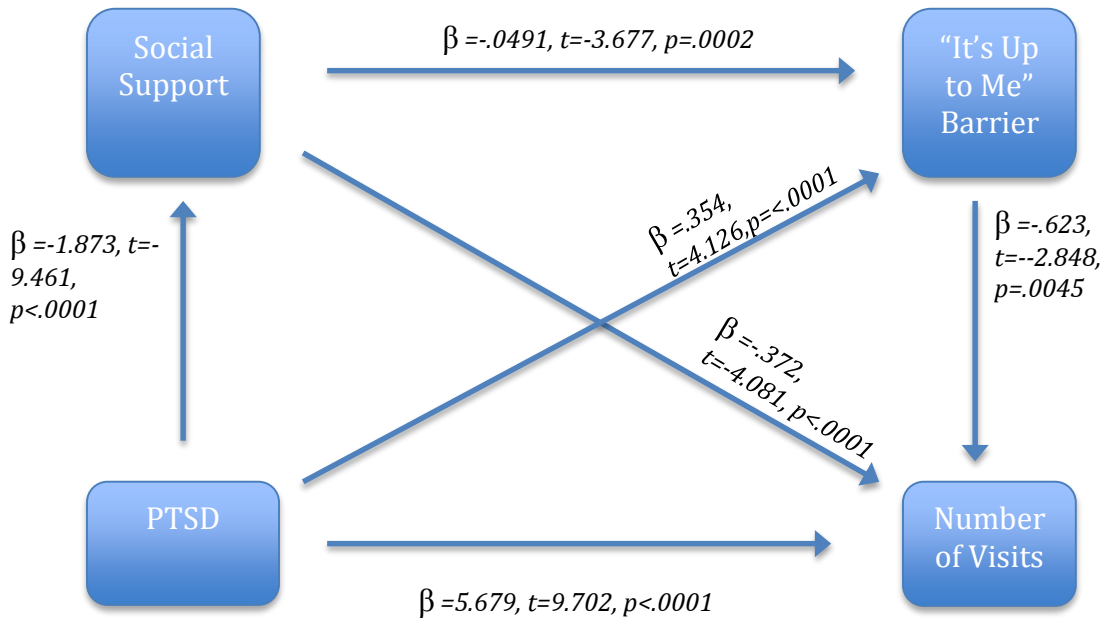


N	Mean	Std Dev	Minimum	Maximum
253	9.0522501	9.1883683	1.0000000	60.0000000



**Figure 3**

Mediation Analysis of PTSD on Number of Visits



	Indirect Effects of Mediation Paths on Number of Visits	Standard Error
PTSD → Social Support → Number of Visits	.696	.210
PTSD → Social Support → "It's Up to Me" Barrier → Number of Visits	-.057	.028
PTSD → "It's Up To me" Barrier → Number of Visits	-.220	.096