

THE EFFECT OF TRADITIONAL MASCULINE GENDER ROLE
ADHERENCE ON COMMUNITY REINTEGRATION FOLLOWING
TRAUMATIC BRAIN INJURY IN MILITARY VETERANS

By

Noah Matthew Meyers

Submitted to the

Faculty of the College of Arts and Sciences

of American University

in Partial Fulfillment of

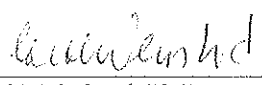
the Requirements for the Degree of

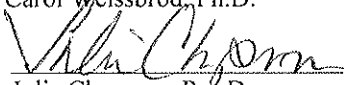
Doctor of Philosophy

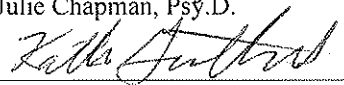
In


Psychology


Chair:


Carol Weissbrod, Ph.D.


Julie Chapman, Psy.D.


Kate Gunthert, Ph.D.


Bryan Fantie, Ph.D.


Dean of the College of Arts and Sciences

Date

June 1, 2012

2012

American University

Washington, D.C. 20016

THE EFFECT OF TRADITIONAL MASCULINE GENDER ROLE ADHERENCE ON
COMMUNITY REINTEGRATION FOLLOWING TRAUMATIC BRAIN
INJURY IN MILITARY VETERANS

By

Noah Matthew Meyers

Submitted to the

Faculty of the College of Arts and Sciences

of American University

in Partial Fulfillment of

the Requirements for the Degree of

Doctor of Philosophy

In

Psychology

Chair:

Carol Weissbrod, Ph.D.

Julie Chapman, Psy.D.

Kate Gunthert, Ph.D.

Bryan Fantie, Ph.D.

Dean of the College of Arts and Sciences

Date

2012

American University, Washington, D.C. 20016

© COPYRIGHT

by

Noah Matthew Meyers

2012

ALL RIGHTS RESERVED

DEDICATION

This dissertation is dedicated to my mother, who always supported me and encouraged me to be the best that I could be. Thanks, Mom – I couldn't have done it without you.

THE EFFECT OF TRADITIONAL MASCULINE GENDER ROLE ADHERENCE ON
COMMUNITY REINTEGRATION FOLLOWING TRAUMATIC BRAIN
INJURY IN MILITARY VETERANS

BY

Noah Matthew Meyers

ABSTRACT

Although returning from deployment and reintegrating into one's community is a difficult task for any military veteran, these tasks can be especially difficult for veterans sustaining a traumatic brain injury (TBI) during deployment. Due to the unique cognitive and social deficits caused by the injury, individuals (predominately male) who sustain a TBI have a more difficult time reintegrating into their communities and report a poorer subjective quality of life than do individuals and veterans with other serious injuries. The present study examined the effect of level of traditional masculine gender role cognitions, attitudes, and behaviors on community reintegration outcomes in a sample of 60 male military veterans who had sustained a TBI during deployment. Data was collected through self-report measures and cognitive tests, and analyses were carried out using correlation, mediation, and moderation models. Results suggested that greater endorsement of traditional masculine gender role beliefs, attitudes, and behaviors was related to: (a) poorer outcomes on certain measures of community reintegration (i.e., living skills and relationships); and (b) poorer outcomes in living skills and increased psychosocial difficulties only for participants with greater verbal cognitive flexibility. Findings were discussed in relation to previous research and future directions.

ACKNOWLEDGMENTS

Thank you to my dissertation committee for your generous availability and wealth of knowledge that you have shared with me throughout this process. Special thanks to Dr. Julie Chapman, who helped me to develop my dissertation idea and with data collection, and who has been a wonderful mentor.

I would also like to thank all the students and friends in the Chapman Lab at the Washington, DC VA Medical Center for your constant sharing of ideas, feedback, and suggestions. Special thanks to Katy Edwards for helping with the statistical analysis, and to Lauren Roselli for always being a wonderful source of support and friendship throughout not only the completion of this dissertation but also throughout my entire graduate career.

Finally, I owe a very special thank you to Dr. Carol Weissbrod, who has served as my advisor, professor, supervisor, and mentor throughout my six years at American University. She has generously provided me with her time and counsel as I worked through each developmental milestone of the graduate program, and I know that she has always had my best interest at heart. I cannot thank Carol enough for helping to shape the way that I view therapy and research, and for the influence that she has had over my upcoming career as a clinical psychologist.

TABLE OF CONTENTS

| | |
|--|-----|
| ABSTRACT..... | ii |
| ACKNOWLEDGMENTS | iii |
| LIST OF TABLES..... | vi |
| LIST OF ILLUSTRATIONS..... | vii |
| CHAPTER 1 INTRODUCTION | 1 |
| Background and Significance | 1 |
| CHAPTER 2 METHOD | 17 |
| Research Design..... | 17 |
| Participants..... | 17 |
| Procedure | 19 |
| Measures | 20 |
| Data Analysis | 26 |
| CHAPTER 3 RESULTS | 32 |
| Descriptive Analyses | 32 |
| Correlational Analyses..... | 34 |
| Moderation Analysis..... | 37 |
| Mediation Analysis | 39 |
| CHAPTER 4 DISCUSSION..... | 41 |
| Limitations and Future Research | 52 |
| APPENDIX A CONFORMITY TO MASCULINE NORMS INVENTORY-46..... | 54 |
| APPENDIX B PSYCHOSOCIAL DIFFICULTIES SCALE..... | 56 |
| APPENDIX C WILLINGNESS TO SEEK HELP QUESTIONNAIRE..... | 57 |
| APPENDIX D SYDNEY PSYCHOSOCIAL REINTEGRATION SCALE-2 | 59 |
| APPENDIX E HIDDEN PATTERNS TEST | 63 |

| | |
|---|----|
| APPENDIX F VERBAL CONCEPT ATTAINMENT TEST..... | 65 |
| APPENDIX G CRAIG HANDICAP AND ASSESSMENT RATING TECHNIQUE..... | 67 |
| APPENDIX H SATISFACTION WITH LIFE SCALE..... | 69 |
| APPENDIX I CENTER FOR EPIDEMIOLOGIC STUDIES DEPRESSION SCALE-10..... | 70 |
| APPENDIX J DEMOGRAPHICS QUESTIONNAIRE | 71 |
| REFERENCES | 72 |

LIST OF TABLES

Table

| | |
|---|----|
| 1: Descriptive Statistics for Variables of Interest | 33 |
| 2: Pearson Correlation Matrix..... | 35 |
| 3: Spearman Correlation Matrix | 36 |

LIST OF ILLUSTRATIONS

Figure

| | |
|---------------------------|----|
| 1. Theoretical Model..... | 16 |
|---------------------------|----|

CHAPTER 1

INTRODUCTION

Background and Significance

As of August 2011, over 2.33 million US military soldiers have been deployed to Iraq and Afghanistan in support of Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF; ABC News, 2011) and additional deployments are planned even as the troop drawdown continues. When returning from lengthy deployments, soldiers' readjustment to civilian life can be a difficult process due to acquired injuries (Fischer, 2009); physiological conditions such as increased risk for hypertension (Granado et al., 2009) and insomnia (Fichtenberg et al., 2000); psychosocial stressors such as reintegration into the family and work environments (Hosek, Kavanagh, & Miller, 2006; Sullivan-Kwantes, Febbraro, & Blais, 2005); and increased mental health concerns (Hoge, Auchterlonie, & Milliken, 2006; Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009; Safran et al., 2009; Sareen et al., 2007). Specifically, multiple studies of combat veterans found the incidence rates for developing mental health disorders including posttraumatic stress disorder (PTSD), depression, and other mood and anxiety disorders to range from 17% (Gaylord, 2006) to 19% (Hoge, Auchterlonie, & Milliken, 2006) following deployment. Additionally, researchers estimate that sub-clinical levels of impairment following deployment are also common. One study found that over 22% of 557 returning OEF/OIF Veterans met criteria for partial PTSD (Pietrzak, Goldstein, Malley, Johnson, & Southwick, 2009), a clinically-relevant presentation that would not be accounted for in most prevalence estimates due to the sub-threshold nature of the impairment. This increased incidence of psychological distress and disorders likely contributes to soldiers' difficulty with successful reintegration following deployment (Gaylord, 2006).

Aside from the psychological difficulties, family and community reintegration following return from deployment can also pose unique challenges. The family members of deployed military personnel frequently take on different or additional roles and duties in order to continue functioning adequately with one less family member in the household. At the same time, in-theater deployment can have a significant impact on the worldview of a soldier. These factors can each influence the reintegration process. One qualitative study of Canadian soldiers (Sullivan-Kwantes, Febbraro, & Blais, 2005) found that returning soldiers had difficulty in the realms of personal, family, work, and cultural reintegration. These personnel reported struggling with a sense of disconnectedness and increased anger, changing family dynamics and family breakdowns, a newfound sense of meaninglessness on the job, a feeling of a lack of civilian support, and less tolerance for “trivial” complaints from others. A qualitative study of American soldiers’ return from deployment echoes the results of the Canadian study, finding that reunions with families were often more difficult than expected, especially if young children no longer recognized the deployed parent (Hosek, Kavanagh, & Miller, 2006). The soldiers who reported greater difficulty reuniting with their families also reported increased wariness of crowds, as well as more frequent nightmares, anger, and hostility. Finally, Brenner and colleagues (2008) found that returning soldiers and veterans often cope with feelings of burdensomeness and failed belongingness, which in some instances can lead to suicidal ideation and attempts.

Although family and community reintegration can be challenging for any soldier returning from deployment, this difficulty can be compounded for soldiers who have sustained a traumatic brain injury (TBI) during deployment. According to the Department of Defense (DoD), a traumatic brain injury is defined as a “traumatically induced structural injury and/or physiological disruption of brain function as a result of external force.” Researchers have

estimated that 300,000 United States military personnel have sustained a TBI (Hoge, Goldberg, & Castro, 2009), a number that is likely to increase as the current conflicts continue (Good et al., 2006). A study conducted by the Defense and Veterans Brain Injury Center (2011) found that the number of service members diagnosed with TBI has almost tripled from 2000 to 2010. Currently, TBI is one of the most common injuries diagnosed in United States military personnel (Murray et al., 2005) and is considered the “signature injury” of OEF/OIF (Zitnay et al., 2008), accounting for 60% of injuries due to explosives (Okie, 2005). Researchers also think that mild TBI may be underreported due to shorter periods of unconsciousness and fewer cognitive symptoms, and thus the total incidence of TBI in the military is thought to be even higher than currently estimated (Koehler, Wilhelm, & Shoulson, 2011). Mild TBI (mTBI) is defined by the VA/DoD as a loss of consciousness of up to 30 minutes, alteration of consciousness from a moment up to 24 hours, and post-traumatic amnesia of up to one day post-injury. Although TBI affects all demographics, the Traumatic Brain Injury National Data Center (2009) reports that men sustain 74% of the traumatic brain injuries occurring in the United States, and it is likely that this percentage is even higher in a military population due to both the greater proportion of males in the military and the restrictions placed upon women serving in direct combat. As the conflicts in Iraq and Afghanistan continue, the US government has continued to call for research on TBI outcomes and treatments (Koehler, Wilhelm, & Shoulson, 2011).

Due to improved protective headgear and advancing medical treatments, military personnel are more likely than ever to survive a trauma to the head (Martin et al., 2008; Mooney, Speed, & Sheppard, 2005). However, the cognitive, psychiatric, and psychosocial sequelae of the injury can remain years after the orthopedic injury has healed. Cognitive symptoms, including memory and executive dysfunction, social pragmatics and self-awareness (Levine, Dawson,

Boutet, Schwartz, & Stuss, 2000; Ownsworth et al., 2007; Fleming & Strong, 1995; O'Callaghan, Powell, & Oyebode, 2006), alexithymia (Henry, Phillips, Crawford, Ietswaart, & Summers, 2006), decreased cognitive flexibility (Milders, Ietswaart, Crawford, & Currie, 2008) and cognitive appraisal (Kervick & Kaemingk, 2005), and decreased emotional control (Kersel, Marsh, Havill, & Sleight, 2001); as well as psychiatric symptoms, including depression (Bay & Donders, 2006; Rapoport, McCullagh, Streiner, & Feinstein, 2003), personality change (Franulic, Horta, Manturana, Scherpenisse, & Carbonell, 2000; Schretlen 2000), and suicidal ideation (Simpson & Tate, 2002), can dramatically influence recovery and reintegration following TBI. These deficits associated with TBI have a strong link to job loss and underemployment (Kendall, 2003; Watt & Penn, 2000); relationship breakdown including separation and divorce (Arango, Ketchum, & Dezfulian, 2008; Kersel et al., 2001); increased risk-taking behavior (Gordon, Mann, & Willer, 1993); suicide (Simpson & Tate, 2002); and a variety of other negative outcomes.

Community reintegration following any serious physical injury can be difficult (Charlifue & Gerhart, 2004; Target, Wilson, Wehman, & McKinley, 1998), yet reintegration following TBI is thought to be a uniquely difficult process because of the changes in social and emotional functioning due to the aforementioned cognitive challenges (Kaplan, 1993). Specifically, when compared to individuals who have sustained a severe physical injury with few cognitive correlates (e.g., spinal cord injury [SCI]), individuals who have sustained a TBI are likely to be significantly less aware of their newly-acquired disabilities, which can have a negative impact on treatment compliance (Trahan, Pepin, & Hopps, 2006). Individuals who have sustained a TBI have also been found to report more unmet important needs and poorer subjective quality of life as compared to individuals who have sustained a SCI (Brown & Vandergoot, 1998). Thus,

community reintegration following TBI has continued to receive special attention in research, and the US Congress has continued to call for further research in this area (Zitnay et al., 2008).

One reason why community integration could be particularly difficult for individuals sustaining a TBI may be due to a decrease in cognitive flexibility. Cognitive flexibility has been defined as the ability to (a) be aware of alternative options, (b) adapt to novel situations, and (c) demonstrate self-efficacy in employing flexible problem-solving strategies (Martin & Ruben, 1995). While there are many sub-types of cognitive flexibility, two sub-types have been commonly studied in the literature. Verbal flexibility is defined as the ability to generate various verbal responses and assess verbal relationships according to a certain set of rules (Cserjesi, Molnar, Luminet, & Lenard, 2007), and has been demonstrated to influence interpersonal functioning and creativity (Cho, Nijenhuis, van Vianen, Kim, & Lee, 2010; Upadhayay & Shukla, 2001). Flexibility of closure has been defined as the ability to hold a mental representation in mind despite distraction (e.g., Butler, Schechter, Revheim, Silipo, & Javitt, 2010) and is related to judgment of spatial relationships (Reio & Czarnolewski, 2004). Overall, decreased cognitive flexibility is a symptom of TBI (Busch, McBride, Curtiss, & Vanderploeg, 2005; Henry et al., 2006; Milders et al., 2008; Rios, Perianez, & Munoz-Cespedes, 2004; Valera & Berenbaum, 2003), and severity of deficits in this particular area of executive function can remain for years following injury (Anderson & Catroppa, 2005). This decreased cognitive flexibility associated with TBI has been related to a variety of negative psychosocial outcomes, including decreased empathy (Grattan & Eslinger, 1989), slower return to work (Watt & Penn, 2000), and increased financial costs to the injured individual (Johnstone, Schopp, Harper, & Koscuilek, 1999). Thus, brain-injured individuals may likely find themselves working to overcome new challenges with less ability to be flexible in their problem-solving strategies.

Because TBI affects men disproportionately, researchers have examined the complex relationships between traditional masculine gender role attitudes and beliefs and recovery from traumatic brain injury. Although researchers have debated the definition of this construct, “traditional masculine gender role” frequently refers to attitudes, beliefs, and behaviors regarding those characteristics considered by the dominant culture to be appropriate for males (Schopp et al., 2006; Mahalik, 2000). Knowledge about traditional gender role expectations of the dominant culture are learned and developed during infancy and childhood (Poulin-Dubios & Serbin, 2006; Miller, Trautner, & Ruble, 2006) and are widely understood by individuals in that culture (Innes, Dormer, & Lukins, 1993). Traditional masculine characteristics in Western cultures often include restricted emotional expression, fear of femininity, attitudes about financial earnings, aggression, and emphasis on sexual functioning, as well as others. Research with non-injured populations in the United States have found that greater adherence to traditional masculine gender roles has been associated with a variety of emotional and functional outcomes, including feelings of competency, ambition, and independence (Lueptow, Garovich-Szabo, & Lueptow, 2001), less satisfying interpersonal relationships and friendships (Shepard, Nicpon, Haley, Lind, & Liu, 2011; Migliaccio, 2009), and avoidance of intimacy (Land, Rochlen, & Vaughn, 2011).

Researchers have found that injured men’s level of masculine socialization can affect TBI recovery both directly as well as through the indirect impact of the adjustment to new limitations on traditional masculine functioning imposed on the individual (Good et al., 2006). Gutman and Napier-Klemic (1996) theorize that the onset of disability can often create gender role strain, referring to a feeling of anxiety experienced by individuals who question their ability to express their gender identity because of the decrease in available social roles and activities following the injury. Another theory of gender conformity and injury was that of Charmaz (1994), who

identified different identity dilemmas that can occur following the onset of a chronic disability. She theorized that, due to the loss of valued attributes, physical abilities, and social role functions as a consequence of the newly acquired disability, identity dilemmas can arise in the areas of “risking activity vs. forced passivity,” “remaining independent vs. becoming dependent,” “maintaining dominance vs. becoming subordinate,” and “preserving public persona vs. acknowledging private feelings.” These different dilemmas can arise when injury or disease threatens men’s “taken-for-granted masculine identities” (Charmaz, p. 270).

One lens through which men often try to resolve these identity dilemmas and combat gender role strain is that of “heroic masculinity,” referring to the traditional masculine ideal of overcoming adversity (e.g., threat, injury, etc.) by employing aggressive action, relentless perseverance, and ignoring their own feelings of sadness or pain (Hutchinson & Kleiber, 2000; Robinson, 1995). Hutchinson and Kleiber (2000) assert that because disability can cause a crisis of de-masculinization, many characteristics of traditionally masculine men are threatened by the loss of physical or cognitive functioning. Thus, although the idea of heroic masculinity can serve to inspire injured men to persevere in the face of their newly-acquired disability, it can also set an unreasonably high bar for success. This is especially true if the more traditionally “heroic” characteristics employed by men to overcome adversity, such as physical strength and dominance, are compromised by the physical injury itself.

Because the construct of traditional masculine gender roles encompasses such a varied range of attitudes, beliefs, and behaviors, the pathways between masculine gender role adherence and injury recovery outcomes are complex. In a small study ($n = 33$) of the influence of masculine gender role attitudes, beliefs, and behaviors on TBI recovery and community reintegration, Schopp and colleagues (2006) found that some aspects of masculine gender role

attitudes and beliefs appear to be associated with positive recovery outcomes, while other aspects were associated with poorer recovery. Specifically, men endorsing stronger attitudes towards playboy roles and desiring power over women reported lower overall life satisfaction, while men endorsing a stronger drive to win, a greater desire for pursuit of status in a social hierarchy, and a proclivity for physical confrontations demonstrated better functional outcomes and higher financial earnings when returning to work following the injury. Additionally, the authors found that the overall level of masculine attitudes, beliefs, and behaviors were correlated positively with follow-up earnings. This finding was in accordance with previous research demonstrating that traditional masculine behavior and values were associated with higher attainment in occupational status (Chow, 1987), and that more masculine men were perceived by others as having greater success in competitive situations (Alagna, 1982). Good and colleagues (2006) reached similar conclusions, finding that the desire for power over women was associated with lower overall life satisfaction, while the endorsement of restricted affectionate behavior among men, work-family conflict, and a higher drive for success, power, and competition were associated with fewer barriers to functioning within the community and greater progress in rehabilitation one year post-injury. Good and colleagues also found that overall level of masculine gender role conformity was associated positively with increased perceived environmental barriers to recovery, and was associated negatively with help-seeking. However, neither Schopp and colleagues nor Good and colleagues provided a clear theoretical explanation for their findings. In fact, both researchers called for further research in this new area of study, and Good and colleagues commented that their study provided only “an initial base of data on this topic” (p. 174). Finally, because there has yet to be a study measuring masculine gender

conformity prior to TBI, it remains unclear whether masculine gender role beliefs and attitudes are altered by the injury and/or the recovery process (Schopp et al., 2006).

One potential pathway through which traditional masculine gender role attitudes and beliefs can affect recovery from TBI is through its impact on help-seeking behavior in the injured individual. Research has consistently supported the popular belief that men are less likely than women to seek help for problems such as physical disability (Husaini, Moore, & Cain, 1994), depression (Padesky & Hammen, 1981; Weissman & Klerman, 1977), and stressful life events (Thom, 1986). Additionally, many of the tasks necessary for the initiation of help-seeking behavior, such as relying on others, admitting a need for help, and recognizing an emotional problem, can conflict with traditional masculine gender role characteristics such as emotional control and self-reliance (Rochlen et al., 2010; Addis & Mahalik, 2003). Thus, it is possible that traditional masculine gender role attitudes and beliefs account for much of the disparity in help-seeking behavior and attitudes between the genders.

Good and Wood (1995) used the term “double jeopardy” to describe the influence that masculine gender role adherence exerts on both increasing depressive symptomatology and supporting negative attitudes towards psychological help-seeking. Not only do men often have difficulty asking for help when needed, but, at times, men can be reluctant to admit weakness altogether. In particular, Charmaz’s (1994) qualitative study of 20 chronically-ill men found that men hid their chronic illness from other men if they determined that this information would lower their social status in the male hierarchy, even risking potentially life-threatening consequences to avoid the embarrassment of their illness by not asking for help.

Additionally, Good and colleagues (2006) found that greater endorsement of traditional masculine gender norms was associated with greater reluctance to seek help for psychological

issues, and men who fail to seek help when in need often have been found to have poorer functional outcomes (Gerschick & Miller, 1995; Rochlen et al., 2010). Interestingly, research findings concerning the relationship between self-reported problems and help-seeking attitudes and behaviors are mixed. While some researchers have demonstrated a strong positive relationship between intensity of personal difficulties and help-seeking (Brown, 1978; Rickwood & Braithwaite, 1994; Tyssen, Rovik, Vaglum, Gronvold, & Ekeberg, 2004), others have found no relationship between the two constructs (Oliver, Reed, Katz, & Haugh, 2009; Zhang, Snowden, & Sue, 1998).

When examining the relationship between traditional masculine gender role attitudes, beliefs, and behaviors and psychosocial recovery, it is important to consider the role of depressive symptomatology in this complex pathway. As mentioned earlier, depression is one of the most common psychiatric sequelae following return from deployment (Bay & Donders, 2006; Hoge, Auchterlonie, & Milliken, 2006; Rapoport, McCullagh, Streiner, & Feinstein, 2003), and this disorder is also strongly related to poorer community reintegration and readjustment (Hosek, Kavanagh, & Miller, 2006), help-seeking attitudes and behaviors (Barney, Griffiths, Jorm, & Christensen, 2006; Roy-Byrne et al., 2000), and overall life satisfaction (Headey, Kelley, & Wearing, 1993; Underhill et al., 2003). Thus, it is necessary to account for the broad influence of depression and depressive symptomatology when developing hypotheses about traditional masculine gender role attitudes, beliefs, and behaviors and psychosocial recovery.

To summarize the research findings reviewed above, researchers have found that although returning from deployment and reintegrating into one's community can be a difficult task for any veteran, these tasks can be especially difficult for personnel sustaining a TBI during

deployment. Due to the unique cognitive/social deficits caused by the injury, individuals (predominately male) who sustain a TBI have a more difficult time reintegrating into their communities and report a poorer subjective quality of life than do individuals with other serious injuries, perhaps due, in part, to decreased cognitive flexibility. It has also been demonstrated that level of traditional masculine gender role cognitions, attitudes, and behaviors can affect community reintegration for individuals with TBI, and that different characteristics of this masculine gender role belief system can either assist with or detract from one's level of community reintegration in different domains of one's life. While there are competing theoretical explications for this phenomenon, we believe that Gutman and Napier-Klemic's (1996) theory of gender role strain might best explain the seemingly paradoxical relationship between traditional masculine role adherence and community reintegration. It is also likely that help-seeking attitudes and behaviors play a role in this process, and research has shown that, traditionally, men are less likely than women to seek help from others when they are faced with a problem. Finally, research demonstrates that depression can have an impact on readjustment, help-seeking, and overall quality of life, and must also be accounted for when considering the relationship between traditional masculine gender role attitudes, beliefs, and behaviors and psychosocial recovery.

Based on these findings, the primary aim of the current investigation was to focus on the various relationships between level of adherence to traditional masculine gender role attitudes, beliefs, and behaviors on the psychosocial reintegration following military deployment and recovery from TBI, with a specific focus on community reintegration. For the purposes of this investigation, traditional masculine gender role attitudes, beliefs, and behaviors was measured through Parent and Moradi's (2009) model of empirically-derived traditional masculine gender role characteristics: 1) winning (drive to win), 2) emotional control (emotional restriction and

suppression), 3) risk-taking (penchant for high-risk behaviors), 4) violence (proclivity for physical confrontation), 5) playboy (desire for multiple or non-committed sexual relationships and emotional distance from sexual partners), 6) self-reliance (aversion to asking for assistance), 7) primacy of work (viewing work as a major focus of life), 8) power over women (perceived control over women at both personal and social levels), and 9) disdain for homosexuals (aversion to the prospect of being gay, or being thought of as gay).

Additionally, although researchers may differ in terms of how they conceptualize the construct of adherence to masculine norms, leading proponents of disparate theories of masculinity adherence (e.g., Mahalik et al., 2003 and O'Neil et al., 1986) nonetheless use similar measurements of traditional masculine norms. Specifically, researchers in this field have focused on the predictive value of individuals' self-reports of masculine attitudes, beliefs, and behaviors on men's future behavior, as opposed to measuring objective behavioral correlates or potential discrepancies between masculine ideals and perceived efficacy in attaining these ideals. Thus, for the purposes of the present investigation, we followed this precedent of measuring attitudes rather than examining objective behavior or any possible conflict between attitudes and behaviors.

Researchers define community reintegration as the self-reported level of success the injured individual can attain in the post-injury readjustment to the areas of (1) Work and Leisure, including work skills and leisure activities (2) Living Skills, including social skills and personal habits, and (3) Relationships, including those with partners and family, as well as communication skills (Tate, Hodgekinson, Veerabangsa, Pfaff, & Simpson, 2007).

In this investigation we examined the attitudes, beliefs, behaviors, and psychosocial outcomes of US military veterans deployed to OEF/OIF who sustained an mTBI while on

deployment. Because acquired injuries and the resulting physical and/or psychological disabilities can limit physical behaviors that an individual can perform, individuals with physical injuries (such as injuries that limit mobility, range of movement, or decreased strength) that would interfere significantly with the performance of everyday behaviors were excluded from the sample.

Through this investigation, we aimed to address the following questions and asserted the following hypotheses [for theoretical model, please refer to Figure 1]:

Question 1: How would traditional masculine gender role beliefs, attitudes, and behaviors affect community reintegration in the domains of work and leisure, living skills, and relationships?

Hypothesis 1: Based on previous research findings demonstrating differential effects of masculine gender role adherence on community reintegration outcomes, we hypothesized that greater traditional masculine gender role beliefs/attitudes/behaviors would be associated positively with work and leisure outcomes and negatively associated with living skills and relationship outcomes.

Question 2: How would cognitive flexibility influence the relationship between traditional masculine gender role beliefs/attitudes/behaviors and community reintegration?

Hypothesis 2: We hypothesized that cognitive flexibility would moderate the three relationships between traditional masculine gender role beliefs/attitudes/behaviors and community reintegration hypothesized above. Specifically, we anticipated that lower levels of cognitive flexibility would increase the strength of (a) the positive relationship between masculine gender role beliefs/attitudes/behaviors and the community reintegration outcome of work and leisure

and (b) the negative relationships between masculine gender role beliefs/attitudes/behaviors and the community reintegration outcomes of living skills and relationships. We similarly anticipated that higher levels of cognitive flexibility would serve to decrease the strength of these three relationships.

As stated previously, Gutman and Napier-Klemic (1996) asserted that gender role strain can be created due to the acquired injury. Because of this gender role strain, Hutchinson and Kleiber (2000) theorized that decreased functioning due to injury can threaten men's taken-for-granted masculinity and that men will employ heroic masculinity when faced with adversity. Therefore, we expected that while many individuals will strive to overcome these new-found obstacles by endorsing attitudes that encompass traditional masculine characteristics such as strength, perseverance, and self-reliance, this endorsement of masculine norms might be stronger in individuals experiencing decreased cognitive flexibility. Specifically, a decrease in cognitive flexibility might lead to an impaired ability to develop new cognitive strategies to overcome new-found cognitive, social, and emotional challenges that individuals with less change in cognitive flexibility might not experience. Thus, this greater reliance on masculine characteristics such as emotional control, self-reliance, and risk-taking would be expected to amplify the associations between traditional masculine gender role beliefs/attitudes/behaviors and community reintegration outcomes.

Question 3: How would help-seeking attitudes influence the relationship between traditional masculine gender role beliefs/attitudes/behaviors and community reintegration?

Hypothesis 3: Consistent with previous research, we believed that help-seeking attitudes would partially mediate the negative association between attitudes about traditional masculine gender

role beliefs/attitudes/behaviors and the community reintegration domains of living skills and relationships, such that higher traditional masculine gender role beliefs/attitudes/behaviors would be associated with lower help-seeking attitudes, which would in turn be related to poorer outcomes in independent living and relationships. We also hypothesized that help-seeking would not be related to the community reintegration domain of work and leisure activities because help-seeking behaviors can sometimes be viewed as a sign of incompetence by coworkers, thus negating potential benefits of being helped by others on the job.

Question 4: How would level of successful community reintegration be related to overall life satisfaction?

Hypothesis 4: Because successful community reintegration necessarily equates to having greater success in the readjustment process in three important domains of one's life (work and leisure, independence, and interpersonal relationships), we posited that greater community reintegration would be associated with greater subjective overall life satisfaction.

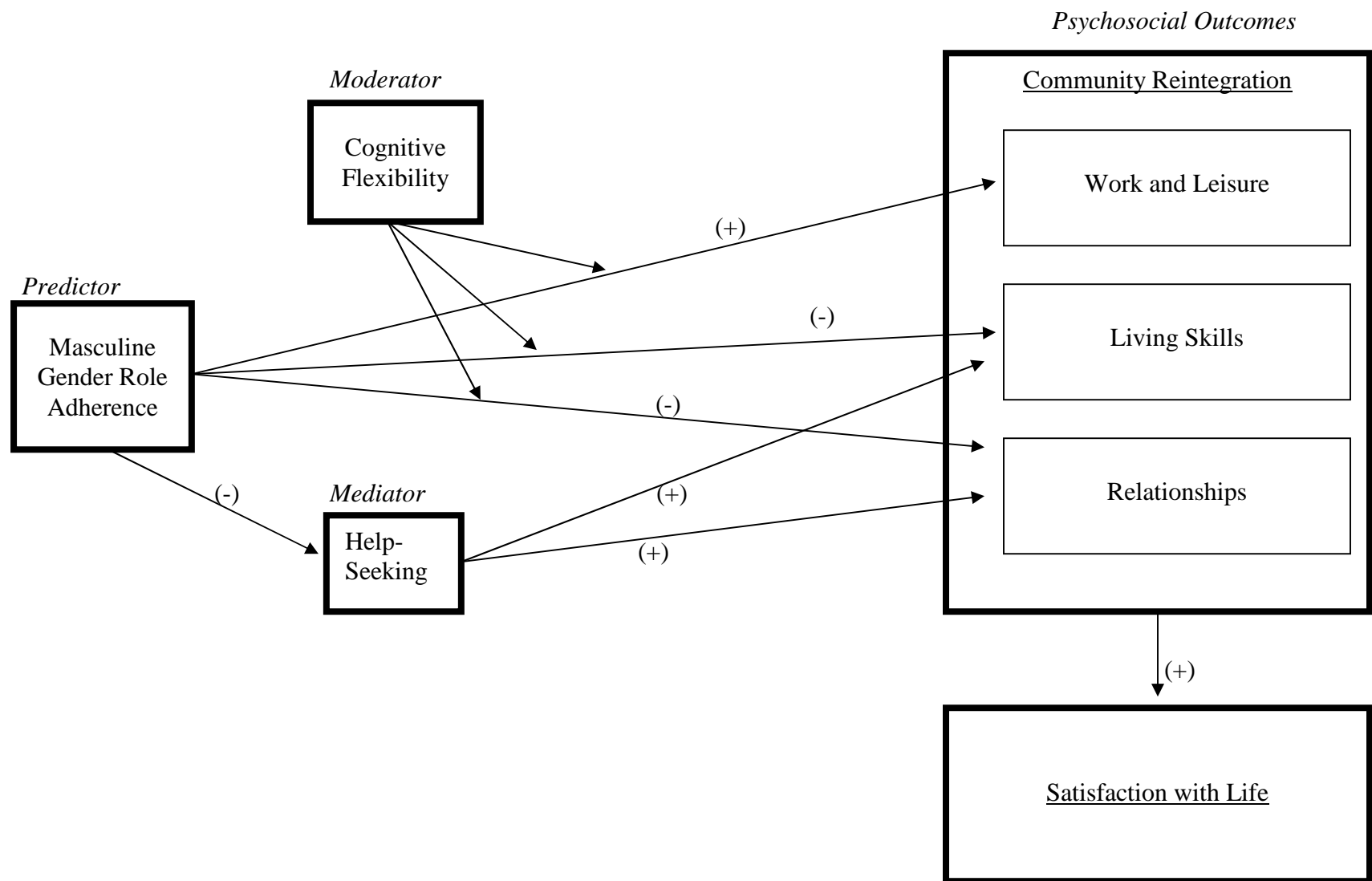


Figure 1. Theoretical Model

CHAPTER 2

METHOD

Research Design

This research consisted of a correlative study examining the impact of beliefs about traditional masculine gender role beliefs/attitudes/behaviors on aspects of community reintegration following mTBI in male military veterans. Additionally, we also investigated (a) the impact of cognitive flexibility on the relationship between traditional masculine gender role beliefs/attitudes/behaviors and community reintegration; and (b) the effect of traditional masculine gender role beliefs/attitudes/behaviors on help-seeking behaviors. Finally, we evaluated the relationships between elements of community reintegration and life satisfaction.

Participants

Veterans were selected for participation through a convenience-based sampling design within the context of a cross-sectional study entitled, “Blast Injury Outcomes (BIO): DTI, PET, Exposure and Neurocognitive Measures.” Veterans were recruited through postings within the Washington, DC Veterans Affairs Medical Center (DC VAMC), the Community-based Outpatient Clinics (CBOCs), the Vet Centers, the Veterans Benefits Administration (VBA), and on university campuses and public spaces. Ten percent of participants were recruited through the DC VA Medical Center ($n = 6$), 61.66 percent were recruited on university campuses ($n = 37$), and 28.33 percent were recruited from public spaces ($n = 17$). All participants were remunerated at the VA-approved rate of \$10.

The sample of veterans was selected based partially upon the inclusion/exclusion criteria used in the BIO study. The overall selection criteria were as follows:

Inclusion criteria:

Veterans must:

- be an OEF/OIF Veteran
- be male
- be between the ages of 18 and 59 years, inclusive
- have at least 10 years of education
- have a mild brain injury (based upon VHA criteria) related to deployment
- be at least one year post-injury

Exclusion Criteria:

Veterans must NOT:

- have any visual impairment that interferes with reading or writing
- have any upper extremity dysfunction that prevents the use of a pencil
- have a current diagnosis (or symptoms consistent with) schizophrenic or bipolar disorders
- be in significant pain during the evaluation (patient subjective report)
- have had or currently have any other injury, medical or neurological illness, or exposure that could potentially explain cognitive deficits (e.g., CNS disease, prior brain injury, seizure disorder, or HIV)
- be taking prescription drugs that significantly interfere with outcome measures
- Display behavior that would significantly interfere with validity of data collection or safety during study
- Demonstrate significant physical disabilities (CHART “Physical Independence” and/or “Mobility” domain scores of less than 85)

Procedure

Informed consent procedures typically lasted about 30 minutes, but could take up to an hour if needed. First, researchers explained information contained in the written informed consent document to prospective participant in a language they could understand. Special care was taken to inform prospective participants repeatedly that their participation was entirely voluntary and that they could withdraw at any time and for any reason without penalty or loss of currently existing benefits. Prospective participants were then asked to read the written informed consent form carefully, and any questions were answered. Next, the prospective participant was asked to summarize the consent form with special focus on the discomforts, risks, and confidentiality sections. When prospective participants had demonstrated (by stating in their own words) that they understood the purposes, risks, and benefits of the study, they were asked to initial each page and sign and date the last page. The Study Staff and a witness also signed and dated the informed consent document, and the participants received a copy for their records.

Following the informed consent process (see above) and a short demographics questionnaire (Appendix 10), researchers asked participants to complete (a) 6 self-report measures [(1) the Conformity to Masculine Norms Inventory-46, (2) the Psychosocial Difficulties Scale, (3) the Willingness to Seek Help Questionnaire, (4) Sydney Psychosocial Reintegration Scale-2, (5) the Satisfaction with Life Scale, and (6) the Center for Epidemiologic Studies Depression Scale-10] and (b) 3 cognitive tests [(1) Hidden Patterns Test, (2) Verbal Concept Attainment Test, (3) WASI – 2-subtest form]. The entire battery of measures and tests took between 30-115 minutes to complete.

Measures

Masculine Gender Role Adherence. The Conformity to Masculine Norms Inventory-46 (CMNI-46; Parent & Moradi, 2009; Appendix 1) is a 46-item instrument that measures adherence to traditional masculine gender roles in Western society. The CMNI-46 comprises nine distinct categories of masculine gender norms: 1) winning (WIN); 2) emotional control (EMOC); 3) risk-taking (RISK); 4) violence (VIOL); 5) playboy (PLAY); 6) self-reliance (SELF); 7) primacy of work (WORK); 8) power over women (POW); and 9) disdain for homosexuals (HOMO). Mahalik and colleagues (2003) created the present 46-item scale through confirmatory factor analysis of the original 94-item, Conformity to Masculine Norms Inventory (CMNI) scale, developed using college-aged men and women who participated in focus groups for eight months. The original CMNI comprised 11 subscales and was validated with 752 college males and tends to reflect white, middle-class heterosexual male norms. Test-retest reliability over a 2-3 week period was strong for the total score (0.95) and varied for subscales (0.51 - 0.96) for the original scale, and internal consistency calculations demonstrated a similar pattern (total score = 0.94; subscales = 0.72 – 0.91). Participants rate statements such as “In general, I will do anything to win” and “If I could, I would frequently change sexual partners” on a 4-point Likert scale ranging from Strongly Disagree to Strongly Agree.

In contrast to the Gender Role Conflict Scale (O’Neil et al., 1986), another widely-used gender roles scale that assumes stronger adherence to gender roles inherently creates internal conflict, the CMNI-46 attempts to examine both the benefits and costs of degree of conformity. It should also be noted that many of the nine categories of the CMNI-46 are more negative in tone (e.g., playboy, power over women, disdain for homosexuals, etc.). However, these categories have nonetheless been found to reflect consistent masculine gender role norms in Western cultures.

Using data from a more diverse sample of participants, the creators of the CMNI-46 reduced the number of items from the original scale and removed two subscales – Dominance and Pursuit of Status – low alphas (e.g., less than .60), low factor loadings, misloadings, and cross-loadings. Aside from these two differences, the CMNI-46 possesses psychometric properties similar to or higher than the original CMNI. Specifically, alpha reliabilities for the 9 factors were adequately high (WIN = .83; EMOC = .86; RISK = .84; VIOL = .86; PLAY = .84; SELF = .84; WORK = .77; POW = .78; HOMO = .91), as was the reliability for the overall scale (alpha = .88). Mean (M = 70.03), standard deviation (SD = 14), and range (min = 51, max = 115) for the current sample were similar to scores on this measure from other populations of male veterans (Morrison, 2012). Administration time for the CMNI-46 is approximately 8 minutes.

Psychosocial Needs. Developed by Goldstein and Malley, and first reported in an article by Pietrzak, Goldstein, and colleagues (2009), the Psychosocial Difficulties Scale (PDS; Appendix 2) is a 23-item self-report questionnaire that assesses psychosocial functioning in areas such as family and peer relationships, as well as work, school, and financial functioning. This scale was designed to identify salient needs, difficulties, and barriers to community reintegration of returning OEF/OIF Veterans. These items are rated on a 4-point scale ranging from 1 (“Not a concern”) to 4 (“A major concern”). An example of a typical item is “My spouse or partner and I are having problems getting along.” Higher scores indicate greater psychosocial difficulties. Cronbach alpha on Psychosocial Difficulties Scale items was 0.89. Administration time for the PDS is approximately 5 minutes.

Help-Seeking Behavior. The Willingness to Seek Help Questionnaire (WSHQ; Cohen, 1999; Appendix 3) is a 25-item measure designed to assess help-seeking intentions across a

variety of problem and stressful realms. The design of this scale was based on the theory that the willingness to seek help is dependent on three conditions: recognition of the need for assistance, willingness to self-disclose, and willingness to give up some degree of control (Keith-Lucas, 1994). Typical items include statements such as “If I were afraid of heights, I would try to conceal this from my friends,” and “If, for whatever reason, I were to have prolonged difficulty walking, I would do whatever possible to avoid asking for help from anyone,” and response options lie on a 4-point Likert scale ranging from “identify completely with statement” to “do not identify with statement at all”. Psychometrics were based on a sample of 71 college students, and the scale was found to have appropriately high reliability ($\alpha = .85$). Convergent validity was determined by strong correlations with another help-seeking scale, and divergent validity was determined by a lack of correlation with social desirability. Administration time for the WSHQ is approximately 5 minutes.

Community Reintegration. The Sydney Psychosocial Reintegration Scale-2 (SPRS-2; Tate et al., 2007; Appendix 4) is a 12-item scale that was created to assess the community reintegration process for individuals who have sustained a TBI. Each item is self-rated on a 5-point rating scale, with higher scores indicating better psychosocial functioning. The scale measures current competency in three domains of community reintegration: Work and Leisure (WL), Relationships (R), and Living Skills (LS). This revised scale was based on the original SPRS (Tate et al., 1999), which was tested using two different samples of TBI patients who were either living in the community ($n = 40$) or who were currently undergoing rehabilitation ($n = 20$). The scale was found to have high internal consistency ($\alpha = .90$), high interrater agreement (.95), and high test-retest stability over a 1 month period (.90). Convergent and discriminant validity were found to be appropriate, and the scale was sensitive to group differences on the

Glasgow Outcome Scale as well as to changes during the period of active recovery. Additionally, Kupiers and colleagues (2004) found that the SPRS compared favorably to another highly-used reintegration scale, the Community Integration Questionnaire (CIQ). Administration time for the SPRS-2 is approximately 5 minutes.

Cognitive Flexibility. One of the most common measures of cognitive flexibility is “flexibility of closure,” referring to the ability to focus on one part of a visual percept and recognize it among distracting material in the visual field. Flexibility of closure was measured by the Hidden Patterns Test (HPT; Ekstrom, French, Harman, & Dermen, 1976; appendix 5). The Hidden Patterns test measures this aspect of cognitive flexibility by requiring the individual to identify specific patterns or shapes embedded within distracting information. HPT was chosen to measure flexibility of closure because it has been found to load strongly and consistently on the closure flexibility factor (Botzum, 1951; Thurstone & Thurstone, 1947) and involves the least amount of culture- and language-specific knowledge as compared to similar tests.

In this test, participants are first shown a simple model pattern. Then, for a series of slightly more complex test patterns, they determine whether the model pattern is embedded in each test pattern. There are 200 items in each of the two subsections, and participants are allowed 1.5 min for each subsection. Test-retest reliability for the complete test was .83 for high school samples and .82 for college samples (Ekstrom et al., 1976). Administration time for the HPT is approximately 4 minutes.

Verbal reasoning and flexibility will be measured by the Verbal Concept Attainment Test (VCAT; Bornstein, 1982; appendix 6). This test is composed of 3 sample items and 23 test items, which are each presented on individual cards. Participants are presented with 16 words in a 4x4 matrix and are required to select one word from each line such that the selected words are all

similar in some way (e.g., construction trades). This test has show strong construct validity with Wisconsin Card Sorting Test and the Trail Making Test (Bornstein, 1982; Bornstein, 1983). Additionally, because research has shown this to be sensitive to caudality and laterality of cerebral lesions while similar tests such as the Wisconsin Card Sorting Test were not (Bornstein, 1986), this test has been found to be useful with individuals who have sustained a TBI. The entire test has a time limit of 30 minutes, and estimated administration time for the VCAT is approximately 15-30 min.

General IQ Estimate. The Wechsler Abbreviated Measure of Intelligence (WASI) – 2-subtest form (Wechsler, 1999) provided a general estimate of each participant’s IQ. The WASI-2 was developed to provide researchers and clinicians with a short and reliable way of measuring intelligence in a manner similar to that used in the Wechsler Adult Scale of Intelligence (WASI-III; Wechsler, 1997). The complete WASI comprises the WAIS-III subtests of Vocabulary, Similarities, Block Design, and Matrix Reasoning, and this 4-subtest WASI Full Scale IQ (FSIQ) has been demonstrated to show a .92 correlation with the WAIS-III FSIQ (Wechsler, 1999). The two-subtest version of the WASI comprises the Vocabulary and Matrix Reasoning subtests, and has demonstrated a .87 correlation with the WASI-III FSIQ. The two-subtest version of the WASI has been widely used in research and has been recommended as a quick and valid estimate of current IQ (Groth-Marnat, 2009). Administration time for the WASI – 2 is approximately 15 minutes.

Physical Functioning. Used as a screening tool to rule out individuals with physical impairment, physical functioning was measured by the Physical Independence and Mobility domains of the Craig Handicap Assessment and Reporting Technique (CHART) rating scale (Mellick et al., 1999; Whiteneck et al., 1992; Appendix 7). This 32-item self-report measure was

developed to measure handicap and functioning in six domains: Physical Independence, Cognitive Independence, Mobility, Occupation, Social Integration, and Economic Independence. Each domain produces a score ranging from 0 – 100, with higher scores indicating higher level of functioning and independence, with a score of “100” indicating the level of performance typical of the average non-disabled person. For the purposes of this investigation, we used only the Physical Independence and Mobility measures. A typical question in the Mobility domain would be, “In your home, do you have independent access to your sleeping area, kitchen, bathroom, telephone, and TV (or radio)?” The CHART has been used to measure level of functioning with individual suffering from spinal cord injury (Matheis, Tulskey, & Matheis, 2006; Whiteneck et al., 1992), stroke (Larson et al., 2005), and TBI (Sander et al., 2009; Salter et al., 2008). This instrument showed good reliability and construct validity in a sample of spinal cord injured individuals (Whiteneck, Brooks, & Mellick, 1997; Whiteneck et al., 1992). Administration time for the 3 domains of the CHART is estimated to take approximately 5 minutes.

Subjective Well-Being. The Satisfaction with Life Scale (SWLS; Diener et al., 1985; Appendix 8) is a 5-item questionnaire designed to measure overall subjective well-being. The SWLS is a commonly-used scale to assess how satisfying respondents judge their life to be. Items are scored on a 7-point Likert scale, ranging from Strongly Agree to Strongly Disagree. Overall scores range from 5 – 35, with higher scores indicating higher quality of life. A sample item reads as follows: “In most ways my life is close to my ideal.” Previous research has found that this scale has strong reliability ($\alpha = .87$), 2-month test-retest reliability stability coefficient (.82), and construct validity (Diener et al., 1985; Pavot & Deiner, 1993). Administration time for the SWLS is approximately 2 minutes.

Depressive Symptomatology. Depressive symptomatology was measured using the Center for Epidemiologic Studies Depression Scale-10 (CESD-10; Andresen et al., 1994; Appendix 9). The CESD-10 is a commonly-used ten-item subset of the CESD (Radloff, 1977) designed to measure overall depressive symptomatology in general community populations, including populations of Veterans (Kilbourne et al., 2002). This self-report rating scale contains items with response options ranging from 0 (“rarely or none of the time”) to 3 (“most or all of the time”) with total scores ranging from 0-30 and where higher scores indicate increased depressive symptomatology. As reported by previous research, a score of ≥ 10 indicates significant depression symptoms (Kilbourne et al., 2002; Yi et al., 2006). Internal consistency coefficients (.063 to 0.93) and test-retest reliability ($\alpha = 0.61$) were found to be adequate (Radloff, 1977). Administration time for the CESD-10 is approximately 3 minutes.

Data Analysis

Preliminary Data Analysis Plan

All data analysis was calculated using Statistical Programs for the Social Sciences (SPSS). Prior to data analysis, data integrity procedures were completed. Data were then checked for normality assumptions by examination of maximum and minimum values, descriptive statistics, indices of kurtosis and skewness, extreme values, Shapiro Wilks W statistic, determination of equality of variances, and visual inspection of scatterplots.

Additionally, depression symptomatology (CESD-10 total score), FSIQ (determined by WASI – 2), demographic variables (age, income, etc.), and injury variables (injury severity, time since injury, etc.) were controlled for when appropriate in the regression analyses below due to these variables’ potential influence on analyses.

Data Analysis Plan

Hypothesis 1a: Greater endorsement of traditional masculine gender role beliefs/attitudes/behaviors will demonstrate moderate to strong positive relationships with the community reintegration domain of Work and Leisure.

Power Analysis 1a: Although there have been no previous studies examining the exact relationships being studied in this current investigation, similar analyses have been conducted from which to draw conclusions about effect sizes. Specifically, previous research has produced medium effect sizes for relationships between: (a) masculinity and psychosocial outcomes (Schopp et al., 2006); (b) masculinity and help-seeking (Husaini, Moore, & Cain, 1994); and (c) cognitive flexibility and psychosocial outcomes (Watt & Penn, 2000). Thus, we assumed a medium effect size for all analyses in this study. According to Cohen (1992), to detect significance of a product moment correlation coefficient at a power of .80 and a significance level of 0.05 when the effect size is medium requires a sample size of approximately eighty-two (82). This was calculated using the G*Power 3 software package developed by Faul and colleagues (2007).

Data Analysis 1a: A correlational analysis was conducted using the variables of Conformity to Masculine Norms Inventory-46 (CMNI-46) total score and the total score for the Work and Leisure domain of the Sydney Psychosocial Reintegration Scale-2 (SPRS-2). When assumptions of normality are met, or substantially met, parametric methods were utilized. Specifically, correlation matrices were calculated using the Pearson multiple correlation coefficients (R). When assumptions of normality were substantially violated, the Spearman multiple correlation coefficients (ρ) were used to compute the correlation matrices. Statistically significant ($p \leq .05$) correlations of $R \geq |0.40|$ or $\rho \geq |0.40|$ were utilized for the decision rule for the existence of at least a moderate degree of association.

Hypothesis 1b: Greater endorsement of traditional masculine gender role beliefs/attitudes/behaviors would demonstrate moderate to strong negative relationships with the community reintegration domains of Living Skills and Relationships.

Power Analysis 1b: See Power Analysis for 1a above.

Data Analysis 1b: A correlational analysis was conducted using the variables of CMNI-46 total score and the total scores for the Living Skills and Relationships domains of the SPRS-2. The same procedure for Hypothesis 1a was followed for 1b (see above).

Hypothesis 2: Cognitive flexibility would moderate the relationships between traditional masculine gender role beliefs/attitudes/behaviors and the three community reintegration domains, such that lower levels of cognitive flexibility would increase the strength of the positive relationship between traditional masculine gender role beliefs/attitudes/behaviors and Work and Leisure as well as the negative relationships between traditional masculine gender role beliefs/attitudes/behaviors and Living Skills and Relationships.

Power Analysis 2: The power analysis for 1a above (n=82) was sufficient for Baron and Kenny's (1986) model of moderation described below.

Data Analysis 2: Baron and Kenny's (1986) moderation model was used to test for the presence of any moderating variables, and specifically for moderation by cognitive flexibility. The predictor variable was CMNI-46 total score, and the criterion variables were the total domain scores for Work and Leisure, Living Skills, and Relationship from the SPRS-2. The variables of Hidden Patterns Test (HPT) and the Verbal Concept Attainment Test (VCAT) were both used as measures of cognitive flexibility and were tested separately as moderators in this model. To test this moderation model, two new variables were first created by centering both the predictor and

moderator variables. Next, an interaction term was created by multiplying the criterion and moderator variables to create another predictor variable (the “interaction” variable). These three variables – predictor, moderator, and interaction – were then entered as predictors in a regression model, and three separate models were tested (one for each outcome domain of the SPRS-2) for both VCAT and HPT, resulting in six models total. If the interaction variable was statistically significant in a model, then the variable of cognitive flexibility (either VCAT or HPT) would be considered to be a moderator for the given SPRS-2 domain used as the criterion in the model. We also paid special attention to the controlling variable of FSIQ (WASI – 2-subtest form) to assure that the moderating influence of cognitive flexibility cannot be accounted for solely by IQ.

Hypothesis 3a: Help-seeking attitudes would partially mediate the negative relationship between traditional masculine gender role beliefs/attitudes/behaviors and the community reintegration domains of Living Skills and Relationships.

Power Analysis 3a: The power analysis for 1a above (n=82) was sufficient for Baron and Kenny’s (1986) 4-step model of mediation described below.

Data Analysis 3a: Baron and Kenny’s (1986) 4-step model of mediation was utilized to test for any mediating influence of variables. Four criteria must be met to prove mediation. First, a direct relationship between the predictor variable of traditional masculine gender role beliefs/attitudes/behaviors (CMNI-46 total score) and the criterion variables (Living Skills and Relationship domains of the SPRS-2) must be demonstrated to be significant; second, the predictor variable (CMNI-46) must be significantly correlated with the mediating variable of help-seeking attitudes (Willingness to Seek Help Questionnaire; WSHQ); third, the mediating

variable (WSHQ) must be significantly correlated with the criterion variables (Living Skills and Relationship domains of the SPRS-2); and fourth, the previously-significant relationship between the predictor (CMNI-2) and criterion variables (Living Skills and Relationship domains of the SPRS-2) must be reduced in size and significance when controlling for the mediator.

A formal test of the significance of mediation was conducted using the Sobel test (Sobel, 1982). A significant Sobel test statistic would indicate that the drop in significance from the original correlation between predictor and outcome to the new correlation with the mediating variable included was statistically significant and not due to chance alone.

An additional correlation analysis was conducted comparing psychosocial needs (Psychosocial Difficulties Scale; PDS), cognitive flexibility, and help-seeking attitudes to determine whether there were any relationships between these three variables that might help to explain the above mediation model better.

Hypothesis 3b: Help-seeking attitudes would demonstrate no relationship between traditional masculine gender role beliefs/attitudes/behaviors and the community reintegration domain of Work and Leisure.

Power Analysis 3b: Please see 3a above.

Data Analysis 3b: We again utilized Barron and Kenny's 4-step mediation model described above. The predictor variable was the CMNI-46 total score, the WSHQ was the mediating variable, and the SPRS-2 domain of Work and Leisure was the outcome variable.

Hypothesis 4: Scores on each of the three domains of community reintegration (Work and Leisure, Living Skills, and Relationships) would be positively associated with overall life satisfaction.

Power Analysis 4: Please see power analyses for 1a above.

Data Analysis 4: If assumptions of normality were met, or substantially met, parametric methods were utilized. Specifically, correlation matrices were calculated using the Pearson multiple correlation coefficients between: (1) the subscale scores of the three reintegration domains from the SPRS-2; and (2) the total score from the SWLS. If assumptions of normality were substantially violated, then the Spearman multiple correlation coefficients (ρ) were used to compute the correlation matrices.

Data Management

The data collected from the currently proposed study was managed in accordance with the data management plan from the BIO study. Specifically, data was encoded into statistical worksheets (SPSS) by use of subject identification number, and worksheets were password protected. Statistical worksheets were kept in a password protected file on the VA research network drive and the VA “Z” network drive with restricted access via security menus. The subject number also accompanied all documents (i.e., screening documents, cognitive instruments) kept in a paper file. These files were stored in a locked lateral file cabinet in one of Dr. Chapman’s locked research offices. One digital file was retained that has a list of subjects’ names and subject numbers. This digital file was password protected and kept on the VA research network drive with restricted access via security menus. Only the Principal Investigator had immediate access to this data. However, any of the other Co-Investigators involved in data analysis and interpretation had access to the data, as well, during these activities.

CHAPTER 3

RESULTS

Descriptive Analyses

All analyses were conducted using IBM SPSS Statistics 19.0. No differences were found among participants from different related recruitment areas (e.g., VA Medical Center, university campuses, public spaces) in any of the major variables of interest. Thus, data from different recruitment areas were collapsed into one overall sample. Descriptive statistics for: (a) demographic and blast-related variables (age, years of education, total number of blasts, time since deployment, time since recent blast); (b) the predictor variable [Conformity to Masculine Norms Inventory-46 (CMNI-46) total score]; (c) variables of mediation [Willingness to Seek Help Questionnaire (WSHQ) total score] and moderation [Hidden Patterns Test (HPT) total score, Verbal Concept Attainment Test (VCAT) total score]; (d) outcome variables [Sydney Psychosocial Reintegration Scale-2 (SPRS-2) domains of (1) Work and Leisure, (2) Relationships, and (3) Living Skills, and Satisfaction with Life Scale (SWLS)]; and (e) other variables of interest [Wechsler Abbreviated Scale of Intelligence Test-2 subtest form (WASI-2) FSIQ, Center for Epidemiologic Studies of Depression Scale-10 (CESD-10) total score, Psychosocial Difficulties Scale (PDS) total score, PDS Work, PDS Financial, PDS Family, and PDS Friends] are displayed in Table 1.

Shapiro-Wilks test indicated a non-normal distribution for the variables of CMNI-46 total score ($p < .001$), SPRS-2 Work and Leisure ($p < .001$), and SPRS-2 Living Skills ($p < .001$), and CESD-10 ($p < .05$). All other variables of interest were normally distributed. Additionally, CMNI-46 total score had a small positive skew (.908) and no evidence of kurtosis (.327). Square root and logarithmic transformations failed to correct any of the non-normally distributed variables. However, the linear regression analysis used for the majority of the analyses is a fairly

robust procedure that should be minimally influenced by this level of non-normality (e.g., Lanzante, 1996; Maas & Hox, 2004).

Table 1: Descriptive Statistics for Variables of Interest

| Variable | Mean | Std Dev |
|--|-------------|----------------|
| <u>Demographic/Injury</u> | | |
| 1. Age (years) | 32.90 | 8.95 |
| 2. Education (years) | 14.93 | 2.04 |
| 3. Total number of blasts exposed to | 2.65 | 3.30 |
| 4. Time since most recent blast (months) | 40.68 | 18.79 |
| 5. Time since most recent deployment (months) | 31.10 | 18.23 |
| | | |
| <u>Predictor</u> | | |
| 6. CMNI-46 total | 17.03 | 14.00 |
| | | |
| <u>Mediation/Moderation Variables</u> | | |
| 7. Willingness to Seek Help Questionnaire (WSHQ) | 41.10 | 6.27 |
| 8. Hidden Patterns Test (HPT) | 193.10 | 39.40 |
| 9. Verbal Concept Attainment Test (VCAT) | 17.92 | 4.08 |
| | | |
| <u>Outcomes</u> | | |
| 10. SPRS-2 – Work and Leisure | 12.80 | 2.97 |
| 11. SPRS-2 - Relationships | 10.62 | 3.14 |
| 12. SPRS-2 – Living Skills | 13.54 | 2.54 |
| 13. Satisfaction with Life Scale (SWLS) | 17.95 | 7.07 |
| | | |
| <u>Other Variables of Interest</u> | | |
| 14. WASI-2 FSIQ | 11.45 | 2.09 |
| 15. CESD-10 | 9.42 | 6.61 |
| 16. PDS – Total Score | 35.32 | 10.32 |
| 17. PDS – Financial | 5.82 | 2.43 |
| 18. PDS – Family | 8.67 | 2.60 |
| 19. PDS – Friends | 7.63 | 3.06 |

Correlational Analyses

A parametric (Pearson) correlational analysis was conducted using the 4 variables mentioned in Hypothesis 1 (CMNI-46, SPRS-2 Work and Leisure, SPRS-2 Living Skills, and SPRS-2 Relationships), as well as the other 17 variables of interest mentioned above, and are displayed in Table 2. Because three of the four main variables of interest were not normally distributed, a nonparametric (Spearman) correlation matrix was also created (Table 3). This nonparametric correlation analysis found that the CMNI-46 was significantly negatively correlated with SPRS-2 Living Skills ($\rho = -.305, p < .05$) and SPRS-2 Relationships ($\rho = -.464, p < .001$), and was not correlated with SPRS-2 Work and Leisure ($\rho = -.036, p > .05$). Because the decision rule for a moderate degree of association was $\rho \geq |0.40|$, it could be said that greater endorsement of traditional masculine gender role beliefs/attitudes/behaviors demonstrated a moderate inverse relationship with the community reintegration domain of Relationships, a mild inverse relationship with the community reintegration domain of Living Skills, and no significant relationship with the community reintegration domain of Work and Leisure.

Other notable relationships include a strong inverse parametric correlation between CMNI-46 total score and WSHQ ($r = -.528, p < .001$). There was also a moderate, positive nonparametric correlation between WSHQ and SPRS-2 Relationships (outcome; $\rho = .394, p < .005$) and SPRS-2 Living Skills ($\rho = .266, p < .05$). Finally, all three domains of the SPRS-2 demonstrated a strong, nonparametric, positive correlations with the Satisfaction with Life Scale (SPRS-2 Work and Leisure: $\rho = .292, p < .05$; SPRS-2 Living Skills: $\rho = .662, p < .001$; SPRS-2 Relationships: $\rho = .697, p < .001$). Interestingly, time since most recent blast ($m = 40.7$ months; $SD = 18.8$) and time since deployment ($m = 31.1$ months, $SD = 18.2$) were not significantly correlated with any of the predictor, mediator/moderator, or outcome variables. Number of blasts was significantly negatively correlated with SPRS-2 Work and Leisure ($\rho = -.377, p < .005$) and

Table 2: Pearson Correlation Matrix

| | | Pearson Correlations | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|------|----------------------|--------|----------|------------------|-------------------|------------|------------|-----------|----------|---------------|------------|-------------|------------|------------------|---------------|------------------|------------|------------|-----------|------------|---------------|----------------|-----------|
| | | age | income | # blasts | time since blast | time since deploy | years educ | CMNI total | PDS Total | PDS Work | PDS Financial | PDS Family | PDS Friends | WSHQ total | SPRS WrkLel sure | SPRS Relation | SPRS Lvng Skills | SWLS total | CESD total | HPT total | VCAT total | WASI-2 verbal | WASI-2 perform | WASI-2 IQ |
| age | corr | 1 | | | | | | | | | | | | | | | | | | | | | | |
| | sig | | | | | | | | | | | | | | | | | | | | | | | |
| income | corr | .639 | 1 | | | | | | | | | | | | | | | | | | | | | |
| | sig | .000 | | | | | | | | | | | | | | | | | | | | | | |
| # blasts | corr | .103 | -.145 | 1 | | | | | | | | | | | | | | | | | | | | |
| | sig | .433 | .267 | | | | | | | | | | | | | | | | | | | | | |
| time since recent blast | corr | .330 | .315 | .250 | 1 | | | | | | | | | | | | | | | | | | | |
| | sig | .010 | .014 | .054 | | | | | | | | | | | | | | | | | | | | |
| time since deployment | corr | .394 | .276 | .289 | .826 | 1 | | | | | | | | | | | | | | | | | | |
| | sig | .002 | .033 | .025 | .000 | | | | | | | | | | | | | | | | | | | |
| years educ | corr | .574 | .670 | .052 | .288 | .334 | 1 | | | | | | | | | | | | | | | | | |
| | sig | .000 | .000 | .695 | .025 | .009 | | | | | | | | | | | | | | | | | | |
| CMNI total | corr | -.033 | -.089 | -.142 | -.104 | .021 | -.172 | 1 | | | | | | | | | | | | | | | | |
| | sig | .803 | .500 | .277 | .429 | .875 | .189 | | | | | | | | | | | | | | | | | |
| PDS Total | corr | -.100 | -.262 | .214 | -.052 | -.060 | -.285 | .259 | 1 | | | | | | | | | | | | | | | |
| | sig | .447 | .043 | .101 | .696 | .646 | .028 | .046 | | | | | | | | | | | | | | | | |
| PDS Work | corr | -.029 | -.163 | .217 | .026 | .019 | -.173 | .076 | .850 | 1 | | | | | | | | | | | | | | |
| | sig | .824 | .213 | .095 | .845 | .884 | .186 | .563 | .000 | | | | | | | | | | | | | | | |
| PDS Financial | corr | -.112 | -.310 | .123 | -.042 | -.114 | -.269 | .055 | .680 | .458 | 1 | | | | | | | | | | | | | |
| | sig | .393 | .016 | .351 | .750 | .388 | .038 | .674 | .000 | .000 | | | | | | | | | | | | | | |
| PDS Family | corr | -.021 | -.151 | .160 | -.106 | -.090 | -.137 | .416 | .715 | .417 | .299 | 1 | | | | | | | | | | | | |
| | sig | .871 | .250 | .223 | .418 | .495 | .297 | .001 | .000 | .001 | .020 | | | | | | | | | | | | | |
| PDS Friends | corr | -.181 | -.237 | .124 | -.094 | -.071 | -.340 | .351 | .802 | .472 | .478 | .632 | 1 | | | | | | | | | | | |
| | sig | .167 | .068 | .344 | .474 | .592 | .008 | .006 | .000 | .000 | .000 | .000 | | | | | | | | | | | | |
| WSHQ total | corr | .199 | .243 | -.017 | .183 | .101 | .355 | -.528 | -.338 | -.176 | .039 | -.412 | -.528 | 1 | | | | | | | | | | |
| | sig | .128 | .062 | .897 | .163 | .443 | .005 | .000 | .008 | .178 | .767 | .001 | .000 | | | | | | | | | | | |
| SPRS | corr | -.066 | .160 | -.380 | -.136 | -.160 | .006 | -.047 | -.535 | -.536 | -.292 | -.411 | -.327 | .042 | 1 | | | | | | | | | |
| WrkLel sure | sig | .617 | .221 | .003 | .299 | .221 | .963 | .723 | .000 | .000 | .000 | .024 | .001 | .011 | .749 | | | | | | | | | |
| SPRS Relation | corr | .238 | .361 | -.279 | .094 | -.007 | .200 | -.424 | -.587 | -.361 | -.289 | -.669 | -.580 | .408 | .555 | 1 | | | | | | | | |
| | sig | .067 | .005 | .031 | .476 | .956 | .126 | .001 | .000 | .005 | .025 | .000 | .000 | .001 | .000 | | | | | | | | | |
| SPRS Lvng Skills | corr | .007 | .267 | -.525 | .024 | -.018 | .193 | -.204 | -.675 | -.582 | -.429 | -.560 | -.487 | .204 | .596 | .643 | 1 | | | | | | | |
| | sig | .959 | .047 | .000 | .857 | .889 | .139 | .118 | .000 | .000 | .001 | .000 | .000 | .117 | .000 | .000 | | | | | | | | |
| SWLS total | corr | .269 | .344 | .023 | .162 | .154 | .404 | -.468 | -.643 | -.460 | -.346 | -.588 | -.625 | .454 | .286 | .712 | .553 | 1 | | | | | | |
| | sig | .038 | .007 | .861 | .215 | .241 | .001 | .000 | .000 | .000 | .007 | .000 | .000 | .000 | .027 | .000 | .000 | | | | | | | |
| CESD total | corr | -.125 | -.319 | .394 | -.001 | .040 | -.238 | .174 | .707 | .610 | .348 | .611 | .568 | -.286 | -.658 | -.674 | -.685 | -.631 | 1 | | | | | |
| | sig | .342 | .013 | .002 | .995 | .761 | .067 | .182 | .000 | .000 | .007 | .000 | .000 | .027 | .000 | .000 | .000 | .000 | | | | | | |
| HPT total | corr | .043 | .143 | -.056 | .196 | .218 | .218 | -.137 | -.161 | .067 | -.068 | -.303 | -.346 | .403 | .031 | .175 | .222 | .187 | -.102 | 1 | | | | |
| | sig | .744 | .276 | .671 | .133 | .094 | .095 | .296 | .220 | .611 | .606 | .019 | .007 | .001 | .811 | .182 | .088 | .152 | .440 | | | | | |
| VCAT total | corr | .023 | .341 | -.187 | .126 | .044 | .307 | -.221 | -.369 | -.124 | -.261 | -.464 | -.438 | .339 | .111 | .295 | .446 | .416 | -.294 | .674 | 1 | | | |
| | sig | .859 | .008 | .153 | .337 | .739 | .017 | .089 | .004 | .343 | .044 | .000 | .000 | .008 | .400 | .022 | .000 | .001 | .023 | .000 | | | | |
| WASI-2 verbal | corr | .185 | .262 | .063 | .174 | .169 | .436 | .038 | -.117 | -.040 | .132 | -.294 | -.185 | .196 | .020 | -.035 | .023 | .065 | -.094 | .329 | .414 | 1 | | |
| | sig | .156 | .043 | .634 | .183 | .196 | .000 | .775 | .374 | .762 | .315 | .023 | .158 | .133 | .877 | .790 | .863 | .624 | .475 | .010 | .001 | | | |
| WASI-2 perform | corr | .037 | .333 | -.274 | .181 | .133 | .354 | -.070 | -.279 | -.128 | -.138 | -.278 | -.383 | .348 | .198 | .122 | .314 | .097 | -.379 | .472 | .571 | .421 | 1 | |
| | sig | .778 | .009 | .034 | .165 | .311 | .005 | .596 | .031 | .331 | .293 | .031 | .002 | .006 | .129 | .354 | .014 | .461 | .003 | .000 | .000 | .001 | | |
| WASI-2 IQ | corr | .134 | .352 | -.120 | .211 | .180 | .470 | -.017 | -.232 | -.098 | .001 | -.340 | -.334 | .320 | .127 | .049 | .195 | .095 | -.276 | .473 | .581 | .852 | .833 | 1 |
| | sig | .306 | .006 | .361 | .106 | .169 | .000 | .896 | .074 | .456 | .995 | .008 | .009 | .013 | .334 | .711 | .135 | .469 | .033 | .000 | .000 | .000 | .000 | |

Table 3: Spearman Correlation Matrix

| | | Spearman Correlations | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|-----|-----------------------|--------|----------|------------------|-------------------|------------|------------|-----------|----------|---------------|------------|-------------|------------|------------------|---------------|------------------|------------|------------|-----------|------------|---------------|----------------|-----------|
| | | age | income | # blasts | time since blast | time since deploy | years educ | CMNI total | POB Total | POB Work | POB Financial | POB Family | POB Friends | WSHQ total | SPRS WnkLei sure | SPRS Relation | SPRS Lvng Skills | SWLS total | CESD total | HPT total | VCAT total | WASI-2 verbal | WASI-2 perform | WASI-2 IQ |
| age | cor | 1.000 | | | | | | | | | | | | | | | | | | | | | | |
| | sig | | | | | | | | | | | | | | | | | | | | | | | |
| income | cor | .544 | 1.000 | | | | | | | | | | | | | | | | | | | | | |
| | sig | .000 | | | | | | | | | | | | | | | | | | | | | | |
| # blasts | cor | .073 | -.173 | 1.000 | | | | | | | | | | | | | | | | | | | | |
| | sig | .578 | .186 | | | | | | | | | | | | | | | | | | | | | |
| time since recent blast | cor | .269 | .310 | .178 | 1.000 | | | | | | | | | | | | | | | | | | | |
| | sig | .038 | .016 | .175 | | | | | | | | | | | | | | | | | | | | |
| time since deployment | cor | .340 | .285 | .164 | .803 | 1.000 | | | | | | | | | | | | | | | | | | |
| | sig | .008 | .049 | .210 | .000 | | | | | | | | | | | | | | | | | | | |
| years educ | cor | .623 | .666 | -.188 | .273 | .307 | 1.000 | | | | | | | | | | | | | | | | | |
| | sig | .000 | .000 | .149 | .036 | .017 | | | | | | | | | | | | | | | | | | |
| CMNI total | cor | -.107 | -.169 | -.074 | -.075 | .026 | -.275 | 1.000 | | | | | | | | | | | | | | | | |
| | sig | .414 | .196 | .576 | .567 | .843 | .033 | | | | | | | | | | | | | | | | | |
| POB Total | cor | -.142 | -.271 | .298 | -.009 | -.015 | -.298 | .323 | 1.000 | | | | | | | | | | | | | | | |
| | sig | .280 | .036 | .021 | .948 | .907 | .021 | .012 | | | | | | | | | | | | | | | | |
| POB Work | cor | -.033 | -.151 | .235 | .086 | .067 | -.164 | .107 | .843 | 1.000 | | | | | | | | | | | | | | |
| | sig | .801 | .250 | .071 | .513 | .513 | .212 | .416 | .000 | | | | | | | | | | | | | | | |
| POB Financial | cor | -.209 | -.257 | .329 | -.053 | -.163 | -.281 | .149 | .648 | .514 | 1.000 | | | | | | | | | | | | | |
| | sig | .109 | .047 | .010 | .688 | .213 | .029 | .255 | .000 | .000 | | | | | | | | | | | | | | |
| POB Family | cor | -.049 | -.166 | .103 | -.055 | -.060 | -.151 | .378 | .695 | .393 | .226 | 1.000 | | | | | | | | | | | | |
| | sig | .708 | .206 | .435 | .677 | .647 | .349 | .003 | .000 | .002 | .083 | | | | | | | | | | | | | |
| POB Friends | cor | -.164 | -.238 | .228 | -.068 | -.028 | -.310 | .407 | .823 | .492 | .482 | .647 | 1.000 | | | | | | | | | | | |
| | sig | .210 | .067 | .079 | .606 | .829 | .016 | .001 | .000 | .000 | .000 | .000 | | | | | | | | | | | | |
| WSHQ total | cor | .203 | .252 | -.028 | .125 | .018 | .347 | -.497 | -.338 | -.132 | -.019 | -.369 | -.500 | 1.000 | | | | | | | | | | |
| | sig | .120 | .052 | .833 | .340 | .891 | .007 | .000 | .008 | .314 | .888 | .004 | .000 | | | | | | | | | | | |
| SPRS WnkLeisure | cor | .000 | .182 | -.377 | -.129 | -.164 | .007 | -.063 | -.538 | -.486 | -.265 | -.404 | -.388 | .079 | 1.000 | | | | | | | | | |
| | sig | 1.000 | .165 | .003 | .325 | .211 | .956 | .631 | .000 | .000 | .040 | .001 | .002 | .549 | | | | | | | | | | |
| SPRS Relation | cor | .180 | .349 | -.211 | .071 | .002 | .192 | -.464 | -.666 | -.346 | -.360 | -.736 | -.646 | .394 | .529 | 1.000 | | | | | | | | |
| | sig | .168 | .006 | .106 | .589 | .996 | .142 | .000 | .000 | .007 | .005 | .000 | .000 | .002 | .000 | | | | | | | | | |
| SPRS Lvng Skills | cor | .048 | .226 | -.494 | -.015 | -.043 | .224 | -.305 | -.699 | -.594 | -.454 | -.568 | -.522 | .266 | .574 | .689 | 1.000 | | | | | | | |
| | sig | .713 | .083 | .000 | .909 | .742 | .086 | .018 | .000 | .000 | .000 | .000 | .000 | .041 | .000 | .000 | | | | | | | | |
| SWLS total | cor | .177 | .335 | -.091 | .134 | .089 | .377 | -.473 | -.686 | -.457 | -.396 | -.606 | -.626 | .424 | .292 | .697 | .662 | 1.000 | | | | | | |
| | sig | .175 | .009 | .490 | .306 | .500 | .003 | .000 | .000 | .000 | .002 | .000 | .000 | .001 | .023 | .000 | .000 | | | | | | | |
| CESD total | cor | -.129 | -.316 | .306 | .023 | .056 | -.247 | .211 | .745 | .608 | .373 | .634 | .593 | -.279 | -.636 | -.696 | -.704 | -.661 | 1.000 | | | | | |
| | sig | .327 | .014 | .018 | .864 | .671 | .057 | .106 | .000 | .000 | .003 | .000 | .000 | .031 | .000 | .000 | .000 | .000 | | | | | | |
| HPT total | cor | .087 | .138 | -.170 | .189 | .140 | .257 | -.206 | -.229 | .038 | -.077 | -.348 | -.439 | .498 | .051 | .296 | .223 | .288 | -.187 | 1.000 | | | | |
| | sig | .508 | .293 | .194 | .149 | .287 | .048 | .114 | .078 | .773 | .556 | .007 | .000 | .000 | .696 | .022 | .087 | .026 | .152 | | | | | |
| VCAT total | cor | .068 | .350 | -.205 | .159 | .082 | .321 | -.213 | -.359 | -.092 | -.188 | -.452 | -.468 | .366 | .102 | .380 | .371 | .457 | -.273 | .744 | 1.000 | | | |
| | sig | .607 | .006 | .116 | .226 | .532 | .012 | .102 | .005 | .484 | .150 | .000 | .000 | .004 | .436 | .003 | .004 | .000 | .035 | .000 | | | | |
| WASI-2 verbal | cor | .197 | .328 | -.030 | .221 | .197 | .443 | .012 | -.089 | -.005 | .139 | -.316 | -.178 | .226 | -.001 | .003 | .022 | .090 | -.102 | .340 | .433 | 1.000 | | |
| | sig | .131 | .010 | .822 | .090 | .131 | .000 | .929 | .498 | .972 | .291 | .014 | .175 | .083 | .995 | .982 | .869 | .493 | .437 | .008 | .001 | | | |
| WASI-2 perform | cor | .190 | .350 | -.220 | .221 | .168 | .439 | -.077 | -.218 | -.012 | -.152 | -.232 | -.394 | .450 | .124 | .137 | .124 | .136 | -.260 | .501 | .492 | .476 | 1.000 | |
| | sig | .146 | .006 | .091 | .089 | .200 | .000 | .560 | .094 | .928 | .247 | .075 | .002 | .000 | .344 | .297 | .344 | .300 | .045 | .000 | .000 | .000 | | |
| WASI-2 IQ | cor | .221 | .362 | -.144 | .211 | .170 | .527 | .010 | -.197 | -.050 | .012 | -.325 | -.331 | .351 | .093 | .068 | .094 | .137 | -.222 | .473 | .531 | .883 | .805 | 1.000 |
| | sig | .089 | .004 | .272 | .106 | .195 | .000 | .939 | .131 | .703 | .925 | .011 | .010 | .006 | .481 | .608 | .475 | .295 | .088 | .000 | .000 | .000 | .000 | |

SPRS-2 Living Skills ($\rho = -.494, p < .001$). However, this variable demonstrated no significant correlations with SPRS-2 Relationships ($\rho = -.211, p > .05$), the predictor variable CMNI-46 total score ($r = -.089, p > .05$), or the variables of mediation (WSHQ: $r = -.017, p > .05$) or moderation (VCAT: $r = -.187, p > .05$; HPT: $r = -.056, p > .05$). Finally, depressive symptomatology (CESD-10) and WASI-2 FSIQ were significantly correlated with a number of predictor, mediator/moderator, and outcome variables, and thus were controlled for in all analyses.

Moderation Analysis

Baron and Kenny's (1986) moderation model was used to test the moderation models where measures of cognitive flexibility (VCAT or HPT) were hypothesized to moderate the relationship between CMNI-46 and the three community reintegration domains. Initial moderation analysis found that VCAT moderated the relationship between CMNI-46 and of Living Skills ($\beta = -.12, p < .05$), was trending towards moderation of the relationship between CMNI-46 and Work and Leisure ($\beta = -.12, p = .076$), and did not moderate the relationship between CMNI-46 and Relationships ($\beta = -.007, p > .05$). These moderating effects were not significantly altered when controlling for FSIQ, but the significant and trending moderation models were no longer statistically significant when controlling for CESD-10. Interestingly, although CESD-10 plays an important role in this model, CESD-10 itself was not a significant moderator for any of the three relationships. No significant moderating effect of HPT was found on the relationship between CMNI-46 and any of the three community reintegration domains.

To examine the moderation models further, the sample was split into two groups based on the VCAT median (median = 18): a high verbal cognitive flexibility group ($n = 27, m =$

21.48, SD = 2.24, min = 19, max = 26) and a low verbal cognitive flexibility group (n = 27, m = 14.33, SD = 2.48, min = 9, max = 17). Range and variability were similar between high and low cognitive flexibility groups. Participants with VCAT scores equal to the median were excluded from this analysis (n = 6). Of note, performance on the VCAT in the current sample (m = 17.92, SD = 4.08) was lower and more variable than that of a sample of health controls (m = 21.00, SD = 1.83; Basso, Bornstein, Carona, & Morton, 2001). Thus, the “high” verbal cognitive flexibility group performance would be more closely related to average performance for healthy controls while the “low” verbal cognitive flexibility group performed well below the average for healthy controls. However, this is to be expected given the common cognitive sequelae of TBI discussed previously.

CMNI-46 significantly predicted Living Skills for participants with high verbal cognitive flexibility ($\beta = -.75$, $p < .05$) but showed no relationship with Living Skills for participants with low verbal cognitive flexibility ($\beta = .003$, $p > .05$). Thus, results suggest that greater endorsement of traditional masculine gender role beliefs/attitudes/behaviors is associated with poorer outcomes in the community reintegration domain of Living Skills only for participants with greater verbal cognitive flexibility. There was no significant relationship found between the endorsement of traditional masculine gender role beliefs/attitudes/behaviors and Work and Leisure for participants with either higher or lower levels of verbal cognitive flexibility.

A similar pattern was found when the different domains of the Psychosocial Difficulties Scale (PDS) were used as the outcome variable. Specifically, although VCAT was initially found to moderate the relationship between CMNI-46 and PDS total score ($\beta = .045$, $p < .05$) as well as PDS Work ($\beta = .030$, $p < .01$), when the sample was again divided into the high and low verbal cognitive flexibility groups described above, the positive relationship between CMNI-46 and

PDS total score only remained for the high verbal cognitive flexibility group ($\beta = .435, p < .01$) but not for the low verbal cognitive flexibility group ($\beta = .011, p > .05$). This pattern was also true for PDS Work, where the effect remained for the high verbal cognitive flexibility group ($\beta = .235, p < .05$) but not for the low verbal cognitive flexibility group ($\beta = -.074, p > .05$). In other words, greater endorsement of traditional masculine gender role beliefs/attitudes/behaviors was related to greater overall psychosocial difficulties as well as difficulties specifically related to work for those participants who demonstrated higher verbal cognitive flexibility, but not for those who showed lower verbal cognitive flexibility. Once again, these effects disappeared when controlling for CESD-10 in the model.

Mediation Analysis

Baron and Kenny's (1986) 4-step model of mediation was used to assess the mediation effects of help-seeking (WSHQ) on the relationship between traditional masculine gender role beliefs/attitudes/behaviors (CMNI-46 total score) and the criterion variables of SPRS-2 Living Skills and SPRS-2 Relationships. First, as mentioned above, a direct relationship between CMNI-46 total score and the criterion variables of SPRS-2 Living Skills ($\rho = -.305, p < .05$) and SPRS-2 Relationships ($\rho = -.464, p < .001$) was determined. Second, CMNI-46 was significantly related to the mediating variable of WSHQ ($r = -.528, p < .001$). Third, WSHQ was significantly related to the criterion SPRS-2 Relationships ($\rho = .408, p < .005$) and Living Skills ($\rho = .266, p < .05$). In the final step of the mediation model, the previously-significant relationship between CMNI-46 and the criterion variable of SPRS-2 Relationships was not reduced in size or significance to a degree with which WSHQ could be considered to be a mediator (Sobel Test $p > .05$). Hence, the relationship between masculine gender role and relationship functioning was not

moderated by help-seeking. Help-seeking also failed to mediate the relationship between CMNI-46 and the criterion variable of SPRS-2 Living Skills (Sobel Test $p > .05$). However, there appeared to be independent additive effects of traditional masculine gender role beliefs/attitudes/behaviors and help-seeking on both SPRS-2 Relationships and SPRS-2 Living Skills. When help-seeking was combined with traditional masculine beliefs/attitudes/behaviors to predict community reintegration, the pair accounted for 22% of the variance for the outcome of Relationships ($R^2 = .226$; $p < .01$) as opposed to 18% when traditional masculine beliefs/attitudes/behaviors was measured alone ($R^2 = .180$; $p < .01$), and accounted for 5.5% of the variance for the outcome of Living Skills ($R^2 = .055$; $p < .05$) as opposed to 4% for traditional masculine beliefs/attitudes/behaviors alone ($R^2 = .042$; $p < .05$). Further, this model remained significant when controlling for FSIQ and CESD-10. So even controlling for intelligence and depression, masculinity and help-seeking independently predicted living skills and relationship functioning.

CHAPTER 4

DISCUSSION

To our knowledge, this is the first study examining the influences of adherence to traditional masculine gender roles on community reintegration of veterans who have sustained a traumatic brain injury. Previous studies have identified differential influences of traditional masculine gender role adherence on the different domains of community reintegration (Work and Leisure, Living Skills, and Relationships; Good et al., 2006; Schopp et al., 2006), and this investigation aimed to examine these pathways in the context of the cognitive and psychosocial symptoms common to military veterans returning from deployment after sustaining a mild TBI.

Our first hypothesis was that greater traditional masculine gender role beliefs/attitudes/behaviors would be positively associated with Work and Leisure outcomes and negatively associated with Living Skills and Relationship outcomes. This hypothesis was partially supported by the results. Specifically, greater endorsement of traditional masculine gender role beliefs/attitudes/behaviors demonstrated a moderate inverse relationship with the community reintegration domain Relationships, a mild inverse relationship with the domain of Living Skills, and no significant relationship with the domain of Work and Leisure. The significant inverse relationships found between traditional masculine gender role beliefs/attitudes/behaviors and Relationships and Living Skills were in accordance with previous research findings of Schopp and colleagues (2006) and Good and colleagues (2006), who found that many aspects of traditional male gender roles were associated with increased psychosocial stressors and lower life satisfaction in brain-injured individuals. Although the lack of association found between traditional masculine gender role beliefs/attitudes/behaviors and the community reintegration domain of Work and Leisure was initially puzzling, this finding was further explained by the moderating influence of cognitive flexibility (as described below). Of note,

participant scores on the measure of traditional masculine gender role beliefs/attitudes/behaviors were somewhat higher than scores from a non-veteran sample (Ward & Cook, 2011). However, this was not unexpected given the stereotypes of military personnel (Boyce & Herd, 2003), and scores on this measure from the present sample were comparable to scores from a military veteran sample (Morrison, 2012).

Our second hypothesis was that level of cognitive flexibility would moderate the relationships between traditional masculine gender role beliefs/attitudes/behaviors and the community reintegration domains of Work and Leisure, Living Skills, and Relationships, such that lower levels of cognitive flexibility would increase the strength of these three relationships while greater cognitive flexibility would decrease the strength of the associations. Because of the potential of inverse relationships between predictor and outcome depending on level of cognitive flexibility, moderation models were tested for all three relationships even though initially there was not a significant relationship found between traditional masculine gender role beliefs/attitudes/behaviors and the outcome of Work and Leisure.

Interestingly, although verbal cognitive flexibility was determined to moderate (or trend towards moderation) the relationships between traditional masculine gender role beliefs/attitudes/behaviors and two of the three community reintegration domains, we were surprised to find that this moderation effect was opposite to that which was hypothesized. Specifically, verbal cognitive flexibility (as measured by the Verbal Concept Attainment Test; VCAT) was a significant or trending moderator of the relationship between traditional masculine gender role beliefs/attitudes/behaviors and the outcomes of Living Skills and Work and Leisure. However, upon further examination of the influences of the high and low verbal cognitive flexibility groups, we found that greater endorsement of traditional masculine gender role

beliefs/attitudes/behaviors was associated with poorer outcomes in Living Skills only for participants with greater verbal cognitive flexibility ($\beta = -.75, p < .05$) but not for those participants with lower verbal cognitive flexibility ($\beta = .003, p > .05$). And while the trending moderation effect of verbal cognitive flexibility did not show any consistent relationship to the influence of traditional masculine gender role beliefs/attitudes/behaviors on the outcome of Work and Leisure, masculine gender role beliefs/attitudes/behaviors were related to an increase in difficulties related to work on the Psychosocial Difficulties Scale (PDS) for individuals with high verbal cognitive flexibility but not for individuals with lower verbal cognitive flexibility. No effect of verbal cognitive flexibility was found for the domain of Relationships. Finally, all relationships in the moderation models ceased to be significant when controlling for depressive symptomatology.

This finding was surprising in many ways. Not only did we expect to find that lower verbal cognitive flexibility would exacerbate problems in the domains of Living Skills and Relationships and increase the positive influence on Work and Leisure for individuals endorsing greater traditional masculine beliefs/attitudes/behaviors, but we also expected to find the opposite effect for individuals with higher verbal cognitive flexibility. In fact, neither of these expectations was supported by the results. Not only did lower verbal cognitive flexibility remove associations between greater traditional masculine beliefs/attitudes/behaviors and outcomes relating to Work and Living Skills, but higher verbal cognitive flexibility seemed to increase perceptions of problems in Work and Living Skills for individuals endorsing greater traditional masculine beliefs/attitudes/behaviors.

It is also important to note that the outcome of Living Skills had a higher overall mean ($m = 13.54$) and a more restricted range ($SD = 2.54$) than did the other two community reintegration

outcomes. Thus, it is possible that this may have produced a ceiling effect because most participants reported minimal difficulties related to personal habits and social skills. However, verbal cognitive flexibility was still a significant moderator of this variable, so it is likely that any potential ceiling effects did not have a major influence in the model.

These findings differ from those of Grattan and Eslinger (1989), Watt and Penn (2000), and Johnstone and colleagues (1999) who found that lower cognitive flexibility is related to poorer psychosocial, and particularly financial, outcomes. However, none of these three previous studies utilized the VCAT or HPT as measures of cognitive functioning. Both Watt and Penn and Grattan and Eslinger both used the Wisconsin Card Sorting Task (WCST) as their measure of overall cognitive flexibility, and Johnstone and colleagues used the Trails B task. Additionally, all three study samples included female participants and none included blast-related brain injured individuals. Therefore, it is possible that the current investigation is measuring a different kind of cognitive flexibility with a different population than did previous studies in this area.

One possibility that was tested to help explain the findings was that verbal cognitive flexibility (as measured by the VCAT) as opposed to flexibility of closure (measured by the Hidden Patterns Test; HPT) might be a proxy for IQ. After all, VCAT was moderately correlated with WASI-2 FSIQ ($r = .581, p < .001$) and the VCAT task is somewhat similar to the Similarities subtest of the WAIS-III. However, FSIQ was not found to be a significant moderator of any of the three relationships between predictor and outcomes. Additionally, the moderating effects of verbal cognitive flexibility were not significantly altered when controlling for FSIQ in the moderation model.

Another possible explanation for these findings was the influence of depressive symptomatology on the moderation model. Because the moderation effect of verbal cognitive

flexibility disappeared when controlling for depressive symptomatology, it was possible that if individuals demonstrating higher verbal cognitive flexibility were more depressed, perhaps the depression was significantly contributing to the lower functioning in the different psychosocial domains endorsed by this sub-group. However, further analysis demonstrated just the opposite. Individuals with lower verbal cognitive flexibility were actually significantly more depressed (CESD-10 $M = 11.30$, $SD = 6.91$) than were the high verbal cognitive flexibility group ($M = 7.81$, $SD = 6.21$; $p < .001$). Thus, depressive symptomatology alone could not account for the unexpected findings.

Another possibility was that individuals with increased verbal cognitive flexibility may be more aware of their psychosocial deficits than those with less flexibility. Because our measure of psychosocial reintegration was self-report, participants were asked to assess their own level of functioning across the different domains of community reintegration and functioning. Research has found that individuals who have sustained a TBI have demonstrated deficits in self-awareness (Fleming & Strong, 1995; O'Callaghan, Powell, & Oyebode, 2006; Ownsworth et al., 2007), cognitive appraisal (Kervick & Kaemingk, 2005) and awareness of their disabilities (Trahan, Pepin, & Hopps, 2006), and thus it is possible that individuals with greater cognitive functioning might be better able to assess their functional deficits accurately in the different domains of psychosocial functioning following their TBI. However, we did not include measures of self-awareness in the current study or obtain measures of participant psychosocial functioning from others in the participants' lives, and therefore we were unable to measure participants' self awareness or compare participant- versus other-reports for level of functioning. Given the current study findings, future researcher may wish to collect data from multiple sources when examining deficits and functioning in individuals with TBI.

Finally, it is interesting to note that although the measure of verbal cognitive flexibility (as measured by the VCAT) moderated the relationships between traditional masculine beliefs/attitudes/behaviors and psychosocial outcomes, the measure of flexibility of closure (measured by the Hidden Patterns Test; HPT) did not. Because verbal flexibility has been more closely linked to creativity, interpersonal skills, and prefrontal cortex functioning (Cho, Nijenhuis, van Vianen, Kim, & Lee, 2010; Troyer, Moscovitch, Winocur, Alexander, & Stuss, 1998; Upadhyay & Shukla, 2001) while flexibility of closure is related to judgment of spatial relationships (Reio & Czarnolewski, 2004), our findings suggest that greater prefrontal cortical functioning and interpersonal skill may play more of a role in TBI recovery and outcomes in day-to-day life than does the ability to judge spatial relationships, which may be less salient in the recovery process. This finding makes sense given the deficits in social pragmatics (Levine et al., 2000) and alexithymia (Henry et al., 2006) commonly found in individuals who have sustained a TBI and the importance of these areas of functioning in family and community reintegration (Henry et al., 2006; Levine et al., 2000).

Our third hypothesis predicted that help-seeking attitudes would partially mediate the relationships between traditional masculine beliefs/attitudes/behaviors and the outcomes of Living Skills and Relationships and would not mediate the relationship between traditional masculine beliefs/attitudes/behaviors and the outcome of Work and Leisure. This hypothesis was partially supported by the results. As predicted, the first three steps of Barron and Kenny's (1986) 4-step model of mediation were met using the predictor of traditional masculine beliefs/attitudes/behaviors, the mediator of help-seeking, and the community reintegration outcomes of Relationships and Living Skills. Additionally, no relationship was found between help-seeking and the domain of Work and Leisure. However, the final step in the mediation

model was found not to be significant, such that help-seeking did not mediate the relationships between traditional masculine beliefs/attitudes/behaviors and the outcomes of Living Skills or Relationships.

Interestingly, although help-seeking was not a significant moderator in this model, it did have an additive effect when combined with traditional masculine beliefs/attitudes/behaviors when predicting the outcomes of Living Skills and Relationships. Thus, it could be concluded that individuals endorsing greater traditional masculine beliefs/attitudes/behaviors along with more negative attitudes about help-seeking would have poorer outcomes in the community reintegration domains of Living Skills and Relationships than individuals endorsing either factor alone. This finding is in accordance with research on both masculinity and help-seeking, which has found that men endorsing greater traditional masculine beliefs/attitudes/behaviors had poorer relationships (e.g., Shepard et al., 2011) and that an unwillingness to seek help can interfere with treatment and recovery (Gerschick & Miller, 1995; Rochlin et al., 2010).

Our fourth and final hypothesis was that the three domains of community reintegration would be associated with greater subjective quality of life. This hypothesis was fully supported by the results. We found that Living Skills ($\rho = .662, p < .001$) and Relationships ($\rho = .697, p < .001$) demonstrated moderate-to-strong relationships with life satisfaction, while Work and Leisure ($\rho = .292, p < .05$) demonstrated a mild-to-moderate degree of association with the same outcome. These findings were to be expected, as previous research has reported strong relationships between significant areas of functioning in one's life (e.g., relationships, work, etc.) and overall quality of life and life satisfaction (e.g., Kang, Shaver, Sue, Min, & Jing, 2003; Nickerson, Schwartz, & Diener, 2007).

In summary, results from the current investigation determined that, for male military veterans who sustained a mild traumatic brain injury in OEF/OIF, greater endorsement of traditional masculine gender role beliefs/attitudes/behaviors was: (a) negatively associated with the community reintegration domains of Living Skills and Relationships and not associated with Work and Leisure; and (b) associated with poorer outcomes in Living Skills and increased difficulties related to work only for participants with greater verbal cognitive flexibility. We also found that although the relationships between traditional masculine gender role beliefs/attitudes/behaviors and Living Skills and Relationships were not partially mediated by help-seeking attitudes, masculine and help-seeking attitudes combined to produce an additive effect in predicting Living Skills and Relationship outcomes. Finally, we found that the three community reintegration domains (Work and Leisure, Living Skills, and Relationships) were significantly related to overall life satisfaction.

These findings seem to be in accordance with Gutman and Napier-Klemic's (1996) theory of gender role strain that is created due to the acquired injury. As discussed earlier, this theory posits that onset of injury gives rise to feelings of anxiety experienced by individuals who question their ability to express their gender identity because of the decrease in available social roles and activities following the injury. Hutchinson and Kleiber (2000) assert that because disability can create gender role strain, men work to overcome adversity by employing aggressive action and ignoring feelings of sadness or pain, which can serve to both inspire injured men to persevere in the face of their disability but also set a high bar for success, especially when the physical and emotional attributes employed overcome this adversity are compromised by the injury itself. Although not tested directly, these theories provided a context for our research hypotheses, and we believe that the results of our study – that men reporting

greater endorsement of traditional masculine gender role beliefs/attitudes/behaviors also demonstrate poorer functioning in living skill and relationships, and are less likely to ask for help – are in accordance with the idea that characteristics such as perseverance and reluctance to ask for help common to more traditionally masculine men may hinder their overall recovery process. We hope that future studies will be able to expand on the perceptions and attitudes behind our more quantitative findings to further examine these theories of gender role strain and functioning.

Our results also highlight the important role of the perception of family functioning in the recovery and community reintegration process. Traditional masculine gender role beliefs/attitudes/behaviors were most closely related to the perception of difficulties with familial and romantic relationships, which in turn was most closely related to overall life satisfaction. This finding is supported by previous research demonstrating that social and family functioning and support can significantly influence TBI treatment and recovery (Koehler, Wilhelm, & Shoulson, 2011). We also found that greater problems in areas such as family, friends, and finances were all related to decreased life satisfaction, a finding echoed by Jacobs (1988), who demonstrated that successful rehabilitation following injury requires successful family cooperation in areas including transportation, finance, leisure, and emotional support. Of note, because self-report data were used to derive our findings, it was not possible to determine whether participants' perceptions of family and relationship functioning matched more objective measurements of this construct. Nonetheless, because traditional masculine gender role beliefs/attitudes/behaviors appear to have a strong influence on the perception of family and relationship cohesion, future investigations and treatments might focus on the interplay between masculinity and relationships in the context of acquired injury.

These findings also highlight the importance of depressive symptomatology on functioning following TBI. Depressive symptoms were correlated with many mediating, moderating, and outcome variables, and accounted for much of the variance in many of the models tested. A recent systematic review of the literature devoted to the treatment of depression in individuals with TBI found that serotonergic antidepressants and cognitive behavioral interventions were most effective in the reduction of depressive symptoms (Fann, Hart, & Schomer, 2009), and our findings suggest the need for the identification and treatment of depressive symptoms during the recovery and reintegration process.

Finally, these results support the influence of general help-seeking attitudes and behavior on recovery and reintegration. Although not as influential on community reintegration outcomes as traditional masculine gender role beliefs/attitudes/behaviors, help-seeking attitudes proved to be an important predictor of reintegration and functioning and demonstrated a similarly strong relationship with overall life satisfaction as does masculinity. Previous research has found within-person and across-situation variability for help-seeking in men to be extensive, and has emphasized the role of context in the interplay between masculinity and help-seeking (Addis & Mahalik, 2003). Other researchers have identified contextual factors that can influence decision-making among more masculine men. Specifically, previous research has found that men are more likely to seek help: (a) if the problem is considered to be “normal” (Nadler, 1990); (b) when problem is not considered to be “part of them” (ego central; Nadler, 1990; Wills & DePaulo, 1991); (c) if it is believed that there will be an opportunity to reciprocate (Wills, 1992); and (d) if it is believed that others will not view them negatively if help is requested (Addis & Mahalik, 2003). In the context of TBI recovery, it is easy to imagine how more traditionally masculine men might be more likely to seek help for problems such as forgetfulness (a “normal,”

non-ego-central problem where reciprocation is possible and without significant stigma), while other problems such as depression or suicidal ideation might pose more of a challenge and/or threat (“non-normal,” ego central, stigmatized and uncertain likelihood of reciprocation).

As discussed, the findings of this current investigation have important implications for psychological and occupational treatment development for traumatically brain-injured men in the context of community reintegration. Specifically, we believe that treatment should focus on four main aspects: facilitating help-seeking behavior (when appropriate), strengths-focused therapy, psychoeducation of family members, and treatment of depression. First, we advocate the normalization and de-stigmatization of TBI symptoms to encourage healthy help-seeking attitudes and behaviors. Second, individual psychotherapy following TBI should focus and expand upon those traditional masculine gender roles that are both related to more positive outcomes (e.g., perseverance, power) and are still available after the injury, while increasing awareness of those characteristics that may be hindering the recovery process to mitigate the potential negative effects (Good et al., 2006). Third, family members of brain-injured men should be educated about the influence of a traditional masculine gender role on the recovery process (e.g., gender role strain, heroic masculinity) and ways in which they can help to minimize gender role strain and maximize autonomy. Lastly, injured men should be screened and treated for depression with antidepressants and/or cognitive behavioral interventions. Of note, because our findings regarding the role of increased verbal cognitive flexibility have deviated from previous research, we think that it is too early to base treatment recommendations on this finding. We recommend that future research more closely examine the role of cognitive flexibility in the current model.

Limitations and Future Research

There are several limitations to the current study. First, as mentioned earlier, this investigation used only self-report measures. Thus, we were unable to assess the accuracy of the participants' ratings. Given that brain-injured individuals can demonstrate deficits in self-awareness and cognitive appraisal, it is possible that participant ratings were skewed or inaccurate in some way. Future research should use both self- and other-rating scales to (a) compare the accuracy of the brain-injured individual's views of themselves and their current functioning, and (b) obtain an outside opinion on participant functioning.

We also did not account for any potential change in traditional masculine gender role beliefs/attitudes/behaviors from pre- to post-injury. Thus, it remains unclear whether these beliefs, attitudes, and behaviors may be altered by the injury and/or the recovery process. If possible, pre-morbid measures of traditional masculine gender role beliefs/attitudes/behaviors would greatly enhance the study of masculinity and injury recovery. While this is a difficult task, we believe that large military institutions (such as the United States Military) could add such measures to currently-used pre-deployment screening questionnaires.

The presence of posttraumatic stress disorder was also not accounted for in the current investigation. Therefore, it is possible that some of our participants had co-occurring PTSD, whose associated symptomatology can add to or magnify TBI symptoms and may have accounted for some of the variance in outcomes. Because PTSD is significantly related to psychosocial functioning and community reintegration outcomes (e.g., Gaylord, 2006), and because many symptoms of TBI and PTSD overlap (Bryant, 2001; Kennedy et al., 2007), it would be important in future studies to differentiate between individuals with TBI only, PTSD only, and co-occurring TBI and PTSD to account for possible differences in community reintegration and life satisfaction.

Finally, it should be noted that our sample of 60 participants fell short of our power analysis goal of 82 participants. However, there is an ongoing debate in the literature regarding the utility of *a priori* power analyses in study design and sample size (Onwuegbuzie & Leech, 2004), and a sample size of at least 50 participants per group is often considered to be adequate for regression analysis (Bonett & Wright, 2011; Moineddin, Matheson, & Glazier, 2007). Furthermore, because this was the first study of its kind, effect sizes from previous research used in our power analyses were only an estimate and may not have been relevant for the current study. Nonetheless, we believe that larger sample sizes in future studies will allow for the additional analytic methods and detection of potential smaller and more nuanced interactions.

Because the present study was the first to investigate the interplay between traditional masculine gender role beliefs/attitudes/behaviors, help-seeking, cognitive functioning, and community reintegration in veterans with a TBI, it has left many questions to be investigated in future research. However, as the current conflicts in Iraq and Afghanistan continue to wind down, our findings help to shed light onto a growing population of brain-injured veterans who are struggling to reintegrate into families and communities with newfound deficits and limitations. We hope that our research will serve as a resource treatment development and as a basis for future research.

APPENDIX A

CONFORMITY TO MASCULINE NORMS INVENTORY-46

The following pages contain a series of statements about how men might think, feel or behave. The statements are designed to measure attitudes, beliefs, and behaviors associated with both traditional and non-traditional masculine gender roles.

Thinking about your own actions, feelings and beliefs, please indicate how much **you personally agree or disagree with each statement** by circling SD for "Strongly Disagree", D for "Disagree", A for "Agree," or SA for "Strongly agree" to the left of the statement. There are no right or wrong responses to the statements. You should give the responses that most accurately describe your personal actions, feelings and beliefs. It is best if you respond with your first impression when answering.

1. In general, I will do anything to win SD D A SA
2. If I could, I would frequently change sexual partners SD D A SA
3. I hate asking for help SD D A SA
4. I believe that violence is never justified SD D A SA
5. Being thought of as gay is not a bad thing SD D A SA
6. In general, I do not like risky situations SD D A SA
7. Winning is not my first priority SD D A SA
8. I enjoy taking risks SD D A SA
9. I am disgusted by any kind of violence SD D A SA
10. I ask for help when I need it SD D A SA
11. My work is the most important part of my life SD D A SA
12. I would only have sex if I was in a committed relationship SD D A SA
13. I bring up my feelings when talking to others SD D A SA
14. I would be furious if someone thought I was gay SD D A SA
15. I don't mind losing SD D A SA
16. I take risks SD D A SA
17. It would not bother me at all if someone thought I was gay SD D A SA
18. I never share my feelings SD D A SA
19. Sometimes violent action is necessary SD D A SA
20. In general, I control the women in my life SD D A SA
21. I would feel good if I had many sexual partners SD D A SA
22. It is important for me to win SD D A SA
23. I don't like giving all my attention to work SD D A SA
24. It would be awful if people thought I was gay SD D A SA
25. I like to talk about my feelings SD D A SA
26. I never ask for help SD D A SA
27. More often than not, losing does not bother me SD D A SA
28. I frequently put myself in risky situations SD D A SA
29. Women should be subservient to men SD D A SA
30. I am willing to get into a physical fight if necessary SD D A SA
31. I feel good when work is my first priority SD D A SA
32. I tend to keep my feelings to myself SD D A SA

- 33. Winning is not important to me SD D A SA
- 34. Violence is almost never justified SD D A SA
- 35. I am happiest when I'm risking danger SD D A SA
- 36. It would be enjoyable to date more than one person at a time SD D A SA
- 37. I would feel uncomfortable if someone thought I was gay SD D A SA
- 38. I am not ashamed to ask for help SD D A SA
- 39. Work comes first SD D A SA
- 40. I tend to share my feelings SD D A SA
- 41. No matter what the situation I would never act violently SD D A SA
- 42. Things tend to be better when men are in charge SD D A SA
- 43. It bothers me when I have to ask for help SD D A SA
- 44. I love it when men are in charge of women SD D A SA
- 45. I hate it when people ask me to talk about my feelings SD D A SA
- 46. I try to avoid being perceived as gay SD D A SA

APPENDIX B

PSYCHOSOCIAL DIFFICULTIES SCALE

When vets return from their deployment, they often face a number of challenges. The questions below ask about some of these challenges and how significant they are for you. Please circle the number that reflects your level of concern or need.

| | Not a concern | A slight concern | A moderate concern | A major concern |
|--|------------------|---------------------|-----------------------|--------------------|
| Problems at Work | ----- | ----- | ----- | ----- |
| 1. Problems finding a job | 1 | 2 | 3 | 4 |
| 2. Being unhappy with my job | 1 | 2 | 3 | 4 |
| 3. Not getting along with my boss | 1 | 2 | 3 | 4 |
| 4. Not getting along with my co-workers | 1 | 2 | 3 | 4 |
| 5. My job is not as satisfying as before I was deployed | 1 | 2 | 3 | 4 |
| 6. I have little chance for advancement | 1 | 2 | 3 | 4 |
| 7. I'm earning less now than before I was deployed | 1 | 2 | 3 | 4 |
| Financial Problems | ----- | ----- | ----- | ----- |
| 8. A lot of bills piled up when I was gone | 1 | 2 | 3 | 4 |
| 9. I'm facing bankruptcy, foreclosure on my house, and/or my car being repossessed | 1 | 2 | 3 | 4 |
| 10. Unsure how to best manage or invest my money | 1 | 2 | 3 | 4 |
| 11. Trouble collecting my unemployment because I can't get my DD-214 | 1 | 2 | 3 | 4 |
| Family Problems | ----- | ----- | ----- | ----- |
| 12. My spouse or partner and I are having problems getting along | 1 | 2 | 3 | 4 |
| 13. My kids are having problems | 1 | 2 | 3 | 4 |
| 14. I'm having problems living with my parents | 1 | 2 | 3 | 4 |
| 15. I'm having a problem connecting emotionally with members of my family | 1 | 2 | 3 | 4 |
| 16. I have a problem arranging daycare | 1 | 2 | 3 | 4 |
| Friends and Peers | ----- | ----- | ----- | ----- |
| 17. I relate better to my fellow Veterans than my civilian friends | 1 | 2 | 3 | 4 |
| 18. My civilian friends just can't understand my experience | 1 | 2 | 3 | 4 |
| 19. I find I don't share the same interests as most of my civilian friends | 1 | 2 | 3 | 4 |

APPENDIX C

WILLINGNESS TO SEEK HELP QUESTIONNAIRE

Please indicate how much you personally identify with each statement below. Please choose from the following response choices: “3”: identify completely with statement; “2”: identify with statement, “1”: do not identify with statement, “0”: do not identify with statement at all.

1. If I were afraid of heights, I would try to conceal this from my friends. 3 1 2 0
2. No conflict in our marriage could be so severe that my partner and I could not solve it on our own. 3 2 1 0
3. Were a problem to develop in my sex life, I would either need to solve it alone or to live with it, because I would not be able to discuss it with anyone. 3 2 1 0
4. If, for whatever reason, I were to have prolonged difficulty walking, I would do whatever possible to avoid asking help from anyone. 3 2 1 0
5. When something breaks down in my home, I usually persist in trying to fix it myself, even when it is difficult and I am wasting time and money. 3 2 1 0
6. If I were suddenly afraid to go out in the street, I believe I could overcome without help from anyone else. 3 2 1 0
7. If a serious problem were to arise in my marriage, I would be willing to talk about it with a professional, or with a friend or relative, but in any case I would not keep it to myself. 3 2 1 0
8. Sexual problems are a difficult topic to talk about, but if I were to have such a problem I would use the services of an expert. 3 2 1 0
9. If I ever have difficulty seeing, I will try to arrange my life so no one will notice. 3 2 1 0
10. If I were to lose control and hurt my child in a moment of anger, I would need to make sure that no one would know about it. 3 2 1 0
11. Discovering unexpectedly that my spouse was hitting my child too hard would lead me to seek out someone who could intervene as quickly as possible. 3 2 1 0
12. Were my spouse to suggest that we go to a family therapist, I would take the position that we are able to solve our own problems. 3 2 1 0
13. I believe that a time of mourning for a loved one would be a time when I would need other people. 3 2 1 0
14. If both my legs were to be broken in an accident, I would prefer to stay home for a few months rather than be pushed around in a wheelchair. 3 2 1 0
15. Some problems are so distressing that they cannot be managed alone. 3 2 1 0
16. If I were to develop an irrational fear of the dark and I were concerned that it might affect my child, I would seek out a person who could help me overcome my fear. 3 2 1 0
17. At the funeral of a loved one, I would do all I could do appear strong and not show any weakness. 3 2 1 0
18. If I had a chronic illness, such as diabetes, I would seek out persons who could offer me guidance in addition to the medical treatment. 3 2 1 0
19. If a member of my family were to become mentally ill, I would hope for contact with an expert who could advise me in how I might be of help. 3 2 1 0
20. If I thought I had a problem of excessive drinking, I could discuss it with persons who might be able to help me. 3 2 1 0
21. Problems of sexual dysfunction would cause me to seek outside help. 3 2 1 0

- 22. During a period of bereavement for a loved one, I would allow friends and relatives to take over some of the tasks for which I am usually responsible. 3 2 1 0
- 23. Becoming addicted to drugs is the kind of situation that would cause me to place my fate in the hands of an expert. 3 2 1 0
- 24. If, in the course of medical treatment for a physical ailment, I were to experience serious anxiety, I would ask the doctor to treat the anxiety. 3 2 1 0
- 25. If I am ever depressed, I will seek out the appropriate person to tell about it. 3 2 1 0

APPENDIX D

SYDNEY PSYCHOSOCIAL REINTEGRATION SCALE-2

Work and Leisure

1. Current work: Have the hours of work (or study), or the type of work (study) changed because of the injury? (If you are a student, answer questions in the section in terms of changes in your studies.)

(4) Not at all: Same or better

(3) a little: Now work less hours per week, OR work duties (studies) have changed for easier/lighter ones

(2) moderately: Work casually, OR have some help from others in doing some work (study)

(1) a lot: Now unemployed, OR in rehabilitation, OR in a supported work program, OR doing volunteer work, OR receive remedial assistance in studies

(0) extreme: Am almost unable to work (study) or am unable to at present

(N/A) unable to assess: Did not work before the injury and still do not work

2. Work skills: Have the work (study) skills changed because of the injury?

(4) Not at all: Same or better

(3) A little: Not quite as good, e.g. have to put in a lot of effort to get the same result, get tired easily, lose concentration

(2) Moderately: Definitely not as good, e.g. sometimes make mistakes

(1) A lot: much worse, e.g. I am slower

(0) Extreme: very much worse, e.g. make many mistakes, am very slow, work is of poor quality, need constant supervision and/or reminders at present

3. Leisure: Has there been any change in the number or type of leisure activities or interests because of the injury?

(4) Not at all: Same or more, and done as often or more

(3) A little: Have most of the same activities and interests, OR have the same activities and interests but do them less often

(2) Moderately: Definitely less, but may have developed new activities and interests

(1) A lot: Only have some of the leisure activities and interests and have not developed new ones

(0) Extreme: Almost none or no leisure activities or interest at present

(N/A) Unable to assess: Did not have leisure activities before the injury and still do not have leisure activities

4. Organizing activities: Has there been any change in the way you organize work and leisure activities because of the injury?

- (4) Not at all: Same or better
- (3) A little: Need prompts or supports from others
- (2) Moderately: More dependent on other people to organize activities, e.g. others suggest what to do and how to go about it
- (1) A lot: need other people to do the organizing, e.g. making arrangement, providing transportation
- (0) Extreme: Almost completely or completely dependent on other people to suggest and organize activities at present

Relationships

5. Spouse or partner: Do you have a partner or spouse at the time of injury?

(a) If yes, has the relationship changed because of the injury? If “no,” go to part (b) below

- (4) Not at all: Same or better
- (3) A little: Not quite the same, but am still able to get along
- (2) Moderately: Definitely not the same
- (1) A lot: A lot of changes, but I might have the skills to form a new relationship
- (0) Extreme: Nature of relationship has changed in a major way (e.g., partner takes on most responsibilities or the primary caregiver/relationship has broken down) and I probably do not have the skills to form a new relationship

(b) If “no,” how much changes is there is your ability to form and maintain such a relationship compared to before?

- (4) None at all: Same or better
- (3) A little: Not quite the same
- (2) Moderate: Definitely not the same
- (1) A lot: A lot of changes, but I might have the skills to form a new relationship
- (0) Extreme: Probably do not have or do not have the skills to form a new relationship

6. Family: Have your relationships with other family members changed because of the injury?

- (4) Not at all: Same or better
- (3) A little: Not quite the same
- (2) Moderately: Definitely not the same
- (1) A lot: A lot of changes in relationships with some family members
- (0) Extreme: Changed in a major way OT a breakdown of relationships with some family members due to effects of injury
- (N/A) Unable to assess: Did not have contact with family before the injury

7. Friends and other people: Have your relationships with other people outside family (such as close friends, co-workers, neighbors) changed because of the injury?

- (4) Not at all: Same or better
- (3) A little: Not quite the same, but still see some friends weekly or more, make new friends, and get along with co-workers and neighbors
- (2) Moderately: Definitely not the same, but still see some friends once a month or more and can make new friends
- (1) A lot: Only see a few friends (or other people outside the family), and do not make new friends easily
- (0) Extreme: See hardly any friends or see none at all (or other people outside the family)

8. Communication: Have your communication skills (that is, talk with other people and understand what others say) changed because of the injury?

- (4) Not at all: Same or better
- (3) A little: Some changes, e.g. ramble and get off the point, talk is sometimes inappropriate, have some trouble finding the words to express myself
- (2) Moderately: Definite changes, e.g. difficulty thinking of things to say, joining in talk with groups of people, only talk about myself
- (1) A lot: A lot of changes, e.g., having trouble understanding what people say
- (0) Extreme: Major changes, but can communicate basic needs, OR use aids for communication OR communication is almost impossible

Living Skills

9. Social skills: Have your social skills and behavior in public changed because of the injury?

- (4) Not at all: Same or better
- (3) A little: Some changes, e.g. am awkward with other people, do not worry about what other people think or want
- (2) Moderately: Definite changes, e.g., can act in a silly way, am not as tactful or sensitive to other people's needs
- (1) A lot: A lot of changes, e.g. am more dependent on other people, am socially withdrawn
- (0) Extreme: Major changes, e.g. have difficulty interacting appropriately with others, behavior is unpredictable, have temper outburst in public, require supervision when with other people

10. Personal habits: Have your personal habits (e.g. your care in cleanliness, dressing, and tidiness) changed because of the injury?

- (4) Not at all: Same or better
- (3) A little: Do not take as much care as before
- (2) Moderately: Attend to my hygiene, dress and tidiness, but have definitely changed in this area; need supervision

(1) A lot: Need prompts, reminders or advice from others, but respond to these; need stand-by assistance

(0) Extreme: Need prompts, reminders, or advice from others, but respond to these only after repeated requests; need hand-on assistance; am totally dependent for assistance

11. Community travel: Has your use of transportation and travel around the community changed due to the injury?

NOTE: Do not include the driver of transportation, or other passengers using such transportation, in rating whether you can travel “alone” or “by yourself.”

(4) Not at all: Same or better

(3) A little: Unable to use some forms of transportation (e.g. driving a car) but can still get around in the community by using other forms of transport without help

(2) Moderately: Definite changes in use of transportation, but after training can travel around the community on my own

(1) A lot: Need assistance to plan the use of transportation, but with such help can travel around the community on my own

(0) Extreme: Very restricted in the use of transport, but with supervision can make short, familiar journeys around the community on my own (e.g. going out to the local store) OR am unable to go out into the community alone

12. Accommodation: Has your living situation changed due to the injury?

(4) Not at all: Same or better

(3) A little: Live in the community, but with emotional or social supports provided by other people, such as family, friends or neighbors, Cannot be left alone without supports for a two-week period

(2) Moderately: Definite changes and cannot be left alone for a weekend unless someone was available to check everything was okay

(1) A lot: Live in the community but in supported accommodations, such as a group home, boarding house, transitional living unit, in family home but require daily supervision or assistance

(0) Extreme: Almost unable to live in the community, even with daily supervision or assistance OR need care which may be at home requiring extensive, daily supervision or other care OR in an institution, such as a nursing home, residential service, rehabilitation unit

APPENDIX E

HIDDEN PATTERNS TEST

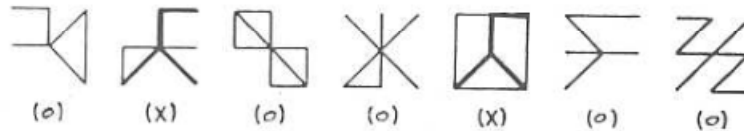
Hidden Patterns Test instructions:

How quickly can you recognize a figure that is hidden among other lines? This test contains many rows of patterns. In each pattern you are to look for the model shown below:

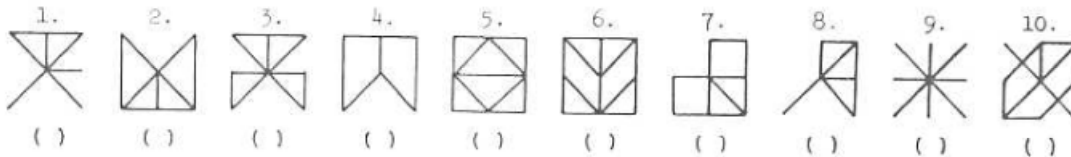


The model must always be in this position, not on its side or upside down.

In the next row, when the model appears, it is shown by heavy lines:



Your task will be to place an X in the space below each pattern in which the model appears and an O below the pattern where the model does not appear. Now, try this row:




You should have marked an X below patterns 1, 3, 4, 8, and 10, because they contain the model. You should have marked an O below patterns 2, 5, 6, 7, and 9 because they do not contain the model.

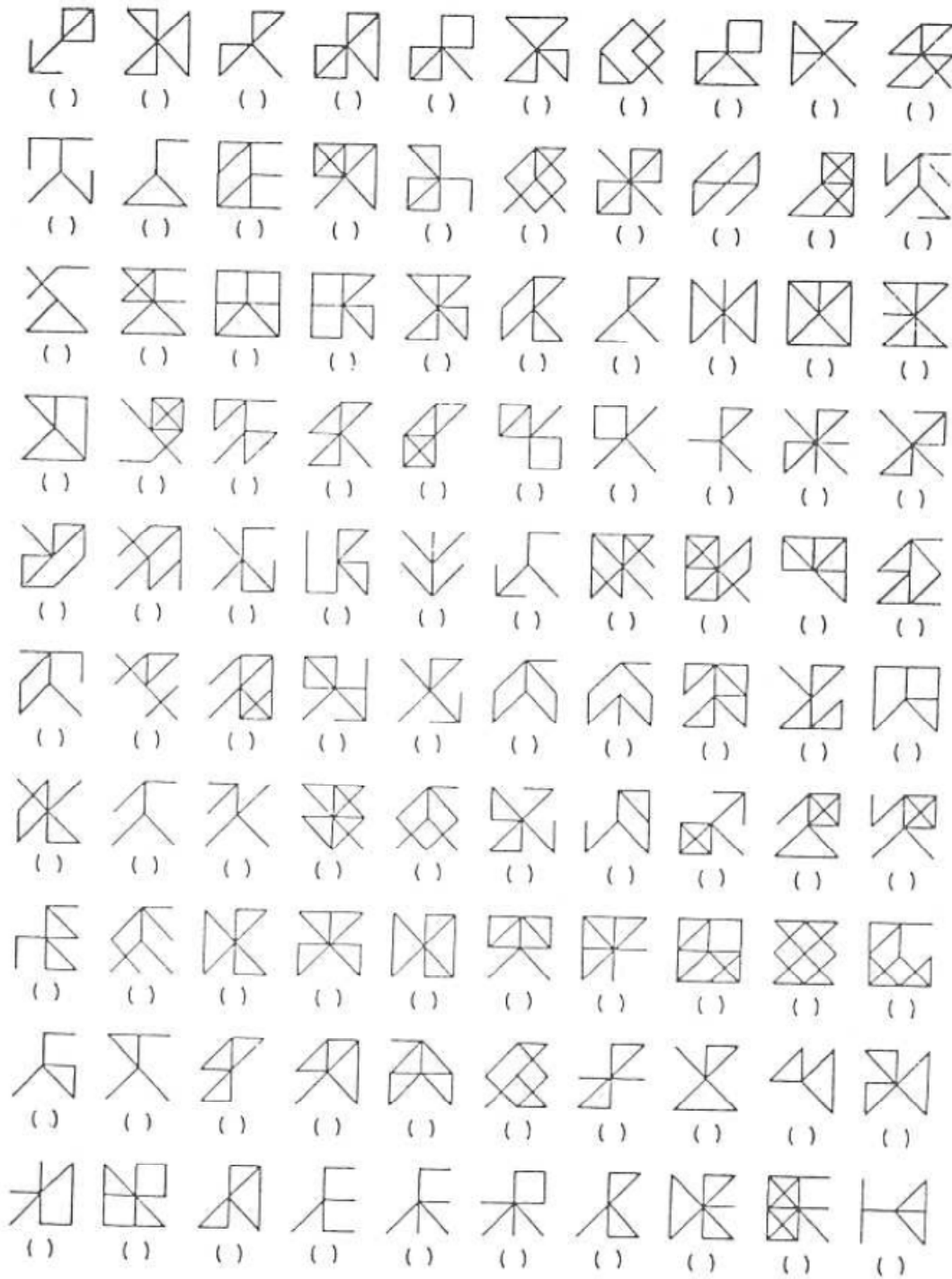
Your score on this test will be the number marked correctly minus the number marked incorrectly. Work as quickly as you can without sacrificing accuracy.

You will have 3 minutes for each of the two parts of this test. Each part has two pages. When you have finished Part 1, STOP. Please do not go on to Part 2 until you are asked to do so.

Page 2

Part 1 (3 minutes)

Model: 



APPENDIX F

VERBAL CONCEPT ATTAINMENT TEST

VCAT Instructions

Examiner says: In this test we want you to find a group of words on each card that are alike or the same in some way. [*Show Card 1.*] Look at this first example which has been done for you. There are two lines of words. Each line has one word in it which is similar to one word in the other line. These words are underlined and form a group of animal words. [*Examiner shows the next example – Card 2.*] Now try this one. Choose one word in each line so that all the words you say out loud belong to one group or type of words. [*Subject may be given up to three trials. If he doesn't understand the task after two trials, show him the answer and re-explain the principle using Card 2 to illustrate.*] Examiner says: Now try this card. [*Card 3; subject may be given up to three trials if necessary. If subject fails to solve Card 3 in three trials, discontinue test.*] If samples are passed, examiner says: In the test items to follow, be sure to choose just one word in each line so that all the words you say out loud belong to one group or type of words. Do not skip any lines. You will have a short time to do each item, but work carefully.

Present each card in order, observing time limits. Discontinue after 4 consecutive failures.

Scoring: No score for sample 1

For sample 2: 2 points for 1 trial
 1 point for 2 trials
 0 points for 3 trials

For sample 3: 2 points for 1 trial
 1 point for 2 trials
 0 points for 3 trials, but if item is passed on trial 3, continue with
card 1. If subject fails to solve sample 3 in 3 trials, discontinue
task.

VCAT stimuli, presented 1 per card – Page 1 of 5; following 4 pages are similar to page 1

Sample 1: I Horse Shoe
 II Sky Cow

Sample 2: I Boats Pink
 II House Brown
 III Yellow Mouse

Sample 3: Cat Ball Bus
 Play Car Corn
 Milk Bird Train

Card 1: Big Bite Butter
 Lack Lard Large
 Back Huge Stick

Card 2: Boy Book Say
 Red Girl Candy
 Man Clock Dog
 Car See Woman

Card 3: Sour Much Tulip
 Fruit Lily Sweet
 Rose Green Sick

APPENDIX G

CRAIG HANDICAP AND ASSESSMENT RATING TECHNIQUE

PHYSICAL INDEPENDENCE

WHAT ASSISTANCE DO YOU NEED?

People with disabilities often need assistance. We would like to differentiate between personal care for physical disabilities and supervision for cognitive problems. First, focus on physical "hands on" assistance: This includes help with eating, grooming, bathing, dressing, management of a ventilator or other equipment, transfers etc. Keeping in mind these daily activities...

1. How many hours in a typical 24-hour day do you have someone with you to provide physical assistance for personal care activities such as eating, bathing, dressing, toileting and mobility?

_____ hours paid assistance _____ hours unpaid (family, others)

2. Not including any regular care as reported above, how many hours in a typical month do you occasionally have assistance with such things as grocery shopping, laundry, housekeeping, or infrequent medical needs because of the disability?

_____ hours per month

3. Who takes responsibility for instructing and directing your attendants and/or caregivers?

_____ Self

_____ Someone Else

_____ Not applicable, does not use attendant care

MOBILITY

Now, I have a series of questions about your typical activities.

ARE YOU UP AND ABOUT REGULARLY?

9. On a typical day, how many hours are you out of bed?

_____ hours

10. In a typical week, how many days do you get out of your house and go somewhere?

_____ days

11. In the last year, how many nights have you spent away from your home (excluding hospitalizations?) _____ none _____ 1-2 _____ 3-4 _____ 5 or more

12. Can you enter and exit your home without any assistance from someone?

yes _____ no _____

13. In your home, do you have independent access to your sleeping area, kitchen, bathroom, telephone, and TV (or radio)? _____ yes _____ no

IS YOUR TRANSPORTATION ADEQUATE?

14. Can you use your transportation independently?

_____yes _____no

15. Does your transportation allow you to get to all the places you would like to go?

_____ yes _____ no

16. Does your transportation let you get out whenever you want?

_____ yes _____ no

17. Can you use your transportation with little or no advance notice?

_____ yes _____ no

APPENDIX H

SATISFACTION WITH LIFE SCALE

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly Disagree

_____ In most ways my life is close to my ideal.

_____ The conditions of my life are excellent.

_____ I am satisfied with my life.

_____ So far I have gotten the important things I want in life.

_____ If I could live my life over, I would change almost nothing.

APPENDIX I

CENTER FOR EPIDEMIOLOGIC STUDIES DEPRESSION SCALE-10

Below is a list of some of the ways you may have felt or behaved. Please indicate how often you have felt this way during the past week: (circle one number on each line)

0 = Rarely or none of the time (less than one day)

1 = Some or a little of the time (1-2 days)

2 = Occasionally or a moderate amount of time (3-4 days)

3 = Most or all of the time (5-7 days)

Circle only one response for each statement.

1. I was bothered by things that usually don't bother me.....0 1 2 3
2. I had trouble keeping my mind on what I was doing.....0 1 2 3
3. I felt depressed.....0 1 2 3
4. I felt that everything I did was an effort.....0 1 2 3
5. I felt hopeful about the future.....0 1 2 3
6. I felt fearful.....0 1 2 3
7. My sleep was restless.....0 1 2 3
8. I was happy.....0 1 2 3
9. I felt lonely.....0 1 2 3
10. I could not "get going".....0 1 2 3

APPENDIX J

DEMOGRAPHICS QUESTIONNAIRE

1. What is your age? _____
2. What do you consider your ethnicity/race to be?
 - a. Caucasian or White
 - b. African-American or Black
 - c. Hispanic or Latino(a)
 - d. Native American
 - e. Asian or Pacific Islander
 - f. Multi-racial
3. What is the combined average yearly income of your primary household?
 - g. < \$25,000
 - h. \$25,000-\$40,000
 - i. \$40,001-\$60,000
 - j. \$60,001-\$80,000
 - k. \$80,001-\$100,000
 - l. \$100,001-\$150,000
 - m. > \$150,000
4. While deployed to Iraq and/or Afghanistan, how many blasts were you exposed to at close range (less than 100 yards)? _____
5. How long has it been since you were exposed to the most recent blast?
_____ years, _____ months
6. How many years of education have you completed? _____
7. What is your relationship status?
 - a. Single
 - b. Married
 - c. Separated
 - d. Divorced
 - e. Widowed

REFERENCES

- Addis, M. E., & Mahalik, J. R. (2003). Men, masculinity, and the contexts of help seeking. *American Psychologist*, 58(1), 5-14.
- Alagna, S. W. (1982). Sex role identity, peer evaluation of competition, and the responses of men and women in a competitive situation. *Journal of Personality and Social Psychology*, 43, 546-554.
- Anderson, V., & Catroppa, C. (2005). Recovery of executive skills following paediatric traumatic brain injury (TBI): A 2 year follow-up. *Brain Injury*, 19(6), 459-470.
- Andresen, E. M., Malmgren, J. A., Carter, W. B., & Patrick, D. L. (1994). Screening for depression in well older adults: Evaluation of a short form of the CES-D. *American Journal of Preventive Medicine*, 10(2), 77-84.
- Arango-Lasprilla, J. C., Ketchum, J. M., Dezfulian, T., Kreutzer, J. S., O'Neil-Pirozzi, T. M., Hammond, F., et al. (2008). Predictors of marital stability 2 years following traumatic brain injury. *Brain Injury*, 22(7-8), 564-574.
- Barney, L. J., Griffiths, K. M., Jorm, A. F., & Christensen, H. (2006). Stigma about depression and its impact on help-seeking intentions. *Australian and New Zealand Journal of Psychiatry*, 40(1), 51-54.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Basso, M. R., Bornstein, R. A., Carona, F., & Morton, R. (2001). Depression accounts for executive function deficits in obsessive-compulsive disorder. *Neuropsychiatry, Neuropsychology, & Behavioral Neurology*, 14(4), 241-245.
- Bay, E., & Donders, J. (2008). Risk factors for depressive symptoms after mild-to-moderate traumatic brain injury. *Brain Injury*, 22(3), 233-241.
- Bonett, D. G., & Wright, T. A. (2011). Sample size requirements for multiple regression interval estimation. *Journal of Organizational Behavior*, 32(6), 822-830.
- Bornstein, R. A. (1982). A factor analytic study of the construct validity of the Verbal Concept Attainment Test. *Journal of Clinical Neuropsychology*, 4(1), 43-50.
- Bornstein, R. A. (1983). Verbal Concept Attainment Test: Cross-validation and validation of a booklet form. *Journal of Clinical Psychology*, 39(5), 743-745.
- Bornstein, R. A. (1986). Contribution of various neuropsychological measures to detection of frontal lobe impairment. *International Journal of Clinical Neuropsychology*, 8(1), 18-22.

- Botzum, W. A. (1951). A factorial study of the reasoning and closure factors. *Psychometrika*, 16, 361-386.
- Boyce, L. A., & Herd, A. M. (2003). The relationship between gender role stereotypes and requisite military leadership characteristics. *Sex Roles*, 49(7/8), 365-378.
- Brenner, L. A., Gutierrez, P. M., Cornette, M. M., Betthausen, L. M., Bahraini, N., & Staves, P. J. (2008). A Qualitative study of potential suicide risk factors in returning combat veterans. *Journal of Mental Health Counseling*, 30(3), 211-225.
- Brown, M., & Vandergoot, D. (1998). Quality of life for individuals with traumatic brain injury: Comparison with other living in the community. *The Journal of Head Trauma Rehabilitation*, 13(4), 1-23.
- Bryant, R. A. (2001). Posttraumatic stress disorder and traumatic brain injury: Can they co-exist? *Clinical Psychology Review*, 21(6), 931-948.
- Busch, R. M., McBride, A., Curtiss, G., & Vanderploeg, R. D. (2005). The components of executive functioning in traumatic brain injury. *Journal of Clinical and Experimental Neuropsychology*, 27(8), 1022-1032.
- Butler, P. D., Schechter, I., Revheim, N., Silipo, G., & Javitt, D. C. Has an important test been overlooked? Closure flexibility in schizophrenia. *Schizophrenia Research*, 118(1-3), 20-25.
- Centers for Disease Control (2006). *Facts about traumatic brain injury*. Retrieved August 15, 2009, 2009, from http://www.cdc.gov/ncipc/tbi/FactSheets/Facts_About_TBI.pdf
- Charlifue, S., & Gerhart, K. (2004). Community integration in spinal cord injury of long duration. *NeuroRehabilitation*, 19(2), 91-101.
- Charmaz, K. (1994). Identity dilemmas of chronically ill men. *The Sociological Quarterly*, 35(2), 269-288.
- Cho, S. H., Nijenhuis, J. T., van Vianen, A. E., Kim, H.-B., & Lee, K. H. The relationship between diverse components of intelligence and creativity. *The Journal of Creative Behavior*, 44(2), 125-137.
- Chow, E. N. (1987). The influence of sex role identity and occupational attainment in the psychological well-being of Asian American women. *Psychology of Women Quarterly*, 11, 69-82.
- Cohen, B.-Z. (1999). Measuring the willingness to seek help. *Journal of Social Service Research*, 26(1), 67-82.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.

- Cserjesi, R., Molnar, D., Luminet, O., & Lenard, L. (2007). Is there any relationship between obesity and mental flexibility in children? *Appetite*, 49(3), 675-678.
- Defense and Veterans Brain Injury Center. (2011). *DoD worldwide numbers for TBI: Total diagnoses*. Retrieved December 17, 2011, from <http://www.dvbic.org/Totals-at-a-Glance.aspx>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49(1), 71-75.
- Ekstrom, R., French, J., Harman, H., & Dermen, D. (1976). *Kit of factor-referenced cognitive tests*. Princeton, NJ: Educational Testing Service.
- Fann, J. R., Hart, T., & Schomer, K. G. (2009). Treatment for depression after traumatic brain injury: A systematic review. *Journal of Neurotrauma*, 26(12), 2383-2402.
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175-191.
- Fichtenberg, N. L., Millis, S. R., Mann, N. R., Zafonte, R. D., & Millard, A. E. (2000). Factors associated with insomnia among post-acute traumatic brain injury survivors. *Brain Injury*, 14(7), 659-667.
- Fischer, H. (2009). *United States military casualty statistics: Operation Iraqi Freedom and Operation Enduring Freedom*: Congressional Research Service.
- Fleming, J., & Strong, J. (1995). Self-awareness of deficits following acquired brain injury: Considerations for rehabilitation. *The British Journal of Occupational Therapy*, 58(2), 55-60.
- Franulic, A., Horta, E., Maturana, R., Scherpenisse, J., & Carbonell, C. (2000). Organic personality disorder after traumatic brain injury: cognitive, anatomic and psychosocial factors: A 6 month follow-up. *Brain Injury*, 14(5), 431-439.
- Gaylord, K. M. (2006). The psychosocial effects of combat: The frequently unseen injury. *Critical Care Nursing Clinics of North America*, 18(3), 349-357.
- Gerschick, T. J., & Miller, A. S. (1995). *Coming to terms: Masculinity and physical disability*. Thousand Oaks, CA: Sage Publications, Inc.
- Good, G. E., Schopp, L. H., Thomson, D., Hathaway, S., Sanford-Martens, T., Mazurek, M. O., et al. (2006). Masculine roles and rehabilitation outcomes among men recovering from serious injuries. *Psychology of Men & Masculinity*, 7(3), 165-176.
- Good, G. E., & Wood, P. K. (1995). Male gender role conflict, depression, and help seeking: Do college men face double jeopardy? *Journal of Counseling & Development*, 74(1), 70-75.

- Gordon, W. A., Mann, N., & Willer, B. (1993). Demographic and social characteristics of the traumatic brain injury model system database. *The Journal of Head Trauma Rehabilitation*, 8(2), 26-33.
- Granado, N. S., Smith, T. C., Swanson, G. M., Harris, R. B., Shahar, E., Smith, B., et al. (2009). Newly reported hypertension after military combat deployment in a large population-based study. *Hypertension*, 54(5), 966-973.
- Grattan, L. M., & Eslinger, P. J. (1989). Higher cognition and social behavior: Changes in cognitive flexibility and empathy after cerebral lesions. *Neuropsychology*, 3(3), 175-185.
- Groth-Marnat, G. (2009). *Handbook of psychological Assessment*. Hoboken, NJ: John Wiley & Sons., Inc.
- Gutman, S. A., & Napier-Klemic, J. (1996). The experience of head injury on the impairment of gender identity and gender role. *American Journal of Occupational Therapy*, 50(7), 535-544.
- Headey, B. W., Kelley, J., & Wearing, A. J. (1993). Dimensions of mental health: Life satisfaction, positive affect, anxiety and depression. *Social Indicators Research*, 29(1), 63-82.
- Henry, J. D., Phillips, L. H., Crawford, J. R., Ietswaart, M., & Summers, F. (2006). Theory of mind following traumatic brain injury: The role of emotion recognition and executive dysfunction. *Neuropsychologia*, 44(10), 1623-1628.
- Henry, J. D., Phillips, L. H., Crawford, J. R., Theodorou, G., & Summers, F. (2006). Cognitive and psychosocial correlates of alexithymia following traumatic brain injury. *Neuropsychologia*, 44(1), 62-72.
- Hoge, C. W., Auchterlonie, J. L., & Milliken, C. S. (2006). Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan. *JAMA: Journal of the American Medical Association*, 295(9), 1023-1032.
- Hoge, C. W., Goldberg, H. M., & Castro, C. A. (2009). Care of war veterans with mild traumatic brain injury -- flawed perspectives. *New England Journal of Medicine*, 360(16), 1588-1591.
- Hosek, J. R., Kavanagh, J., & Miller, L. (2006). *How deployments affect service members*. Santa Monica: RAND Corporation.
- Husaini, B. A., Moore, S. T., & Cain, V. A. (1994). Psychiatric symptoms and help-seeking behavior among the elderly: An analysis of racial and gender differences. *Journal of Gerontological Social Work*, 21(3-4), 177-195.

- Hutchinson, S. L., & Kleiber, D. A. (2000). Heroic masculinity following spinal cord injury: Implications for therapeutic recreation practice and research. *Therapeutic Recreation Journal*, 34(1), 42-54.
- Innes, J., Dormer, S., & Lukins, J. (1993). Knowledge of gender stereotypes and attitudes towards women: A preliminary report. *Psychological Reports*, 73(3, Pt 1), 1005-1006.
- Jacobs, H. E. (1988). The Los Angeles head injury survey: Procedures and initial findings. *Archives of Physical Medicine and Rehabilitation*, 69(6), 425-431.
- Johnstone, B., Schopp, L. H., Harper, J., & Koscuilek, J. (1999). Neuropsychological impairments, vocational outcomes, and financial costs for individuals with traumatic brain injury receiving state vocational rehabilitation services. *The Journal of Head Trauma Rehabilitation*, 14(3), 220-232.
- Kang, S.-M., Shaver, P. R., Sue, S., Min, K.-H., & Jing, H. (2003). Culture-Specific Patterns in the Prediction of Life Satisfaction: Roles of Emotion, Relationship Quality, and Self-Esteem. *Personality and Social Psychology Bulletin*, 29(12), 1596-1608.
- Kaplan, S. P. (1993). Five-year tracking of psychosocial changes in people with severe traumatic brain injury. *Rehabilitation Counseling Bulletin*, 36(3), 151-159.
- Keith-Lucas, A. (1994). *Giving and Taking Help* (Revised ed.). St. Davids, PA: North American Association of Christian Social Workers.
- Kendall, E. (2003). Predicting vocational adjustment following traumatic brain injury: A test of a psychosocial theory. *Journal of Vocational Rehabilitation*, 19(1), 31-45.
- Kennedy, J. E., Jaffee, M. S., Leskin, G. A., Stokes, J. W., Leal, F. O., & Fitzpatrick, P. J. (2007). Posttraumatic stress disorder and posttraumatic stress disorder-like symptoms and mild traumatic brain injury. *J Rehabil Res Dev*, 44(7), 895-920.
- Kersel, D. A., Marsh, N. V., Havill, J. H., & Sleight, J. W. (2001). Psychosocial functioning during the year following severe traumatic brain injury. *Brain Injury*, 15(8), 683-696.
- Kervick, R., & Kaemingk, K. (2005). Cognitive appraisal accuracy moderates the relationship between injury severity and psychosocial outcomes in traumatic brain injury. *Brain Injury*, 19(11), 881-889.
- Kilbourne, A. M., Justice, A. C., Rollman, B. L., McGinnis, K. A., Rabeneck, L., Weissman, S., et al. (2002). Clinical importance of HIV and depressive symptoms among veterans with HIV infection. *Journal of General Internal Medicine*, 17(7), 512-520.
- Koehler, R., Wilhelm, E., & Shoulson. (2011). *Cognitive rehabilitation therapy for traumatic brain injury: Evaluating the evidence*. Washington, DC: Institute of Medicine.

- Kuipers, P., Kendall, M., Fleming, J., & Tate, R. (2004). Comparison of the Sydney Psychosocial Reintegration Scale (SPRS) with the Community Integration Questionnaire (CIQ): psychometric properties. *Brain Inj*, 18(2), 161-177.
- Land, L. N., Rochlen, A. B., & Vaughn, B. K. Correlates of adult attachment avoidance: Men's avoidance of intimacy in romantic relationships. *Psychology of Men & Masculinity*, 12(1), 64-76.
- Lanzante, J. R. (1996). Resistant, robust and nonparametric techniques for the analysis of climate data: Theory and examples, including applications to historical radiosonde station data. *International Journal Of Climatology*, 16, 1197-1226.
- Larson, E. B., Kirschner, K., Bode, R., Heinemann, A., & Goodman, R. (2005). Construct and Predictive Validity of the Repeatable Battery for the Assessment of Neuropsychological Status in the Evaluation of Stroke Patients. *Journal of Clinical and Experimental Neuropsychology*, 27(1), 16-32.
- Levine, B., Dawson, D., Boutet, I., Schwartz, M. L., & Stuss, D. T. (2000). Assessment of strategic self-regulation in traumatic brain injury: Its relationship to injury severity and psychosocial outcome. *Neuropsychology*, 14(4), 491-500.
- Lueptow, L. B., Garovich-Szabo, L., & Lueptow, M. B. (2001). Social change and the persistence of sex typing: 1974-1997. *Social Forces*, 80(1), 1-36.
- Maas, C. J., & Hox, J. J. (2004). Robustness issues in multilevel regression analysis. *Statistica Neerlandica* 58(2), 127-137.
- Mahalik, J. R. (2000). A model of masculine gender role conformity. Symposium - Masculine gender role conformity: Examining theory, research, and practice, *108th Annual Convention of the American Psychological Association*. Washington, DC.
- Mahalik, J. R., Locke, B. D., Ludlow, L. H., Diemer, M. A., Scott, R. P., Gottfried, M., et al. (2003). Development of the Conformity to Masculine Norms Inventory. *Psychology of Men & Masculinity*, 4(1), 3-25.
- Martin, E. M., Lu, W. C., Helmick, K., French, L., & Warden, D. L. (2008). Traumatic brain injuries sustained in the Afghanistan and Iraq wars. *J Trauma Nurs*, 15(3), 94-99; quiz 100-101.
- Martin, M. M., & Rubin, R. B. (1995). A new measure of cognitive flexibility. *Psychological Reports*, 76(2), 623-626.
- Martinez, L., & Bingham, A. (2011, November 11). U.S. veterans: By the numbers. *ABC News*, Retrieved February 26, 2012 from <http://abcnews.go.com/Politics/us-veterans-numbers/story?id=14928136#>.

- Matheis, E. N., Tulskey, D. S., & Matheis, R. J. (2006). The relation between spirituality and quality of life among individuals with spinal cord injury. *Rehabilitation Psychology, 51*(3), 265-271.
- Mellick, D., Walker, N., Brooks, C. A., & Whiteneck, G. (1999). Incorporating the cognitive independence domain into CHART. *Journal of Rehabilitation Outcome Measures, 3*(3), 12-21.
- Migliaccio, T. (2009). Men's friendships: Performances of masculinity. *The Journal of Men's Studies, 17*(3), 226-241.
- Milders, M., Ietswaart, M., Crawford, J. R., & Currie, D. (2008). Social behavior following traumatic brain injury and its association with emotion recognition, understanding of intentions, and cognitive flexibility. *Journal of the International Neuropsychological Society, 14*(2), 318-326.
- Miller, C. F., Trautner, H. M., & Ruble, D. N. (2006). *The Role of Gender Stereotypes in Children's Preferences and Behavior*. New York, NY: Psychology Press.
- Moineddin, R., Matheson, F. I., & Glazier, R. H. (2007). A simulation study of sample size for multilevel logistic regression models. *BMC Med Res Methodol, 7*, 34.
- Mooney, G., Speed, J., & Sheppard, S. (2005). Factors related to recovery after mild traumatic brain injury. *Brain Injury, 19*(12), 975-987.
- Morrison, J. A. (2012). Masculinity moderates the relationship between symptoms of PTSD and cardiac-related health behaviors in male veterans. *Psychology of Men and Masculinity, 13*(2), 158-165.
- Murray, C. K., Reynolds, J. C., Schroeder, J. M., Harrison, M. B., Evans, O. M., & Hospenthal, D. R. (2005). Spectrum of care provided at an echelon II Medical Unit during Operation Iraqi Freedom. *Military Medicine, 170*(6), 516-520.
- Nadler, A. (1990). *Help-seeking behavior as a coping resource*. New York, NY: Springer Publishing Co; US.
- Nickerson, C., Schwarz, N., & Diener, E. (2007). Financial aspirations, financial success, and overall life satisfaction: Who? and How? *Journal of Happiness Studies, 8*(4), 467-515.
- O'Callaghan, C., Powell, T., & Oyebode, J. (2006). An exploration of the experience of gaining awareness of deficit in people who have suffered a traumatic brain injury. *Neuropsychological Rehabilitation, 16*(5), 579-593.
- Okie, S. (2005). Traumatic brain injury in the war zone. *New England Journal of Medicine, 352*(20), 2043-2047.
- O'Neil, J. M., & et al. (1986). Gender-Role Conflict Scale: College men's fear of femininity. *Sex Roles, 14*(5-6), 335-350.

- Onwuegbuzie, A. J., & Leech, N. L. (2004). Post Hoc Power: A Concept Whose Time Has Come. *Understanding Statistics*, 3(4), 201-230.
- Owensworth, T., Fleming, J., Strong, J., Radel, M., Chan, W., & Clare, L. (2007). Awareness typologies, long-term emotional adjustment and psychosocial outcomes following acquired brain injury. *Neuropsychological Rehabilitation*, 17(2), 129-150.
- Padesky, C. A., & Hammen, C. L. (1981). Sex differences in depressive symptom expression and help-seeking among college students. *Sex Roles*, 7, 309-320.
- Parent, M. C., & Moradi, B. (2009). Confirmatory factor analysis of the Conformity to Masculine Norms Inventory and development of the Conformity to Masculine Norms Inventory-46. *Psychology of Men & Masculinity*, 10(3), 175-189.
- Pavot, W., & Diener, E. (1993). Review of the Satisfaction With Life Scale. *Psychological Assessment*, 5(2), 164-172.
- Pietrzak, R. H., Goldstein, M. B., Malley, J. C., Johnson, D. C., & Southwick, S. M. (2009). Subsyndromal posttraumatic stress disorder is associated with health and psychosocial difficulties in veterans of Operations Enduring Freedom and Iraqi Freedom. *Depression & Anxiety*, 26(8), 739-744.
- Pietrzak, R. H., Johnson, D. C., Goldstein, M. B., Malley, J. C., & Southwick, S. M. (2009). Posttraumatic stress disorder mediates the relationship between mild traumatic brain injury and health and psychosocial functioning in veterans of operations Enduring Freedom and Iraqi Freedom. *Journal of Nervous and Mental Disease*, 197(10), 748-753.
- Poulin-Dubois, D., & Serbin, L. A. (2006). Infants' knowledge about gender stereotypes and categories. *Enfance*, 58(3), 283-310.
- Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1(3), 385-401.
- Rapoport, M. J., McCullagh, S., Streiner, D., & Feinstein, A. (2003). The clinical significance of major depression following mild traumatic brain injury. *Psychosomatics: Journal of Consultation Liaison Psychiatry*, 44(1), 31-37.
- Reio, T. G., Jr., Czarnolewski, M., & Eliot, J. (2004). Handedness and spatial ability: Differential patterns of relationships. *Laterality: Asymmetries of Body, Brain and Cognition*, 9(3), 339-358.
- Rios, M., Perianez, J. A., & Munoz-Cespedes, J. M. (2004). Attentional control and slowness of information processing after severe traumatic brain injury. *Brain Injury*, 18(3), 257-272.
- Robinson, J. C. (1995). *Death of a hero, birth of the soul: Answering the call of midlife*. Sacramento, CA: Tzedakah Publications.

- Rochlen, A. B., Paterniti, D. A., Epstein, R. M., Duberstein, P., Willeford, L., & Kravitz, R. L. (2010). Barriers in diagnosing and treating men with depression: A focus group report. *American Journal of Men's Health*, 4(2), 167-175.
- Roy-Byrne, P. P., Stang, P., Wittchen, H.-U., Ustun, B., Walters, E. E., & Kessler, R. C. (2000). Lifetime panic-depression comorbidity in the National Comorbidity Survey: Association with symptoms, impairment, course and help-seeking. *British Journal of Psychiatry*, 176, 229-235.
- Safran, M. A., Strine, T. W., Dhingra, S. S., Berry, J. T., Manderscheid, R., & Mokdad, A. H. (2009). Psychological distress and mental health treatment among persons with and without active duty military experience, Behavior Risk Factor Surveillance System, United States, 2007. *International Journal of Public Health*, 54(Suppl 1), 61-67.
- Salter, K., Foley, N., Jutai, J., Bayley, M., & Teasell, R. (2008). Assessment of community integration following traumatic brain injury. *Brain Injury*, 22(11), 820-835.
- Sander, A. M., Caroselli, J. S., High, W. M., Jr., Becker, C., Neese, L., & Scheibel, R. (2002). Relationship of family functioning to progress in a post-acute rehabilitation programme following traumatic brain injury. *Brain Injury*, 16(8), 649-657.
- Sandera, A. M., Pappadis, M. R., Davis, L. C., Clark, A. N., Evans, G., Struchen, M. A., et al. (2009). Relationship of race/ethnicity and income to community integration following traumatic brain injury: Investigation in a non-rehabilitation trauma sample. *NeuroRehabilitation*, 24(1), 15-27.
- Sandera, A. M., Pappadis, M. R., Davis, L. C., Clark, A. N., Evans, G., Struchen, M. A., et al. (2009). Relationship of race/ethnicity and income to community integration following traumatic brain injury: Investigation in a non-rehabilitation trauma sample. *NeuroRehabilitation*, 24(1), 15-27.
- Sareen, J., Cox, B. J., Afifi, T. O., Stein, M. B., Belik, S. L., Meadows, G., et al. (2007). Combat and peacekeeping operations in relation to perceived mental disorders and perceived need for mental health care. *Archives of General Psychiatry*, 64(7), 843-852.
- Schopp, L. H., Good, G. E., Barker, K. B., Mazurek, M. O., & Hathaway, S. L. (2006). Masculine role adherence and outcomes among men with traumatic brain injury. *Brain Injury*, 20(11), 1155-1162.
- Schretlen, D. J. (2000). Do neurocognitive ability and personality traits account for different aspects of psychosocial outcome after traumatic brain injury? *Rehabilitation Psychology*, 45(3), 260-273.
- Shepard, S. J., Nicpon, M. F., Haley, J. T., Lind, M., & Liu, W. M. Masculine norms, school attitudes, and psychosocial adjustment among gifted boys. *Psychology of Men & Masculinity*, 12(2), 181-187.

- Simpson, G., & Tate, R. (2002). Suicidality after traumatic brain injury: Demographic, injury and clinical correlates. *Psychological Medicine*, 32(4), 687-697.
- Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models. In S. Leinhardt (Ed.), *Sociological Methodology* (pp. 290-312). San Francisco: Jossey-Bass.
- Sullivan-Kwantes, W., Febbraro, A. R., & Blais, A. R. (2005). *Air force post-deployment reintegration: A qualitative study*. Toronto: Defense Research & Development Canada.
- Targett, P. S., Wilson, K., Wehman, P., & Mc Kinley, W. O. (1998). Community needs assessment survey of people with spinal cord injury: An early follow-up study. *Journal of Vocational Rehabilitation*, 10(2), 169-177.
- Tate, R., Hodgkinson, A., Veerabangsa, A., & Maggiotto, S. (1999). Measuring psychosocial recovery after traumatic brain injury: Psychometric properties of a new scale. *Journal of Head Trauma Rehabilitation*, 14(6), 543-557.
- Tate, R. L., Hodgekinson, A. E., Veerabangsa, A., Pfaff, A., & Simpson, G. (2007). Sydney psychosocial reintegration scale-2. Sydney, NSW: Rehabilitation Studies Unit, Department of Medicine, University of Sydney.
- Thom, B. (1986). Sex differences in help-seeking for alcohol problems: I. The barriers to help-seeking. *British Journal of Addiction*, 81(6), 777-788.
- Thurstone, L. L., & Thurstone, T. G. (1947). *SRA primary mental abilities: (1947) SRA primary mental abilities* Oxford, England: Science Research Associates; England.
- Trahan, E., Pepin, M., & Hopps, S. (2006). Impaired Awareness of Deficits and Treatment Adherence Among People With Traumatic Brain Injury or Spinal Cord Injury. *The Journal of Head Trauma Rehabilitation*, 21(3), 226-235.
- Traumatic Brain Injury Research Center (2009). Traumatic Brain Injury Model Systems National Database Update (pp. 3). Englewood, CO.
- Troyer, A. K., Moscovitch, M., Winocur, G., Alexander, M. P., & Stuss, D. (1998). Clustering and switching on verbal fluency: The effects of focal frontal- and temporal-lobe lesions. *Neuropsychologia*, 36(6), 499-504.
- Underhill, A. T., Lobello, S. G., Stroud, T. P., Terry, K. S., Devivo, M. J., & Fine, P. R. (2003). Depression and life satisfaction in patients with traumatic brain injury: A longitudinal study. *Brain Injury*, 17(11), 973-982.
- Upadhyay, H., & Shukla, A. (2001). A study of relationship of Piagetian stage of cognitive development and intelligence to creative thinking potential. *Psycho-Lingua*, 31(1), 21-24.
- Valera, E. M., & Berenbaum, H. (2003). Brain injury in battered women. *Journal of Consulting and Clinical Psychology*, 71(4), 797-804.

- Ward, A. Z., & Cook, S. W. (2011). The complex associations between conforming to masculine norms and religiousness in men. *Psychology of Men and Masculinity*, 12(1), 42-54.
- Watt, N., & Penn, C. (2000). Predictors and indicators of return to work following traumatic brain injury in South Africa: Findings from a preliminary experimental database. *South African Journal of Psychology*, 30(3), 27-37.
- Wechsler, D. (1997). *WAIS-III: Wechsler Adult Intelligence Scale-Third Edition: administration and scoring manual*. San Antonio: The Psychological Corporation.
- Wechsler, D. (1999). *WASI Manual*. San Antonio: Psychological Corporation.
- Weissman, M. M., & Klerman, G. L. (1977). Sex differences and the epidemiology of depression. *Archives of General Psychiatry*, 34(1), 98-111.
- Whiteneck, G., Brooks, C. A., & Mellick, D. C. (1997). *Handicap assessment - Final report*. Buffalo, NY: State University of New York.
- Whiteneck, G., Charlifue, S., Gerhart, K., Overholser, D., & Richardson, G. N. (1992). Quantifying handicap: A new measure of long-term rehabilitation outcomes. *Archives of Physical Medicine and Rehabilitation*, 73, 519-526.
- Wills, T. A. (1992). *The helping process in the context of personal relationships*. Thousand Oaks, CA: Sage Publications, Inc; US.
- Wills, T. A., & DePaulo, B. M. (1991). *Interpersonal analysis of the help-seeking process*. Elmsford, NY: Pergamon Press; US.
- Yi, M. S., Mrus, J. M., Wade, T. J., Ho, M. L., Hornung, R. W., Cotton, S., et al. (2006). Religion, Spirituality, and Depressive Symptoms in Patients with HIV/AIDS. *Journal of General Internal Medicine*, 21(Suppl 5), S21-S27.
- Zitnay, G. A., Zitnay, K. M., Povlishock, J. T., Hall, E. D., Marion, D. W., Trudel, T., et al. (2008). Traumatic brain injury research priorities: The Conemaugh International Brain Injury Symposium. *Journal of Neurotrauma*, 25(10), 1135-1152.