

INTERSECTIONS OF PTSD AND DD: THE EVOLUTION OF PTSD SYMPTOM
CLUSTERS THROUGHOUT TREATMENT OF DISSOCIATIVE DISORDERS

by

Patricia Abduragimova

A thesis

Presented to the faculty of

Towson University

in partial fulfillment

of the requirements for the degree

Master of Arts

Department of Psychology

Towson University

Towson, Maryland 21252

May, 2017

TOWSON UNIVERSITY
OFFICE OF GRADUATE STUDIES

THESIS APPROVAL PAGE

This is to certify that the thesis prepared by [INSERT Student's Name] _____


Patricia Abduragimova _____ entitled [INSERT Title of Thesis] _____


Intersections of PTSD and DD: _____

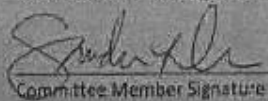
The Evolution of PTSD Symptom Clusters _____

Throughout Treatment of Dissociative Disorders _____

has been approved by the thesis committee as satisfactorily completing the thesis requirements for the degree [INSERT Type of Degree] Master of Arts
(for example, Master of Science)


 _____ Dr. Richard Brand 5/15/17
Chairperson, Thesis Committee Signature Type Name Date

 _____ Dr. Frederick Mawle 5/15/17
Committee Member Signature Type Name Date

 _____ Dr. Sandra Llera 5-15-17
Committee Member Signature Type Name Date

Committee Member Signature Type Name Date

Committee Member Signature Type Name Date

 _____ Janet V. Delaney May 16, 2017
Dean of Graduate Studies Type Name Date

Abstract

THE INTERSECTIONS OF PTSD AND DD: THE EVOLUTION OF PTSD SYMPTOMS THROUGHOUT TREATMENT OF DISSOCIATIVE DISORDERS

Patricia Abduragimova

Despite phenomenological and neurobiological similarities between Post-Traumatic Stress Disorder (PTSD) and Dissociative Disorders (DD), and their frequent co-occurrence, they are rarely studied in conjunction with each-other and PTSD symptom clusters are generally ignored. This study examines archival data from the Treatment of Patients with Dissociative Disorders (TOP DD) study to determine how PTSD symptom clusters differ in severity between DD patients in varying stages of treatment. I hypothesized that the Avoidance cluster would vary the least between Stage 1 and Stage 5 patients. Participants recruited by the TOP DD study researchers include 292 therapists and 280 patients diagnosed with DD. I conducted a MANOVA upon the three PTSD symptom clusters as Dependent Variables and the five stages of DD treatment as Independent Variables. As predicted, Avoidance showed the least variation between Stage 1 and Stage 5 of treatment, indicating that it may be the most resistant cluster to DD treatment.

Table of Contents

List of Tables.....	v
List of Figures.....	vi
Introduction.....	1
Community Impact.....	2
Intersections of PTSD and DD.....	3
PTSD Symptom Clusters.....	5
Current Study.....	8
Methods.....	10
Participants.....	10
Measures.....	11
Results.....	12
Discussion.....	15
Appendices.....	21
References.....	26
CV.....	45

List of Tables

Table 1. Estimated Marginal Means for Each Symptom Cluster at Each Stage of Treatment.....	34
Table 2. Post-Hoc Analysis for Re-experiencing Symptom Cluster.....	35
Table 3. Post-Hoc Analysis for Hyper-arousal Symptom Cluster.....	36
Table 4. Post-Hoc Analysis of Correlations among Symptom Clusters for Total Sample.....	37
Table 5. Correlation of Dissociation and Symptom Clusters at Each Stage of DD Treatment.....	38
Table 6. Partial Correlations among Dependent Variables with Dissociation.....	39
Table 7. Post-Hoc Multivariate Analysis of Covariance (MANCOVA) with Age as Covariate.....	40
Table 8. Post-Hoc Univariate Analysis.....	41

List of Figures

Figure 1. Estimated Marginal Means of Re-experiencing with 95% Confidence

Intervals.....42

Figure 2. Estimated Marginal Means of Hyper-arousal with 95% Confidence

Intervals.....43

Figure 3. Estimated Marginal Means of Avoidance with 95% Confidence

Intervals.....44

Introduction

Over the years, our understanding of Post-Traumatic Stress Disorder (PTSD) has evolved independently from our understanding of Dissociative Disorders (DD) despite the fact that the two are highly comorbid and phenomenologically related. This is primarily due to lack of research that examines the intersections between the two disorders. It is, therefore, necessary to study the prevalence and impact of PTSD and DD in our society, examine the phenomenological link between the two, summarize the pre-existing research, and explore exactly which symptom clusters of PTSD are most affected during each stage of DD treatment.

PTSD is one of the several conditions classified within the DSM-5 under the category of Trauma- and Stressor-Related Disorders. These disorders are characterized by psychological distress following exposure to a traumatic or stressful event. In the DSM-5, PTSD symptoms, in particular, are partitioned into four symptom clusters known as Intrusion, which includes unwanted memories or dreams of the traumatic event; Avoidance, which involves efforts to avoid distressing thoughts or external reminders of the event; Negative Cognitions/Mood, which may manifest in feelings of detachment, anhedonia, or disproportionate guilt; and Hyper-arousal, which includes sleep disturbance, hypervigilance, and problems with concentration.

Another group of disorders frequently found in the aftermath of trauma is Dissociative Disorders. This group of trauma-based disorders includes Dissociative Identity Disorder (DID), Dissociative Disorder Not Otherwise Specified (DDNOS), and Other Specified Dissociative Disorder (OSDD), among other diagnoses. They are characterized by a disruption in the normal integration of consciousness, memory,

identity, emotion, perception, motor control, and behavior, and are experienced either as unbidden intrusions into awareness and behavior accompanied by loss of continuity, or as an unusual inability to access information or control mental functions. Their placement in the DSM-5 next to trauma- and stressor-related disorders is reflective of the close relationship between the diagnostic classes, as they share not only a common environmental etiology but also symptoms such as amnesia, flashbacks, numbing, and depersonalization/derealization (APA, 2013).

Community Impact

Unfortunately, both disorders are highly prevalent in the community and are associated with much distress among patients and their loved ones. In fact, Perkonig et al. (2005) have summarized several studies that found the overall community lifetime prevalence estimates for PTSD to range from 1% in earlier DSM-III studies to 12.3% in more recent surveys (Berslau et al., 1998; Berslau, Davis, Andreski, & Peterson, 1991; Cuffe et al., 1998; Hezler, Robins, & McEvoy, 1987; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Perkonig, Kessler, Stroz, & Wittchen, 2000; Resnick, Kilpatrick, Dansky, & Saunders, 1993; Shore, Vollmer, & Tatum, 1989). Similarly, Brand et al. (2009) have noted that the prevalence of DD in clinical settings ranges between 5% - 20.7% among inpatients (Friedl & Draijer, 2000; Gast, Rodewald, Nickel, & Emrich, 2001; Ross, Anderson, Fleisher, & Norton, 1991; Tutkun et al., 1998), between 12 - 38% among outpatients (Foote, Smolin, Kaplan, Legatt, & Lipschitz, 2006; Garcia, Rico, & Agra'z, 2006; Sar et al., 2003; Sar, Tutkun, Alyanak, Bakim, & Baral, 2000), and 34.9% among patients presenting to a psychiatric emergency room (Sar et al., 2007).

With high prevalence rates, the impact of PTSD upon sufferers and on society is great. The National Vietnam Veterans Readjustment Study has allowed researchers to gauge the distress and impairment caused by PTSD among patients and their loved ones. The researchers concluded that veterans suffering from PTSD were at a significantly higher risk of being unemployed and in poor physical health, compared to veterans without PTSD (Zatzick et al., 1997). The high societal cost and level of distress provide ample justification for attempting to better understand the effects of this disorder. Research also indicates that significant improvements in psychosocial and physical Health-Related Quality of Life occur alongside improvements in PTSD symptoms following treatment. Therefore, continued research may improve the quality of treatment for patients (Schnurr, Lunney, McFall, & Uddo, 2006).

Intersections of PTSD and DD

Although researching the aforementioned disorders individually has added greatly to our knowledge of each, it is important to examine the two in conjunction simply because PTSD and DD are highly comorbid and share phenomenological and neurobiological links. Rodewald, Wilhelm-Gößling, Emrich, Reddemann, and Gast (2011) demonstrated that the most prevalent comorbidity in DID is PTSD. Chalavi et al. (2015) examined the neuropsychological connection between PTSD and DID. They found that global hippocampal volume is significantly smaller in patients with either or both disorders (left: 6.75%; right: 8.33%) compared with a healthy control. Groups with PTSD–DID (left: 10.19%; right: 11.37%) and PTSD- only with a history of childhood traumatization (left: 7.11%; right: 7.31%) also had significantly smaller global hippocampal volume compared to the healthy control group. Although reduced

hippocampal volume can also be a sign of prolonged stress, the authors were able to conclude from these results that patients with PTSD and DID are more neurologically similar to each other than they are to non-traumatized populations.

There are other phenomenological similarities between DD and PTSD as well. For instance, both disorders are linked to emotion dysregulation. Powers, Cross, Fani, and Bradley (2015) sought to determine whether a relationship existed between PTSD symptoms and dissociation in a sample of 154 adults recruited from a public, urban hospital. They conducted a linear regression analysis to show that both PTSD and emotion dysregulation were significant predictors of dissociation, even after controlling for trauma exposure. Using bootstrapping techniques, they found that overall emotion dysregulation partially mediated the effect of PTSD symptoms on dissociative symptoms, leading to the conclusion that dissociation and PTSD may be phenomenologically related. Because dissociation is an integral aspect of DD, this suggests that the course of one disorder impacts the course of the other via a mechanism of emotion dysregulation, hence warranting further exploration of the relationship between the two.

Unfortunately, there is already a scarcity of research in the field of DD and the preliminary treatment studies of DD patients suffer from some methodological limitations. They rely primarily on small samples, single therapists, and/or treatment sites, according to a review of DD treatment studies (Brand et al., 2009). A review of the literature reveals that treatment outcome research on DID patients is primarily limited to clinical series studies (e.g., Coons, 1986; Kluft, 1984, 1988), case studies (e.g., Kellett, 2005; Sar, Ozturk, & Kundakci, 2002), and acute stabilization following inpatient treatment (Ross & Ellason, 2001; Ross & Haley, 2004). Finally, most DD treatment

studies used inpatient samples that may confound treatment effects with regression to the mean phenomena, and the research was primarily conducted with U.S. patients (Ellason & Ross, 1997, 2001, 2004; Ross & Haley, 2004). These shortcomings regrettably limit the external validity of the existing literature and thereby call into question the general applicability of the research findings.

PTSD research is far more common but despite the comorbidity and the phenomenological relationship between DD and PTSD, a majority of studies on PTSD, including treatment outcome studies of childhood abuse, tend to exclude participants with comorbid DD because of their complex presentations and polysymptomatology (Cloitre, Koenen, Cohen, & Han, 2002; McDonagh et al., 2005; van der Kolk & Courtois, 2005; Loewenstein, 1991). As a result of this gap in the literature, little is known about the course of the two disorders when they co-occur.

PTSD Symptom Clusters

Finally, when studying the relationship between PTSD and DD, it is important to consider individual PTSD symptom clusters. The DSM-IV recognized three different PTSD symptom clusters: Avoidance/Numbing, Hyper-arousal, and Re-experiencing. The recent separation of PTSD symptoms into four clusters is a departure from the previous DSM-IV criteria, as the latter cluster is now further divided into *negative mood/cognitions* and *intrusion* within the DSM-5. Symptom clusters can be considered manifestations of an individual's methods of coping with trauma. Behaviorally speaking, traumatized individuals may avoid triggers that remind them of the trauma, may numb themselves to trauma-related emotions, may remain hyper-vigilant to prevent re-victimization and so on. Because a majority of PTSD research, including the Treatment

of Patients with Dissociative Disorders (TOP DD) study, from which this data is taken, has been conducted on the basis of DSM-IV criteria for PTSD diagnosis, this study will continue to use the three symptom clusters outlined in the DSM-IV for the sake of consistency.

Symptom clusters are being considered in this study because research shows that not every PTSD patient experiences every symptom to the same extent. Each cluster has a unique presentation and unique implications for the patient. This makes symptom clusters valuable in designing individualized treatments. For instance, Harder et al. (2011) determined that the clusters of numbing and Hyper-arousal are particularly associated with poor Health-Related Quality of Life. On the other hand, the Avoidance cluster of PTSD appears to be associated with poorer functioning in veterans' romantic relationships and family functioning (Erbes, Meis, Polusny, & Compton, 2011; Evans, Cowlishaw, & Hopwood, 2009; Possemato, Pratt, Barrie, & Ouimette, 2015; Sayers, Farrow, Ross, & Oslin, 2009). High risk of re-traumatization, however, is primarily attributed to Re-experiencing symptoms (Orcutt, Erickson, & Wolfe, 2002). These studies demonstrate how each cluster has a unique impact on the patient, depending on the severity of the symptoms experienced.

Although the unique presentations and implications of symptom clusters make a fair argument for studying each cluster individually, prior research has yet to carefully examine how the different PTSD symptom clusters relate to the different stages of DD treatment. This information would be useful in better understanding the efficacy of DD treatment for patients who have comorbid PTSD and DD. Because comorbidity of the two disorders is so high and research shows that the course of one disorder can impact the

course of the other (Powers, Cross, Fani, & Bradley, 2015), it is important for clinicians to understand how each stage of DD treatment correlates to severity of PTSD symptom clusters. Information such as this could potentially help practitioners be mindful that certain stages of DD treatment are associated with particularly severe Avoidance, Hyper-arousal, or Re-experiencing symptoms, depending on the findings of this study.

Of the three symptom clusters, some studies over the years have demonstrated a significant link between Avoidance and dissociation. Madan, Bellin, and Haden (2015) established that avoidant coping (a behavior characteristic of the Avoidance symptom cluster) plays a significant indirect role in the manifestation of persistent dissociation following a traumatic experience. Research suggests that because dissociation helps to regulate the negative emotions resulting from trauma, it contributes to the avoidance of aversive thoughts, memories, and emotions, thereby making an individual more likely to cope with trauma using avoidant coping strategies (Foa and Hearst-Ikeda 1996; Wagner and Linehan 1998).

A similar relationship was loosely demonstrated in a study by Zerach, Greene, Ginzburg, and Solomon (2014), which examined the association between individual PTSD symptom clusters and persistent dissociation among ex-prisoners of war. They found that “detachment coping,” operationally defined in this study as isolating oneself from the outside world – behavior that largely falls into the category of Avoidance, was positively associated with persistent dissociation. Because research has found such a strong connection between Avoidance and dissociation, it is likely that Avoidance will be the most persistent PTSD symptom cluster experienced by DD patients, and they will thereby exhibit high marginal means for severity of Avoidance symptoms at each stage of

DD treatment. At the least, these findings suggest the importance of exploring the Avoidance cluster in relation to DD, and prompt our hypothesis that Avoidance will show the least variation between Stages 1 and 5 of DD treatment.

Current Study

The data utilized in the current study were taken from a naturalistic study known as the Treatment of Patients with Dissociative Disorders (TOP DD) study conducted by Brand, Classen, Lanins, Loewenstein, McNary, Pain, & Putnam (2009). This study has addressed limitations to external validity by using an internationally diverse sample of DD patients receiving outpatient treatment from community therapists. DD patients typically require extensive therapy over the years with treatment focusing on different tasks and symptoms, according to the stage of treatment of the patient. The current study is the first to examine how each PTSD symptom cluster varies among patients in different stages of treatment within a diverse population of adults diagnosed with DD. The five stages of treatment emphasize different objectives such as stabilization and establishing safety in Stage 1, processing of traumatic memories with full emotion in Stage 3, and integration/reconnection of dissociated identities in Stage 5. Although many authors have described three stages of DD treatment with the foci as listed, authors of the TOP DD study added intermediate stages, that is, Stages 2 and 4, between the more traditional three stages so as to better capture and assess the gradual shifting back and forth in tasks and symptoms that occur over years of treatment (Brand et al., 2009).

I hypothesize that when the three clusters of DSM-IV PTSD symptoms are compared across different DD patients from each stage of the five stages of treatment, the severity of all three symptom clusters will be inversely correlated with stage of treatment.

The severity of the PTSD symptom clusters will be indicated by their marginal means for the group of patients at each stage of DD treatment. Furthermore, because avoidance of unpleasant thoughts, emotions, and recollections is an integral component of persistent dissociation and DD, my second hypothesis is that marginal means for the Avoidance cluster will differ the least between participants at Stage 1 and Stage 5, indicating that it is the most persistent PTSD symptom cluster among patients with DD, and thereby the most resistant to DD treatment. Finally, I hypothesize that although each of the symptom clusters will be positively correlated to Dissociation, the Avoidance cluster will have the highest correlation coefficient due to the relationship between avoidant coping and persistent dissociation.

Because Stage of DD treatment is naturally positively correlated to the age of the patient seeking treatment, I will also conduct a similar analysis with the participants' Age as a covariate in order to ascertain that the variance in symptom severity is indeed being accounted for by stage of treatment, rather than a co-varying factor such as the age of the participant. For this reason, I will conduct an additional Multivariate Analysis of Covariance (MANCOVA). This study's findings have the potential to improve our understanding of how DD patients with comorbid PTSD make progress in treatments, which PTSD symptom clusters are most strongly related to dissociation, and whether stage of DD treatment can account for the variance in PTSD symptom severity beyond the effects of the participants' Age. Ultimately, I hope this study will lead to a better understanding of PTSD and DD, their symptoms, presentations, and treatment, in patients who so frequently are diagnosed with both disorders concurrently, in the wake of a highly traumatic experience.

Methods

Participants

When the TOP DD study was concluded, the researchers had recruited 292 therapists and 280 patients diagnosed with a dissociative disorder. The therapists were recruited from membership registers of the International Society for the Study of Trauma & Dissociation (ISSTD), the ISSTD's list of therapists who had graduated from its DD Psychotherapy Training Program, and listservs for mental health professionals. Initial email invitations asked therapists to participate in a treatment outcome study for DD, but recruitment methods were later expanded (see Brand et al., 2009 for a full description of recruitment). The inclusion criteria for therapists required that they be able to read English and be currently providing ongoing treatment of at least 3-months duration to an adult patient diagnosed with Dissociative Identity Disorder (DID) or Dissociative Disorder Not Otherwise Specified (DDNOS).

Inclusion criteria for patients required that they also be able to read English, be 18 years old or older, and be diagnosed with an illness above. There is a discrepancy between the number of clinicians and the number of patients is because some patients were either unable to fill out the required questionnaires or were uncomfortable with submitting their responses for study. Although the TOP DD study was a longitudinal study that collected data from participants more than four times over the course of several years, attrition is not a concern for this particular analysis because I am only using Time-1 data for patients in different stages of treatment. Namely, this analysis does not examine change in symptom clusters over time, but how they compare between patients in different stages of treatment at Time-1.

Measures

Both clinician and patient measures provided data for this study. Although many measures were used in the TOP DD study, only the Posttraumatic Stress Checklist-Civilian (PCL-C; Weathers, Litz, Huska, & Keane, 1994) and the Clinical data form will be used in this study. My thesis will utilize patients' responses on the PCL-C, a 17-item measure of PTSD symptomatology, to gauge the severity of PTSD clusters (Appendix A). The first five questions on the checklist are designed to measure Re-experiencing symptoms, the next seven are designed to measure Avoidance symptoms, and the final five measure symptoms of Hyper-arousal. Using a 5-point scale, patients rate how much each of the symptoms has affected them within the past month. A total sub-score for each cluster will be calculated by summing the items that measure the symptoms of said cluster. The overall diagnostic efficiency of the PCL-C has been found to be high at an alpha of 0.90 (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996) and its test-retest reliability is 0.96 with a retest interval of two to three days (Weathers et al., 1994).

In order to measure patients' dissociation, I used their responses on the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986). The DES is a commonly used measure of dissociative experiences, and consists of 28 self-report questions regarding the client's experiences (Appendix B). I summed the participants' responses on each question of the DES to create a variable representing their total Dissociation score. The reliability of this scale has been previously established, with Cronbach's alpha ranging from .95 to .96 when calculated at each follow-up of the TOP DD study (Brand et al., 2009).

Concurrently, therapists were asked to fill out a clinical data form, which assessed a number of variables including demographics, the clinicians' level of experience, and the patients' stage of treatment. The form was developed by Westen and colleagues and research by Zittel, Conklin, and Westen (2005) has shown that clinicians' ratings in this form correlate strongly with the ratings of independent interviewers. In one of the questions on this clinical data form, therapists were asked to indicate which stage of treatment best characterizes their work with the patient within the past six months. Descriptors were included for each stage of treatment, with the focus of Stage 1 described as stabilization and establishing safety, the focus of Stage 3 described as processing traumatic memories with full emotion, and the focus of Stage 5 described as integration/reconnection. Stages two and four were used to indicate the transition between two stages (for a more detailed description of treatment stages, see Brand et al., 2009). This study utilized therapists' responses to the stage of treatment question to determine which stage of treatment characterized each patient at Time-1, according to his/her clinician.

Results

I conducted a multivariate Analysis of Variance (MANOVA) to examine how the three PTSD symptom cluster scores (Hyper-arousal, Avoidance, and Re-experiencing) vary according to the stage of treatment. The independent variable was a code that represented the five stages of treatment, and the dependent measures were the scores on the three symptom clusters. Levine's test for equality of error variances was not significant. The analysis revealed a significant difference among the groups for the overall vector of dependent measures, Wilks' Lambda = .89, $F(12, 573.38) = 2.014$, $p <$

.05, partial eta square = .038, power = .83. The Hyper-arousal variable was also significant, $F(4,205) = 3.373$, $p < .05$, partial eta square = .062, power = .84. The Avoidance variable was not significant. The progression of marginal means for each symptom cluster at each stage of treatment can be seen in Table 1 below.

Figures 1, 2, and 3 present the plots for the three variables, with confidence intervals indicating whether the difference in symptom severity between each stage of treatment was statistically significant. Hyper-arousal, Re-experiencing, and Avoidance all demonstrated a significant downward trend between Stage 1 and Stage 5 of therapy, but this trend was not statistically significant for Avoidance. The results of post-hoc analyses comparing Re-experiencing and Hyper-arousal symptoms at each stage of treatment can be found in Table 2 and Table 3, respectively. Re-experiencing symptoms differed significantly between Stage 1 and Stage 4 patients, Stage 1 and Stage 5 patients, Stage 2 and Stage 4 patients, and Stage 2 and Stage 5 patients at the .05 alpha level. Hyper-arousal symptoms were significantly different between Stage 1 and all the other stages (i.e., Stage 2 patients, Stage 3 patients, Stage 4 patients, and Stage 5 patients). Therefore, tests of the individual outcome measures indicated a significant difference for the Re-experiencing variable, $F(4,205) = 4.107$, $p < .05$, partial eta square = .075, power = .87. The effects accounted for between 4-8% of the total variance.

The plots demonstrate that although the marginal means of all three symptom clusters decreased over the stages of treatment, Avoidance showed the least variation between Stage 1 and Stage 5 participants, whereas Re-experiencing showed the greatest variation. Further post-hoc analyses were conducted in order to examine the correlations between the three symptom clusters, as well as the correlations between Dissociation and

each PTSD symptom cluster. A summary of these analyses can be found in table 4.

Steigers' Z statistics did not reveal any significant differences among the correlations between the individual symptom clusters and the Dissociation variable. Dissociation and Re-experiencing = .91, $p = .363$, $p > .05$, Dissociation and Avoidance, Steigers' Z = -.86, $p = .39$, $p > .05$, and Dissociation and Hyper-arousal Steigers' Z = -.31, $p = .76$, $p > .05$.

These correlations were further broken down by stage of DD treatment. The analyses are presented in Table 5. The table shows a significant correlation between dissociation and all three symptom clusters at Stage 2, Stage 3, Stage 4, and Stage 5, but not at Stage 1. The partial correlations are displayed in Table 6; they show that dissociation is correlated with each of the symptom clusters individually and uniquely, and this relationship cannot be attributed to any correlation that it shares with any of the other clusters.

Finally, Table 7 shows the overall results of the post-hoc Multivariate Analysis of Covariance (MANCOVA) with Age of participant as a covariate. Although covarying age changes the results for some of the tests of the Stage effect (Wilks' Lambda = .90, $F(12, 518.86) = 1.695$, $p > .05$, partial eta square = .033, power = .81), it does not change the results for all tests as Roy's Largest Root is still statistically significant, Roy's Largest Root = .08, $F(4, 198) = 3.784$, $p < .05$, partial eta square = .071, power = .89. In addition, the results of the univariate follow-up tests, displayed in Table 8, remain unchanged even after including the Age variable as a covariate. The univariate test confirmed the main effect of Stage upon Re-experiencing symptoms ($F(4, 198) = 3.26$, $p < .05$, partial eta square = .062) and Hyperarousal symptoms ($F(4, 198) = 3.09$, $p < .05$, partial eta square = .059), but not on Avoidance symptoms.

Discussion

Although research has conclusively established that PTSD and DD share phenomenological origins, neurobiological similarities, and a high rate of comorbidity, there is a paucity of research examining the two in concurrence with each other. Most studies of PTSD tend to exclude patients with comorbid DD and largely neglect the nuanced presentations and implications of individual symptom clusters. This is especially concerning when considering the high prevalence of the two disorders and the vast impact that they have on the patients, their loved ones, and the mental/medical health-care systems that provide their care.

The first hypothesis of this study was that the severity of the three DSM-IV PTSD symptom clusters would be inversely correlated with the stage of treatment. I predicted that the mean severity score for each cluster would be lower for participants at each subsequent stage, with participants in Stage 1 of treatment displaying the highest severity for each symptom cluster and participants in Stage 5 displaying the lowest severity. This hypothesis was supported, as the means follow a downward trend from Stage 1 participants to Stage 5 participants. However, the difference in severity by stage was only statistically significant for the Hyper-arousal and the Re-experiencing symptoms.

These results also support the second hypothesis, that is, that the mean severity scores for the Avoidance cluster show the least variation between patients at subsequent stages of treatment. As predicted, severity scores for Avoidance were only marginally lower for patients at Stage 5 than for patients at previous stages, and this difference was not found to be statistically significant. Fortunately, this lack of statistical significance is instructive. Although the correlations do not allow for causal inferences, the direction of

these results could indicate that Avoidance is the PTSD symptom cluster that is the slowest to improve during DD treatment.

Finally, the third hypothesis was partially supported as the three PTSD symptom clusters were positively correlated with Dissociation. However, the Re-experiencing symptom cluster had the highest correlation in relation to Dissociation, rather than the Avoidance symptom cluster, as was originally predicted. Additionally, this difference in strength of correlation was not found to be statistically significant. Therefore, Avoidance was definitely not found to be the most highly correlated symptom cluster with Dissociation.

The post-hoc analyses found that when grouping the participants by their stage of treatment, Re-experiencing, Avoidance, and Hyper-arousal were all significantly correlated with Dissociation at Stages 2, 3, 4, and 5 but not at Stage 1. This is an interesting trend that suggests that the characteristic symptoms of DD and PTSD become significantly correlated with each other at progressively higher stages of treatment. This finding suggests that more advanced stages of treatment are indeed associated with lower severity of PTSD and DD symptoms. Another potential explanation for this finding is that the sample size at Stage 1 is extremely small and only includes five participants. Similar tests with a larger sample size may yield different results. The partial correlations show that this unique relationship with Dissociation cannot be attributed to any overlap each symptom cluster shares with any of the other clusters.

The results above have several potential implications for clinical practice and future research. The fact that marginal means are significantly lower at Stage 5 compared to Stage 1 for two of the three PTSD symptom clusters shows that DD treatment is

associated with a measurable reduction in Hyper-arousal and Re-experiencing symptoms for patients diagnosed with comorbid PTSD and DD. The overall downward trend among all symptom clusters may be attributed to the efficacy of DD treatment in reducing symptoms of comorbid PTSD, although because of the design of the study, causation cannot be assumed. The correlation between PTSD symptom clusters and symptoms of Dissociation show that this is also true of dissociative symptoms. This further emphasizes the need to study the interactions between the two disorders and their respective treatments when they co-occur.

However, the difference in Avoidance symptoms was not statistically significant between participants at different stages. This suggests that Avoidance is the most persistent PTSD symptom among DD patients, and could thereby be the most resistant to DD treatment. Research suggests that this may be due to the intrinsic role that Avoidance or "avoidant coping" plays in persistent dissociation –a primary symptom of DD (Madan, Bellin, & Haden, 2015). Because researchers have theorized that avoidant coping can maintain and exacerbate PTSD by interfering with successful processing of the trauma, habituation of aversive emotions associated with reminders of the trauma, and extinction of the resultant fear responses (Foa & Rothbaum, 1998), future studies of DD treatment may benefit from an increased focus on reducing Avoidance as a means of treating the symptoms of PTSD and dissociation.

An increased focus on reducing Avoidance, however, merits a word of caution. Research suggests that pushing patients to process traumatic memories, either too intensively or too early in the treatment, can cause DD patients to decompensate rather than improve. Because the majority of DD patients have relied on dissociation as the sole

means of escape for many years, Avoidance has likely become an ingrained method of coping with aversive emotions and memories. Therefore, the ISSTD guidelines for treatment of DID suggest that the processing of traumatic memories be an extremely gradual undertaking to ensure that patients are not suddenly flooded with long-avoided emotions and memories (International Society for the Study of Trauma and Dissociation, 2011).

Furthermore, although the difference in marginal means for Hyper-arousal between participants at Stage 3 and Stage 4 is not statistically significant according to Table 3, Figure 2 does show a slightly higher mean for participants at Stage 4 compared to Stage 3. Although initially counter-intuitive within the context of overall treatment, this trend may be related to the focus in Stage 3 increasing processing of traumatic experiences with emotion – an experience that can be extremely distressing for traumatized individuals (Brand et al., 2009). As a result, many patients are likely to experience a temporary increase in irritability, angry outbursts, difficulty concentrating, and other symptoms of Hyper-arousal. However, these symptoms are not likely to remain high in severity, as indicated by the marginal means for Hyper-arousal being significantly lower among participants at Stage 5 of treatment compared to Stage 1.

Finally, a post-hoc analysis of covariance with Age of participant as a covariate changes the results for some of the tests of the Stage effect, but not all tests, as observed above. Roy's Largest Root is a test of only the first or largest canonical relationship whereas the other tests (e.g., Wilk's Lambda) measure all the relationships that exist within the data. The fact that only Roy's Largest Root was significant when Age was included as a covariate, suggests that there are possible orthogonal relationships in these

data beyond the first or largest relationship, and they may be influenced by the participants' age. However, it is unclear whether these additional canonical relationships are statistically significant. It can be inferred from this analysis that there exists at least one multivariate relationship in these data, which does not covary with the age of the participants. This notion is supported by the fact that the univariate follow-up tests yielded the same results even when Age was included as a covariate. Specifically, the effect of Stage of treatment was still statistically significant for the Re-experiencing and the Hyper-arousal symptom clusters. Moreover, since the MANCOVA is a post hoc test, the reliability of the Age covariate as a change agent needs to be further examined with future replications. Although it was not the subject of a-priori investigation in this study, it is a good candidate for inclusion in future studies.

This study has a number of strengths as well as drawbacks. Longitudinal analyses would have yielded more information about changes over time within patients rather than cross-sectional analyses, although due to high attrition over time, the sample size would have been smaller. This study was also unable to control for the variation in PTSD symptom severity among patients entering the study at different stages of DD treatment. Thus, I cannot be certain that all patients had similar levels of PTSD and dissociation at entry into treatment and/or at the stages of treatment. It is possible that the downward trend in PTSD symptoms may have been due to pre-existing differences in the sample's level of symptoms. Furthermore, the TOP DD study does not exclude patients undergoing complex pharmacotherapy, including changes in pharmacotherapy, nor does it eliminate those with other comorbidities such as substance use disorders. The naturalistic design of this study in addition to its large international sample size increases

its external validity compared to many other studies. Lastly, the continued use of DSM-IV diagnostic criteria for PTSD allows for comparisons across studies. Future research may examine why the marginal means for Hyper-arousal seem to be higher for patients at Stage 4 of treatment compared to Stage 3 of treatment, in addition to conducting a longitudinal, within-subjects analyses.

Appendix A

PCL-C

INSTRUCTIONS: Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?	1	2	3	4	5
2. Repeated, disturbing <i>dreams</i> of a stressful experience from the past?	1	2	3	4	5
3. Suddenly <i>acting or feeling</i> as if a stressful experience were <i>happening again</i> (as if you were reliving it)?	1	2	3	4	5
4. Feeling very <i>upset</i> when <i>something reminded you</i> of a stressful experience from the past?	1	2	3	4	5
5. Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, sweating) when <i>something reminded you</i> of a stressful experience from the past?	1	2	3	4	5
6. Avoiding <i>thinking about</i> or <i>talking about</i> a stressful experience from the past or avoiding <i>having feelings</i> related to it?	1	2	3	4	5
7. Avoiding <i>activities or situations</i> because <i>they reminded you</i> of a stressful experience from the past?	1	2	3	4	5
8. Trouble <i>remembering important parts</i> of a stressful experience from the past?	1	2	3	4	5
9. <i>Loss of interest</i> in activities that you used to enjoy?	1	2	3	4	5
10. Feeling <i>distant or cut off</i> from other people?	1	2	3	4	5
11. Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?	1	2	3	4	5
12. Feeling as if your <i>future</i> will somehow be <i>cut short</i> ?	1	2	3	4	5
13. Trouble <i>falling or staying asleep</i> ?	1	2	3	4	5
14. Feeling <i>irritable</i> or having <i>angry outbursts</i> ?	1	2	3	4	5
15. Having <i>difficulty concentrating</i> ?	1	2	3	4	5
16. Being " <i>super-alert</i> " or watchful or on guard?	1	2	3	4	5
17. Feeling <i>jumpy</i> or easily startled?	1	2	3	4	5

PCL-C for DSM-IV (11/1/94) Weathers, Litz, Huska, & Keane National Center for PTSD—Behavioral Science Division

Please notice that these forms are printed on both sides.

1. Some people have the experience of driving or riding in a car or bus or subway and suddenly realizing that they don't remember what has happened during all or part of the trip. Circle a number to show what percentage of the time this happened to you within the last month.
0% 10 20 30 40 50 60 70 80 90 100%
2. Some people find that sometimes they are listening to someone talk and they suddenly realize that they did not hear part or all of what was said. Circle a number to show what percentage of the time this happened to you within the last month.
0% 10 20 30 40 50 60 70 80 90 100%
3. Some people have the experience of finding themselves in a place and having no idea how they got there. Circle a number to show what percentage of the time this happened to you within the last month.
0% 10 20 30 40 50 60 70 80 90 100%
4. Some people have the experience of finding themselves dressed in clothes that they don't remember putting on. Circle a number to show what percentage of the time this happened to you within the last month.
0% 10 20 30 40 50 60 70 80 90 100%
5. Some people have the experience of finding new things among their belongings that they do not remember buying. Circle a number to show what percentage of the time this happened to you within the last month.
0% 10 20 30 40 50 60 70 80 90 100%
6. Some people sometimes find that they are approached by people that they do not know who call them by another name or insist that they have met them before. Circle a number to show what percentage of the time this happened to you within the last month.
0% 10 20 30 40 50 60 70 80 90 100%
7. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person. Circle a number to show what percentage of the time this happened to you within the last month.
0% 10 20 30 40 50 60 70 80 90 100%
8. Some people are told that they sometimes do not recognize friends or family members. Circle a number to show what percentage of the time this happened to you within the last month.
0% 10 20 30 40 50 60 70 80 90 100%
9. Some people find that they have no memory for some important events in their lives (for example, a wedding or graduation). Circle a number to show what percentage of the time this happened to you within the last month.
0% 10 20 30 40 50 60 70 80 90 100%
10. Some people have the experience of being accused of lying when they do not think that they have lied. Circle a number to show what percentage of the time this happened to you within the last month.
0% 10 20 30 40 50 60 70 80 90 100%

11. Some people have the experience of looking in a mirror and not recognizing themselves. Circle a number to show what percentage of the time this happened to you within the last month.
- 0% 10 20 30 40 50 60 70 80 90 100%
12. Some people have the experience of feeling that other people, objects, and the world around them are not real. Circle a number to show what percentage of the time this happened to you within the last month.
- 0% 10 20 30 40 50 60 70 80 90 100%
13. Some people have the experience of feeling that their body does not seem to belong to them. Circle a number to show what percentage of the time this happened to you within the last month.
- 0% 10 20 30 40 50 60 70 80 90 100%
14. Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event. Circle a number to show what percentage of the time this happened to you within the last month.
- 0% 10 20 30 40 50 60 70 80 90 100%
15. Some people have the experience of not being sure whether things that they remember happening really did happen or whether they just dreamed them. Circle a number to show what percentage of the time this happened to you within the last month.
- 0% 10 20 30 40 50 60 70 80 90 100%
16. Some people have the experience of being in a familiar place but finding it strange and unfamiliar. Circle a number to show what percentage of the time this happened to you within the last month.
- 0% 10 20 30 40 50 60 70 80 90 100%
17. Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them. Circle a number to show what percentage of the time this happened to you within the last month.
- 0% 10 20 30 40 50 60 70 80 90 100%
18. Some people find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them. Circle a number to show what percentage of the time this happened to you within the last month.
- 0% 10 20 30 40 50 60 70 80 90 100%
19. Some people find that they are sometimes able to ignore pain. Circle a number to show what percentage of the time this happened to you within the last month.
- 0% 10 20 30 40 50 60 70 80 90 100%
20. Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time. Circle a number to show what percentage of the time this happened to you within the last month.
- 0% 10 20 30 40 50 60 70 80 90 100%

21. Some people sometimes find that when they are alone they talk out loud to themselves. Circle a number to show what percentage of the time this happened to you within the last month.

0% 10 20 30 40 50 60 70 80 90 100%

22. Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people. Circle a number to show what percentage of the time this happened to you within the last month.

0% 10 20 30 40 50 60 70 80 90 100%

23. Some people sometimes find that in certain situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them (for example, sports, work, social situations, etc.). Circle a number to show what percentage of the time this happened to you within the last month.

0% 10 20 30 40 50 60 70 80 90 100%

24. Some people sometimes find that they cannot remember whether they have done something or have just thought about doing it (for example, not knowing whether they have just mailed a letter or have just thought about mailing it). Circle a number to show what percentage of the time this happened to you within the last month.

0% 10 20 30 40 50 60 70 80 90 100%

25. Some people find evidence that they have done things that they do not remember doing. Circle a number to show what percentage of the time this happened to you within the last month.

0% 10 20 30 40 50 60 70 80 90 100%

26. Some people sometimes find writings, drawings, or notes among their belongings that they must have done but cannot remember doing. Circle a number to show what percentage of the time this happened to you within the last month.

0% 10 20 30 40 50 60 70 80 90 100%

27. Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing. Circle a number to show what percentage of the time this happened to you within the last month.

0% 10 20 30 40 50 60 70 80 90 100%

28. Some people sometimes feel as if they are looking at the world through a fog so that people and objects appear far away or unclear. Circle a number to show what percentage of the time this happened to you within the last month.

0% 10 20 30 40 50 60 70 80 90 100%

Please notice that these forms are printed on both sides.

References

- Blanchard, E. B., Jones-Alexander, J., Buckley, T. C., & Forneris, C. A.. (1996).
Psychometric properties of the PTSD Checklist (PCL). *Behaviour Research and Therapy*, 34, 669–673.
- Brand, B., Classen, C., Lanins, R., Loewenstein, R., McNary, S., Pain, C., & Putnam, F..
(2009). A naturalistic study of dissociative identity disorder and dissociative
disorder not otherwise specified patients treated by community clinicians.
Psychological Trauma: Theory, Research, Practice, And Policy, 1(2), 153-171.
doi:10.1037/a0016210
- Bernstein, E., & Putnam, F. W.. (1986). Development, reliability, and validity of a
dissociation scale. *Journal of Nervous and Mental Disease*, 174, 727–735.
doi:10.1097/00005053-198612000-00004
- Chalavi, S., Eline, M.V., Mechteld, E.G., Ellert, R.S., Nijenhuis, N., James, H.C., and
Antje, A.T.S.R., et al. 2015. Abnormal hippocampal morphology in dissociative
identity disorder and post-traumatic stress disorder correlates with childhood
trauma and dissociative symptoms. *Human Brain Mapping* 36, no. 5: 1692-1704.
- Cloitre, M., Koenen, K. C., Cohen, L. R., & Han, H. (2002). Skills training in affective
and interpersonal regulation followed by exposure: A phase-based treatment for
PTSD related to childhood abuse. *Journal Of Consulting And Clinical
Psychology*, 70(5), 1067-1074. doi:10.1037/0022-006X.70.5.1067

- Coons, P. M.. (1986). CHILD ABUSE AND MULTIPLE PERSONALITY DISORDER: REVIEW OF THE LITERATURE AND SUGGESTIONS FOR TREATMENT. *Child Abuse And Neglect*, 10(4), 455-462.
- Cuffe, S.P., Addy, C.L., Garrison, C.Z., Waller, J.L., Jackson, K.L., McKeown, R.E., Chilappagari, S.. (1998). Prevalence of PTSD in a community sample of older adolescents. *Journal Of The American Academy of Child and Adolescent Psychiatry*; 37:147–154
- Ellason, J. W., & Ross, C. A.. (1997). Two-year follow-up of inpatients with dissociative identity disorder. *American Journal Of Psychiatry*, 154, 832– 839.
- Ellason, J. W., & Ross, C. A.. (2004). SCL-90-R Norms for Dissociative Identity Disorder. *Journal Of Trauma And Dissociation*, 5, 85–91.
- Erbes, C. R., Meis, L. A., Polusny, M. A., & Compton, J. S.. (2011). Couple adjustment and posttraumatic stress disorder symptoms in National Guard veterans of the Iraq war. *Journal Of Family Psychology*, 25, 479 – 487.
<http://dx.doi.org/10.1037/a0024007>
- Evans, L., Cowlshaw, S., & Hopwood, M.. (2009). Family functioning predicts outcomes for veterans in treatment for chronic posttraumatic stress disorder. *Journal Of Family Psychology*, 23, 531–539. [http://dx .doi.org/10.1037/a0015877](http://dx.doi.org/10.1037/a0015877)
- Foa, E. B., & Hearst-Ikeda, D.. (1996). Emotional dissociation in response to trauma: An information-processing approach. In L. K. Michelson, W. J. Ray, L. K. Michelson, W. J. Ray (Eds.) , *Handbook of dissociation: Theoretical, empirical, and clinical perspectives* (pp. 207-224). New York, NY, US: Plenum Press.

- Foa, E. B., & Rothbaum, B. O.. (1998). Treating the trauma of rape : Cognitive-behavioral therapy for PTSD. New York : Guilford Press, c1998.
- Foote, J. B., Smolin, Y., Kaplan, M., Legatt, M. E., & Lipschitz, D.. (2006). Prevalence of dissociative disorders in psychiatric outpatients. *American Journal Of Psychiatry*, 163, 623– 629.
- Friedl, M. C., & Draijer, N.. (2000). Dissociative disorders in Dutch psychiatric inpatients. *American Journal Of Psychiatry*, 157, 1012–1013
- Garcia, R. R., Rico, S. E. G., & Agra´z, F. P.. (2006). Dissociative disorders in Mexican psychiatric patients: Prevalence, comorbidity and Dissociative Experiences Scale psychometric properties. *Salud Mental*, 29, 38 – 43.
- Gast, U., Rodewald, F., Nickel, V., & Emrich, H. M.. (2001). Prevalence of dissociative disorders among psychiatric inpatients in a German university clinic. *Journal of Nervous and Mental Disease*, 189, 249 –257.
- Harder, L. H., Chen, S., Baker, D. G., Chow, B., McFall, M., Saxon, A., et al. (2011). The influence of posttraumatic stress disorder numbing and hyperarousal symptom clusters in the prediction of physical health status in veterans with chronic tobacco dependence and posttraumatic stress disorder. *Journal of Nervous Mental Disorder*, 199(12), 940–945. doi:10.1097/ NMD.0b013e3182392bfb
- International Society for the Study of Trauma and Dissociation. (2011). Guidelines for Treating Dissociative Identity Disorder in Adults, Third Revision. *Journal of Trauma and Dissociation*, (12), 115-187. doi:10.1080/15299732.2011.537247

- Kellett, S.. (2005). The Treatment of Dissociative Identity Disorder with Cognitive Analytic Therapy: Experimental Evidence of Sudden Gains. *Journal Of Trauma & Dissociation*, 6(3), 55-81. doi:10.1300/J229v06n03-03
- Kessler, RC., Sonnega, A., Bromet, E., Hughes, M., Nelson, C.B.. (1995): Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry*; 52:1048–1060
- Kluft, R. P.. (1984). Treatment of multiple personality disorder. A study of 33 cases. *The Psychiatric Clinics Of North America*, 7(1), 9-29.
- Kluft, R. P.. (1988). The Postunification Treatment of Multiple Personality Disorder: First Findings. *American Journal Of Psychotherapy*, 42(2), 212.
- Loewenstein, R. J.. (1991). Rational psychopharmacology in the treatment of multiple personality disorder. *Psychiatric Clinics Of North America*, 14(3), 721-740.
- Madan, N., Bellin, E., & Haden, S. C.. (2015). Avoidant Coping as a Mediator between Persistent Dissociation and PTSD. *Journal Of The American Psychoanalytic Association*, 63(3), 541-548. doi:10.1177/0003065115594602
- McDonagh, A., Friedman, M., McHugo, G., Ford, J., Sengupta, A., Mueser, K., & ... Descamps, M.. (2005). Randomized Trial of Cognitive-Behavioral Therapy for Chronic Posttraumatic Stress Disorder in Adult Female Survivors of Childhood Sexual Abuse. *Journal Of Consulting And Clinical Psychology*, 73(3), 515-524. doi:10.1037/0022-006X.73.3.515

- Nijenhuis, E. S.. (2014). Ten reasons for conceiving and classifying posttraumatic stress disorder as a dissociative disorder. *Psichiatria E Psicoterapia*, 33(1), 74-106.
- Orcutt, H. K., Erickson, D. J., & Wolfe, J.. (2002). A prospective analysis of trauma exposure: the mediating role of PTSD symptomatology. *Journal Of Traumatic Stress*, 15(3), 259-266.
- Perkonig, A., Kessler, R.C., Storz, S., Wittchen, H-U.: Traumatic events and posttraumatic stress disorder in the community: prevalence, risk factors and comorbidity. *Acta Psychiatrica Scandinavica* 2000; 101:46–59
- Perkonig, A., Pfister, H., Stein, M. B., Höfler, M., Lieb, R., Maercker, A., & Wittchen, H.. (2005). Longitudinal course of posttraumatic stress disorder and posttraumatic stress disorder symptoms in a community sample of adolescents and young adults. *The American Journal Of Psychiatry*, 162(7), 1320-1327.
- Possemato, K., Pratt, A., Barrie, K., & Ouimette, P. (2015). Family functioning in recent combat veterans with posttraumatic stress disorder and alcohol misuse. *Traumatology*, 21(4), 267-272. doi:10.1037/trm0000037
- Powers, A., Cross, D., Fani, N., & Bradley, B. (2015). PTSD, emotion dysregulation, and dissociative symptoms in a highly traumatized sample. *Journal Of Psychiatric Research*, 61174-179. doi:10.1016/j.jpsychires.2014.12.011
- Resnick, H.S., Kilpatrick, D.G., Dansky, B.S., Saunders, B.E., Best, C.L. (1993): Prevalence of civilian trauma and posttraumatic stress disorder in a representative national sample of women. *Journal of Consulting and Clinical Psychology*; 61:984–991

Rodewald, F., Wilhelm-Göbbling, C., Emrich, H. M., Reddemann, L., & Gast, U. (2011).

Axis-I comorbidity in female patients with dissociative identity disorder and dissociative identity disorder not otherwise specified. *Journal Of Nervous And Mental Disease*, 199(2), 122-131. doi:10.1097/NMD.0b013e318208314e

Ross, C. A., & Haley, C. (2004). Acute stabilization and three-month follow-up in a trauma program. *Journal of Trauma and Dissociation*, 5, 103–112.

Ross, C. A., Anderson, G., Fleisher, W. P., & Norton, G. R. (1991). The frequency of Multiple Personality Disorder among psychiatric inpatients. *American Journal of Psychiatry*, 148, 1717–1720.

Sar, V., Koyuncu, A., Ozturk, E., Yargic, L. I., Kundakci, T., Yazici, A., et al. (2007). Dissociative disorders in the psychiatric emergency ward. *General Hospital Psychiatry*, 29, 45–50.

Sar, V., Kundakci, T., Kiziltan, E., Yargic, I., Tutkun, H., Bakim, B., et al. (2003). Axis I Dissociative Disorder comorbidity in borderline personality disorder among psychiatric outpatients. *Journal of Trauma and Dissociation*, 4, 119 –136.

Sar, V., Tutkun, H., Alyanak, B., Bakim, B., & Baral, I. (2000). Frequency of dissociative disorders among psychiatric outpatients in Turkey. *Comprehensive Psychiatry*, 41, 216 –222.

Sayers, S. L., Farrow, V. A., Ross, J., & Oslin, D. W. (2009). Family problems among recently returned military veterans referred for a mental health evaluation. *Journal of Clinical Psychiatry*, 70, 163–170. <http://dx.doi.org/10.4088/JCP.07m03863>

Schnurr, P. P., Hayes, A. F., Lunney, C. A., McFall, M., & Uddo, M. (2006).

Longitudinal analysis of the relationship between symptoms and quality of life in veterans treated for posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology*, 74(4), 707–713. doi:10.1037/0022-006X.74.4.707.

Shore, J.H., Vollmer, W.M., Tatum, E.J.. (1989): Community patterns of posttraumatic stress disorder. *The Journal of Nervous and Mental Diseases*; 177:681–685

Tutkun, H., Sar, V., Yargic, L. I., O' zpulat, T., Yanik, M., & Kiziltan, E. (1998).

Frequency of dissociative disorders among psychiatric inpatients in a Turkish university clinic. *American Journal of Psychiatry*, 155, 800 – 805.

van der Kolk, B. A., Roth, S., Pelcovitz, D., Sunday, S., & Spinazzola, J. (2005).

Disorders of extreme stress: The empirical foundation of a complex adaptation to trauma. *Journal Of Traumatic Stress*, 18(5), 389-399.

Wagner, A. W., & Linehan, M. M. (1998). Dissociative behavior. In V. M., Follette, J. I., Ruzek, F. R., Abueg, V. M., Follette, J. I., Ruzek, F. R. Abueg (Eds.), *Cognitive-behavioral therapies for trauma* (pp. 191-225). New York, NY, US: Guilford Press.

Weathers, F. W., Litz, B. T., Huska, J. A., & Keane, T. M.. (1994). The PTSD

Checklist—Civilian Version (PCL-C). Boston: National Center for PTSD.

Zatzick, D.F., Marmar, C.R., Weiss, D.S., Browner, W.S., Metzler, T.J., Golding, J.M.,

Stewart, A., Schlenger, W.E., Wells, K.B. (1997): Posttraumatic stress disorder and functioning and quality of life outcomes in a nationally representative sample of male Vietnam veterans. *American Journal of Psychiatry*; 154:1690–1695

- Zerach, G., Greene, T., Ginzburg, K., & Solomon, Z. (2014). The relations between posttraumatic stress disorder and persistent dissociation among ex-prisoners of war: A longitudinal study. *Psychological Trauma: Theory, Research, Practice, And Policy*, 6(2), 99-108. doi:10.1037/a0031599
- Zittel Conklin, C., & Westen, D. (2005). Borderline personality disorder in clinical practice. *American Journal of Psychiatry*, 162, 867–875.

Table 1

Estimated Marginal Means for Each Symptom Cluster at Each Stage of Treatment

Dependent Variable	Stage of treatment	Mean	Standard Error	95% Confidence Interval	
				Lower	Upper
				Bound	Bound
Re-experiencing	Stage 1	3.80	.154	3.50	4.12
	Stage 2	3.51	.106	3.31	3.72
	Stage 3	3.42	.154	3.12	3.72
	Stage 4	3.12	.142	2.83	3.40
	Stage 5	2.88	.241	2.40	3.36
Avoidance	Stage 1	3.70	.140	3.42	3.97
	Stage 2	3.49	.097	3.30	3.68
	Stage 3	3.47	.140	3.19	3.75
	Stage 4	3.28	.130	3.03	3.54
	Stage 5	3.25	.220	2.81	3.68
Hyper-arousal	Stage 1	3.98	.131	3.72	4.24
	Stage 2	3.57	.090	3.40	3.75
	Stage 3	3.49	.131	3.23	3.74
	Stage 4	3.53	.122	3.28	3.77
	Stage 5	3.19	.206	2.78	3.59

Note. Stage 1 = stabilization and establishing safety; Stage 3 = processing traumatic memories with full emotion; Stage 5 = integration of dissociated identities and reconnection.

Table 2

Post-Hoc Analysis for Re-experiencing Symptom Cluster

Dependent Variable	(I) Stage	(J) Stage	Mean Diff (I-J)	Std. Error	Sig.	95% CI	
						Lower	Upper
Re-experiencing	Stage 1	Stage 2	.290	.186	.121	-.077	.657
		Stage 3	.384	.217	.079	-.044	.812
		Stage 4	.689*	.209	.001	.276	1.10
		Stage 5	.925*	.286	.001	.361	1.48
		Stage 2	-.290	.186	.121	-.657	.077
	Stage 2	Stage 3	.094	.186	.616	-.273	.461
		Stage 4	.399*	.177	.026	.049	.748
		Stage 5	.635*	.263	.017	.116	1.15
		Stage 1	-.384	.217	.079	-.812	.044
		Stage 2	-.094	.186	.616	-.461	.273
	Stage 3	Stage 4	.305	.209	.146	-.107	.718
		Stage 5	.542	.286	.060	-.022	1.10
		Stage 1	-.689*	.209	.001	-1.10	-.276
		Stage 2	-.399*	.177	.026	-.748	-.049
		Stage 3	-.305	.209	.146	-.718	.107
	Stage 4	Stage 5	.236	.280	.400	-.316	.788
		Stage 1	-.925*	.286	.001	-1.48	-.361
		Stage 2	-.635*	.263	.017	-1.15	-.116
		Stage 3	-.542	.286	.060	-1.10	.022
		Stage 4	-.236	.280	.400	-.788	.316

Note. Based on observed means. The error term is Mean Square(Error) = .639. * The

mean difference is significant at the .05 level.

Table 3

Post-Hoc Analysis for Hyper-arousal Symptom Cluster

Dependent Variable	(I) Stage	(J) Stage	Mean Difference (I-J)	Std. Error	Sig.	95% CI	
						Lower	Upper
Hyper-arousal	Stage 1	Stage 2	.404*	.159	.012	.089	.718
		Stage 3	.492*	.186	.009	.125	.858
		Stage 4	.453*	.179	.012	.099	.806
		Stage 5	.792*	.244	.001	.309	1.27
		Stage 2	-.404*	.159	.012	-.718	-.089
	Stage 2	Stage 3	.088	.159	.582	-.227	.402
		Stage 4	.049	.152	.748	-.250	.348
		Stage 5	.388	.225	.087	-.056	.832
		Stage 1	-.492*	.186	.009	-.858	-.126
		Stage 2	-.088	.159	.582	-.402	.227
	Stage 3	Stage 4	-.039	.179	.828	-.392	.314
		Stage 5	.299	.244	.222	-.182	.782
		Stage 1	-.453*	.179	.012	-.806	-.099
		Stage 2	-.049	.151	.748	-.348	.250
		Stage 3	.039	.179	.828	-.314	.392
	Stage 4	Stage 5	.339	.239	.159	-.133	.811
		Stage 1	-.792*	.244	.001	-1.27	-.309
		Stage 2	-.388	.225	.087	-.832	.056
		Stage 3	-.300	.244	.222	-.782	.182
		Stage 4	-.339	.239	.159	-.811	.133

Note. Based on observed means. The error term is Mean Square(Error) = .639. * The

mean difference is significant at the .05 level.

Table 4

Post-Hoc Analysis of Correlations among Symptom Clusters for Total Sample

		Re-			
		Dissociation	experiencing	Avoidance	Hyperarousal
Dissociation	Pearson	1	.615**	.531**	.528**
	Correlation				
	Sig. (2-tailed)				
	N				
Re-experiencing	Pearson	.615**	1	.572**	.594**
	Correlation				
	Sig. (2-tailed)				
	N				
Avoidance	Pearson	.531**	.572**	1	.624**
	Correlation				
	Sig. (2-tailed)				
	N				
Hyperarousal	Pearson	.528**	.594**	.624**	1
	Correlation				
	Sig. (2-tailed)				
	N				

Note. ** Correlation is significant at the 0.01 level (2-tailed).

Table 5

Correlation of Dissociation and Symptom Clusters at Each Stage of DD treatment.

Stage of Treatment			Dissociation	Re-experiencing	Avoidance	Hyper-arousal
Stage 1	Dissociation	Pearson <i>r</i>	1	.817	.553	.633
		Sig. (2-tailed)		.091	.334	.251
		N	5	5	5	5
Stage 2	Dissociation	Pearson <i>r</i>	1	.594**	.600**	.478**
		Sig. (2-tailed)		.001	.001	.003
		N	37	37	37	37
Stage 3	Dissociation	Pearson <i>r</i>	1	.581**	.458**	.489**
		Sig. (2-tailed)		.001	.001	.001
		N	78	77	76	78
Stage 4	Dissociation	Pearson <i>r</i>	1	.656**	.638**	.567**
		Sig. (2-tailed)		.001	.001	.001
		N	43	43	42	43
Stage 5	Dissociation	Pearson <i>r</i>	1	.797**	.622*	.640*
		Sig. (2-tailed)		.001	.010	.010
		N	16	16	16	15

Note. *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).Page Break

Table 6

Partial Correlations among Dependent Variables with Dissociation

			<u>Correlations</u>	
Control Variables			Dissociation	Re-experiencing
Avoidance & Hyper-arousal	Dissociation	Correlation	1.00	.383
		Significance (2-tailed)	.	.001
		df	0	206
Hyper-arousal & Re-experiencing	Re-experiencing	Correlation	.383	1.00
		Significance (2-tailed)	.001	.
		df	206	0
Control Variables			Dissociation	Avoidance
Hyper-arousal & Re-experiencing	Dissociation	Correlation	1.00	.189
		Significance (2-tailed)	.	.006
		df	0	206
Re-experiencing & Avoidance	Avoidance	Correlation	.189	1.00
		Significance (2-tailed)	.006	.
		df	206	0
Control Variables			Dissociation	Hyperarousal
Re-experiencing & Avoidance	Dissociation	Correlation	1.00	.158
		Significance (2-tailed)	.	.023
		df	0	206
Avoidance & Hyper-arousal	Hyper-arousal	Correlation	.158	1.00
		Significance (2-tailed)	.023	.
		df	206	0

Table 7

Post-Hoc Multivariate Analysis of Covariance (MANCOVA) with Age as Covariate

		Hypothesis Error					Partial	Observed
Effect		Value	F	df	df	Sig.	Eta ²	Power ^d
Intercept	Pillai's Trace	.573	87.55 ^b	3.00	196.00	.001	.573	1.00
	Wilks' Lambda	.427	87.55 ^b	3.00	196.00	.001	.573	1.00
	Hotelling's Trace	1.34	87.55 ^b	3.00	196.00	.001	.573	1.00
	Roy's Largest Root	1.34	87.55 ^b	3.00	196.00	.001	.573	1.00
Age	Pillai's Trace	.039	2.68 ^b	3.00	196.00	.048	.039	.647
	Wilks' Lambda	.961	2.68 ^b	3.00	196.00	.048	.039	.647
	Hotelling's Trace	.041	2.68 ^b	3.00	196.00	.048	.039	.647
	Roy's Largest Root	.041	2.68 ^b	3.00	196.00	.048	.039	.647
Stage	Pillai's Trace	.099	1.69	12.00	594.00	.066	.033	.863
	Wilks' Lambda	.903	1.69	12.00	518.85	.064	.033	.806
	Hotelling's Trace	.105	1.70	12.00	584.00	.063	.034	.867
	Roy's Largest Root	.076	3.78 ^c	4.00	198.00	.005	.071	.886

Note. a. Design: Intercept + Age + Stage b. Exact statistic c. The statistic is an upper bound on F that yields a lower bound on significance level. d. Computed using alpha = .05

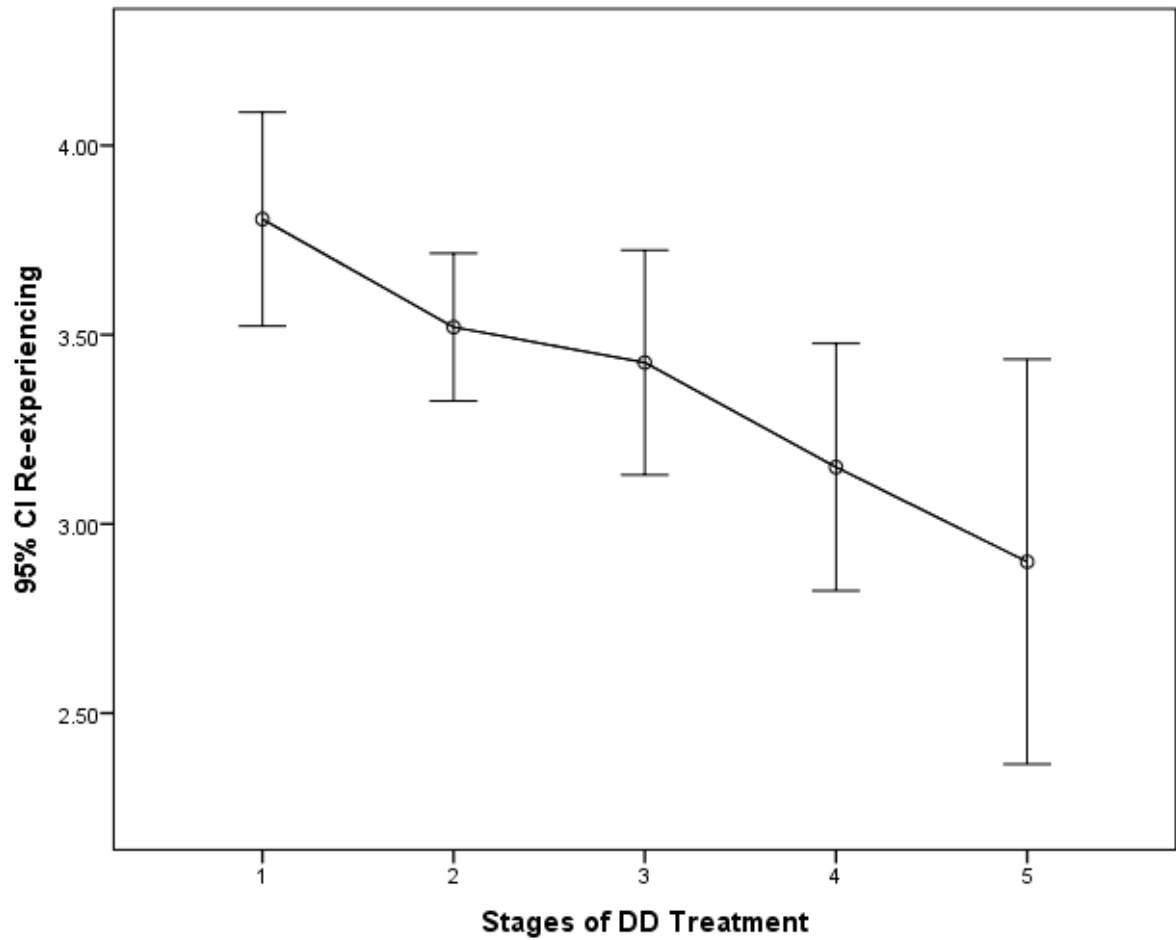
Table 8

Post-Hoc Univariate Analysis

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta ²	Obs. Power ^d
Corrected Model	Reexperiencing	14.30 ^a	5	2.86	3.33	.007	.078	.894
	Avoidance	5.08 ^b	5	1.02	1.41	.221	.034	.492
	Hyperarousal	9.31 ^c	5	1.86	2.94	.014	.069	.847
Intercept	Reexperiencing	142.07	1	142.07	165.50	.001	.455	1.00
	Avoidance	103.74	1	103.74	144.29	.001	.422	1.00
	Hyperarousal	149.58	1	149.58	235.89	.001	.544	1.00
Age	Reexperiencing	.947	1	.947	1.10	.295	.006	.182
	Avoidance	1.17	1	1.17	1.63	.204	.008	.245
	Hyperarousal	.429	1	.429	.676	.412	.003	.130
Stage	Reexperiencing	11.18	4	2.79	3.26	.013	.062	.828
	Avoidance	4.72	4	1.18	1.64	.165	.032	.500
	Hyperarousal	7.85	4	1.96	3.09	.017	.059	.805
Error	Reexperiencing	169.97	198	.858				
	Avoidance	142.36	198	.719				
	Hyperarousal	125.55	198	.634				
Total	Reexperiencing	2582.1	204					
	Avoidance	2576.9	204					
	Hyperarousal	2754.2	204					
Corrected Total	Reexperiencing	184.27	203					
	Avoidance	147.44	203					
	Hyperarousal	134.86	203					

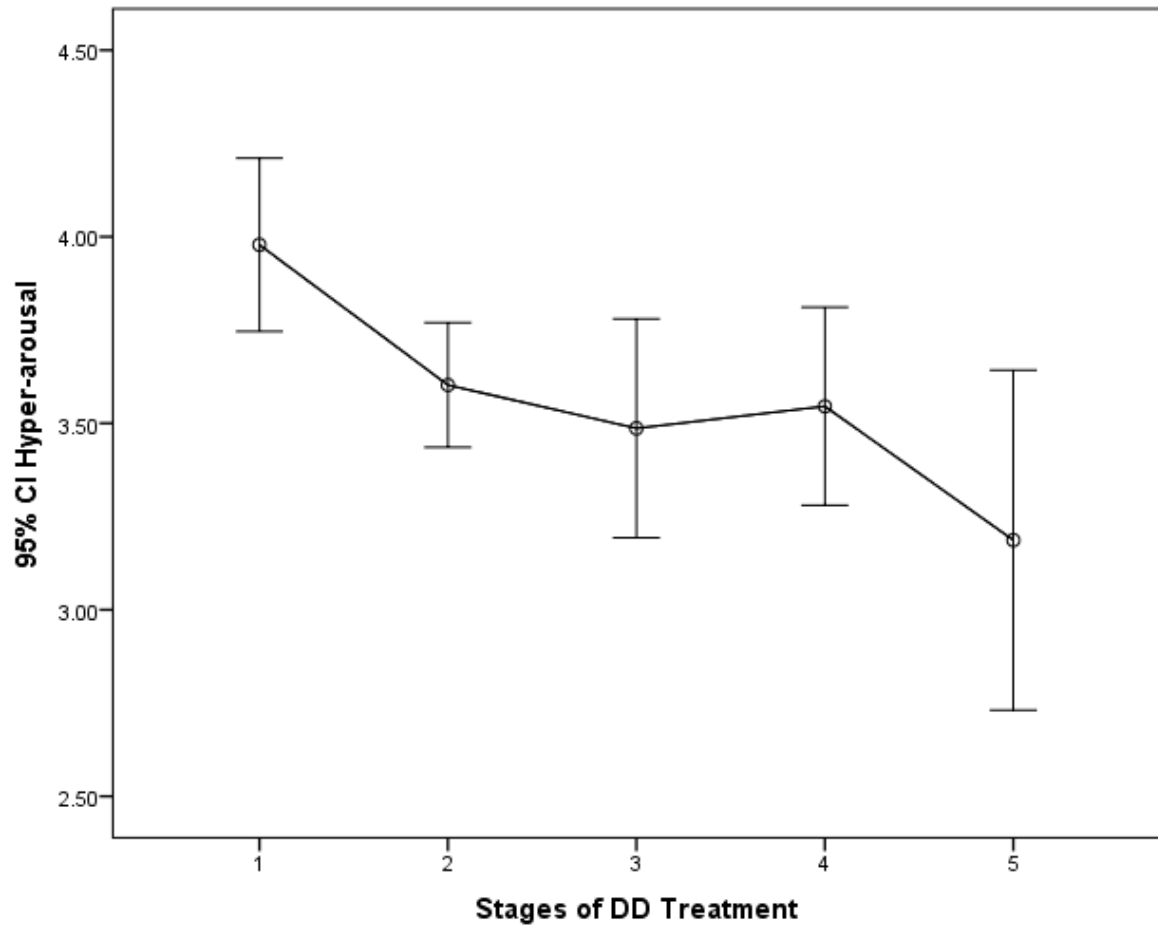
Note. a. R Squared = .078 (Adjusted R Squared = .054) b. R Squared = .034 (Adjusted R Squared = .010) c. R Squared = .069 (Adjusted R Squared = .046) d. Computed as $\alpha = .05$

Figure 1. Estimated Marginal Means of Re-experiencing with 95% Confidence Intervals.



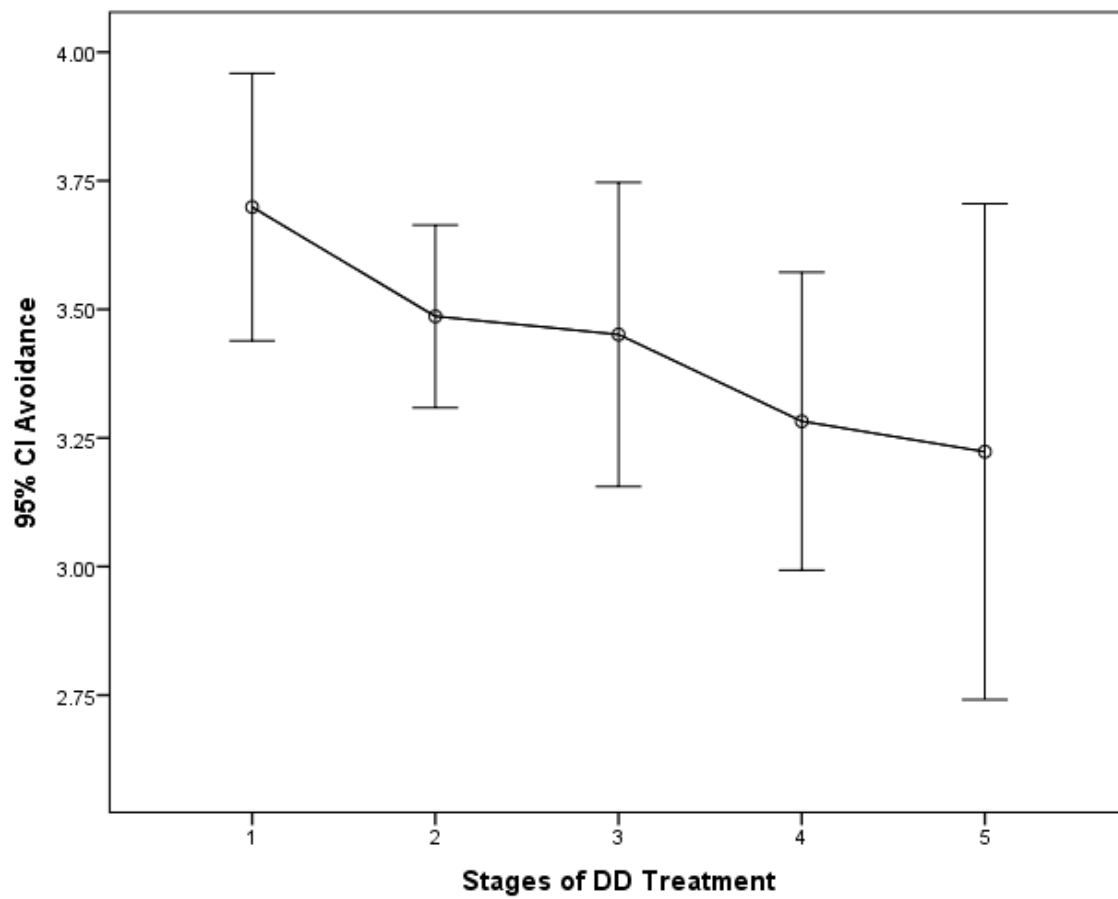
Note: Marginal means were significantly lower in patients at Stage 5 than patients at Stage 1. $F(4,205) = 4.107$, $p < .05$, partial eta square = .075, power = .87

Figure 2. Estimated Marginal Means of Hyper-arousal with 95% Confidence Intervals.



Note: Marginal means were statistically significantly lower among patients at Stage 5 than patients at Stage 1. $F(4,205) = 3.373$, $p < .05$, partial eta square = .062, power = .84

Figure 3. Estimated Marginal Means of Avoidance with 95% Confidence Intervals.



Note: Marginal means were not statistically significantly lower among patients at Stage 5 than patients at Stage 1.

Patricia Abduragimova

████████████████████

████████████████████

██████████

██████████

Education

M.A. Clinical Psychology, Towson University, Towson, MD 21252 May 2017

Thesis: “Intersections of PTSD and DD: The Evolution of PTSD Symptom Clusters Throughout Treatment of Dissociative Disorders”

B.S. Psychology, University of Florida, Gainesville, FL 32611 May 2014

Research Experience

Graduate Student, Towson University, Towson, MD August 2015 - May 2017

Studied Dissociative Identity Disorder with Dr. Bethany Brand

- Inputting data from SIMS, DES, and NEO
- Coding and analyzing data from the TOP DD study

Undergraduate Student, University of Florida, Gainesville, FL August 2012 - May 2014

Studied applications of Social Psychology with Dr. James Sheppard

- Obtaining informed consent from participants
- Administering test materials
- Debriefing participants and reinforcing confidentiality
- Coding and inputting data

Teaching Experience

Community College of Baltimore County, MD August 2016 – Present

Single Step Program Instructor

- Designing English Reading/Writing and Language Arts curricula for adults with cognitive and developmental disabilities.
- Teaching said English Reading/Writing and Language Arts courses.

Employment

Center for Student Diversity, Towson, MD 21252 August 2015 – Present

Graduate Assistant: Asian Pacific Islander Division

- Promoting diversity and equity for underserved populations through discourse and education.
- Supervising the activities of two student organizations and five work-study students.
- Facilitating community outreach and involvement through mentoring programs, guided tours, and promotional marketing campaigns (digital and otherwise).
- Designing, budgeting, and executing educational events, presentations, and trainings.

House of Ruth Maryland, Baltimore, MD 21218

August 2016 – Present

Child & Family Therapy Intern

- Applying the principles of evidence-based cognitive-behavioral therapy to the counseling of children and adults who have suffered from the effects of Intimate-Partner Violence.
- Leading regular interpersonal and psychoeducational group therapy sessions for victims as well as perpetrators of Intimate-Partner Violence.

Volunteer Experience

12th Judicial Circuit of Sarasota, FL.

January 2015 – August 2015

Certified Guardian Ad Litem

- Advocating for the needs and rights of displaced/mistreated children within the 12th Judicial Circuit of Sarasota, FL.

Presentations

- International Society for the Study of Trauma and Dissociation (ISSTD) Conference, Washington DC, 2017
- 20th Annual Multicultural Conference, Towson, MD, 2016

Computer Skills

- SPSS statistical data-analysis software
- Microsoft Excel, Access, PowerPoint, Word

Languages

- Hindi, Gujarati, English, Russian, French
- Acquiring Arabic and German

