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2013

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UNIVERSITY OF CALIFORNIA, SAN DIEGO

SAN DIEGO STATE UNIVERSITY

Trauma-Related Guilt: Conceptual Development and Relationship with Posttrauma
Psychopathology

A dissertation submitted in partial satisfaction of the requirements for the degree of
Doctor of Philosophy

in

Clinical Psychology

by

Kendall Clarke Wilkins

Committee in charge:

University of California, San Diego

Professor Sonya Norman, Chair
Professor Sandra Brown
Professor Susan Tate
Professor Ryan Trim

San Diego State University

Professor Joseph Price
Professor V. Robin Weersing

2013

The Dissertation of Kendall Clarke Wilkins is approved, and it is acceptable
in quality and form for publication on microfilm and electronically:

Chair

University of California, San Diego

San Diego State University

2013

DEDICATION

To my parents and husband...the worlds best cheering section

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ACKNOWLEDGEMENTS

I would like to acknowledge my graduate mentor Dr. Sonya Norman for her tremendous mentorship, unwavering support, encouragement, and wicked sense of humor. I will forever consider myself lucky to have been a member of the Norman Lab.

I would also like to acknowledge my graduate mentor Dr. Sandra Brown for sharing her infinite wisdom, guidance, humor, and love of the fine state of Michigan.

I would like to acknowledge the members of my dissertation committee...you have been cherished teachers through out my graduate career.

I would like to acknowledge Ursula Myers, purveyor of cupcakes, proofreading, patience, kindness, and unlimited cheer.

Finally, I would like to acknowledge my Joint Doctoral Program cohort for forever sticking to our class motto.

VITA

EDUCATION

- 2012-2013 **Veterans Affairs, Puget Sound Healthcare System**, Seattle, WA
Clinical Psychology Internship (APA accredited program)
Training Director: Stephen McCutcheon, Ph.D.
- 2007-2013 Ph.D. **San Diego State University/University of California, San Diego**
Joint Doctoral Program in Clinical Psychology, San Diego, California (APA accredited program)
Dissertation: *Trauma-related guilt: Conceptual development and relationship with posttrauma psychopathology*
Advisors: Sandra A. Brown, Ph.D., Sonya B. Norman, Ph.D.
- M.S. Master of Science in Clinical Psychology
Master's thesis: *Does a decade make a difference? Comparing adolescents with and without alcohol use disorders ten years following study entry*
Advisors: Sandra A. Brown, Ph.D., Sonya B. Norman, Ph.D.
- 2000-2004 B.A. **Boston University**, Boston, Massachusetts
Bachelor of Arts in Psychology, Magna Cum Laude

GRANT SUPPORT

- 2010-2012 5 F31 AA018909-02 (Total Direct Cost: \$62,446)
Funding Source: National Institute on Alcohol Abuse and Alcoholism (NIAAA)
Title: **Emergence and Course of Co-occurring Alcohol and Internalizing Disorders**
Role: Principal Investigator
- 2008-2010 5 T32 AA013525-09
Funding Source: National Institute on Alcohol Abuse and Alcoholism (NIAAA)
Title: **Alcohol Research in the Science/Practitioner Model** (PI: Edward Riley, Ph.D.)
Role: Predoctoral Fellow

HONORS AND AWARDS

2010	Dorathe Frick Memorial Award <i>Honoring outstanding contributions to the Joint Doctoral Program</i>
2009, 2010, 2011	Research Society on Alcoholism Student Merit Award
2004	Magna Cum Laude, Boston University
2003-2004	Psi Chi National Honor Society in Psychology
2000-2004	Dean's List, Boston University

PROFESSIONAL PUBLICATIONS & PRESENTATIONS

Peer-Reviewed Articles

1. Goldsmith, A. A., **Wilkins, K. C.**, & Norman, S. B. (2012). When having one disorder is the exception, not the norm: Psychological comorbidity in veterans. *The Behavior Therapist*, 35 (8), 153-156.
2. Lang, A., **Wilkins, K. C.**, Roy-Byrne, P. P., Golinelli, D., Chavira, D., Sherbourne, C., Rose, R. D., Bystritsky, A., Greer Sullivan, G., Craske, M. G., & Stein, M. B. (2012). Abbreviated PTSD Checklist (PCL) as a guide to clinical response. *General Hospital Psychiatry*, 34, 332-338. doi: 10.1016/j.genhosppsych.2012.02.003
3. Norman, S. B., Myers, U. S., **Wilkins, K. C.**, Goldsmith, A. A., Hristova, V., Huang, Z., McCullough, K., & Robinson, S. K. (2012). Review of biological mechanisms and pharmacological treatments of comorbid PTSD and substance use disorders. *Neuropharmacology*, 62, 542-551. doi: 10.1016/j.neuropharm. 2011.04.032
4. **Wilkins, K. C.**, Norman, S. B., & Lang, A. (2011). Synthesis of the psychometric properties of the PTSD Checklist (PCL) military, civilian, and specific versions. *Depression & Anxiety*, 28, 596-606. doi: 10.1002/ da.20837
5. Norman, S. B., Campbell-Sills, L., Rochlin, A., Hitchcock, C., **Wilkins, K. C.**, & Stein, M. B. (2010). Validation of the Overall Anxiety Severity and Impairment Scale (OASIS) with a college student sample. *Journal of Psychiatric Research*, 112, 92-101. doi: 10.1016/j.jpsychhires.2010.06.011
6. Norman, S. B., Tate, S. R., **Wilkins, K. C.**, Cummins, K., & Brown, S. A. (2010). Posttraumatic stress disorder's role in integrated substance dependence and depression treatment outcomes. *Journal of Substance Abuse Treatment*, 38, 346-355. doi: 10.1016/j.jsat.2010.01.013

7. Norman, S. B., **Wilkins, K. C.**, Tapert, S., Lang, A. J., & Najavits, L. (2010). A pilot study of Seeking Safety with OEF/OIF veterans. *Journal of Psychoactive Drugs*, 42, 83-87. doi: 10.1080/02791072.2010. 10399788
8. Canavera, K. E., **Wilkins, K. C.**, & Ehrenreich, J. T. (2009). Parent-child agreement in the assessment of obsessive-compulsive disorder in childhood and adolescence. *Journal of Clinical Child & Adolescent Psychology*, 38, 909-915. doi: 10.1080/15374410903258975

Books

1. Norman, S. B., **Wilkins, K. C.**, Baeressen, K., Rodgers, C., Grimes, E., Thorp, S., & Allard, C. (2011). *Drinking in the context of intimate partner violence*. Hauppauge, NY: Nova Science Publishers.

Book Chapters

1. Norman, S. B., Harrop, E., **Wilkins, K. C.**, Pedersen, E. R., Myers, U. S., Chabot, A., & Rodgers, C. (in press). Development of sexual relationships. In S. A. Brown and R. A. Zucker (Eds), *The Oxford handbook of adolescent substance abuse*. New York, NY: Oxford University Press.
2. Bekman, N., **Wilkins, K. C.**, & Brown, S. A. (in press). Treatment of youth and adolescents. In B. S. McCrady and E. E. Epstein (Eds), *Addictions: A comprehensive guidebook*. New York, NY: Oxford University Press.
3. Myers, U. S., **Wilkins, K. C.**, Allard, C. B., & Norman, S. B. (2012). Trauma-Related Guilt Inventory: Review of psychometrics and directions for future research. In A. Columbus (Ed), *Advances in psychology research*. Hauppauge, NY: Nova Science Publishers.
4. Najavits, L. M., Schmitz, M., Johnson, K. M., Smith, C., North, T., Hamilton, N., Walser, R., Reeder, K., Norman, S., & **Wilkins, K. C.** (2009). Seeking Safety therapy for men: Clinical and research experiences. In L. Kaitlin (Ed), *Men and addictions*. Hauppauge, NY: Nova Science Publishers.

Unpublished Treatment Materials

1. Norman, S. B., Allard, C., & **Wilkins, K. C.** *Trauma Informed Guilt Reduction Manual*. Unpublished treatment manual. University of California, San Diego.
2. Norman, S. B., Allard, C., & **Wilkins, K. C.** *Trauma Informed Guilt Reduction Workbook*. Unpublished treatment workbook. University of California, San Diego.

Presentations & Abstracts

1. **Wilkins, K. C.**, Myers, U. S., Goldsmith, A. A., Buzzella, B., & Norman, S. B. (2013, April). High-risk behaviors in Iraq and Afghanistan veterans: The role of trauma-related guilt. In S. Norman (Chair), *Relationship between PTSD and common co-occurring problems*. Symposium accepted for presentation at the Anxiety and Depression Association of America Annual Conference, La Jolla, CA.
2. Buzzella, B. A., **Wilkins, K. C.**, Myers, U. S., Goldsmith, A. A., & Norman, S. B. (2013, April). The impact of PTSD on relationship functioning in a sample of male OEF/OIF veterans. In S. Norman (Chair), *Relationship between PTSD and common co-occurring problems*. Symposium accepted for presentation at the Anxiety and Depression Association of America Annual Conference, La Jolla, CA.
3. Goldsmith, A. A., **Wilkins, K. C.**, Myers, U. S., & Norman, S. B. (2013, April). Posttraumatic stress disorder and suicidal ideation in OEF/OIF/OND combat veterans. In S. Norman (Chair), *Relationship between PTSD and common co-occurring problems*. Symposium accepted for presentation at the Anxiety and Depression Association of America Annual Conference, La Jolla, CA.
4. Masino, T. M., **Wilkins, K. C.**, & Norman, S. B. (2013, April). Obstructive sleep apnea risk in OEF/OIF veterans with PTSD. In S. Norman (Chair), *Relationship between PTSD and common co-occurring problems*. Symposium accepted for presentation at the Anxiety and Depression Association of America Annual Conference, La Jolla, CA.
5. Nappi, C. M., Ferriter, C., Campos, M., **Wilkins, K. C.**, & Davis, K. (2013, April). *Dialectical behavior skills group for depression among veterans: An effectiveness study*. Poster session accepted for presentation at the International Society for the Improvement and Teaching of Dialectical Behavior Therapy Conference, Baltimore, MD.
6. Myers, U. S., **Wilkins, K. C.**, Pedersen, E. R., & Norman, S. B. (2012, June). *The role of alcohol expectancies in drinking behavior among women with AUD and PTSD*. Poster session presented at the Research Society on Alcoholism Annual Meeting, San Francisco, CA.
7. Norman, S. B., **Wilkins, K. C.**, Myers, U. S., & Allard, C. (2012, May). *Treating combat guilt*. Poster session presented at the Naval Center Combat and Operational Stress Control Annual Conference, San Diego, CA.
8. Nappi, C. M., Ferriter, C., **Wilkins, K. C.**, & Adler, S. (2011, November). *Dialectical behavior skills group for depression among veterans: An effectiveness study*.

Poster session presented at the Association for Behavioral and Cognitive Therapies Annual Convention, Toronto, CA.

9. **Wilkins, K. C.,** Worley, M. A., Tomlinson, K., Ramo, D., Khoddam, R., & Brown, S. A. (2011, June). *The long-term impact of psychiatric comorbidity on adolescent alcohol/drug treatment outcomes: Ten-year outcomes*. Poster session presented at the Research Society on Alcoholism Annual Meeting, Atlanta, GA.
10. **Wilkins, K. C.,** Tomlinson, K., Ramo, D., & Brown, S. A. (2011, June). *Extending long-term outcomes: Comparing adolescents with alcohol use disorders and community adolescents 20 years following treatment*. Poster session presented at the Research Society on Alcoholism Annual Meeting, Atlanta, GA.
11. Myers, U. S., **Wilkins, K. C.,** & Norman, S. B. (2011, June). *Who completes psychotherapy for PTSD and AUD? A comparison of women with histories of partner violence who completed and dropped out of psychotherapy*. Poster session presented at the Research Society on Alcoholism Annual Meeting, Atlanta, GA.
12. Norman, S. B., **Wilkins, K. C.,** Allard, C. A., Rindt, S., & Kusian, J. (2010, November). Adjunctive guilt treatment for OEF/OIF service members with PTSD. In S. Norman (Chair), *Treatment of returning service members from Afghanistan and Iraq: Efforts to enhance treatment delivery and outcomes*. Symposium conducted at the Association for Behavioral and Cognitive Therapies Annual Convention, San Francisco, CA.
13. **Wilkins, K. C.,** Norman, S. B., Campbell-Sills, L., Rochlin, A., Hitchcock, C., & Stein, M. B. (2010, June). *Validation of the Overall Anxiety Severity and Impairment Scale (OASIS) with a college student sample*. Poster session presented at the 6th World Congress of Behavioral and Cognitive Therapies, Boston, MA.
14. Norman, S. B., **Wilkins, K. C.,** McGhee, R., Huelsenbeck, R., & Whalen, M. (2010, August). Predictors of intervention completion in a pilot study for concurrent A/SUD and PTSD psychotherapy. In S. Glasner-Edwards (Chair), *Optimizing treatment of substance users with psychiatric comorbidity*. Symposium conducted at the American Psychological Association Annual Convention, San Diego, CA.
15. Norman, S. B., Bermann, C., Bousman, C. A., Gale, M., Twamley, E. W., Heaton, R. K., **Wilkins, K. C.,** McGhee, R., Everall, I. P., & Judd, P. A. (2010, August). Trauma history and drug use characteristics among COD outpatients. In S. B. Norman & P. A. Judd (Chairs), *Co-occurring substance abuse/mental disorders: Characteristics at treatment initiation: Treatment implications*. Symposium conducted at the American Psychological Association Annual Convention, San Diego, CA.
16. **Wilkins, K. C.,** Norman, S. B., & Lang, A. (2010, August). *The PTSD Checklist: What we know, what we don't know, and use with a new population*. Poster

session presented at the American Psychological Association Annual Convention, San Diego, CA.

17. **Wilkins, K. C.**, Norman, S. B., Cummins, K., Khoddam, R., & Brown, S. A. (2010, June). *Does a decade make a difference?: Comparing adolescents with alcohol use disorders and community adolescents ten years following study entry*. Poster session presented at the Research Society on Alcoholism Annual Meeting, San Antonio, TX.
18. **Wilkins, K. C.**, Norman, S. B., Tate, S. R., Cummins, K., & Brown, S. A. (2009, July). *The role of PTSD in depression and substance dependence treatment outcomes*. Poster session presented at the Research Society on Alcoholism Annual Meeting, San Diego, CA.
19. **Wilkins, K. C.**, Tapert, S., Lang, A., & Norman, S. B. (2008, November). Seeking Safety with OEF/OIF veterans. In S. Rauch (Chair), *Treatment of returning active duty troops and veterans from Afghanistan and Iraq: Current programs and future directions*. Symposium conducted at the Association for the Advancement of Behavior Therapy Annual Convention, Orlando, FL.
20. McGee, R., **Wilkins, K. C.**, Allard, C., Bousman, C., Judd, P. H., Twamley, E. W., Heaton, R. K., Everall, I. P., & Norman, S. B. (2008, April). *Rates of relational conflict among severely mentally ill patients with and without interpersonal trauma histories*. Poster session presented at the California Psychological Association Convention, Anaheim, CA.
21. Walen, M., **Wilkins, K. C.**, Twamley, E. W., Bousman, E., Judd, P. H., Heaton, R. H., Everall, I. P., & Norman, S. B. (2008, April). *Relationship between PTSD symptom severity and cognitive impairment in the severely mentally ill*. Poster session presented at the California Psychological Association Convention, Anaheim, CA.
22. Bitran, S., Duade, J. E., **Wilkins, K. C.**, Im, J. Y., Farchione, T., Barlow, D. H., Gulliver, S. B., Kamholz, B. W., Morrisette, S. B., Devine, E., & Cirualo, D. (2006, November). *Relationships between desired alcohol expectancies and alcohol severity in an alcohol use and anxiety disordered population*. Poster session presented at the Association for the Advancement of Behavior Therapy Annual Convention, Chicago, IL.
23. Canavera, K. E., **Wilkins, K. C.**, Suarez, L. M., Pincus, D. B., & Ehrenreich, J. T. (2006, November). *Anxiety sensitivity and post-traumatic stress disorder in children and adolescents*. Poster session presented at the Association for the Advancement of Behavior Therapy Annual Convention, Chicago, IL.

24. Landon, T. M., Cheron, D. M., **Wilkins, K. C.**, Hourigan, S. E., Pincus, D. B., & Ehrenreich, J. T. (2006, November). *Thinking about thoughts: Metacognitive processes in anxious children*. Poster session presented at the Association for the Advancement of Behavior Therapy Annual Convention, Chicago, IL.
25. Trosper, S. E., Suarez, L. M., Bennett, S. M., **Wilkins, K. C.**, & Ehrenreich, J. T. (2006, November). *Treating adolescent trauma and substance abuse: Pilot testing a modular treatment approach*. Poster session presented at the Association for the Advancement of Behavior Therapy Annual Convention, Chicago, IL.
26. Stoddard, J. A., Hofmann, S. G., & **Wilkins, K. C.** (2006, November). *Development & evaluation of an 8-day, 6-session intensive cognitive behavioral treatment for social phobia*. Poster session presented at the Association for the Advancement of Behavior Therapy Annual Convention, Chicago, IL.
27. **Wilkins, K. C.**, Santucci, L., Canavera, K. E., Buzzella, B. A., Pincus, D. B., & Ehrenreich, J. T. (2006, November). *Separation anxiety disorder: Evaluating a randomized-controlled trial and clinic-based treatment*. Poster session presented at the Association for the Advancement of Behavior Therapy Annual Convention, Chicago, IL.
28. Bennett, S. M., Suarez, L. M., Trosper, S. E., Jakle, K., **Wilkins, K. C.**, & Saxe, G. (2006, November). *Adapting trauma systems therapy for adolescents with substance abuse: Treatment outcome and initial case study*. Poster session presented at The International Society for Traumatic Stress Studies Convention, Hollywood, CA.
29. Canavera, K. E., **Wilkins, K. C.**, Suarez, L. M., Pincus, D. B., & Ehrenreich, J. T. (2005, March). *Obsessive-compulsive disorder and trauma: Thematic overlap and treatment implications*. Poster session presented at the Anxiety Disorders Association of America Convention, Miami, FL.
30. Hourigan, S. E., **Wilkins, K. C.**, Buzzella, B., Landon, T. M., & Ehrenreich, J. T. (2005, November). *The contribution of family environment to the severity of childhood anxiety disorders*. Poster session presented at the Association for the Advancement of Behavior Therapy Annual Convention, Washington, DC.
31. **Wilkins, K. C.**, Hourigan, S. E., Buzzella, B., Landon, T. M., & Ehrenreich, J. T. (2005, November). *Multiple informants on the assessment of obsessive-compulsive disorder in childhood and adolescents*. Poster session presented at the Association for the Advancement of Behavior Therapy Annual Convention, Washington, DC.
32. Moses, E. B., **Wilkins, K. C.**, Bennett, S., Landon, T., Pincus, D. B., & Ehrenreich, J. T. (2005, June). *The role of gender and age in the prediction of child and*

adolescent anxiety diagnostic severity. Poster session presented at the Twelfth Scientific Meeting of the International Society for Research in Child and Adolescent Psychopathology, New York, NY.

RESEARCH EXPERIENCE

Veterans Affairs, Puget Sound Health Care System

2012-present *Co-Investigator*
Project: **New Avenues Evaluation**, Center of Excellence in Substance Abuse Treatment and Education
Principal Investigator: Tracy L. Simpson, Ph.D.

Veterans Affairs, San Diego Healthcare System

2012-present *Collaborator*
Project: **Effectiveness of Evidence Based Treatments for PTSD Symptoms and Trauma-Related Mental Health Problems Among Veterans**
Principal Investigator: Sonya B. Norman, Ph.D.

2009-2013 *Collaborator & Graduate Study Coordinator*
Project: **Psychotherapy to Address Non-Adaptive Guilt in OEF/OIF Military Personnel with PTSD**, University of California, San Diego Academic Senate
Principal Investigator: Sonya B. Norman, Ph.D.

2007-2010 *Graduate Study Coordinator*
Project: **Evaluation of Seeking Safety for Operation Enduring Freedom or Operation Iraqi Freedom Veterans**, Veterans Affairs Health Services Research & Development
Principal Investigator: Sonya B. Norman, Ph.D.

Psychology Department, University of California, San Diego

2008-2013 *Graduate Research Assistant*
Project: **Adolescent Alcohol Treatment Outcome: Recovery Patterns**, National Institute on Alcohol Abuse and Alcoholism (NIAAA)
Principal Investigator: Sandra A. Brown, Ph.D.

Outpatient Psychiatric Services, University of California, San Diego

2007- 2010 *Graduate Study Coordinator*

Project: **An Integrated Treatment for Alcohol Use Disorders and PTSD in Victims of Partner Violence**, National Institute on Alcohol Abuse and Alcoholism (NIAAA)
Principal Investigator: Sonya B. Norman, Ph.D.

Center for Anxiety and Related Disorders, Boston University

- 2006-2007 *Program Evaluator*
Project: **Adolescent Traumatic Stress and Substance Abuse Treatment Study**, Substance Abuse and Mental Health Services Administration (SAMHSA)
Principal Investigator: David H. Barlow, Ph.D.
- 2005-2006 *Research Technician*
Project: **Adolescent Traumatic Stress and Substance Abuse Treatment Study**, Substance Abuse and Mental Health Services Administration (SAMHSA)
Principal Investigator: David H. Barlow, Ph.D.
- 2004-2006 *Research Technician*
Project: **Cognitive Behavioral Therapy and Venlafaxine Treatments for Anxiety in Alcoholism**, National Institute on Alcohol Abuse and Alcoholism (NIAAA)
Principal Investigator: David H. Barlow, Ph.D.
- 2004-2005 *Research Technician*
Project: **The Classification of Anxiety Disorders**, National Institute of Mental Health (NIMH)
Principal Investigator: Timothy Brown, Psy.D.

CLINICAL EXPERIENCE

Veterans Affairs, San Diego Healthcare System

Mood Disorders Psychotherapy Program & Behavioral Sleep Medicine Program

- 2011-2012 *Study Therapist*
Project: **Nightmare and Insomnia Treatment Efficacy Study (N.I.T.E.S)**, National Institute of Nursing Research (NINR)
Principal Investigator: Sean Drummond, Ph.D.
- 2010-2011 *Practicum Student*
Supervisors: Sean Drummond, Ph.D., Carla Nappi, Ph.D.

Operation Enduring Freedom/Operation Iraqi Freedom PTSD Clinic

2010-2012 *Study Therapist*
Project: **Psychotherapy to Address Non-Adaptive Guilt in OEF/OIF Military Personnel with PTSD**, University of California, San Diego Academic Senate
Principal Investigator: Sonya Norman, Ph.D.

Substance Abuse and Mental Illness Clinic

2011-2012 *Study Therapist*
2009-2010 Project: **Intervention for Veterans with Depression, Substance Use Disorders, and Trauma**, Veterans Affairs Clinical Science Research & Development
Principal Investigator: Susan Tate, Ph.D.

2009-2010 *Study Therapist*
Project: **Evaluation of Seeking Safety for Operation Enduring Freedom or Operation Iraqi Freedom Veterans**, Veterans Affairs Health Services Research & Development
Principal Investigator: Sonya Norman, Ph.D.

2009-2010 *Practicum Student*
Supervisors: Susan Tapert, Ph.D., Ryan Trim, Ph.D., Martha Carlson, Ph.D.

San Diego State University

Psychology Clinic

2008-2009 *Practicum Student*
Supervisors: Nader Amir, Ph.D., Vanessa Malcarne, Ph.D., Michael Taylor, Ph.D.

University of California, San Diego

Outpatient Psychiatric Services

2007-2010 *Study Therapist*
Project: **An Integrated Treatment for Alcohol Use Disorders and PTSD in Victims of Partner Violence**, National Institute on Alcohol Abuse and Alcoholism (NIAAA)
Principal Investigator: Sonya B. Norman, Ph.D.

PROFESSIONAL MEMBERSHIPS

Association for Behavioral and Cognitive Therapies
Research Society on Alcoholism
Adolescent Trauma and Substance Abuse Committee, National Child Traumatic Stress Network

SERVICE ACTIVITIES

2012-2013	Internship Selection Committee, VA Puget Sound, Seattle
2012-2013	Intern Didactic Seminar Planning Committee, VA Puget Sound, Seattle
2009-2012	<i>Chair</i> , Student Anxiety Research Group, University of California, San Diego
2009	<i>Student Volunteer</i> , American Psychological Association Commission on Accreditation Assembly Meeting, San Diego, CA

ABSTRACT OF DISSERTATION

Trauma-Related Guilt: Conceptual Development and Relationship with Posttrauma
Psychopathology

by

Kendall Clarke Wilkins

Doctor of Philosophy in Clinical Psychology

University of California, San Diego, 2013
San Diego State University, 2013

Professor Sonya Norman Chair

Trauma-related guilt has been linked to more severe post-traumatic outcomes, yet little effort has been made to conceptualize the construct of posttraumatic guilt or empirically evaluate existing theoretical models. To address this need, the present study conducted a systematic empirical evaluation of the theoretical model of trauma-related guilt proposed by Kubany and Watson (2003). This model hypothesizes that emotional and physical distress related to the trauma memory partially mediates the relationship between guilt cognitions and posttraumatic guilt. This investigation aimed to: (1)

empirically evaluate Kubany and Watson's components of posttraumatic guilt model; (2) extend this model in male Veterans by evaluating models where by guilt cognitions, distress, and posttraumatic guilt were related to posttraumatic stress disorder (PTSD) and depression (MDD) symptom severity; and (3) explore the prognostic significance of posttraumatic guilt, PTSD, and MDD symptoms for treatment course in female IPV survivors. This investigation examined male Iraq and Afghanistan Veterans ($n = 149$) and female IPV survivors with ($n = 30$) and without ($n = 39$) alcohol/substance use disorders. Aims 1 and 2 were evaluated using path analysis. Aim 3 was explored using Pearson's product moment correlations. Kubany and Watson's components of posttraumatic guilt model demonstrated the hypothesized indirect effect in male Veterans (indirect effect = .14, $SE = .04$, 95% CI = [.05-.21]). In the extended model examining the relationship between the components of posttraumatic guilt model and PTSD, the hypothesized indirect path suggesting the relationship between guilt-related cognitions, distress, and PTSD is mediated by posttraumatic guilt became non-significant as the model was respecified. Results related to MDD models paralleled these findings. Support for Kubany and Watson's model was inconsistent in female IPV survivors. Significant correlations were detected between change in posttraumatic guilt and change in PTSD ($r = .52$, $p = .04$) and MDD symptoms ($r = .81$, $p < .01$) from mid-treatment to post-treatment. Findings provide support for Kubany and Watson's model in male Veterans while highlighting the need to further define the distress component included in this model. Correlational findings within female IPV survivors suggest a mechanistic link may exist between trauma-related guilt and PTSD and MDD.

INTRODUCTION

Trauma-related guilt is highly prevalent

A traumatic event involves experiencing, witnessing, or being exposed to death, threatened death, serious injury, or threat to an individual's physical integrity (American Psychiatric Association, 2000). Survivors who negatively appraise their action or inaction during trauma may experience guilt, a distressing emotion arising from complex cognitive appraisals, including negative self-evaluation of one's behavior in comparison to valued standards (Kubany & Watson, 2003; Lewis, 1971; Tangney & Dearing, 2002). Guilt appears to be a highly prevalent posttraumatic reaction. For instance, approximately half of a sample of female victims of intimate partner violence (IPV), over half of a sample of sexually abused women, and 2/3 of a Vietnam Veteran sample reported experiencing at least moderate levels of guilt related to their behaviors, thoughts, and/or feelings during their traumatic experiences (Kubany et al., 1996).

Trauma-related guilt is linked with worse posttrauma outcomes

Posttraumatic stress disorder (PTSD). Current DSM-IV-TR PTSD criteria (American Psychiatric Association, 2000), implies individuals consistently experience a limited set of peritraumatic emotions (i.e., experienced at or close to the time of trauma) in response trauma (i.e., fear, helplessness, horror); however, preliminary evidence suggests trauma-related guilt may also contribute to the onset and maintenance of PTSD (Beckham, Feldman, & Kirby, 1998; Brewin, Andrews, & Rose, 2000; Harman & Lee, 2010; Kubany & Watson, 2003; Marx et al., 2010; Street, Gibson, & Holohan, 2005). In fact, proposed revisions to PTSD criteria for DSM-V include adding guilt as a symptom under Criterion D (Miller et al., 2012). This revision is supported by frequent reports of

peritraumatic guilt in those who go on to develop PTSD (Hathaway, Boals, & Banks, 2010; O'Donnell, Creamer, McFarlane, Silove, & Bryant, 2010), studies detecting strong positive correlations between trauma-related guilt and PTSD in individuals surviving a variety of traumatic events (e.g., Beckham et al., 1998; Kubany et al., 1996; Owens, Chard, & Cox, 2008; Resick, Nishith, Weaver, Astin, & Feuer, 2002) and factor analytic studies identifying trauma-related guilt as a major symptom cluster within trauma survivors (Glover, Pelesky, Bruno, & Sette, 1990; Hyer, Davis, Boudewyns, & Woods, 1991; Kubany et al., 1996). These results are contrasted by findings suggesting individuals who do not experience guilt related to their trauma exhibit better posttrauma outcomes (Hendin & Pollinger Haas, 1984; Trickett, Kurtz, & Pizzigati, 2004).

Posttraumatic major depression (MDD). Unlike PTSD, DSM-IV-TR has long conceptualized guilt as a contributing factor in MDD (American Psychiatric Association, 2000). Current MDD diagnostic criteria includes nine symptoms, one of which is excessive feelings of guilt. Empirical findings suggest the contribution of guilt to MDD may include guilt related to trauma. Specifically, moderate to high positive correlations have been found between depression and guilt in trauma survivors (e.g., Kubany et al., 1995; Kubany et al., 1996). Additionally, reductions in MDD symptoms are associated with decreased guilt cognitions (e.g., Resick et al., 2002).

Suicide. Trauma-related guilt has also been linked with concerning findings related to suicide. Guilt was the most significant predictor of suicidal ideation and attempts in Vietnam Veterans with PTSD (Hendin & Haas, 1991; Hyer, McCranie, Woods, & Boudewyns, 1990). Trauma-related guilt was also significantly and positively

associated with suicidal thoughts in Vietnam Veterans and female victims of IPV (Kubany et al., 1996).

Trauma-related guilt may not respond to traditional empirically supported treatments. Trauma-related guilt appears to be less responsive to exposure based treatments, the gold standard psychotherapeutic treatment for PTSD, such as Prolonged Exposure (PE), and may hinder emotional processing of traumatic events (Arntz, Tiesema, & Kindt, 2007; Foa & Meadows, 1997; Monson et al., 2006). As guilt is conceptualized as involving both cognitive and affective components, it has been suggested that cognitive focused treatments, such as Cognitive Processing Therapy (CPT), may be more effective in reducing trauma-related guilt (Resick et al., 2002). Resick and colleagues (2002) found female rape survivors receiving CPT reported significant reductions in two forms of trauma-related guilt cognitions when compared to PE. However, these findings are not consistent with those of Owens and colleagues (2009) who failed to find significant pre to post differences in trauma-related guilt in Vietnam Veterans receiving CPT despite reductions in PTSD and MDD symptoms.

Trauma-related guilt may persist without appropriate treatment. Kubany and colleagues (1995) found Vietnam Veterans continued to experience distressing levels of trauma-related guilt nearly four decades after combat exposure. In a later study, Kubany and colleagues (2003) found guilt was significantly reduced in female IPV survivors who received cognitive therapy for battered women (CTT-BW), a treatment which targets guilt cognitions in addition to PTSD; however, no significant differences were found in pre and post treatment guilt in the delayed comparison condition. Additionally, 91% of treated women no longer met criteria for PTSD with 83% of the same sample reporting

depression scores in the non-clinical range. Significant reductions in guilt were seen in the delayed sample after receiving CTT-BW.

Conceptual models of trauma-related guilt

High prevalence rates and research linking trauma-related guilt to worse posttrauma functioning highlight the importance of building a better understanding of the nature and consequences of experiencing trauma-related guilt. To further current knowledge, one must first clearly define the construct of trauma-related guilt and specify a theoretical model explaining the relationship between this variable and related constructs. This conceptual step is crucial because the definitions and model proposed will serve as the basis for operational definitions (i.e., measurement model) and empirical evaluation (i.e., analytic model; Treat & Weersing, 2005).

Given the importance of construct definitions and theoretical models, what is known about trauma-related guilt conceptualization will be briefly reviewed here. Early efforts to define trauma-related guilt began within psychoanalytic and psychodynamic literatures. Much of this early work centered around survivors' guilt (Glover, 1984; Williams, 1987) and/or attempts to classify types of guilt following combat (see Glover, 1988; Opp & Samson, 1989; Parson, 1986). These early theoretical efforts were based predominantly on clinical experience and accounts found in the literature with few conceptualizations or classifications evaluated empirically (e.g., Glover et al., 1990; Kubany & Watson, 2003).

Since this time, researchers and theorists in the fields of abnormal, personality, and social psychology have increasingly written about and investigated guilt in response to trauma (e.g., Kubany et al., 1996; Kubany & Watson, 2003; Litz et al., 2009; Resick et

al., 2002; Resick & Schnicke, 1992). Most trauma theorists and researchers agree that trauma-related guilt consists of a feeling or affective component as well as an interpretive cognitive component (e.g., Blum, 2008; Foa, Steketee, & Rothbaum, 1989; Harman & Lee, 2010; Kubany & Watson, 2003; Litz et al., 2009; Resick et al., 2002; Wilson, Drozdek, & Turkovic, 2006). Current definitions generally conceptualize trauma-related guilt as a distressing 'self-conscious' emotion arising from complex cognitive appraisals, including negative self-evaluation of one's thoughts, feelings, or behaviors during the traumatic event in comparison to valued standards (Kubany et al., 1996; Lewis, 1971; Tangney & Dearing, 2002).

Behavioral urges believed to be associated with trauma-related guilt have also been proposed. Specifically, trauma-related guilt has been conceptualized as involving tension, regret, and remorse, which serves to motivate prosocial reparative action (e.g., apology, reparation, making amends, etc.; Blum, 2008; Lee, Scragg, & Turner, 2001; Lewis, 1971; Wilson et al., 2006). However, reparative action is not always feasible after traumatic events. For instance, a combat Veteran cannot bring his fallen comrade back to life nor can a battered woman take back the violence her children may have witnessed. It is hypothesized that this type of situation (i.e., when restitution is blocked) may intensify the emotional distress experienced and lead to greater avoidance and maladaptive coping (e.g., social isolation, alcohol/substance use; Kubany, 1998; Kubany & Watson, 2003).

Theoretical model of interest: A multidimensional approach to trauma-related guilt

Kubany and Watson (2003) suggest taking a multidimensional approach where by trauma-related guilt is conceptualized as a construct composed of different interacting components. Like the definitions described above, Kubany and Watson conceptualize

trauma-related guilt as involving affective and cognitive components; however, authors propose a conceptual model describing the onset and relationship between these pieces. Specifically, authors define trauma-related guilt as “an unpleasant feeling accompanied by a belief that one should have thought, felt, or acted, differently.” The cognitive component is described as the recognition/belief that one’s thoughts, feelings, or actions have violated personal and/or moral standards of behavior. Kubany and Watson propose four interrelated cognitive variables (i.e., guilt cognitions) regarding one’s role in the trauma, which can result in guilt-related appraisals. These interpretations include: 1) Perceived violation of values (i.e., wrong-doing), 2) Believing one is responsible for the event (i.e., responsibility), 3) Perceived lack of justification for behavior (i.e., lack of justification), and 4) Beliefs that the event was foreseeable and thus preventable (i.e., foreseeability/preventability). Kubany and Watson suggest the affective component (i.e., distress) is elicited when outcomes of the traumatic event are viewed as negative. Specifically, the affective component is conceptualized as emotional and physical distress that is specifically related to the trauma memory. Authors state that at least one of these guilt cognitions and this distress component must be present to experience trauma-related guilt. The severity or magnitude of guilt experienced after a traumatic event (i.e., posttraumatic guilt) is believed to be a function of the degree to which these affective (i.e., distress) and cognitive components (i.e., guilt cognitions) are present. Kubany and Watson propose guilt cognitions exhibit a strong effect on the severity of distress. A small effect, if any, is hypothesized from distress to guilt cognitions. Kubany and Watson suggest this small effect may occur as a result of mood-state dependent retrieval (e.g.,

Bower, 1981; Bower & Cohen, 1982) or as a result of an individual evaluating the meaning of his/her distress (see Figure 1.1).

Building upon the above multidimensional construct, Kubany and Watson (2003) put forth a larger theoretical causal model. In addition to distress, guilt cognitions, and posttraumatic guilt, this model includes genetic/physiological variables, prior learning experiences, shame variables (i.e., trait-shame, shame cognitions), and contextual variables authors believe contribute to the onset and severity of guilt (see Figure 2.1). This model was designed to more fully account for the degree to which one experiences guilt following a negative event.

Empirical Support. Kubany and colleagues (2002) multidimensional construct, referred to here as the components of posttraumatic guilt model, is one of few conceptualizations that has been evaluated empirically. The majority of these evaluations have used the Trauma-Related Guilt Inventory (TRGI; Kubany et al., 1996), which includes guilt cognitions, distress, and global guilt (labeled the posttraumatic guilt scale in the present investigation) scales. While this work is limited, it provides preliminary support for Kubany and Watson's components of posttraumatic guilt model. Findings suggest both distress and guilt cognitions were positively and significantly correlated with guilt severity (i.e., posttraumatic guilt scale) in female victims of IPV, Vietnam Veterans, and college students who experienced trauma (Beck et al., 2011; Kubany et al., 1996). Regression analyses suggested distress combined with guilt cognitions accounted for 51% of variance in posttraumatic guilt in college students experiencing a trauma, 62% of variance in female IPV survivors, and 74% in Vietnam Veterans (Kubany et al., 1996). Small analogue studies with college students were also conducted (Kubany & Watson,

2003). After reading scenarios of traumatic events, in which the student was an innocent witness, guilt cognition and distress ratings were significantly correlated with posttraumatic guilt ratings. In two studies participants were told about things they could have done to prevent the traumatic event after reading the scenario (i.e., hindsight bias—having knowledge of the events outcome) and providing initial guilt ratings. Distress and cognitions were significantly higher at second assessment. Authors suggest this supports the idea that hindsight-bias may have a direct causal effect on distress and guilt cognitions as is suggested in their larger causal model (see Figure 2.1).

Kubany and colleagues (1996) have also begun to examine the relationship between the components of their proposed model and forms of posttraumatic psychopathology. Specifically, in the final stages of TRGI measure development, all three model components (i.e., guilt cognitions, distress, posttraumatic guilt) were found to significantly correlate with PTSD and depression symptom measures in two samples, a female IPV survivor sample and a Vietnam Veteran sample (Kubany et al., 1996).

Since this initial work, results have been inconsistent. In a study of mixed-era Veterans, the posttraumatic guilt scale was found to significantly correlate with both self-reported and clinician-rated PTSD symptoms (Held, Owens, Schumm, Chard, & Hansel, 2011). Guilt cognitions and distress scales were not examined. Conversely, in a study of female IPV survivors, researchers failed to find a significant correlation between the posttraumatic guilt scale and PTSD but did detect significant correlations between PTSD symptoms and guilt cognitions and PTSD symptoms and distress (Beck et al., 2011). This study also examined components of Kubany and Watson's (2003) model as predictors of self-reported and clinician assessed PTSD symptoms in regression models, including one

guilt component (i.e., guilt cognitions, distress, or posttraumatic guilt scales), one type of interpersonal abuse (i.e., emotional/verbal, domination/isolation) and a guilt x abuse type interaction term in each model. Distress and guilt cognitions were found to significantly predict PTSD; however, guilt cognitions was only a significant predictor of self-reported PTSD symptoms. A similar guilt cognitions model has also been examined in journalists exposed to work-place danger (Browne, Evangeli, & Greenberg, 2011). Specifically, regression models were used to examine exposure to work-place trauma and guilt cognitions as predictors of PTSD. Guilt cognitions significantly predicted self-reported PTSD in this model. Distress and posttraumatic guilt were not studied.

Expanding on this line of work Held and colleagues (2011) examined the relationship between the posttraumatic guilt scale, disengagement coping, and PTSD using path analysis in a Veteran sample. Authors found posttraumatic guilt significantly predicted self-reported PTSD symptoms and that disengagement coping partially mediated this relationship. Posttraumatic guilt was found to significantly predict clinician-rated PTSD, however, disengagement coping did not mediate this relationship. Guilt cognitions and distress scales were not examined.

Limitations of current trauma-related guilt conceptualizations

Lack of empirical evaluations. The construct definition and components of posttraumatic guilt model proposed by Kubany and colleagues described above draws from clinical work, reviews of clinical research, and analyses of structured interviews (Kubany et al., 1996). While this components of posttraumatic guilt model is mentioned with increasing frequency (e.g., Beck et al., 2011; Held et al., 2011; Owens, Steger, Whitesell, & Herrera, 2009; Resick et al., 2002), little effort has been made to further

conceptualize trauma-related guilt or empirically evaluate this model outside of basic empirical evaluations (e.g., correlations; Kubany & Watson, 2003; Kugler & Jones, 1992).

Trauma-related guilt definitions and conceptualizations are not widely used.

Construct definitions specific to trauma-related guilt do not appear to be used consistently and are often confused with other guilt categories. Likely this confusion is due in part to the lack of an empirically supported construct definition and theoretical model (Kubany & Watson, 2003; Kugler & Jones, 1992), which further highlights the importance of continued research in this area. This failure to properly define and measure trauma-related guilt is problematic, as it appears to be limiting current understanding of the consequences of experiencing guilt in response to trauma (Kubany & Watson, 2003). For example, trauma-related guilt, or ‘state’ guilt (i.e., one’s transitory experience of guilt in response to specific experiences) is not consistently differentiated from the related but separate construct of ‘trait’ guilt (i.e., one’s proclivity to generally experience guilt; Kim, Thibodeau, & Jorgensen, 2011; Kubany & Watson, 2003). Additionally, within state guilt, trauma-related guilt is not always distinguished from guilt related to common everyday events (e.g., forgetting son’s baseball game). Research suggests that while trauma-related guilt is positively associated with psychopathology (i.e., is maladaptive); trait guilt and guilt related to common every day experiences are not consistently linked with negative outcomes and may be adaptive in certain circumstances (Tangney & Dearing, 2002). Given possible differences in the adaptive verses maladaptive nature of these subcategories, it is essential that trauma-related guilt be properly defined and measured in a way that differentiates it from these other forms of guilt.

Lack of transdiagnostic conceptualization. Increasing evidence suggests the mediating effects of appraisals of traumatic events, such as trauma-related guilt, cannot be ignored when examining posttrauma psychopathology (Foa et al., 1989; Fontana, Rosenheck, & Brett, 1992; Janoff-Bulman, 1989; Kubany et al., 1995; Resick & Schnicke, 1992). PTSD and MDD represent two of the most prevalent posttraumatic psychological disorders, with research suggesting trauma survivors exhibit similar probabilities of developing either PTSD or MDD following trauma (e.g., 14-17%; Shalev et al., 1998). MDD and PTSD are highly comorbid, with rates of co-occurrence as high as 50% (Bleich, Koslowsky, Dolev, & Lerer, 1997). These high prevalence and comorbidity rates have led to debate regarding whether PTSD and posttraumatic MDD represent two separate forms of psychopathology or if these clusters of symptoms represent manifestations of the same posttraumatic disorder (Norman et al., 2011). As a result of this debate, increasing emphasis has been placed on transdiagnostic research within the trauma field.

As was previously mentioned, there is ample theory and research to suggest trauma-related guilt serves as risk factor for and is related to both PTSD and MDD. High rates of trauma-related guilt are found in trauma survivors and significant positive correlations of similar magnitude have been found between the components of trauma-related guilt (i.e., guilt cognitions, distress, posttraumatic guilt), and PTSD and MDD (e.g., Kubany et al., 1996; Owens et al., 2009). Additionally, overlap exists within the mechanisms proposed to explain how trauma-related guilt may contribute to the onset, exacerbation, and/or maintenance of these disorders (i.e., negative appraisals, avoidance/withdrawal, rumination; see Litz et al., 2009; Marx et al., 2010; Speckens,

Ehlers, Hackmann, Ruths, & Clark, 2007; Street & Arias, 2001). Despite these findings, the relationship between trauma-related guilt and posttraumatic psychopathology has not been consistently incorporated into existing theoretical models. Further, the few studies that have incorporated components of trauma-related guilt (e.g., guilt cognitions, distress, posttraumatic guilt) when examining posttraumatic psychopathology have only evaluated these components in isolation (e.g., examined only the guilt cognitions scale, examined guilt components in separate models; see Beck et al., 2011; Browne et al., 2012; Held et al., 2011). Thus, how these guilt components interact together to influence posttraumatic psychopathology has not yet been examined, nor have these guilt component variables been directly compared.

Systematic empirical evaluations and extension of trauma-related guilt conceptualizations are needed

Model specification, evaluation, and comparison will be essential to advance current understanding of trauma-related guilt (Treat & Weersing, 2005). As such, empirical evaluations of existing trauma-related guilt conceptual models using more informative analyses than have been previously conducted are needed (e.g., path analysis). Specifically, trauma-related guilt is believed to consist of the combination of distress and guilt cognitions, with guilt cognitions having a strong effect on distress levels (i.e., relationship between guilt cognitions and posttraumatic guilt mediated by distress; Kubany & Watson, 2003). However, this components of posttraumatic guilt model has not been directly tested. As a result, empirically evaluating this multidimensional conceptual model (see Figure 3.1) remains an essential first step in research aiming to expand our knowledge of posttraumatic guilt.

Extending this components of posttraumatic guilt model to understand the relationship between posttraumatic guilt and posttraumatic psychopathology represents an important second step in this line of research. While it is speculated that posttraumatic guilt, the combination of distress and guilt cognitions, drives the relationship seen with psychopathology, such as PTSD, this hypothesis has not been empirically evaluated. As a result, it is important to examine the conceptual model proposed by Kubany and Watson (2003) as it relates to PTSD (see Figure 4.1). Additionally, given the high degree of interrelatedness between PTSD and MDD (e.g., high rates of comorbidity, overlap in proposed causal mechanisms) the relationship of trauma-related guilt to both of these disorders should be examined. To accomplish this task, Kubany and colleagues (2003) components of posttraumatic guilt model can also be extended to examine relationships between this model and MDD (see Figure 5.1). Doing so will allow for comparisons across the relationships seen between the components of posttraumatic guilt and PTSD and the relationships seen between the components of posttraumatic guilt and MDD.

Female IPV survivors make up one of the largest trauma populations in North America (Heise, Ellsberg, & Gottemoeller, 1999) and may provide a unique opportunity to study the conceptualization and consequences of trauma-related guilt. Given the nature of IPV (e.g., repeated trauma exposure, known perpetrator, sense of betrayal, involvement of family) women who experience IPV are at great risk for maladaptive guilt (Kubany et al., 2004; Kubany & Watson, 2003). Similarly, combat Veterans may also provide an important opportunity to study guilt. Veterans frequently report experiencing guilt related to trauma (Kubany et al., 1996; Miller et al., 2010). In addition, this population offers an opportunity to examine types of guilt not often experienced by other

groups (e.g., guilt related to perpetration of violence, guilt related to commission and/or witnessing of atrocities; Kubany & Watson, 2003). Of note, research findings to date suggest these populations exhibit similar average levels of distress, guilt cognitions, and posttraumatic guilt as well as comparable correlations between these constructs (e.g., Kubany, 1994; Kubany et al., 1996; Monson et al., 2006; Owens et al., 2009; Resick et al., 2002). Additionally, high rates of posttraumatic psychopathology, including PTSD and MDD, are often found in both populations. As a result, IPV survivors and combat Veterans provide important opportunities to study the relationship between the components of trauma-related guilt and posttraumatic psychopathology.

Present Study

Based on the state of the current literature, pressing needs in the field of posttraumatic guilt research are as follows:

Empirical evaluation of the leading posttraumatic guilt conceptual model (i.e., the components of posttraumatic guilt model), previously examined only through basic analyses (e.g., correlations). This work remains an essential first step in this line of research.

Expanding current knowledge of the consequences of experiencing posttraumatic guilt related to posttrauma functioning by:

1. Building upon the leading posttraumatic guilt model to incorporate the known relationship between the components of trauma-related guilt and posttraumatic psychopathology.
2. Examining the influence of posttraumatic guilt on treatment course and outcomes for posttraumatic psychopathology.

The present investigation was designed to begin to address the above-mentioned gaps in the literature through the following aims:

Aim 1: To empirically examine the cross-sectional relationship between distress, guilt cognitions, and posttraumatic guilt.

Hypothesis 1.1: A significant indirect effect will be found where by distress mediates the relation between guilt cognitions and posttraumatic guilt, supporting the components of posttraumatic guilt model (see Figure 3.1).

Aim 2: To extend understanding of the relationship between trauma-related guilt and PTSD by evaluating the cross-sectional relationship between distress, guilt cognitions, posttraumatic guilt, and PTSD.

Hypothesis 2.1: A significant indirect effect will be found where by the relationship between guilt-related cognitions, distress, and PTSD is mediated by posttraumatic guilt (see Figure 4.1).

Aim 3: To extend understanding of trauma-related guilt and posttraumatic psychopathology more broadly by evaluating the cross-sectional relationship between distress, guilt cognitions, posttraumatic guilt, and two of the most common forms of posttraumatic psychopathology, PTSD and MDD.

Hypothesis 3.1: Like PTSD, a significant indirect effect will be found where by the relationship between guilt-related cognitions, distress, and MDD is mediated by post-traumatic guilt (see Figure 5.1).

Exploratory Aim 4: To investigate the prognostic significance of trauma-related guilt, PTSD symptoms, and MDD symptoms for treatment course and post-treatment outcomes.

Exploratory Hypothesis 4.1: Posttraumatic guilt will be associated with significantly higher PTSD and MDD symptom severity at baseline.

Exploratory Hypothesis 4.2: Posttraumatic guilt will be positively correlated with change in PTSD and MDD symptoms across treatment (i.e., baseline, mid-treatment, post-treatment, and follow-up).

METHODS

To facilitate the study of diverse trauma samples, the present investigation utilized data collected as part of an on-going investigation (i.e., Sample 1: OEF/OIF/OND Veterans) as well as archival data from two completed treatment-outcome investigations (i.e., Sample 2: female victims of IPV with alcohol or substance use; Sample 3: female victims of IPV). Samples 2 and 3 were combined to form one IPV sample in Aim 1. Data included baseline assessments gathered from all three samples in Aim 1, baseline assessments from Sample 1 in Aims 2 and 3, and baseline, midpoint, post-treatment, and two-month follow-up data from a subset of Sample 3 in Aim 4 (see Table 2.1 for Self-Report Assessment Schedule).

Participants

Sample One: OEF/OIF/OND Veterans. Participants were 149 male Veterans presenting for intake assessments and/or treatment within the VA San Diego Healthcare System's (VASDHS) Operation Enduring Freedom, Operation Iraqi Freedom, Operation New Dawn PTSD Clinic (i.e., OEF/OIF/OND PTSD Clinic). For demographic and diagnostic information see Table 1.1.

This study protocol was executed in accordance with the standards approved by the University of California, San Diego Human Research Protections Program (UCSD HRPP; Protocol: 111463) as well as by the Veterans Association Research and Development Office.

All Veterans eligible for assessment and/or treatment in the VASDHS OEF/OIF/OND PTSD clinic were invited to participate. Veterans were eligible for services within this clinic if they served during the current Iraq (OIF/OND) or

Afghanistan (OEF; i.e., Veterans discharged from the military after 2003) conflicts and reported experiencing distressing or interfering PTSD symptoms.

Individuals with suicidal ideation were included because guilt has been shown to increase the risk for this symptom; however, acutely suicidal individuals (assessed using the suicide items from the assessment battery and through observation of the clinical team) were referred for higher level care (i.e., hospitalization) if clinically indicated by standards outlined by the VASDHS. Veterans with significant alcohol or substance use problems and/or current psychosis, psychotic depression, or mania were referred for more appropriate treatment within the VASDHS and were not seen within the OEF/OIF/OND PTSD clinic.

The procedures involved in this study were no different than the standard practice of the OEF/OIF/OND PTSD clinic for the majority of Veterans recruited (i.e., $n = 129$). Consenting and assessments occurred as part of standard treatment protocols. All patients referred for services were required to complete an initial intake appointment or initial orientation group appointment prior to beginning group or individual psychotherapy. Patients were asked if they were interested in allowing assessment information collected as part of standard care to be used for research purposes during initial intake or orientation group appointments. If a patient expressed interest in this project, s/he underwent informed consent during his/her initial appointment. During the initial visit, patients also completed a brief assessment packet given as part of standard care within the clinic. This packet included the measurement tools described below (see Measures). The present investigation utilized data collected from the medical records and self-report questionnaires of all male Veterans who consented to participate and returned completed

questionnaire packets defined as having no more than two incomplete items on any measure.

A small portion of Veterans ($n = 20$) included in the present investigation were referred for treatment within the OEF/OIF/OND PTSD clinic but chose to participate in an on-going treatment outcome study (UCSD IRB Protocol #081879). As only intake or baseline assessment information is used in the present investigation, procedures for these two samples did not differ greatly. Similar to Veterans presenting for intake assessments within the PTSD clinic, Veterans participating in research were consented to treatment during a baseline intake assessment. Baseline assessment procedures for this investigation included a structured interview and self-report assessments similar to those given as part of standard practice within the OEF/OIF/OND PTSD clinic. The present investigation utilized data collected from the medical records and self-report questionnaires collected during baseline assessments.

Sample Two: Female victims of interpersonal violence with alcohol or substance use. Participants were 30 female IPV survivors recruited as part of a treatment outcome study investigating an integrated intervention for co-occurring PTSD and alcohol use disorders. For demographic and diagnostic information see Table 1.1.

This study protocol was executed in accordance with the standards approved by the University of California, San Diego Human Research Protections Program (UCSD HRPP; Protocol #080961).

Study participants were (a) female IPV victims, (b) over the age of 18, (c) at least one month out of the abusive relationship or traumatic event, (d) who scored above the clinical cutoff of ≥ 50 on the PTSD Checklist (Weathers, Litz, Herman, Huska, & Keane,

1993), (e) met DSM-IV (American Psychiatric Association, 2000) criteria for an alcohol or substance use disorder, (f) were literate in English, (g) had not changed psychotropic medications or dosages within two months of baseline and agreed not to during the active phase (first 12 weeks) of the intervention, and (h) had an identified primary care physician.

Women were excluded if they experienced moderate or severe cognitive impairment as measured by a Mini-Mental State Examination score less than or equal to 18 (Folstein, Folstein, & McHugh, 1975). Women with histories of psychosis or mania were also excluded if their symptoms were not well managed by pharmacotherapy for the most recent 6-month period.

Potential participants were recruited through UCSD Outpatient Psychiatry, newspaper advertisements, and flyers distributed to community clinics and agencies providing IPV services. Following phone consent, potential participants were screened over the phone to preliminarily assess PTSD (i.e., PTSD Checklist score ≥ 50) and alcohol and/or drug use symptoms (i.e., problematic use in the past 30 days). Participants meeting preliminary criteria were invited to participate in a baseline assessment. Following full study consent, potential participants completed a baseline assessment consisting of structured interviews and self-report measures. Measures included in the present investigation are listed below (see Measures). Participants meeting eligibility criteria were randomly assigned to one of two interventions: 1) A new treatment integrating Seeking Strength (Najavits, 2002) with aspects of Cognitive Behavior Therapy for Battered Women (Kubany et al., 2004), or 2) a control condition (i.e., 12-Step facilitation). All participants were assessed at baseline, mid, and post-intervention,

and 6-months and 9-months post-baseline. The present investigation utilized data collected as part of initial baseline assessments.

Sample Three: Female victims of interpersonal violence. Participants were 39 women who took part in a larger study of the neurobiology of PTSD. For demographic and diagnostic information see Table 1.1.

The study protocol was executed in accordance with the standards approved by the University of California, San Diego Human Research Protections Program (UCSD HRPP Protocol #070987).

Study participants were females (a) experiencing IPV within the last 5 years, (b) over the age of 18, (c) at least one month out of the abusive relationship or traumatic event, (d) who met full or partial DSM-IV (American Psychiatric Association, 2000) criteria for PTSD, (e) were literate in English, and (f) able to read at or above an 8th grade level.

Women were excluded if they were currently in an abusive relationship or had been within the past 30 days. As women were recruited as part of a larger study examining the neurobiology of PTSD, potential participants were also excluded for factors known to affect neurocognitive functioning. Exclusion criteria included current or past alcohol or substance abuse for longer than 5 years, use of psychotropic medication within the last 4 weeks, steroid use in the past 4 months, history of bipolar disorder, schizophrenia, attention deficit disorder, learning disability, loss of consciousness greater than 10 minutes or requiring hospitalization for 24 hours or more, or any neurological illness. Additionally, women were excluded if they reported conditions in which fMRI would be contraindicated (e.g., ferromagnetic material, pregnancy, breastfeeding,

HIV/AIDS, cancer treatment), if they were unable to fit comfortably in the fMRI, and/or if they were unable to properly view stimuli presented during scanning.

Potential participants were recruited through advertisements posted in local print and internet, as well as through flyers distributed to community IPV agencies. Following phone consent, potential participants were screened over the phone to assess preliminary eligibility. Participants meeting preliminary criteria were invited to participate in the baseline assessment. Following full study consent, potential participants completed the baseline assessment, including clinician-administered diagnostic evaluations, self-report measures, neuropsychological testing, and fMRI scanning. Assessments included in the present investigation are listed below (see Measures). Those participants meeting eligibility criteria were invited to participate in the treatment phase of the study.

Participants were assessed again at pre, mid, post-treatment and a 2-month follow-up.

Following baseline assessment, those entering treatment participated in individual sessions of Cognitive Trauma Therapy for Battered Women (CTT-BW; Kubany et al., 2004). Participants received an average of 12 90-minute psychotherapy sessions ($SD = 1.61$, range 10 – 15). CTT-BW is a manualized intervention designed to treat PTSD and functional impairment in IPV victims. Twelve modules were delivered in a consistent order for all participants, including: 1) overview and introduction to self-empowerment, 2) stress and relaxation, 3) PTSD and re-learning (exposure to reminders), 4) learned helplessness and coping strategies, 5) catching and challenging negative self-talk, 6) trauma-related guilt appraisal (typically administered over two or more sessions), 7) managing anger, 8) assertiveness training, 9) identifying and challenging “shoulds,” 10) identifying potentially abusive men, 11) self-advocacy and final review. As previously

noted, a waitlist control trial of CTT-BW in female victims of IPV found guilt was significantly reduced in women receiving treatment with 91% of treated women no longer meeting criteria for PTSD and 83% reporting depression scores in a non-clinical range (Kubany et al., 2003).

Measures

Clinical Diagnoses. Participants in Sample 1 underwent standard unstructured mental health intake evaluations offered within the OEF/OIF/OND PTSD clinic. Participants in Sample 2 participated in diagnostic assessments using the Clinician Administered PTSD Scale (CAPS; Blake et al., 1995) as well as the Mini-International Neuropsychiatric Interview (M.I.N.I.; Sheehan et al., 1998). Participants in Sample 3 participated in diagnostic assessments using the CAPS and sections of the Structured Clinical Interview for DSM-IV (First, Spitzer, Gibbon, & Williams, 1997; i.e., depression, panic disorder, generalized anxiety disorder).

Self-Report Symptom Measures. The self-report measure assessment schedule for each sample can be found in Table 2.1.

The Trauma-Related Guilt Inventory (TRGI; Kubany et al., 1996) is a 32-item self-report questionnaire designed to measure guilt experienced as a result of surviving a traumatic event. The TRGI has three scales: 1) Distress, 2) Guilt cognitions, and 3) Global guilt (i.e., posttraumatic guilt). The guilt cognitions scale consists of three scales mapping onto guilt cognitions including: 1) Hindsight bias/responsibility, 2) Lack of justification, and 3) Wrongdoing. Developed over a series of seven studies in college students who experienced a traumatic event, female IPV survivors, and Vietnam Veterans, the TRGI exhibits good internal consistency, test-retest reliability, construct

validity, and structural validity (Kubany et al., 1996). The guilt cognitions, distress, and posttraumatic guilt scales are used in the present investigation. Convergent validity was demonstrated for these scales with other measures of guilt, PTSD, depression, self-esteem, shame, and social anxiety (Kubany et al., 1996). The TRGI has also been found to weakly correlate with guilt elicited by commonplace every day events (Kubany et al., 1996). Total score internal consistency was high within the total sample ($\alpha = .932$) as well as across the male sample and combined female sample (male Veterans $\alpha = .938$; combined female IPV survivors sample $\alpha = .913$). Internal consistency was also high within the total sample, male sample, and combined female sample (i.e., male Veterans, combined IPV survivors sample) for the TRGI scales included in the present analysis (guilt cognitions $\alpha = .895-.922$; distress $\alpha = .744-.817$; posttraumatic guilt $\alpha = .824 - .884$).

The Posttraumatic Stress Disorder Checklist – Civilian (PCL-Civilian; Weathers, Litz, Herman, Huska, & Keane, 1993) is a brief, widely used self-report instrument to quantify PTSD symptoms. It consists of 17 items corresponding to PTSD diagnostic criteria. Respondents rated how much they were bothered by the specified problem on a 5-point scale (ranging from 1 [“not at all”] to 5 [“extremely”]) in response to stressful experiences. The PCL is a well-established self-report measure of PTSD symptoms with good reliability and validity (Wilkins, Lang, & Norman, 2011). Of note two items (i.e., question 4 “Feeling very upset when something reminded you of a stressful experience from the past” and 5 “Having physical reactions when something reminded you of a stressful experience from the past”) were removed due to content overlap with the TRGI (i.e., items 15 “I experience severe emotional distress when I think about what happened”

and 24 “When I am reminded of the event(s), I have strong physical reactions such as sweating, tense muscles, dry mouth, etc”). Internal consistency was high within male Veterans and the portion of female IPV survivors given this measure (male Veterans $\alpha = .910$; Sample 3 $\alpha = .862$).

The Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001) is a 9-item self-report measure used to assess the severity and frequency of mood symptoms over a 2-week period. The PHQ-9 is based directly on the diagnostic criteria for major depressive disorder as outlined by the DSM-IV (American Psychiatric Association, 2000) but does not include an item directly assessing guilt. Total scores range from 0 to 27 with a cutoff of 10 or higher indicating significant depression. Internal consistency was high within the male Veterans given this measure ($\alpha = .866$).

The Brief Symptom Inventory (BSI-18; Derogatis & Savitz, 1999) is an abbreviated form of the Symptom Checklist 90 (Derogatis, 1983), a measure of psychiatric symptoms with well-established psychometric properties. The BSI-18 has three subscales: 1) Depression, 2) Anxiety, and 3) Somatization. Reliability and validity of the abbreviated measure has been shown in multiple populations (e.g., Lang, 2003). The depression subscale is used in the present investigation. Of note, the depression subscale does not include an item directly assessing guilt. Internal consistency was high within the portion of female IPV survivors given this measure (i.e., Sample 3 only; $\alpha = .887$).

Preliminary Analyses

Potential Covariates. The IPV survivor sample proposed for Aim 1 consisted of women from two separate treatment outcome studies as is indicated above (see

Participants). Sample 2 included women diagnosed with PTSD and a co-occurring alcohol or substance use disorder (A/SUD); however, Sample 3 included women without A/SUD. Independent sample t-tests were conducted to determine if mean levels of the variables included in Aim 1 (i.e., guilt cognitions, distress, posttraumatic guilt) significantly differed across these two groups. These t-tests were non-significant indicating levels of distress [$t(67) = -1.0, p = .30$], guilt cognitions [$t(67) = .55, p = .59$], and posttraumatic guilt [$t(60) = -.18, p = .86$] did not differ as a function of study group. As a result A/SUD was not included as a covariate in the analysis of Aim 1, and Samples 2 and 3 were combined for Aim 1 analyses.

Power. Analyses were conducted to ensure sufficient power to examine proposed hypotheses. Since the model tested in Aim 1 is a fully saturated path model it was statistically equivalent to an OLS regression model. Thus, prior to study analyses, a power analysis for OLS regression with two predictors was conducted using G*Power 3 software (Faul, Erdfelder, Lang & Buchner, 2007). Using conventional effect size guidelines (Cohen, Cohen, West, & Aiken, 1983), the present study would have sufficient power (i.e., at least .80) to detect medium ($f^2 = 0.15$) and large effects ($f^2 = 0.35$) with a sample of 164. Given the trauma samples under study we would expect these guilt variables to be reported in the clinically significant range, resulting in medium to large effects. A priori expectations of medium to large effects are consistent with effect sizes previously detected between the variables in the proposed model (Kubany et al., 1996). The sample used to test Aim 1, 149 OEF/OIF Veterans combined with 69 female IPV survivors totaling 218 participants, exceeds the recommended sample size and had

sufficient power to detect an effect of 0.06, a value in between the “small” ($f^2=.02$) and “medium” ($f^2= .15$) cutoff values.

Like the model proposed in Aim 1, the hypothesized models in Aims 2 and 3 are statistically similar to an OLS regression model. Thus, a power analysis for OLS regression with three predictors was conducted and this study had sufficient power to detect medium (0.15) and large effects (0.35) with a sample of 114. Similar to Aim 1, medium to large effect sizes were expected. The recruited sample for Aims 2 and 3, 149 Veterans, exceeds this recommendation and had sufficient power to detect an effect of 0.08, a value in between the “small” and “medium” cutoff values.

Data Screening. Prior to analyses, initial data screening was conducted. Missing data was detected on the PCL and TRGI measures. Specifically, four participants were found to be missing a single item on the PCL, twenty-three participants were found to be missing a single item on the TRGI, and three participants were found to be missing two TRGI items. The maximum amount of missing data on any variable was 10.5% within the guilt cognitions scale of the TRGI. A missing variable analysis was conducted to determine if systematic data loss patterns existed within missing TRGI items. Results of Little’s missing completely at random (MCAR) test indicated missing data was randomly distributed ($\chi^2 = 655.25 [613], p = .115$). In instances where data is determined to be MCAR or missing at random, maximum likelihood (ML) estimation can be used. This estimation method utilizes all available data to estimate a path analysis or SEM model using full information maximum likelihood (Muthén & Muthén, 2003; Kline, 2011). Computer simulation studies indicate ML-based methods for incomplete data outperform classical methods (e.g., pairwise or listwise deletion, imputation) and result in more

accurate parameter estimates (Enders & Bandalos, 2001; Kline, 2012; Muthén & Muthén, 2003; Peters & Enders, 2002).

Examinations of univariate and multivariate normality did not detect deviations warranting corrective action. Specifically, univariate normality plots (e.g., histogram, Q-Q plot) did not indicate significant deviations from normality. To further confirm these results, multivariate normality was examined by comparing results generated by general and more robust estimation methods (Byrne, 2012; Muthén & Muthén, 2003). Specifically, models were evaluated using both maximum-likelihood (i.e., ML) estimation as well as MLR estimation (i.e., ML estimation with robust standard errors). MLR estimation generates parameter estimates and a chi-square statistic robust to non-normality (i.e., Yuan-Bentler T2* test statistic) and like ML can be used in the presence of missing data (Muthén & Muthén, 2003). A comparison of scaled and unscaled chi-square statistics and parameter estimate standard errors generated by each of these estimation methods can be used to examine multivariate normality (i.e., noteworthy adjustments in these values indicate deviations from normality). Additionally, MLR estimation calculates a numerical scaling correction factor used to adjust the chi-square statistic. Values greater than 1 are considered increasingly suggestive of scores deviating from a normal distribution (Byrne, 2012). The use of MLR estimation resulted in slight or no modification in standard errors and chi-square tests across models and these minor adjustments did not alter the pattern of results. Further, scaling correction factors were consistently <1.00 across models investigated.

Data screening did not detect problematic univariate or multivariate outliers. Specifically, examination of univariate outliers detected a single case with $z > 3.00$ within

the male Veteran sample ($z = -3.16$). No outliers were detected in the female IPV samples. Analysis of multivariate outliers using Mahalanobis distance did not detect the presence of problematic scores.

Analyses

Hypothesis 1.1: A significant indirect effect will be found where by distress mediates the relation between guilt cognitions and posttraumatic guilt, supporting the components of posttraumatic guilt model (see Figure 3.1).

The components of posttraumatic guilt model (see Figure 3.1) was tested using maximum likelihood (ML) estimation using the path analysis and structural equation modeling (SEM) program Mplus version 6.11 (Muthén & Muthén, 2003). Path analysis allows for the simultaneous examination of direct and indirect effects in a single analysis, offering an advantage over traditional mediation analysis that require three separate regression equations (e.g., Baron & Kenny, 1986). The components of posttraumatic guilt model was analyzed using a multigroup format to allow for separate parameter estimates for the male Veteran sample and the combined IPV sample. The strength and significance of path parameters (i.e., path coefficients) and the variance explained by the model were evaluated. A significance level of .05 was used for individual model parameters. Indirect paths (i.e., mediation pathways) were evaluated using a product-of-coefficients test known as the distribution of product (MacKinnon, Warsi, & Dwyer, 1995). This contemporary analytic approach has increased power to detect a mediated effect and does not require that all “causal steps” be significant to assess for mediation, as was required in previously recommended strategies (e.g., Baron & Kenny, 1986). This test involves calculating the product of the independent variable $\rightarrow$ mediator path and the

mediator → dependent variable path. The product of these path coefficients is then divided by the standard error of the product and confidence intervals adjusting for the asymmetric distribution of the product are calculated. This interval provides a more accurate estimate of the range of potential values for the mediated effect. Of note, the components of posttraumatic guilt model proposed by Kubany and Watson (2003) is a fully saturated just-identified path model, meaning the model has the same number of free parameters as it does observations (i.e., $df = 0$). Most structural equation models with zero degrees of freedom perfectly reproduce the data (i.e., sample covariances) and as a result model fit cannot be estimated or examined (Kline, 2011).

Hypothesis 2.1: A significant indirect effect will be found where by the relationship between guilt-related cognitions, distress, and PTSD is mediated by posttraumatic guilt (see Figure 4.1).

The extended components of posttraumatic guilt model (see Figure 4.1) examining the relationship between guilt cognitions, distress, posttraumatic guilt and PTSD was tested using ML estimation using the path analysis and SEM program Mplus version 6.11 (Muthén & Muthén, 2003). This model was examined using a model building approach, which allowed for the cross-sectional relations between guilt cognitions, distress, posttraumatic guilt, and PTSD to be explored and the need for model respecification to be examined. To ensure model respecification was theoretically driven, a list of theoretically supported model modifications was created prior to analyses.

As in Aim 1, the strength and significance of path parameters and the variance explained by the model were evaluated. A significance level of .05 was used for

individual model parameters. Mediation pathways were again evaluated using the product-of-coefficients test (MacKinnon, Warsi, & Dwyer, 1995). The extended components of posttraumatic guilt model is a over-identified path model with two degrees of freedom. As a result, model fit statistics can begin to be evaluated. However, it is important to note that certain statistics and indices of model fit (e.g., chi-square test, Root Mean Square Error of Approximation index) are influenced by degrees of freedom in the estimated model and sample size (Chen, Curran, Bollen, Kirby, & Paxton, 2008; Hu & Bentler, 1999; Kenny, Kaniskan, & McCoach, 2011; Kline, 2011). For instance, when evaluating models with a small number of degrees of freedom, RMSEA appears to be positively biased (i.e., calculated value is too large; Hu & Bentler, 1999; Tabachnick & Fidell, 2007). These findings have led some to argue that researchers should work to identify potential sources of specification error within models (e.g., modification indices, covariance residuals) rather than relying exclusively on model fit indices, particularly when examining models with small degrees of freedom (Chen, Curran, Bollen, Kirby, & Paxton, 2008; Kenny, Kaniskan, & McCoach, 2011; Kline, 2011). Thus, model fit statistics, modification indices, and covariance residuals were examined in the present study. Specific model fit statistics examined included the Root Mean Square Error of Approximation (RMSEA; Steiger, 1990) using values less than .08, the Comparative Fit Index (CFI; Bentler, 1990) using values greater than .90, and a non-significant chi-square likelihood ratio test (see Tanaka, 1993). Additionally, chi-square difference test, Akaike's Information Criterion (AIC), and the Sample Size Adjusted Bayesian Information Criterion (BIC) were used to compare the initial and respecified model.

Hypothesis 3.1: Like PTSD, a significant indirect effect will be found where by the relationship between guilt-related cognitions, distress, and MDD is mediated by post-traumatic guilt (see Figure 5.1).

The second extended theoretical components of posttraumatic guilt model (see Figure 5.1) examining the relationship between guilt cognitions, distress, posttraumatic guilt and MDD was tested using ML estimation using the path analysis and SEM program Mplus version 6.11(Muthén & Muthén, 2003). This path model was examined using the guidelines described in Hypothesis 2.1.

Exploratory Hypothesis 4.1: Trauma-related guilt will be associated with significantly higher PTSD and MDD symptom severity at baseline.

This hypothesis was tested using Pearson's product-moment correlation coefficients using SPSS 18.0.

Exploratory Hypothesis 4.2: Posttraumatic guilt will be positively correlated with change in PTSD and MDD symptoms across treatment (i.e., baseline, mid-treatment, post-treatment, and follow-up).

To further examine the relationship between trauma-related guilt and posttraumatic psychopathology, change scores were calculated between baseline and mid-treatment scores, mid-treatment and post-treatment scores, and post-treatment and follow-up scores for trauma-related guilt, PTSD symptoms, and MDD symptoms. The relationship between change in trauma-related guilt and change in PTSD symptoms as

well as the relationship between change in trauma-related guilt and MDD symptoms were examined using Pearson's product-moment correlation coefficients using SPSS 18.0.

RESULTS

Hypothesis 1.1: A significant indirect effect will be found where by distress mediates the relation between guilt cognitions and posttraumatic guilt, supporting the components of posttraumatic guilt model (see Figure 3.1).

Male Veterans. The mean values and correlations among variables examined in the path-analytic model are presented in Table 3.1. Results of the path analysis model in the male Veteran sample are presented in Figure 3.2 and Table 3.2. As hypothesized, guilt cognitions and distress exerted significant direct effects on posttraumatic guilt. Further, guilt-related cognitions exerted a significant indirect effect on posttraumatic guilt via distress, providing evidence for a partial mediation effect. The examined model explained 15.4% of the variance in distress and 60.2% of the variance in posttraumatic guilt.

Female Survivors of IPV. The mean values and correlations among variables examined in the path-analytic model are presented in Table 3.3. Results of this path analysis model in female IPV survivors are presented in Figure 3.3 and Table 3.4. Significant direct effects were found from guilt cognitions to both distress and posttraumatic guilt. However, the direct effect from distress to posttraumatic guilt and the indirect effect of guilt cognitions on posttraumatic guilt through distress were non-significant. The examined model explained 15.5% of the variance in distress and 29.1% of the variance in posttraumatic guilt.

As noted above, the female IPV sample used in this analysis was a combination of archival data from two separate treatment outcome studies. Post-hoc analyses were conducted to examine the impact of this sampling method and to further understand the

cross-sectional relationship between guilt cognitions, distress, and posttraumatic guilt within each of these samples. Significant correlations were found between guilt cognitions, distress, and posttraumatic guilt within Sample 3, the female IPV survivors without A/SUD ($n = 39$; $r = .35-.72$, $p \leq .03$). However, all three correlations in Sample 2, the female IPV survivors with A/SUD ($n = 30$), failed to reach significance ($p \geq .86$). Due to these non-significant correlational findings, internal consistency across samples was also examined. These analyses revealed high internal consistency for the total TRGI measure as well as the guilt cognitions and distress scales within both samples ($\alpha = .71-.95$). Differences in internal consistency within the posttraumatic guilt scale were detected. Specifically, the alpha value for the female IPV survivors with A/SUD was in a low and unacceptable range (i.e., female IPV survivors with A/SUD $\alpha = .03$; female IPV survivors without A/SUD $\alpha = .95$). This finding suggests the high and acceptable alpha value found for this scale within the combined sample was driven by data from the female IPV survivors without A/SUD.

Score reliability is essential in path analysis, as this is a single indicator technique (Kline, 2011). Due to unreliable measurement in Sample 2, the components of posttraumatic guilt model was re-examined using only Sample 3 data. In this model, guilt cognitions exerted significant direct effects on posttraumatic guilt and distress (guilt cognitions $\rightarrow$ posttraumatic guilt $\beta = .573$, $SE = .091$, $p < .001$; guilt cognitions $\rightarrow$ distress $\beta = .348$, $SE = .141$, $p = .013$). Further, unlike in the combined sample, a significant direct effect was detected from distress to posttraumatic guilt ($\beta = .407$, $SE = .099$, $p < .001$). The indirect effect from guilt cognitions to posttraumatic guilt via distress failed to reach significance (indirect effect = .142, $SE = .058$, 95% CI = $[-.01 - .29]$). The

examined model explained 12.1% of the variance in distress and 65.7% of the variance in posttraumatic guilt.

Hypothesis 2.1: A significant indirect effect will be found where by the relationship between guilt-related cognitions, distress, and PTSD is mediated by posttraumatic guilt (see Figure 4.1).

The mean values and correlations among variables examined in the path-analytic model are presented in Table 4.1. The results of the initial extended model examining the relationship between guilt cognitions, distress, posttraumatic guilt and PTSD symptoms are reported in Figure 4.2 and Table 4.2. While direct and indirect effects supported study hypotheses, the overall path model failed to demonstrate adequate fit ($\chi^2 = 32.19$, 2 df, $p < .001$; RMSEA = .318, CFI = .853, AIC = 2135.32, BIC = 2133.39). This model accounted for 15.7% of the variance in distress, 60.2% of the variance in posttraumatic guilt, and 18.6% of the variance in PTSD. Modification Indices were evaluated to help guide possible model respecification. The maximum Modification Index for this model was 25.88 for the direct path from distress to PTSD symptoms, suggesting model fit would be improved if this path were added.

Because the direct path from distress to PTSD was both theoretically and empirically indicated, the model was reanalyzed including this path (see Figure 4.3). This respecified model demonstrated improved model fit ($\chi^2 = 4.17$, 1 df, $p = .041$; RMSEA = .15, CFI = 1.00, AIC = 2109.30, BIC = 2107.21), and this improvement in fit was statistically significant ($\chi^2_{\text{diff}} = 28.02$, $p < .001$). This model accounted for 15.7% of the variance in distress, 60.2% of the variance in posttraumatic guilt, and 32.6% of the

variance in PTSD. Examination of parameter estimates revealed the direct path from posttraumatic guilt to PTSD was no longer significant (see Figure 4.3; Table 4.3). Similarly, the hypothesized indirect effect of guilt cognitions and distress on PTSD through posttraumatic guilt was no longer significant. However, the new indirect path created by adding a path from distress to PTSD was significant (i.e., indirect effect of guilt cognitions on PTSD through distress). When examined, model covariance residuals suggest this model may under predict the observed relationship between guilt cognitions and PTSD (i.e., largest residual = 1.13). Further model respecification was not evaluated as estimating an additional parameter, including nonsensical paths or correlations, would result in a fully saturated just-identified model demonstrating perfect model fit.

Hypothesis 3.1: Like PTSD, a significant indirect effect will be found where by the relationship between guilt-related cognitions, distress, and MDD is mediated by post-traumatic guilt (see Figure 5.1).

The mean values and correlations among variables examined in the path-analytic model are presented in Table 5.1. The results of the second extended model examining the relationship between guilt cognitions, distress, posttraumatic guilt and MDD are reported in Figure 5.2 and Table 5.2. Similar to the findings related to PTSD, the direct and indirect effects supported study hypotheses; however, the overall path model failed to demonstrate adequate fit ($\chi^2 = 24.71$, 2 df, $p < .001$; RMSEA = .276, CFI = .876, AIC = 1965.08, BIC = 2001.13). This model accounted for 15.7% of the variance in distress, 60.2% of the variance in posttraumatic guilt, and 9.3% of the variance in MDD. Modification Indices were again evaluated to help guide possible model respecification.

The maximum Modification Index for a theoretically indicated path was 16.93 for the direct path from distress to MDD symptoms, suggesting model fit would be improved if this path were added. Thus, the model was reanalyzed including a direct path from distress to MDD (see Figure 5.3). This respecified model demonstrated improved model fit ($\chi^2 = 6.46$, 1 df, $p = .01$; RMSEA = .192, CFI = .970, AIC = 1948.84, BIC = 1946.75), and this improvement in fit was statistically significant ($\chi^2_{\text{diff}} = 17.25$, $p < .001$). This model accounted for 15.7% of the variance in distress, 60.2% of the variance in posttraumatic guilt, and 19.9% of the variance in MDD. Examination of parameter estimates revealed the direct path from posttraumatic guilt to MDD was no longer significant (see Figure 5.3; Table 5.3). Similarly, the hypothesized indirect effect of guilt cognitions and distress on MDD through posttraumatic guilt was no longer significant. However, the new indirect path created by adding a path from distress to depression was significant (i.e., indirect effect of guilt cognitions on MDD through distress). When examined, model covariance residuals suggest this model may under predict the observed relationship between guilt cognitions and MDD (i.e., largest residual = 1.60). Further model respecification was not evaluated as estimating an additional parameter, including nonsensical paths or correlations, would result in a fully saturated just-identified model demonstrating perfect model fit.

Exploratory Hypothesis 4.1: Trauma-related guilt will be associated with significantly higher PTSD and MDD symptom severity at baseline.

The relationship between trauma-related guilt and PTSD and MDD symptom severity was explored at baseline in female IPV survivors (i.e., Sample 3, $n = 28$).

Trauma-related guilt was significantly associated with baseline PTSD symptoms ($r = .41$, $p = .03$). Trauma-related guilt was not significantly associated with baseline depression symptoms ($r = .21$, $p = .28$).

Exploratory Hypothesis 4.2: Posttraumatic guilt will be positively correlated with change in PTSD and MDD symptoms across treatment (i.e., baseline, mid-treatment, post-treatment, and follow-up).

The relationship between change in trauma-related guilt, PTSD, and MDD symptoms was explored in a subset of female IPV survivors from Sample 3 with complete data at all assessment points. Sixteen women had complete data at baseline, midpoint and post-treatment assessments, while thirteen had complete data through the follow-up assessment. To maximize power, analyses comparing baseline to mid-treatment and mid-treatment to post-treatment utilized all available data (i.e., $n = 16$). Significant correlations were detected related to mid-treatment to post-treatment change scores for PTSD and MDD (see Table 6.1). A sensitivity analysis was conducted examining only those with complete data (i.e., $n = 13$) to determine the impact of including all available data at the baseline, mid-treatment and post-treatment time points. While the general pattern of results remained largely unchanged, the correlation between trauma-related guilt and PTSD from mid-treatment to post-treatment which was no longer significant ($p = .22$).

DISCUSSION

The goal of the present study was to conduct a systematic empirical evaluation of the leading theoretical model of trauma-related guilt proposed by Kubany and Watson (2003), referred to here as the components of posttraumatic guilt model. This evaluation included testing Kubany and Watson's components of posttraumatic guilt model, which suggests that distress mediates the relationship between guilt cognitions and posttraumatic guilt (Aim 1), extending this model to examine the relationship between its components (i.e., guilt cognitions, distress, and trauma-related guilt) and two of the most common forms of posttraumatic psychopathology, PTSD and depression (Aim 2 and 3), and examining the relationship between one component of this model, posttraumatic guilt, and PTSD and MDD symptoms across trauma-focused treatment (Aim 4).

When tested in a sample of male combat Veterans, Kubany and Watson's components of posttraumatic guilt model demonstrated the hypothesized direct and indirect effects. These results suggest that higher levels of guilt cognitions, or negative appraisals of one's role in the trauma(s) such as beliefs about wrong-doing, responsibility, and/or lack of justification for one's actions, are related to increased levels of emotional and physical distress related to the trauma-memory as well as higher levels of posttraumatic guilt. Further, findings in the present investigation provide initial support for a possible partial mediation pathway from guilt cognitions to posttraumatic guilt through distress.

These study findings are in line with the small but growing body of literature examining correlational patterns and regression models involving the individual components included in Kubany and Watson's (2003) model. Specifically, significant

positive correlations have been found between the guilt cognitions, distress and posttraumatic guilt components in a variety of trauma samples (e.g., Beck et al., 2011; Kubany et al., 1996). Further, the guilt cognitions and distress components have been found to significantly predict the posttraumatic guilt component in a sample of Vietnam Veterans as well as a sample of female IPV survivors (Kubany et al., 1996). The present study represents the first attempt to extend these findings by examining the indirect pathway from guilt cognitions to posttraumatic guilt via distress.

Study results are also consistent with broader guilt theory, which suggest guilt is a complex or “secondary” emotion. Fundamentally different from a primary emotion such as fear, secondary emotions are believed to be generated by cognitive appraisals, which then elicit distress. This process might be particularly relevant to combat Veterans who may hold strong beliefs about their abilities prior to experiencing trauma (e.g., “It is my job to protect my fellow soldiers”; Glover, 1985; Held et al., 2012). To assimilate these pre-existing beliefs with their traumatic experiences and gain more control over their primary emotions, Veterans may generate guilt cognitions, such as hindsight bias, where by one determines they must have had knowledge prior to the event that they failed to interpret (e.g., “I should have known better”; Glover, 1986; Held et al., 2012; Kubany & Watson, 2003).

Contrary to study hypothesis, Kubany and Watson’s (2003) components of posttraumatic guilt model did not consistently demonstrate the hypothesized relationships when tested in female IPV survivors. When tested in the full female IPV survivor sample, the direct path from distress to posttraumatic guilt and the hypothesized indirect mediation path were not significant. Yet, when tested only in female IPV survivors

without A/SUD, the direct path from distress to posttraumatic guilt was significant. These inconsistent results may be due to sampling and measurement performance in one of the two samples combined to create the full female IPV survivor sample. Specifically, correlations between model components were non-significant and the internal consistency value for the posttraumatic guilt scale was in a low unacceptable range in female IPV survivors with A/SUD. These findings are puzzling as they are unlike numerous previous studies using the TRGI measure in trauma survivors, including female IPV survivors, (e.g., Kubany, et al., 1996) and also differ from results in the other two samples studied in the present investigation. It is possible the clinical severity of the female IPV survivors with A/SUD contributed to these results. The author of the present study served as a study therapist and baseline assessor for the parent study from which this sample was drawn and thus had extensive contact with the majority of these individuals. While not formally assessed, these clinical experiences provided information regarding the chronicity of participants' trauma histories. It is likely that the female IPV survivors with A/SUD sample represents a group of survivors of multiple traumatic events, beginning in early childhood and continuing throughout adulthood, with at least one of these events including IPV. Further, given the dual diagnosis focus of the parent study and high comorbidity in the sample, it is possible that PTSD was not the primary disorder that brought these women into treatment. While this information is anecdotal at best, it raises the possibility that the TRGI measure, and the posttraumatic guilt scale in particular, does not hold together as well when used in a sample with complex trauma histories and/or more prominent co-occurring disorders.

It is, however, also possible that study results indicate a different process is driving the high prevalence of trauma-related guilt seen in female IPV survivors and/or survivors of chronic trauma when compared to male combat Veterans. If the present study's findings were replicated in a larger sample with reliable measurement, it would suggest that Kubany and Watson's (2003) components of posttraumatic guilt model might need to be revisited (see Future Directions).

To continue to evaluate Kubany and Watson's components of posttraumatic guilt model, the present study extended this model to examine the relationship between guilt cognitions, distress, trauma-related guilt and PTSD and MDD in male Veterans. In the first extended path-analytic model examining PTSD, the hypothesized indirect path (i.e., indirect effect of guilt cognitions and distress on PTSD through posttraumatic guilt) was significant. However, this path became non-significant as the model was respecified to improve model fit. More specifically, a portion of the hypothesized indirect path, the direct effect from posttraumatic guilt to PTSD, became non-significant when a direct path from distress to PTSD was added. This indicates the new direct path from distress to PTSD accounted for a portion of the effect previously detected between posttraumatic guilt and PTSD.

Failure to continue to detect the direct effect from posttraumatic guilt to PTSD and the hypothesized indirect effect in the respecified model may have been caused by a combination of factors. For instance, findings may have been influenced by limitations related to conceptualization and measurement of the distress component. This concept is discussed in greater detail below. Additionally, sample size may have contributed to results. Specifically, the path from posttraumatic guilt to PTSD went from being largely

significant to slightly larger than .05, possibly due to insufficient power to detect the reduced effect that remained once the direct path from distress to PTSD was added.

Findings in the extended MDD models paralleled the results seen in the extended PTSD models. Mainly, the hypothesized indirect effect became non-significant during model respecification, and a new significant indirect effect from guilt cognitions to MDD through distress emerged. One noteworthy difference was detected. Specifically, the reduction in significance of the direct path from posttraumatic guilt to psychopathology symptoms (i.e., posttraumatic guilt → PTSD; posttraumatic guilt → MDD) was more pronounced in the MDD model when compared to the PTSD model. This suggests posttraumatic guilt may be more strongly related to PTSD than depression after controlling for distress in Veterans presenting for PTSD treatment. However, as with the PTSD models, the limitations related to the distress component may have influenced findings.

While results regarding the hypothesized indirect effects were inconsistent in the extended PTSD and MDD models, information regarding how the posttraumatic guilt components relate to one another and posttraumatic psychopathology symptoms can still be gleaned. For instance, results across the extended models suggest that when one considers all three components of Kubany and Watson's model simultaneously, emotional and physical distress attributed to the trauma memory may serve as the strongest predictor of PTSD and MDD symptoms in male Veterans presenting for PTSD treatment. These findings are consistent with those of Beck and colleagues (2011) who examined regression models predicting PTSD symptoms in female IPV survivors with one guilt component (i.e., guilt cognitions, distress, or posttraumatic guilt) and one

interpersonal abuse variable in each model. Within their study, distress was the only guilt model component found to consistently predict PTSD symptoms. To this author's knowledge, the components of posttraumatic guilt included in the present study have not been previously examined as predictors of posttraumatic depression symptoms.

Further, by examining the components of posttraumatic guilt simultaneously, the present study also draws attention to the role guilt cognitions may play in the relationship between distress and posttraumatic psychopathology. Specifically, results across models indicate that greater distress is related to more severe PTSD and MDD symptoms. However, the significant direct effects detected from guilt cognitions to distress and the significant indirect effects detected from guilt cognitions to posttraumatic psychopathology via distress, suggest the presence of guilt cognitions may serve to intensify the relationship between distress and PTSD and MDD. Taken together, the similarity seen across extended PTSD and MDD models adds to a growing body of literature supporting the idea that these posttraumatic disorders have overlapping or common risk factors (Breslau, Davis, Peterson, & Schultz, 2000).

Findings across the extended PTSD and MDD models shed light on limitations in the definition of and available measurement for the distress component of Kubany and Watson's (2003) model. More specifically, the initial extended PTSD and MDD models were structured based on theory suggesting that posttraumatic guilt (i.e., the combination of distress and guilt cognitions) drives the relationship seen with psychopathology, such as PTSD and MDD (Kubany & Watson, 2003). However, the distress component, not the posttraumatic guilt component, emerged as the strongest predictor of both PTSD and MDD in the present study. An examination of the items within the distress scale of the

Trauma-Related Guilt Inventory (TRGI) reveals why this may have occurred. For instance, while some TRGI distress items might be interpreted as including guilt feelings and cognitions (e.g., “I feel sorrow or grief about the outcome”), items do not explicitly reference guilt or query about distress generated by guilt cognitions (e.g., “What happened causes me emotional pain”). Thus, it is unclear if the distress scale of the TRGI is measuring distress related to guilt or more broadly measuring posttraumatic emotional and physical distress related to the trauma memory.

While limitations related to the TRGI distress scale do not appear to impact findings when examining the components of posttraumatic guilt model in isolation, results from the extended models highlight how lack of clarity surrounding the distress component may limit our understanding of the relationship between posttraumatic guilt and PTSD and MDD. Specifically, general emotional and physical distress elicited by trauma memories are strongly related to posttraumatic psychopathology in trauma survivors, regardless of whether or not they experience posttraumatic guilt. It is possible that using the TRGI distress scale resulted in the inclusion of this general trauma-related distress in the models examined. As a result, the relationship between the multidimensional construct of posttraumatic guilt and posttraumatic psychopathology may have been overshadowed by the relationship between general distress and PTSD and general distress and MDD in their respective models.

The lack of clarity seen at the measurement level likely stems in part from lack of clarity related to the conceptualization of the distress component of Kubany and Watson’s model. While most trauma theorists and researchers agree that trauma-related guilt consists of cognitive component and a negative feeling or affective component (e.g.,

Foa, Steketee, & Rothbaum, 1989; Kubany & Watson, 2003; Litz et al., 2009; Resick et al., 2002), there is little discussion of what the affective component consists of outside of distress elicited when outcomes of the traumatic event are viewed as negative (Kubany & Watson, 2003). Thus, continuing to define the construct of distress as it relates to the construct of posttraumatic guilt represents an essential next step for investigations interested in examining how the components of posttraumatic guilt model relates to posttraumatic psychopathology. Such work will have important implications for how best to measure and model the multidimensional construct of posttraumatic guilt in future investigations (see Future Directions).

It should not go without mention that potential indicators of poor model fit were also detected in both the PTSD and MDD extended models. As expected this included significant chi-square tests and large RMSEA values. As previously noted, both the chi-square test and the RMSEA index are influenced by degrees of freedom available in the estimated model as well as by sample size (Kenny et al., 2012; Kline, 2011). The problems encountered when examining models with such small degrees of freedom have led some authors to suggest researchers focus on identifying potential sources of specification error within models, rather than relying exclusively on model fit tests/indices (Kenny et al., 2012; Kline, 2011). Within the respecified PTSD and MDD models, the largest covariance residual was found between guilt cognitions and PTSD and guilt cognitions and MDD, suggesting the proposed models may not fully account for the association between these variables. This potential model misspecification should be taken into consideration when specifying future trauma-related guilt component models (see Future Directions).

Lastly, the present study explored the relationships between posttraumatic guilt and PTSD, and MDD in a subset of female IPV survivors as they completed a 12-week cognitive behavioral PTSD intervention, Cognitive Trauma Therapy for Battered Women. A significant correlation was found between trauma-related guilt and PTSD symptoms at baseline. However, contrary to hypothesis, a significant correlation was not found between posttraumatic guilt and depression symptoms. Significant positive correlations have been found between posttraumatic guilt (as measured by the TRGI) and PTSD as well as MDD in a number of investigations (e.g., Kubany, 1996). Given the small available sample size, failure to find a significant relationship between posttraumatic guilt and depression may be due to this analysis being underpowered.

To the author's knowledge, the present study is one of the first investigations to explore the relationship between change in posttraumatic guilt and change in PTSD and MDD symptoms across treatment. Despite small sample size, a significant correlation was found between posttraumatic guilt and both PTSD and MDD when comparing change scores from mid-treatment to post-treatment. This finding is particularly interesting in the context of the intervention used. Specifically, CTT-BW begins trauma-related guilt appraisal work in session 6, halfway through the 12-session intervention. Through this work, participants learn to identify and challenge maladaptive guilt-related cognitions. The high correlations detected between changes in posttraumatic guilt and respective changes in PTSD and MDD in the weeks following these guilt appraisal sessions suggest a potential mechanistic link. A similar relationship was also detected in a recent study of Veterans participating in a guilt-focused intervention (Norman, Wilkins, Myers, & Allard, 2013). Taken together, these findings suggest that treatments designed

to appraise and target guilt in individuals who report posttraumatic guilt may help to alleviate symptoms associated with posttraumatic psychopathology. Further replication and the use of control groups are needed to fully draw this conclusion.

Failure to detect the hypothesized correlational patterns before or after the mid to post-treatment time points and between PTSD and posttraumatic guilt from the mid to post treatment time points in the smaller sample (i.e., $n = 13$), could be the result of analyses being underpowered. However, results may also have been influenced by study design. More advanced prospective analyses (e.g., time series analyses) requiring large samples may provide further insight into the relationship among these variables. For instance, it is possible that negative guilt cognitions reduced in earlier time points is related to reduced PTSD and/or MDD symptoms later in treatment. Additionally, given findings from the extended PTSD and MDD models, future investigations using the TRGI might consider examining changes before and after treatment in the other hypothesized components of guilt in addition to or in lieu of the summary posttraumatic guilt variable.

Limitations

Limitations within this study must be noted. First, as discussed above, sample size and inadequate power may have influenced findings, particularly within Aim 4. Second, this investigation employed a cross-sectional design. While this allowed for an exploration of the relationship among the variables of interest as trauma survivors present to treatment, it did not allow for temporal sequence to be established. Theory suggests trauma-related guilt can onset during (e.g., peritraumatic) or closely after the trauma (Brewin et al., 2000; Kubany & Watson, 2003) suggesting guilt cognitions and distress

can onset prior to posttraumatic psychopathology. However, given that temporal sequence was not established in the present study, conclusions regarding mediation must be considered preliminary and statements regarding causality cannot be made. Given the limited scope of previous empirical evaluations of the relationship between trauma-related guilt and posttraumatic psychopathology, it is believed the present cross-sectional analysis contributes important information to this line of research. Third, gender and trauma type are confounded variables in this investigation. Thus, it is unknown if trauma type, gender, both variables, and/or problematic data in the women's combined sample are contributing to the differences detected between male Veterans and female IPV survivors (see Future Directions). Fourth, data included assessments gathered as part of routine clinical care as well as archival research data. These strategies resulted in a sample with full and partial PTSD diagnoses, varying levels of depression, and varying levels of posttraumatic guilt. While this variability was likely helpful in testing path-analytic models, it is unclear if findings will generalize to those with more severe PTSD or depression. Finally, data was collected using self-report measures. For instance, only a single self-report measure of trauma-related guilt was administered to male Veterans, as more than one measure was not clinically indicated. Further, self-report measures, while clinically convenient, are generally considered less reliable than clinician administered gold-standard interviews when assessing PTSD and MDD symptoms. It will be important to replicate and extend findings, through studies employing appropriate guilt measures as well as clinician-administered interviews (see Future Directions).

Future Directions

Results of the present investigation provide support for Kubany and Watson's (2003) components of posttraumatic guilt model in male Veterans and served to further our understanding of the relationships between components of this model and posttraumatic psychopathology in male Veterans and female IPV survivors. However, these results also brought to light critical gaps in Kubany and colleagues' conceptualization and measurement of posttraumatic guilt that require further attention. These findings have been used to outline a research agenda for future investigators working to further our understanding of the construct of posttraumatic guilt.

Defining the construct of distress. Presently, it remains unclear if the construct of distress believed to combine with guilt cognitions to form posttraumatic guilt differs in any way from or if it can be separated from the general emotional and physical distress elicited by trauma memories that is seen across posttraumatic psychopathology. Further research examining possible differences in these forms of distress is needed to help to advance our understanding of the multidimensional construct of posttraumatic guilt.

A number of studies could be designed to begin this work. For instance, comparing the components of posttraumatic guilt model in trauma survivors reporting high and low levels of posttraumatic guilt may help to clarify possible differences in these forms of trauma-memory related distress. Such investigations would help to determine whether the distress component included in Kubany and Watson's model differs in any way between these groups (e.g., if the distress component relates differently to other model components or posttraumatic psychopathology when tested in each sample). Comparing the distress scale of the TRGI to items assessing distress specifically attributed to guilt cognitions in trauma survivors may also help to advance our knowledge

of distress. The Laufer-Parson's inventory (1981), a measure designed to assess guilt related to combat trauma, might allow for this comparison to be made in combat Veterans. Instead of completely separating distress items from guilt cognition items, the Laufer-Parson inventory links distress more directly to guilt cognitions (e.g., "How often have you gotten upset for not risking your own life to help a wounded buddy or comrade who later died?"; Marx et al., 2010).

Expanding measurement tools. In addition, to further our understanding of the construct of posttraumatic guilt it may be necessary to modify existing instruments and/or develop new assessments. Currently, only one self-report measure exists that maps directly onto the components believed to create trauma-related guilt, the Trauma Related Guilt Inventory (TRGI). Findings in the present study highlight limitations in this measure that warrant attention. For instance, as noted above, it may be necessary to modify the TRGI or develop tools capable of discriminating between distress generated by guilt cognitions and general distress commonly felt in response to trauma memories. Additionally, developing clinical cut-offs for the TRGI or developing new tools with validated clinical cut-offs would also help to advance current understanding of posttraumatic guilt. Such tools would allow for samples to be recruited for or divided by level of guilt severity.

Examining the construct of posttraumatic guilt in specific mixed gender trauma samples. Finally, while previous research studies did not find significant differences in distress, guilt cognitions, or posttraumatic guilt in samples of Vietnam Veterans and female IPV survivors, results of the present investigation suggest differences in the way these components interact across civilian and military trauma and

male and female trauma survivors should be examined. Both combat and interpersonal violence involve experiencing and/or witnessing traumatic events; however, combat also involves numerous moral or ethical dilemmas less common to civilian traumas (e.g., perpetration of violence, war-related atrocities; Litz et al., 2009). Additionally, gender differences are known to exist in the frequency and severity of posttraumatic symptoms, such as stress and anxiety (e.g., Breslau, 2002; Tolin & Foa, 2006). Thus, it will be important to better understand how these trauma type and gender differences may contribute to the experience of posttraumatic guilt cognitions and distress following trauma.

Continued model specification. Exploring different ways to model the multidimensional construct of posttraumatic guilt may also serve to advance our understanding of this complex emotion. For instance, using formative measurement within an SEM framework would allow investigators to model posttraumatic guilt as a latent variable with guilt cognition and distress variables as indicators. With formative measurement the latent variable is viewed as a composite variable caused by its indicators (Kline, 2011). Such a formative latent variable might better capture the hypothesized nature of posttraumatic guilt (i.e., guilt cognitions combines with distress to form posttraumatic guilt) and better account for its relationship with posttraumatic psychopathology when compared to a summary single indicator posttraumatic guilt variable.

Finally, while the above described research agenda will increase our understanding of the multidimensional construct of posttraumatic guilt, it will be essential to continue to expand beyond this conceptual model if we hope to understand the course and

consequences of trauma related guilt. Thus, in future studies, investigators should consider adding potentially important variables to respecified posttraumatic guilt component models that were not examined in the present study. Doing so will not only provide the opportunity to test more complex models with larger degrees of freedom, which are more suitable for model testing, but it will allow for research questions with important clinical implications to be examined.

Paramount among the research areas requiring attention are: 1) the contextual factors contributing to the development of posttraumatic guilt, and 2) the processes by which trauma-related guilt influences the development and treatment of posttraumatic psychopathology. Perpetration of violence in combat is a contextual factor that warrants particular attention. More specifically, better understanding the onset of posttraumatic guilt in the aftermath of killing or perpetrating combat abusive violence is a needed and timely area of study. Up to 65% of men and service women returning from the current conflicts in Iraq and Afghanistan report killing or being responsible for killings during deployment (Hoge et al., 2004; Maguen et al., 2010). Killing and perpetrating combat abusive violence are strong predictors of posttraumatic psychopathology even after controlling for the overall effects of combat exposure (MacNair 2002; Maguen et al., 2010; Marx et al., 2010). Perpetration of these forms of wartime violence is likely highly related to posttraumatic guilt (Kubany & Watson, 2003; Marx et al., 2010) and early research suggests guilt may serve to mediate the relationship between these wartime experiences and PTSD and MDD (Marx et al., 2010).

Understanding the mechanisms by which trauma-related guilt influences the development and maintenance of posttraumatic disorders following trauma represents a

natural and needed extension of this work. One promising potential mechanism, which may help to explain how trauma-related guilt contributes to onset of PTSD and MDD, is avoidant coping. Memories of a traumatic event(s) can be associated with strong guilt reactions, including guilt cognitions and distress, both of which can be reduced via avoidance of these memories (Held et al., 2011; Kubany & Watson, 2003; Marx et al., 2010; Street et al., 2005). However, avoidance of guilt cognitions and associated distress may also prevent exposure to broader trauma memories and fear-related triggers. Such exposure is thought to be essential to natural posttraumatic recovery and avoidance of such exposure is believed to facilitate the development of PTSD (e.g., Bryant & Harvey, 1995). Additionally, behavioral theories of major depression suggest withdrawal and avoidance behaviors can contribute to the development of depressive symptoms if an individual is reinforced by avoidance behaviors that allow him/her to escape unpleasant and distressing experiences (Dimidjian, Martell, Addis, Herman-Dunn, & Barlow, 2008; Young, Weinberger, & Beck, 2008). Thus, it is possible that posttraumatic guilt may contribute to the development of posttraumatic psychopathology by serving to increase avoidant coping in the aftermath of the trauma.

It is important to note that posttraumatic shame is also thought to contribute to the onset of posttraumatic psychopathology, possibly through avoidant coping and other mechanisms similar to those attributed to posttraumatic guilt (Litz et al., 2009; Norman et al., 2013). Thus, differentiating the role of trauma-related guilt from the role of the related but separate construct of trauma-related shame will be a critical step in understanding how trauma-related guilt impacts the development of posttraumatic psychopathology. In summary, future work is needed to both clarify the existing

conceptual model of posttraumatic guilt and to build upon this model to take into account additional factors likely to play a role in the relationship between trauma-related guilt and posttraumatic psychopathology.

Summary & Conclusions

60.7% of men and 51.2% of women report experiencing at least one traumatic event in their lifetime (Kessler, Chiu, Demler, & Walters, 2005). High prevalence rates of trauma-related guilt are found in survivors experiencing a wide variety of trauma types (Kubany & Watson, 2003; Miller et al., 2012). Those who experience guilt related to their trauma exhibit worse posttrauma outcomes, including higher rates of PTSD, MDD, and suicidality (Kubany et al., 1996; Kubany & Watson, 2003; Resick et al., 2002). Trauma-related guilt also appears to be less amenable to change by current gold-standard trauma interventions (e.g., Prolonged Exposure Therapy; Arntz et al., 2007; Foa & Meadows, 1997; Lee et al., 2001; Monson et al., 2006; Resick et al., 2002).

Despite high prevalence rates and concerning outcomes, little effort has been made to conceptualize the construct of posttraumatic guilt or empirically evaluate existing theoretical models. The present investigation began to address this issue by completing a systematic empirical evaluation of the leading theoretical model of trauma-related guilt proposed by Kubany and Watson (2003). Kubany and Watson's components of posttraumatic guilt model suggests that trauma-related guilt consists of the combination of distress and guilt cognitions, with guilt cognitions strongly impacting distress levels (i.e., distress partially mediates the relationship between guilt cognitions and posttraumatic guilt). Findings from the present investigation provide initial support for this model in male Veterans. These results indicate higher levels of guilt cognitions

are related to increased levels of emotional and physical distress related to the trauma-memory as well as higher levels of posttraumatic guilt in Veterans presenting for PTSD treatment. The present investigation is the first study to provide initial support for a possible partial mediation pathway from guilt cognitions to posttraumatic guilt through distress. Results also suggest that of the three components in Kubany and Watson's model (guilt cognitions, distress, and posttraumatic guilt), distress may be the strongest predictor of PTSD and MDD symptoms. Further, findings indicate guilt cognitions may serve to intensify the relationship seen between distress and posttraumatic psychopathology when present in trauma survivors.

Support for Kubany and Watson's (2003) components of posttraumatic guilt model was inconsistent in female IPV survivors. However, significant positive correlations between change in posttraumatic guilt and change in PTSD and MDD symptoms in the weeks following sessions targeting guilt cognitions suggest a mechanistic link may exist between trauma-related guilt and these posttraumatic symptoms.

Taken together, findings from the present investigation also serve to outline an agenda for future researchers working to examine the construct of posttraumatic guilt including: 1) Further determining how best to measure the distress component of posttraumatic guilt, 2) Exploring alternative ways to model Kubany and Watson's components of posttraumatic guilt model when examining the relationship between this model and posttraumatic psychopathology, and 3) Replicating and extending current findings in specific samples including individuals with high levels of posttraumatic guilt and mixed gender trauma survivor groups. This research agenda will pave the way for

important advances in the assessment of trauma-related guilt. Improved assessment will serve to increase our understanding of the nature, course, and associated problems related to trauma-related guilt. This knowledge will help guide modifications of existing interventions and the continued development of new treatments. It is hoped that this research agenda will ultimately result in interventions better able to conceptualization, target, and treat this highly prevalent distressing posttraumatic symptom.

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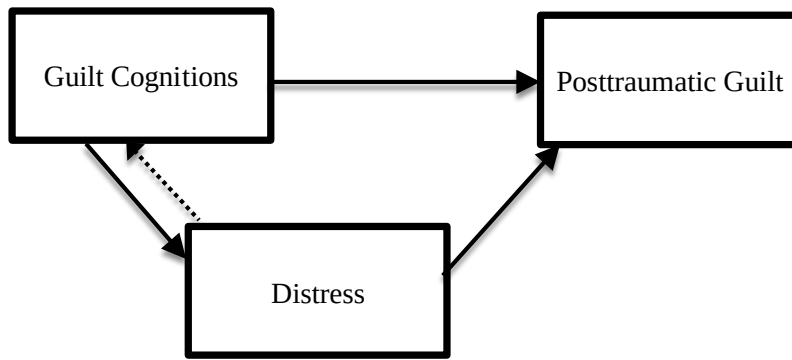


Figure 1.1. Kubany and Watson's posttraumatic guilt model

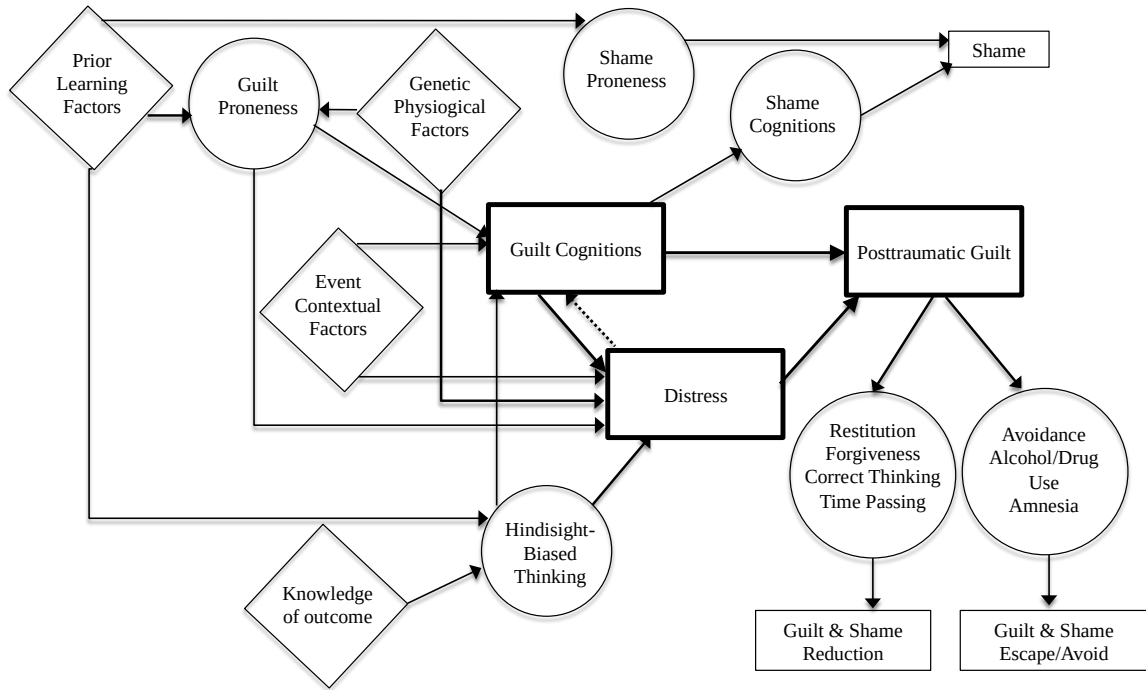


Figure 2.1. Kubany and Watson's full causal model

Note. Diamonds represent unmodifiable variables. Adapted from Kubany, E. S., & Watson, S. B. (2003). Guilt: Elaboration of a multidimensional model. *Psychological Record*, 53(1), 51-90.

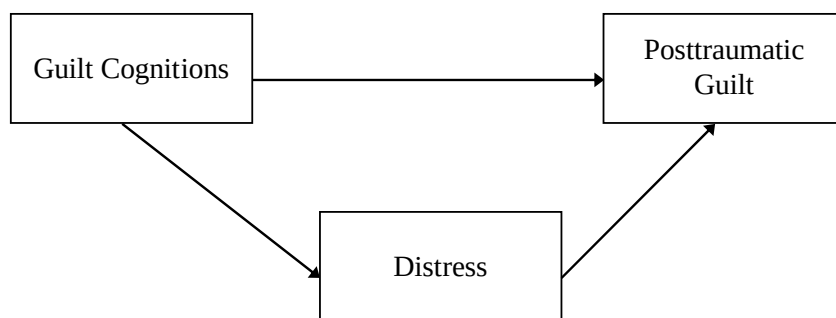


Figure 3.1. Kubany and Watson's components of posttraumatic guilt model

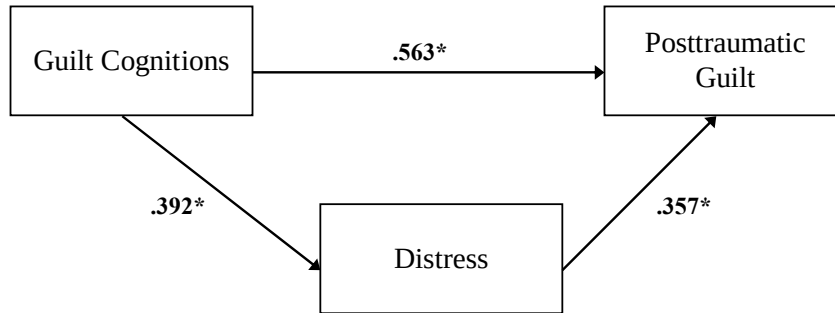


Figure 3.2. The direct effects among variables in the components of posttraumatic guilt model tested in male Veterans ($n = 149$); All numerical values represent standardized coefficients (* $p < .001$).

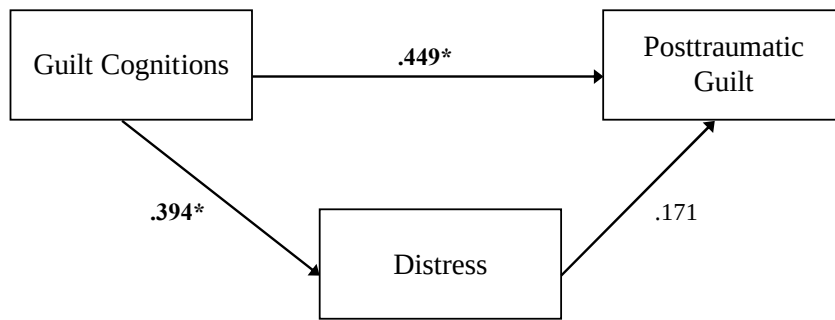


Figure 3.3. The direct effects among variables in the components of posttraumatic guilt model tested in the combined female IPV survivor sample ($n = 69$); All numerical values represent standardized coefficients (* $p < .001$).

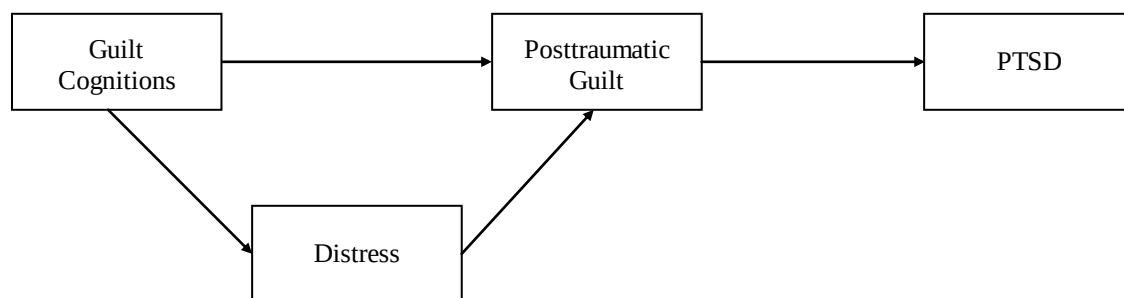


Figure 4.1. The components of posttraumatic guilt model extended to include PTSD

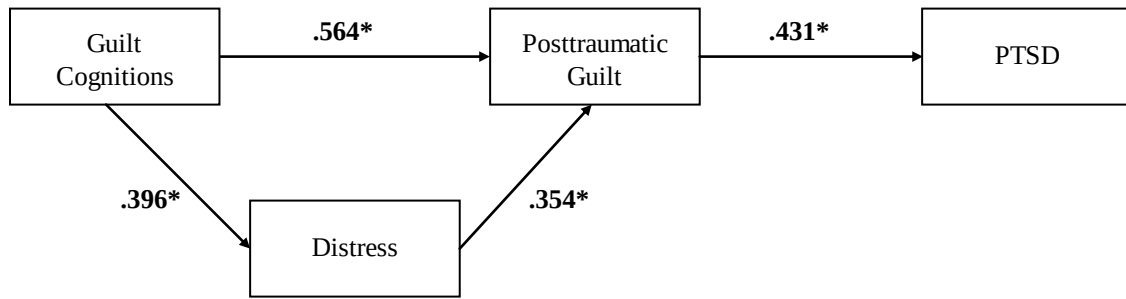


Figure 4.2. The direct effects among variables in extended model tested in male Veterans (n = 149); All numerical values represent standardized coefficients (*p < .001).

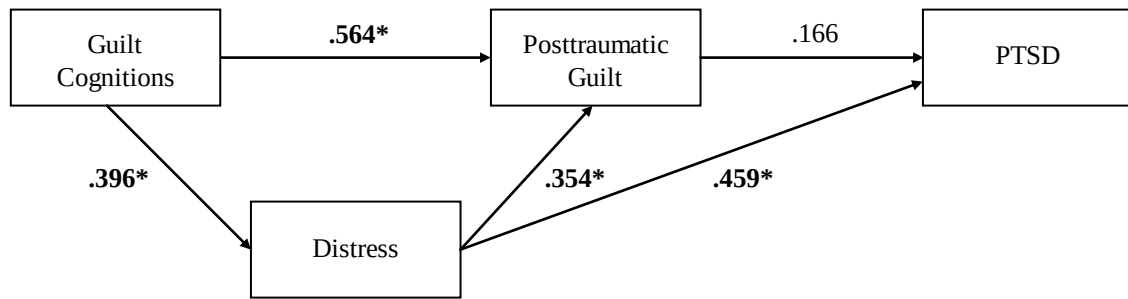


Figure 4.3. The direct effects among variables in the respecified extended model tested in male Veterans ($n = 149$); All numerical values represent standardized coefficients (* $p < .001$).

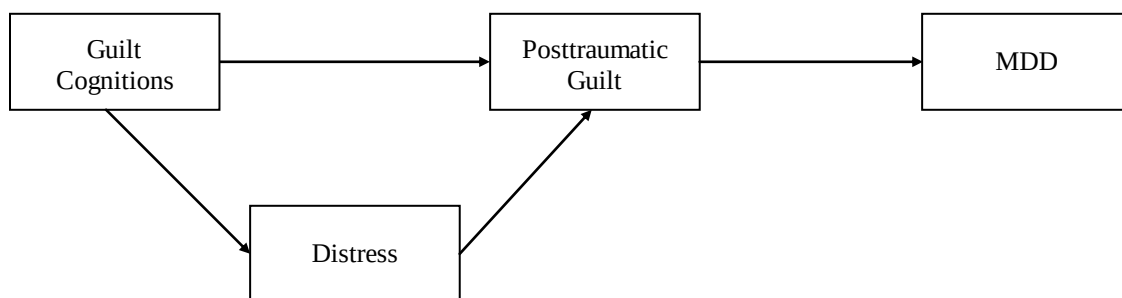


Figure 5.1. The components of posttraumatic guilt model extended to include MDD

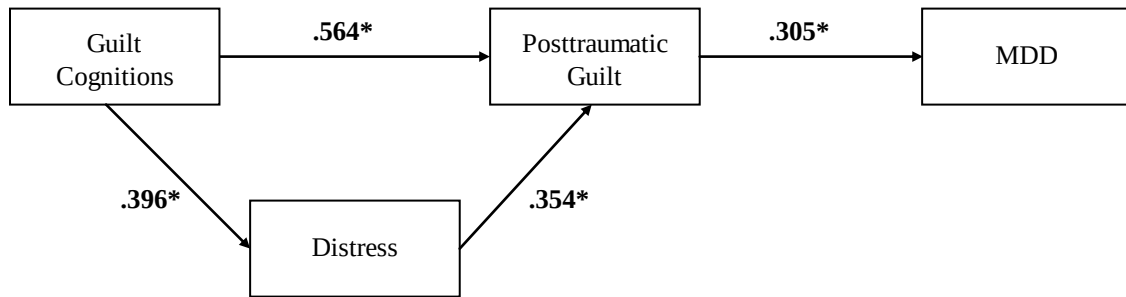


Figure 5.2. The direct effects among variables in the extended model tested in male Veterans (n = 149); All numerical values represent standardized coefficients (*p < .001).

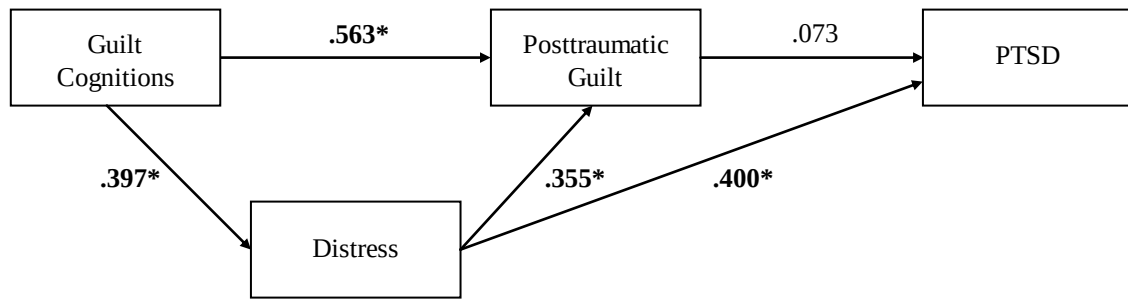


Figure 5.3. The direct effects among variables in the respecified extended model tested in male Veterans ($n = 149$); All numerical values represent standardized coefficients (* $p < .001$).

Table 1.1. Sample Characteristics

	Male Veterans	Female IPV Survivors	
		With A/SUD	Without A/SUD
	(<i>n</i> = 149)	(<i>n</i> = 30)	(<i>n</i> = 39)
Age	<i>M</i> = 33.1, <i>SD</i> = 8.3	<i>M</i> = 41.9, <i>SD</i> = 10.0	<i>M</i> = 38.7, <i>SD</i> = 8.1
Ethnicity			
Caucasian	44.2%	56.7%	56.4%
Hispanic	28.9%	26.7%	10.3%
African American	14.8%	13.3%	12.8%
Asian	5.4%	--	--
Native American/ Alaskan Native	--	3.3%	--
Native Hawaiian/ Pacific Islander	3.3%	--	--
Filipino	--	--	2.6%
Other	.7%	--	17.9%
Unknown	2.7%	--	--
PTSD Diagnosis			
Full	85.2%	74.2%	84.6%
Subclinical ^a	14.6%	22.6%	12.8%
MDD Diagnosis	32.9%	54.8%	43.6%
Other Anxiety ^b	--	51.6%	51.3%

^aEndorsed a Criterion A event and at least some distressing/interfering symptoms of PTSD.

^bOther anxiety disorder diagnoses (i.e., Panic Disorder, Generalized Anxiety Disorder).

Table 2.1. Self-Report Measure Assessment Schedule

	Baseline	Mid-treatment	Post-Treatment	Follow-Up
Sample 1	TRGI, PCL, PHQ-9	--	--	--
Sample 2	TRGI, PCL	--	--	--
Sample 3	TRGI, PCL, BSI	TRGI, PCL, BSI	TRGI, PCL, BSI	TRGI, PCL, BSI

Note. BSI = Brief Symptom Inventory; PCL = PTSD Checklist; PHQ-9 = Patient Health

Questionnaire; TRGI = Trauma Related Guilt Inventory.

Table 3.1. Descriptive statistics and correlations among variables included in the components of posttraumatic guilt path analysis model in male Veterans

	<i>M</i>	<i>SD</i>	1	2	3
1. PTG	2.04	1.15	--		
2. DS	2.87	.812	.578**	--	
3. GC	1.35	.866	.703**	.392**	--

Note. DS = distress; GC = guilt cognitions; PTG = posttraumatic guilt.

** $p < .001$.

Table 3.2. Components of posttraumatic guilt path analysis model parameter estimates, indirect effects, standard errors, and significance values in male Veterans

Parameters	Unstandardized				Standardized			
	Value	SE	<i>p</i>	CI	Value	SE	<i>p</i>	CI
GC→DS	.368	.066	<.001	--	.392	.073	<.001	--
GC→PTG	.744	.082	<.001	--	.563	.053	<.001	--
DS→PTG	.503	.092	<.001	--	.357	.057	<.001	--
GC→DS→PTG	.185	.048	<.001	.075-.287	.140	.035	<.001	.049-.209

Note. DS = distress; GC = guilt cognitions; PTG = posttraumatic guilt.

Table 3.3. Descriptive statistics and correlations among variables included in the components of posttraumatic guilt path analysis model in female IPV survivors

	<i>M</i>	<i>SD</i>	1	2	3
1. PTG	1.98	1.01	--		
2. DS	2.98	.625	.348**	--	
3. GC	1.79	.729	.516**	.394*	--

Note. DS = distress; GC = guilt cognitions; PTG = posttraumatic guilt.

* $p \leq .01$. ** $p < .001$.

Table 3.4. Components of posttraumatic guilt path analysis model parameter estimates, indirect effects, standard errors, and significance values in female IPV survivors

Parameters	Unstandardized				Standardized			
	Value	SE	<i>p</i>	CI	Value	SE	<i>p</i>	CI
GC→DS	.340	.100	.011	--	.394	.106	<.001	--
GC→PTG	.624	.175	<.001	--	.449	.106	<.001	--
DS→PTG	.276	.218	.207	--	.171	.117	.143	--
GC→DS→PTG	.094	.079	.234	-.119-.276	.067	.056	.230	-.077-.177

Note. DS = distress; GC = guilt cognitions; PTG = posttraumatic guilt.

Table 4.1. Descriptive statistics and correlations among variables included in path analysis for models 4.2 and 4.3

	<i>M</i>	<i>SD</i>	1	2	3	4
1. PTSD	54.28	11.58	--			
2. PTG	2.04	1.15	.432**	--		
3. DS	2.87	.812	.556**	.577**	--	
4. GC	1.34	.865	.404**	.704**	.401**	--

Note. DS = distress; GC = guilt cognitions; PTG = posttraumatic guilt;

PTSD = posttraumatic stress disorder.

** $p < .001$.

Table 4.2. Path analysis parameter estimates, indirect effects, standard errors, and significance values for extended model 4.2

Parameters	Unstandardized				Standardized			
	Value	SE	<i>p</i>	CI	Value	SE	<i>p</i>	CI
GC→DS	.372	.068	<.001	--	.396	.073	<.001	--
GC→PTG	.746	.083	<.001	--	.564	.053	<.001	--
DS→PTG	.499	.091	<.001	--	.354	.057	<.001	--
PTG→PTSD	4.36	.799	<.001	--	.431	.068	<.001	--
GC→PTG→PTSD	3.26	.587	<.001	1.76-4.38	.243	.039	<.001	.144-.103
GC→DS→PTG→PTSD	.810	.300	.007	.262-1.54	.060	.022	.005	.005-.103

Note. DS = distress; GC = guilt cognitions; PTG = posttraumatic guilt; PTSD = posttraumatic stress disorder.

Table 4.3. Path analysis parameter estimates, indirect effects, standard errors, and significance values for respecified model 4.3

Parameters	Unstandardized				Standardized			
	Value	SE	<i>p</i>	CI	Value	SE	<i>p</i>	CI
GC→DS	.371	.068	<.001	--	.396	.073	<.001	--
GC→PTG	.746	.083	<.001	--	.564	.053	<.001	--
DS→PTG	.499	.091	<.001	--	.354	.057	<.001	--
PTG→PTSD	1.69	.916	.066	--	.166	.083	.044	--
DS→PTSD	6.56	1.21	<.001	--	.459	.077	<.001	--
GC→PTG→PTSD	1.26	.696	.071	-.415-2.68	.094	.051	.064	-.037-.193
GC→DS→PTSD	2.44	.689	<.001	.997-4.02	.182	.049	<.001	.055-.278
GC→DS→PTG→PTSD	.312	.186	.093	-.077-.787	.023	.014	.087	-.012-.050

Note. DS = distress; GC = guilt cognitions; PTG = posttraumatic guilt; PTSD = posttraumatic stress disorder.

Table 5.1. Descriptive statistics and correlations among variables included in path analysis for models 5.2 and 5.3

	<i>M</i>	<i>SD</i>	1	2	3	4
1. MDD	14.96	5.91	--			
2. PTG	2.04	1.15	.305**	--		
3. DS	2.87	.865	.443**	.579**	--	
4. GC	1.35	.865	.351**	.703**	.397**	--

Note. DS = distress, GC = guilt cognitions; MDD = major depression symptoms; PTG = posttraumatic guilt.

** $p < .001$.

Table 5.2. Path analysis parameter estimates, indirect effects, standard errors, and significance values for extended model 5.2

Parameters	Unstandardized				Standardized			
	Value	SE	<i>p</i>	CI	Value	SE	<i>p</i>	CI
GC→DS	.372	.068	<.001	--	.396	.073	<.001	--
GC→PTG	.746	.083	<.001	--	.564	.053	<.001	--
DS→PTG	.499	.091	<.001	--	.354	.057	<.001	--
PTG→MDD	1.57	.411	<.001	--	.305	.074	<.001	--
GC→PTG→MDD	1.17	.310	<.001	.449-1.95	.172	.045	<.001	.056-.260
GC→DS→PTG→MDD	.292	.124	.019	.063-.734	.043	.018	.017	-.003-.078

Note. DS = distress; GC = guilt cognitions; MDD = major depression symptoms; PTG = posttraumatic guilt.

Table 5.3. Path analysis parameter estimates, indirect effects, standard errors, and significance values for respecified model 5.3

Parameters	Unstandardized				Standardized			
	Value	SE	<i>p</i>	CI	Value	SE	<i>p</i>	CI
GC→DS	.373	.068	<.001	--	.397	.073	<.001	--
GC→PTG	.745	.083	<.001	--	.563	.053	<.001	--
DS→PTG	.500	.091	<.001	--	.355	.057	<.001	--
PTG→MDD	.378	.475	.427	--	.073	.090	.416	--
DS→MDD	2.91	.685	<.001	--	.400	.086	<.001	--
GC→PTG→MDD	.281	.355	.428	-.631-1.19	.041	.052	.793	-.093-.175
GC→DS→MDD	1.08	.352	.002	.372-2.18	.159	.050	.001	.031-.287
GC→DS→PTG→MDD	.070	.095	.459	-.197-.392	.010	.014	.458	-.025-.046

Note. DS = distress; GC = guilt cognitions; MDD = major depression symptoms; PTG = posttraumatic guilt.

Table 6.1. Change score correlations between trauma-related guilt and PTSD (PCL) symptoms and trauma-related guilt and depression symptoms (BSI)

	Pre-treatment to Mid-treatment (<i>n</i> = 16)	Mid-treatment to Post-treatment (<i>n</i> = 16)	Post-treatment to Follow-up (<i>n</i> = 13)
PCL	.39, <i>p</i> = .14	.52, <i>p</i> = .04	.24, <i>p</i> = .44
BSI	.14, <i>p</i> = .61	.81, <i>p</i> < .01	.24 <i>p</i> = .43

Note. BSI = Brief Symptom Inventory; PCL = PTSD Checklist.