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Habilitationsschrift

Spezifische Komponenten der Psychotraumatherapie einsatzbedingter psychischer Erkrankungen bei deutschen Soldaten

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Abkürzungen

PTBS: Posttraumatische Belastungsstörung

EMDR: Eye Movement Desensitization and Reprocessing

1. Einleitung

1.1 Einsatzbedingte psychische Erkrankungen als eine Herausforderung für die Versorgungspraxis

In einem Artikel von Dan Baum (2004) „Du sollst töten“ nimmt der Autor Bezug auf die Betrachtungen von Grossmann (1995) und fordert einen gesellschaftlich offenen und moralischen Umgang mit psychisch kranken Soldaten, sobald die Gesellschaft den Soldaten darauf vorbereitet, seinen Widerstand gegen das Töten zu überwinden, und ihn in eine Umgebung versetzt, in der er töten wird.

Seit den 90er Jahren nimmt die Bundeswehr an Auslandseinsätzen teil. Erstmals seit dem zweiten Weltkrieg ist die deutsche Armee damit wieder in nennenswerter Zahl außerhalb der eigenen Staatsgrenzen mit militärischen Aufgaben betraut. Das verändert nicht nur das Verständnis für die Einsatzpräsenz von Soldaten in unserer Gesellschaft seit dem letzten Weltkrieg, es hat auch entscheidende Auswirkungen auf die Versorgungsstruktur psychisch belasteter und erkrankter Soldaten innerhalb und außerhalb der Bundeswehr.
Der Soldat ist in seinem Einsatz vielfältigen Belastungen ausgesetzt. Neben allgemeinen Faktoren, wie Trennung von der Familie und dem gewohnten Umfeld, ist er u.a. mit extremen klimatischen Bedingungen, hoher Dienstzeitbelastung, aber auch mit Elend, Armut, Not und der Erfahrung fremder kultureller Hintergründe und Bräuche konfrontiert (Kowalski et al., 2012). Darüber hinaus kann es zu Gefechtsstress, Anschlägen, Attentaten und Beschusssituationen mit leichten oder auch schweren Waffen kommen (Wittchen et al., 2012). Auch die Verschiebung eigener Werte, Normen vor dem Hintergrund moralischer Verletzungen kann zu vielfältigen psychischen Belastungen führen (Litz et al., 2009).

Mittlerweile ist unumstritten, dass die Teilnahme an Auslandseinsätzen mit einem erhöhten Risiko für die Entwicklung einsatzbedingter psychischer Erkrankungen verbunden ist. Die 12-Monats-Prävalenz für einzelne Krankheitsbilder ist bei Einsatzsoldaten im Vergleich zur Stichprobe von Soldaten ohne Einsätze signifikant höher (Wittchen et al., 2012). Bei Auslandssoldaten ergab die sog. „Dunkelzifferstudie“ der Forschungsgruppe um Prof. Wittchen

et al. (2012), in Zusammenarbeit mit dem Psychotraumazentrum der Bundeswehr in Berlin, für die Posttraumatische Belastungsstörung (PTBS) eine 12-Monats-Prävalenz von 2,9%, für affektive Erkrankungen von 7,8%, für Angststörungen von 10,8%, für somatoforme Störungen von 2,5% und für Alkoholmissbrauch und Abhängigkeitserkrankungen von 3,6 % (Wittchen et al. 2012, 2013). Allerdings wird die Dunkelziffer der Soldaten, deren PTBS unerkannt und unbehandelt bleibt, nach Wittchen et al. (2012) auf ca. 45 % geschätzt. Wittchen et al. (2012) postuliert, dass 49 % der deutschen Soldaten in einem Auslandseinsatz ein bzw. 13 % mehr als drei traumatisch belastende Ereignisse erfahren. Dabei spielt der Ort des Einsatzes bei untersuchten deutschen Stichproben eine Rolle. In Kunduz eingesetzte Soldaten habe beispielsweise eine um das zwei- bis vierfach erhöhte 12- Monats-Inzidenzrate als Soldaten anderer Einsatzregionen (Wittchen et al., 2012). Auch zeigt die Studie von Wittchen et al. (2012) Unterschiede in der Lebenszeitprävalenz zwischen Soldaten mit (5 %) und ohne Teilnahme an einem Auslandeinsatz (3 %). Die 12-Monats-Inzidenzrate für PTBS liegt bei Soldaten mit Einsatzhintergrund bei 1 %, für Soldaten ohne Einsatzerfahrung bei 0,2 % und für die Kampftruppen nach dem Einsatz bei ebenfalls 1 % (Wittchen et al., 2012). Neben dem Ausmaß an Kampfhandlungen, die zu einer Variabilität der PTBS-Prävalenzrate in der Armee beitragen können, spielen zudem Faktoren wie soldatisches Vorbereitungstraining, Erfahrung und Zugehörigkeit zu unterschiedlichen Truppengattungen in militärischen Stichproben eine Rolle (Wittchen et al., 2012; Kowalski et al., 2012).
Die Suche nach Risikofaktoren für die Entstehung einsatzbedingter Störungen erbrachte u.a. die Erkenntnis, dass die Anzahl der belastenden traumatischen Erfahrungen, der Grad der empfundenen fehlenden sozialen Unterstützung, die Belastung durch Vorerkrankungen und der Mangel an Fähigkeit zur Emotionsregulation, Risikofaktoren für die Entwicklung einer PTBS darstellten (Trautmann et al., 2015).

Das Erkrankungsrisiko für die einzelnen psychoreaktiven Störungen ist bei den Betroffenen also nicht gleichermaßen verteilt. So haben beispielsweise Soldaten mit einer hohen Kampfbelastung zudem höhere Raten an Angststörungen (Panik und Agoraphobie) (Trautmann et al., 2016).
Die Erkenntnisse um das besondere Erkrankungsrisiko aus der deutschen Studienlage decken sich mit Studienergebnissen anderer Armeen. So zeigte sich bei amerikanischen

Einsatzsoldaten ebenfalls in Abhängigkeit von der Intensität der Kampfhandlungen eine unterschiedliche PTBS-Prävalenz-Rate (Hoge et al., 2014). Für Betroffene mit einer geringen Frequenz an Kampfhandlungen liegt diese Rate bei 9 % und steigt bis zu 29 % bei Soldaten mit hoher Kampfhandlungsfrequenz (Hoge et al., 2004). Die PTBS - Rate einer untersuchten kanadischen Soldatenstichprobe nach Afghanistaneinsatz zwischen 2001 und 2008 von Boulos & Zamorski (2013) lag bei einer Prävalenzrate von 8 %.
Wie in o.g. deutschen Untersuchungen zeigt sich auch bei internationalen Soldaten ein hohes Ausmaß an komorbiden Einsatzerkrankungen. Studien zufolge sind Angststörungen mit 13 % und depressive Erkrankungen mit 30 % besonderes häufig vertreten (Hoge et al., 2004; Wojcik et al., 2004). Die Rate an Suizidversuchen bei Soldaten nach der Teilnahme an Kampfeinsätzen liegt achtmal höher als in der Normalbevölkerung (Davidsan et al., 1991). Für die Behandlung dieser Soldaten ist es dabei nicht unwichtig zu wissen, dass die Komplexität und Anzahl an komorbiden Erkrankungen einen Einfluss auf die Verlaufsprognose psychischer Erkrankungen hat (Sareen et al., 2010).

Das Eingeständnis der Tatsache, dass nach einem traumatisierenden Auslandseinsatz nicht nur das Störungsbild der PTBS, sondern auch eine Vielzahl an komorbiden Erkrankungen und sozialen Belastungen für die Betroffenen und deren Angehörige eine Rolle spielen, ist in Deutschland erst langsam gewachsen. Mittlerweile ist die Erkenntnis der Notwendigkeit, effektive und zielgruppenspezifische Behandlungsmethoden für einsatzbelastete Soldaten vorzuhalten, in der Versorgungsstruktur der Armee angekommen. Das hat in den letzten 20 Jahren zu einer intensiven Beschäftigung mit diagnostischen und therapeutischen Fragestellungen im militärisch-medizinischen Kontext geführt. Die Abschaffung der Wehrpflicht und das politische Bekenntnis, die Bundeswehr zu einer international tätigen Einsatzarmee aufzubauen, setzt damit Grundlagen für eine notwendige und differenzierte Entwicklung geeigneter Behandlungsstrategien erkrankter Soldaten nach traumatischen Auslandseinsatzerfahrungen.

1.2 Aktuelle Behandlungskonzepte einsatzbedingter Erkrankungen im Rahmen der Bundeswehr

Die Behandlung einsatzerkrankter Soldaten im Rahmen der Bundeswehr hat in den letzten Jahrzehnten neben präventiven Vorsorgemaßnahmen einen immer größer werdenden Stellenwert eingenommen. Im Jahr 2010 war die PTBS nach einem Einsatz in Afghanistan (International Security Assistance Force-Einsatz ISAF) mit 45 % die häufigste diagnostizierte Erkrankung in Bundeswehreinrichtungen (Jenuwein et al., 2012).

Im Rahmen der Diagnostik stehen neben dem klinischen Interview eine Reihe von standardisierten Testverfahren in den Bundeswehrkrankenhäusern zur Verfügung, die nach festgelegten Verfahrensanweisungen eingesetzt werden.

Die Frage nach einer spezifischen, zeitökonomischen, differenzierten Erfassung entsprechender diagnostischer Parameter, die nach kriegsbedingter Traumatisierung bei soldatischen Patienten relevant sein können, ist damit von wissenschaftlichem Interesse und u.a. Teil einer Studie in dieser Habilitationsschrift. Um die diagnostische Versorgung weiter zu spezialisieren und an die Bedürfnisse unterschiedlicher Patientengruppen anzupassen, ist in den letzten Jahren die Adaption und Validierung verschiedener Untersuchungsinstrumente an Soldatenstichproben notwendig geworden. Dazu haben sich u.a. unterschiedliche Forschungsgruppen diesem diagnostischen Thema gewidmet und beispielsweise die Posttraumatic Stress Disorder Checklist (PCL-5) für DSM-5 an Soldatenpopulationen betrachtet (Krüger-Gottschalk et al., 2017).

Eine zentrale Grundüberlegung ist dabei, dass nach kognitiv-behavioralen Erklärungsmodellen die Entstehung und Aufrechterhaltung einer Posttraumatischen Belastungsstörung entscheidend von maladaptiven kognitiven Verarbeitungsprozessen beeinflusst wird (Ehlers et al., 2000; Foa et al., 1999; Alliger-Horn et al., 2017). Insbesondere der von Foa et al. (1999) entwickelte Posttraumatic Cognitions Inventory (PTCI) beschäftigt sich mit der Erfassung maladaptiver Kognitionen gegenüber sich selbst und der Welt. Auch empfundene Selbstvorwürfe werden mit dem PTCI systematisch abgefragt. In einer vorliegenden Publikation dieser Habilitation soll u.a. untersucht werden, ob sich die Veränderung der Selbst- und Weltsicht nach der Teilnahme an einem Kriegseinsatz von der bei zivilen Traumaopfern unterscheidet. Das Wissen um die genaue Differenzierung spezifischer traumarelevanter Kognitionen kann dabei die Möglichkeit

eröffnen, die therapeutische Behandlungsplanung für die belasteten Soldaten zu verbessern.

Neben einer spezifischen Traumadiagnostik hat sich seit Mitte der 1990er Jahre die psychotraumatologische therapeutische Versorgung in den Bundeswehrkrankenhäusern ebenfalls weiterentwickelt. Dabei ist von praktischem Interesse, ob die Evaluationsergebnisse verschiedener Therapiemethoden der zivilen Forschungslandschaft im Bereich der Psychotraumatologie gleichermaßen auf den militärischen Bereich übertragbar sind. Entsprechend der Vorgaben der Fachgesellschaften (u.a. Deutschsprachige Gesellschaft für Psychotraumatologie (DeGPT)) und den Leitlinien der Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaft e.V. (AWMF-Leitlinien) bietet die Bundeswehr in ihren Krankenhäusern seit Jahren verschiedene Konzepte der Einzel- und Gruppentherapien für die Behandlung von PTBS und anderen einsatzassoziierten Erkrankungen bzw. Störungsmustern an. Dabei richtet sich das Versorgungsangebot nach dem Standard internationaler Fachgremien und orientiert sich u.a. an den Empfehlungen des Australian Centre for Posttraumatic Mental Health (2013) bzw. an den Leitlinien des Department of Veterans Affair and Department of Defense (2017), wonach in der Therapie der Posttraumatischen Belastungsstörung (PTBS) traumafokussiertes Arbeiten den sog. Goldstandard darstellt.
Zu den eingesetzten Traumakonfrontationsmethoden zählen neben der klassischen Behandlung von PTBS-Patienten im traumakonfrontativen Einzelsetting durch Cognitive Processing Therapy (CPT) und Eye-Movement Desensitization and Reprocessing (EMDR) auch die Angebote spezifischer kognitiv-behavioraler Gruppenmaßnahmen sowie ergänzender komplementärer Behandlungsangebote (z.B. der Alptraumbehandlung bei posttraumatischen Träumen).

EMDR wird im Kontext der PTBS - Therapie entsprechend den Leitlinien als eine Methode der Wahl im Einzelbehandlungskontext der Bundeswehr angeboten. Francine Shapiro (1989) entwickelte die Methode in den 1980er Jahren auf der Grundlage des sogenannten Adaptive Information Processing (AIP) Modells. Shapiro (1989) ging davon aus, dass durch traumatische Reize fehlerhaft gespeicherte Informationen im EMDR identifiziert, aktualisiert und einer neuen Informationsverarbeitung unter Nutzung sakkadischer Augenbewegungen zugeführt

werden. Während sich der Patient an die traumatischen Bilder, verbunden mit den dazugehörigen Gefühlen, zentralen maladaptiven Kognitionen und den entsprechenden belastenden Köpergefühlen erinnert, wird durch die Methode der Anstoß für einen adaptiven Prozess der Traumaverarbeitung in Gang gesetzt. Dabei nutzt der Therapeut ein standardisiertes Protokoll, das sich in insgesamt 8 Therapiephasen unterteilt (Hofmann, 2006).
Mittlerweile existiert eine große Anzahl von internationalen Studien, die die Wirksamkeit und Praktikabilität der Methode zur Behandlung der PTBS und anderer Störungsbilder nachweisen konnten (Davidson et al., 2001; Shapiro & Maxfield, 2002). Seit 2006 gehört EMDR in Deutschland zur wissenschaftlich anerkannten Therapiemethode und ist Teil des kassenärztlichen Leistungsangebotes. Im Vergleich zu zivilen Studien finden sich allerdings im militärischen Kontext einige Untersuchungen, die eine weitaus geringere Wirksamkeit von EMDR bei Kriegsveteranen im Vergleich zu zivilen Stichproben beschreiben (Johnson et al., 2002; Johnson et al., 2004). Die internationale Diskussion um die Wirksamkeit von EMDR im militärischen Kontext gab die Grundlage für die Fragestellung einer retrospektiven, quasiexperimentellen Effektivitätsstudie am Bundeswehrkrankenhaus Berlin, die in dieser Habilitation berichtet wird.

Ergänzend zu Methoden, wie EMDR und klassischen Verfahren der kognitiv-behavioralen Traumatherapie, haben sich seit einigen Jahren imaginative Behandlungsformen in der Versorgungspraxis für Einsatzgeschädigte etabliert. Im Kontext der unterschiedlichen Behandlungsmethoden für PTBS beschreibt Schnyder et al. (2015) in seinem Artikel entscheidende Gemeinsamkeiten und Unterschiede verschiedener traumafokussierter Interventionsmethoden. Er macht deutlich, dass neben den Bestandteilen der Edukation, dem Aufbau von Skills, dem sog. „Meaning making“ (Bedeutungsgebung des Traumas in der persönlichen Lebensgeschichte) und der Emotionsregulation, vor allem die Traumaexposition und die damit verbundene Arbeit an den traumaassoziierten Emotionen den verschiedenen Traumatherapiemethoden gemeinsam ist. Benecke (2014) betont in seinem Lehrbuch für integrative Psychotherapie, dass schulenübergreifende Psychotherapie stets Arbeit an Emotionen ist und diese sozusagen die „Antreiber“ des inneren psychischen Systems darstellen. Damit wird deutlich, dass auch traumafokussiertes Arbeiten stets die zentralen, mit dem jeweiligen Trauma in Verbindung stehenden Emotionen im Fokus des Prozesses haben sollte.

In der therapeutischen Arbeit mit Soldaten zeigt sich, dass die Beteiligung an Kriegshandlungen neben Angst und Hilflosigkeit besonders belastende Emotionen der Schuld und Scham hervorbringen kann, die dann wiederum entscheidend den pathologischen Prozess der Traumaverarbeitung bedingen und aufrechterhalten können (Alliger-Horn et al., 2015a). Grunert et al. (2003) beschreibt, dass gerade klassisch angstfokussierte Therapieansätze der Traumabehandlung, die z.B. ein reines Extinktionslernen im Fokus haben, vergleichsweise ungünstige Resultate in der Behandlung von Schuld und anderen Emotionen zeigen. Stattdessen scheint das geleitete imaginative Umschreiben (Imagery Rescripting), die damit verbundene Erarbeitung von Bewältigungsbildern und die Förderung eines empathischen und versöhnlichen Umgangs mit den eigenen verletzten und traumatisierten inneren Anteilen eine Alternative im Umgang mit internalisierter Schuld, Scham oder auch Zorn zu sein (Arntz et al., 2007; Schmucker et al., 2015). In einer aktuellen Meta-Analyse konnte gezeigt werden, dass Imagery Rescripting eine vielversprechende Methode ist, aversive Erinnerungen und damit verbundene dysfunktionale Gefühle in wenigen Therapiestunden zielführend behandeln zu können (Morina et al., 2017).

Diese Erkenntnis und die wissenschaftlichen Hinweise, dass u.a. die Anwendung von EMDR bei Soldaten weniger effektiv zu sein scheint als in zivilen Stichproben (Johnson et al., 2002; Johnson et al., 2004), erbrachte die Frage nach der Wirksamkeit der Anwendung imaginativer Behandlungsmethoden im militärischen Kontext.

In einer vorliegenden Publikation dieser Habilitationsschrift soll die Anwendung von Imagery Rescripting bei kriegsbedingter Schuld und Scham beleuchtet werden. Dabei liegt der Therapieschwerpunkt auf der Exposition des Traumas, dem „Überschreiben“ des traumatischen Erinnerungsmaterials bei gleichzeitiger Erarbeitung von adäquaten Bewältigungsbildern, die ihrerseits mit der Entwicklung eines versöhnlichen und verzeihenden Umgangs mit sich selbst einhergehen.

In einem weiteren Artikel der Habilitation wird Imagery Rescripting in der Behandlung chronischer posttraumatischer Alptraumstörungen betrachtet. In dieser Arbeit zeigt sich, dass Soldaten mit einer kriegsbedingten PTBS in ihren Alpträumen verstärkt durch Gefühle der Schuld und Scham belastet sind. Das imaginative Umschreiben der belastenden Alpträume zielt auch hier auf die Erarbeitung von adäquaten Bewältigungsbildern ab und stellt eine Adaption der Alptraumbehandlungsmethode IRT (Imagery Rescripting Therapy; Thünker et al., 2011;

2012) an einer Soldatenstichprobe dar.

In der militärischen Versorgungspraxis kommen neben den traditionellen Themen der Traumatherapie, die auch im zivilen Versorgungsbereich Anwendung finden (z.B. Exposition angstbesetzter traumaassoziierter Stimuli), zusätzlich ganz spezielle Themen aus dem militärischen Kontext zum Tragen.

Dazu gehört vor allem die Betrachtung der Veränderung von Werte- und Normsystemen bei Kriegstraumatisierten, die mit dem Begriff der „Moral Injury“ (Litz et al., 2009) in Verbindung gebracht werden können. Die begrifflichen Wurzeln sind schon im antiken Griechenland zu finden, wo bereits von moralischer Verschmutzung (Miasmen) durch die Teilnahmen am Krieg gesprochen wurde (Nash et al., 2013). Populär wurde der Begriff im Zusammenhang mit dem Vietnamkrieg durch das Buch von Jonathan Shay (1994), der eindrücklich den moralischen Verfall von Soldaten durch den Verrat ihrer Vorgesetzten und Befehlsgeber beschreibt.

In diesem Zusammenhang wird deutlich, dass der Soldat in seiner professionellen Rolle nicht nur Gefahren ausgesetzt ist, die sein Leben bedrohen können. Er kann ebenfalls mit Situationen konfrontiert sein, die sein moralisches und ethisches Verständnis von sich selbst in der Welt erschüttern können. Dabei wird eine denkbare moralische Verletzung als emotionaler Stress definiert (Litz et al., 2009), die das eigene Glaubenssystem tief erschüttert (Nash et al., 2013) und dabei zu psychischen Erkrankungen führen kann (Jinkerson, 2016). Auf den militärischen Kontext bezogen kann es dazu kommen, dass ein Soldat vor dem Hintergrund seines militärischen Auftrages gegen eigene internalisierte Werte, Normen und Glaubenssysteme verstößt oder auch erleben muss, wie anderen (z.B. militärische Vorgesetzte) im Kriegseinsatz gegen moralische Standards verstoßen. So kann z.B. das nicht verhindern können von schweren Gewalthandlungen gegenüber Frauen und Kindern oder die unterlassene Hilfeleistung gegenüber befreundeten Armeemitgliedern aufgrund kritischer Sicherheitsbedingungen zu tiefgreifenden inneren Konflikten führen, deren Folgen u.a. Beschämung und Schuldgefühle sein können, wenn die eigene Handlung nicht in das bestehende moralische Glaubenssystem integriert werden kann.

Jinkerson (2016) beschreibt in seinem Modell, das moralische Verletzungen zunächst vier zentrale Symptome vermitteln (Schuldgefühle, Scham, spiritueller bzw. existentieller Konflikt, Verlust am Glauben an sich selbst und andere) und sekundär zu weiteren sieben Symptomen

(Depression, Angst, Wut, Selbstmordgedanken, Selbstverletzung, Probleme im sozialen Umfeld, Erleben innerer moralischer Konflikte) führen können. Er benennt dabei das Gefühl von Schuld als „zentrale Scharnieremotion“ für die Entwicklung einer Moral Injury.

Zusammenfassend wird deutlich, dass das Thema der moralischen Verletzung (Moral Injury) im Kontext von Militäreinsätzen auch in der deutschen Armee an Bedeutung gewonnen hat und demzufolge in den letzten Jahren auch ein Thema in der therapeutischen Versorgung geworden ist. In einer weiteren Publikation dieser Habilitation sollen deshalb die Zusammenhänge zwischen moralisch verletzenden Einsatzerfahrungen, Werten und psychischen Erkrankungen bei deutschen Einsatzsoldaten betrachtet werden.
Daran anschließend wendet sich die letzte Veröffentlichung dieser Arbeit der Bedeutung von Moral Injury im stationären therapeutischen Kontext zu. Dabei wird ein klassisches kognitiv-behaviorales Gruppenkonzept, das bereits in den letzten Jahren evaluiert wurde (Alliger-Horn et al., 2014a, b), um einen speziellen Behandlungsbaustein zur Bearbeitung von moralischen Verletzungen ergänzt und in seinem Ablauf beschrieben. Im Zentrum der Betrachtung steht außerdem die Veränderung von dysfunktionalen Copingstrategien im Zusammenhang mit Einsatztraumatisierungen und moralischer Verletzung.

Zusammenfassend wird erkennbar, dass es über die letzten Jahrzehnte notwendig geworden ist, bestehende Versorgungskonzepte für Militärangehörige im diagnostischen und therapeutischen Rahmen auszubauen und weiter zu entwickeln bzw. aus dem zivilen Bereich auf das militärische Umfeld zu adaptieren, anzuwenden und natürlich in ihrer Wirksamkeit für die Soldatenstichprobe zu evaluieren.
Dabei wirft der Forschungsbereich, der sich mit der Planung differenzieller Behandlungskonzepte für Einsatzgeschädigte, mit ihren spezifischen Themen und Kontextfaktoren und sich daraus ergebenden Anforderungen an den therapeutischen Prozess beschäftigt, noch unzählige unbeantwortete Fragen auf, die es lohnt, in der nächsten Zukunft zu betrachten.

1.3 Wissenschaftliche Fragestellungen der vorliegenden Habilitationsschrift

Die vorliegende kumulative Habilitationsschrift geht der Frage nach den verschiedenen und spezifischen Komponenten in der psychotraumatologischen Versorgung einsatzgeschädigter deutscher Soldaten nach. Es sollen sowohl diagnostische, einzel- als auch gruppentherapeutische ausgewählte Ansätze im stationären Behandlungsangebot für Einsatzgeschädigte betrachtet und auf ihre thematischen Besonderheiten für den traumatisierten Soldaten diskutiert werden.

<u>Drei zentrale Fragestellungen stehen im Fokus der Habilitationsschrift:</u>

1. *Die Bedeutung der Erfassung maladaptiver traumabezogener Kognitionen im diagnostischen Prozess und der Einsatz von EMDR (Eye Movement Desensitization and Reprocessing) im stationären Kontext bei kriegstraumatisierten Soldaten:*

   I. Welche Besonderheiten ergeben sich bei der Erfassung maladaptiver traumabezogener Kognitionen bei kriegstraumatisierten Soldaten unter Berücksichtigung der Validierung und Adaption des Posttraumatic Cognitions Inventory (PTCI) unter Praxisbedingungen?

   II. Welche Wirksamkeit zeigt die Anwendung von EMDR (Eye Movement Desensitization and Reprocessing) bei Soldaten im stationären klinischen alltäglichen Versorgungskontext?

2. *Die Betrachtung therapeutischer Ansätze unter Beachtung spezifischer traumaassoziierter Affekte der Schuld und Scham in der Behandlung von traumatisierten Soldaten:*

   I. Welche Bedeutung haben Scham, Schuld und die Verbesserung des emotionalen Copings auf die Veränderung der Beschwerdesymptomatik in der imaginativen Traumakonfrontation bei Soldaten?

   II. Was sind entscheidende Spezifika einer adaptiven Anwendung von Imagery

Rehearsal Therapy (IRT) bei chronischen, kriegsbedingten Alpträumen für soldatische Patienten mit PTBS?

3. *Die Bedeutung der „moralischen Verletzung“ bei Einsatzsoldaten in der traumaspezifischen Behandlung:*

   I. Welche Zusammenhänge ergeben sich zwischen moralisch verletzenden Einsatzerfahrungen, Werten und psychischen Erkrankungen bei Einsatzsoldaten?
   II. Welche Bedeutung hat das Thema der „moralischen Verletzung“ in der Anwendung eines spezifischen kognitiv-behavioralen Gruppenkonzeptes?

2. Die Bedeutung der Erfassung traumabezogener maladaptiver Kognitionen im diagnostischen Prozess und der Einsatz von EMDR (Eye Movement Desensitization and Reprocessing) im stationären Kontext bei kriegstraumatisierten Soldaten

2.1 The Posttraumatic Cognitions Inventory (PTCI) – Development and Validation of a Shortened Military Version Based on a Sample of German Soldiers with Deployment-Related Trauma

(Alliger-Horn, C., Hahn, I., Hessenbruch, I., Schultheis, J., Zimmermann, P., Hecker, T., Willmund, G. (2017). The Posttraumatic Cognitions Inventory (PTCI) – Development and Validation of a Shortened Military Version Based on a Sample of German Soldiers with Deployment-Related Trauma. Journal Traumatic Stress Disorders & Treatment, 6, 2. https://doi.org/10.4172/2324-8947.1000169)

Die vorliegende erste Publikation widmet sich der Frage nach der Entwicklung und Evaluation einer ökonomischen Kurzvariante des PTCI an einer Soldatenstichprobe von Einsatzgeschädigten. Patienten durchlaufen komplexe und oft aufwendige diagnostische Prozesse. Im klinischen Alltag steht der Praktiker deshalb häufig vor der Aufgabe und Notwendigkeit zeitökonomische diagnostische Testverfahren anzuwenden. Auch die Differenzierungsfähigkeit des genutzten Instrumentes für unterschiedliche Störungsgruppen (z.B. zivile sexuell früh traumatisierte Patienten vs. kriegstraumatisierte Soldaten) kann für die diagnostische Aussage von Interesse sein, da es dadurch möglich wird, den therapeutischen Prozess bewusster und spezifischer an die einzelnen Patientengruppen anzupassen.

Vor diesem Hintergrund entstand aus der klinischen Versorgungspraxis der Wunsch, für das einsatzgeschädigte soldatische Klientel einen ökonomischen, zeiteffektiven, validen und differenziellen Frageborgen zur Erfassung maladaptiver traumabedingter Kognitionen zu entwickeln und zu validieren.

Die hier entwickelte zeitökonomische Kurzvariante des PTCI findet seither in der klinischen diagnostischen Praxis alltägliche Anwendung und gibt Aussagen über die kognitiven Denkmuster in der Traumaverarbeitung bei Soldaten.

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The Posttraumatic Cognitions Inventory (PTCI) – Development and Validation of a Shortened Military Version Based on a Sample of German Soldiers with Deployment-Related Trauma

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Abstract

Background: Differentiated and economical diagnostic methods are in ever greater demand in the treatment of soldiers traumatised by war. In the context of cognitive-behavioural approaches, the Posttraumatic Cognitions Inventory (PTCI) serves to identify dysfunctional cognitions that play a key role in the development and persistence of trauma-related disorders such as posttraumatic stress disorder (PTSD).

Objectives: The aim of this study is develop and validate an efficient shortened version of the PTCI for soldiers traumatised on deployment in order to provide an improved and practical instrument for use in everyday clinical practice.

Methodology: A total of 352 Bundeswehr soldiers diagnosed with deployment-related mental health problems were examined using the PTCI, with the number of items covered by the original instrument being reduced from 33 to 12. The resulting military version of the PTCI (PTCI –Short Version / PTCI-SV) was then validated using a sample of 109 personnel with deployment-related PTSD.

Results: The overall scale of the PTCI-SV showed good internal consistency with α=0.86. (Subscales: "negative cognitions about the self" α=0.89; "negative cognitions about the world" α=0.86; "self-blame" α=0.61).

Discussion: The possibility of improving trauma therapy for soldiers with deployment-related mental health issues by further developing existing screening instruments is discussed.

Keywords

Posttraumatic Cognitions Inventory (PTCI); PTCI – Short Version (PTCI-SV); Posttraumatic stress disorder (PTSD); Deployment-related trauma; Bundeswehr

Introduction

According to a current study, approximately 24% of German soldiers are confronted with at least one potentially traumatic experience while deployed on operations abroad [1]. At 45%, PTSD was the most common diagnosis in the field of military psychiatric care following deployment on ISAF operations in 2010 (ISAF: International Security Assistance Force) [2]. The proportion of undiagnosed and untreated cases of deployment-related mental health problems is as high as 80% (ibid.). This seems to be more due to subjective barriers, including expected stigmatisation, than objective criteria such as long waiting times or a shortage of treatment places (ibid.).

Overall, a trend towards an increase in stress reactions resulting from military operations is apparent [3]. This makes it important to identify symptoms associated with trauma in a military context in a differentiated, practical and economical way.

Using a wide range of cognitive-behavioural models, previous research in the field of trauma-related mental disorders has been able to highlight the central role of dysfunctional cognitions in the development and persistence of disorders such as PTSD [4-7]. Previous results suggest that in particular maladaptive cognitions about the self and the world have a significant impact on the development and course of a mental disorder after confrontation with potentially traumatic events [8-10].

The Posttraumatic Cognitions Inventory (PTCI), which was developed by Foa, Ehlers, Clark et al. [8] and has been tested several times on samples of civilian subjects, provides a methodological approach to identifying trauma-related, maladaptive cognitions [11,12]. With regard to the support and treatment provided to soldiers traumatised by war, the question arises as to whether, or to what extent, cognitions are influenced by the confrontation with war scenarios. No appropriate studies conducted in German speaking countries are available thus far. Soldiers deployed on wartime operations may be confronted with special types of trauma which cannot be directly compared with traumas in the civilian environment [13].

Confrontation with wounding, mutilation and death on the one hand and, on the other, the special role of comradeship and the hierarchical chain of command influence the specific development and intensity of possible post-traumatic disorders [14] and also seem to increase the barriers to adequate diagnosis and treatment. In addition, psychotherapy in the military context differs from psychotherapy in the civilian setting in important aspects regarding its structures. In the case of soldiers, for instance, the service context and the treatment system are not two separate spheres.

The PTCI has previously been considered in different studies and described as reliable and valid [10,11,15]. In the majority of studies, the three factors "negative cognitions about the world", "negative cognitions about the self" and "self-blame" postulated by the researchers who developed the PTCI were statistically confirmed [10,15]. These studies clearly revealed a factor imbalance in favour of "negative cognitions about the self", which was reflected in the higher degree of explained variance compared to the two other factors.

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Due to the key role of trauma-related cognitions in the development and persistence of trauma-related disorders, an optimum ease of use and differentiation capacity of the questionnaire in the clinical setting are of particular importance. Precise knowledge of the existing patterns of cognition provides a starting point for planning therapeutic interventions in the treatment of trauma-related disorders and forms the main emphasis of cognitive-behavioural confrontation treatment as part of routine care at the Bundeswehr hospital. Where this is concerned, the PTCI is of particular importance since it permits identification of relevant maladaptive cognitions and, on the basis of stringent and differentiated treatment planning, facilitates timely treatment that is tailored to the individual.

While previous studies have dealt with victims of road accidents [11,12] Israeli patients with post-traumatic disorders [10] and victims of sexual violence [6] this study focuses on trauma in the context of military conflict, with a subsequent discussion of the results against the background of the specific trauma.

Hence, this study aims to develop a shortened military version of the PTCI to thus create a valid screening instrument for use in everyday clinical practice.

In a second step, the newly developed shortened questionnaire (PTCI–Short Version / PTCI-SV) was tested on a validation sample of 111 male soldiers. The aim is to provide a reliable instrument capable of identifying maladaptive cognitions in an economical way and thus facilitating treatment planning and therapeutic care.

Methodology

Study participants

In order to develop the shortened version of the PTCI, an initial data set consisting of 352 soldiers who underwent treatment at the Berlin Bundeswehr Hospital was considered. The shortened version of the questionnaire developed from this was subsequently validated using a second sample of 111 male soldiers traumatised on deployment.

The PTCI was used to examine all study participants on an inpatient basis for suspected deployment-related mental disorders. The data was collected at Berlin Bundeswehr Hospital over a period of 7 years. The soldiers examined presented to hospital after being referred by their unit surgeons, who at their respective bases have a similar role to that of a general practitioner.

The first sample data set (n=352) used to develop a shortened version of the PTCI consisted of 92.6% (n=326) male and 7.4% (n=26) female soldiers. Soldiers who had experienced an A1 Criterion event during deployment abroad involving armed conflict were included in the calculation. The Posttraumatic Stress Diagnostic Scale (PDS) was used to determine the existence of an "A Criterion". In 205 of the patients examined, deployment-related PTSD was identified as being the primary diagnosis by the specialist in psychiatry and psychotherapy during inpatient clinical diagnostic assessments. 147 soldiers received a different deployment-related primary diagnosis after specialist clinical assessment (37% [n=54]: adjustment disorder, 27% [n=40]: anxiety disorder, 24% [n=35]: depression, 12% [n=18]: other diagnoses).

The second data set, which was used to validate the shortened version (PTCI-SV), consisted exclusively of male soldiers.

All study participants in the second sample (N=111) were given the primary diagnosis of deployment-related PTSD. The diagnoses were made on the basis of inpatient assessment by the specialist in psychiatry and psychotherapy at Berlin Bundeswehr Hospital.

Measurement

The PTCI is an instrument for identifying dysfunctional cognitions in the context of potentially traumatic experiences. The original questionnaire consists of 33 items, which can be answered by means of a seven point self-rating Likert scale (1 = "totally disagree" to 7 = "totally agree"). The items can be assigned to three scales, with the "negative cognitions about the self" scale, which consists of a total of 21 items, being the longest scale followed by the "negative cognitions about the world" scale (seven items) and finally, the self-blame scale (five items). With $r_{(S)}$=0.57-0.75, the three scales demonstrate a medium to high degree of Intercorrelations. When first published [8] the individual scales showed an overall high degree of internal consistency ("negative cognitions about the self" [Cronbach's α=0.97]; "negative cognitions about the world" [α=0.88]; "self-blame" [α=0.86]; overall scale [α=0.97]).

For all three scales, the test-retest reliability coefficient was between 0.75 and 0.89 for a measurement interval of one week and between 0.80 and 0.86 after three weeks (ibid.). The German translation used was taken from Ehlers et al. [16].

The PDS [17] is a self-rating instrument for diagnosing PTSD as defined by the DSM-IV and ICD-10 criteria, a questionnaire making it possible to quantify the extent of the stress caused by posttraumatic symptoms. It is based on the DSM-IV diagnostic criteria, which are documented in a total of 49 items. Part 1 of the PDS corresponds to the A Criterion as defined by DSM-IV. The subject's state which of 12 potentially traumatic experiences their responses to the questionnaire will refer to. Part 2 of the PDS is closely based on the DSM-IV criteria and asks about symptoms regarding re-experiencing (Criterion B), avoidance (Criterion C) and arousal (Criterion D). Item 39 ascertains the duration of the symptoms and thus makes it possible to distinguish between acute and chronic PTSD. Item 40 is helpful for gleaning information about possible delayed onset PTSD. Responses to the items are provided using a four point Likert scale (0 = "not at all or only once last month" up to 4 = "five times a week / almost always"). The sum of item responses forms the total score, which can range from 0 to 51. Values between ≥ 0 and ≤ 10 indicate mild symptoms, ≥ 11 and ≤ 20 moderate symptoms, ≥ 21 and ≤ 35 moderate to severe symptoms and values greater than 36 very severe symptoms.

Information on the high degree of internal consistency (α=0.92 for the overall test, α=0.78 for the intrusion subscale and α=0.84 for the avoidance and hyperarousal subscales (ibid.)) can be found in the relevant literature. For the overall test, the test-retest reliability coefficient was 0.83 with 0.77 for the intrusion scale, 0.81 for the avoidance scale and 0.85 for the hyperarousal scale (ibid.). In the German translation [18] the total scale had an internal consistency coefficient of 0.94 the avoidance scale 0.90 the hyperarousal scale 0.89 and the intrusion scale 0.88 [19].

Statistical Analysis

Statistical analysis was performed using SPSS, Version 23.0.0.0 and AMOS for Windows Version 23. To this end, exploratory and confirmatory factor analyses were carried out. The Likert scales were treated as approximating interval data. Non-parametric tests were also used.

The exploratory sample consisted of 349 subjects. Three subjects responded to less than 85% of the questions. They were excluded from the calculation, thus resulting in n=352.

First, the PTCI items were evaluated using the exploratory sample (n=352) based on different parameters to allow initial item selection.

Based on the assumed correlation between the three factors, principal axis factoring with direct oblimin rotation was conducted three consecutive times as part of exploratory factor analysis. Fraction defectives of the items are not eliminated in conventional principal component analysis. This mostly leads to higher factor loadings. Measurement error variance was taken into account in the principal axis analysis, which resulted in a lower total variance explanation. However, this is closer to the "true variance" that Moosbrugger and Kelava [20]. The data was examined with regard to the response behaviour displayed in order to identify systematic response tendencies. Where less than 85% of the questions were answered, the subjects were excluded from further analysis. Missing individual values led to a list-specific exclusion.

As in the original study [8] items with a high loading (>0.50) on one factor and a small loading (<0.30) on all the other factors as well as sufficient commonalities (at least 0.50) were retained [21]. Items whose difficulty was too high or too low (<0.20 or >0.80) or which exhibited too low item-total correlation (<0.30) were excluded from further analysis [22].

After the selection of appropriate items, the shortened version of the questionnaire was examined with regard to reliability and validity by calculating the internal consistency (Cronbach's alpha) of the total scale and of each individual subscale.

The shortened version of the questionnaire (PTCI-SV) was validated using a second sample of 111 male soldiers traumatised on deployment.

After examination of the overall sample of 111 subjects for normality and multivariate outliers, one patient who did not fully complete the questionnaire was excluded from analysis. After calculating the Mahalanobis distance, a second subject was excluded from the sample (Mahalanobis d^2=35.14, p1=0.000). The final sample of 109 subjects showed a multivariate normal distribution with a critical ratio (c.r.) smaller than 5 (multivariate kurtosis =16.26, c.r. = 4.63).

The three-factor questionnaire structure was verified by subjecting this sample of 109 soldiers to an exploratory factor analysis with direct oblimin rotation. Subsequently, confirmatory factor analysis using structural equation modelling was performed to verify convergent and discriminant validity (recommendations by Moosbrugger und Schermelleh-Engel [23]). Reliability, factor validity, construct validity, item difficulty and item-total correlation were ascertained to validate the quality criteria. To determine model fit in accordance with Hu und Bentler [24] the cut-off values of the following criterion indices were defined as SRMR ≤ 0.08; RMSEA ≤ 0.06; Pclose ≥ 0.05 and CFI ≥ 0.90.

With regard to the reliability of the PTCI-SV, the internal consistency (Cronbach's alpha) of the total scale and the three subscales was as certained.

Results

Development of the shortened version of the PTCI

Three principal axis analyses with direct oblimin rotation were performed (Table 1). After the first principal axis analysis, 5 factors were extracted on the basis of the Kaiser-Guttman criterion, explaining a total of 54.90% of variance. Based on the primary and secondary loadings of the items and taking commonality into account, a total of 16 items were selected. A second principal axis analysis with direct oblimin rotation was performed on these 16 items which produced an explained variance of 56.81%. The eigenvalue analysis on the basis of the Kaiser-Guttmann criterion suggested a three-factor solution supported by the visual examination of the scree plot. A third principal axis analysis with direct oblimin rotation using the remaining 12 items confirmed the three-factor structure of the questionnaire, which was analogous to the original version [8]. The explained variance of the 12 items in the PTC-SV totalled 57%. In line with the factor loadings calculated, the number of items in the first scale of the questionnaire "negative cognitions about the self" was reduced from 21 to 8, in the second scale "negative cognitions about the world" from 7 to 2 and in the third scale "self-blame" from 5 to 2 (Table 2).

PTCI-SV validation

With a value of 0.82, the Kaiser-Meyer-Olkin measure demonstrated good sample suitability for exploratory factor analysis.

The twelve items in the PTCI-SV were examined by means of principal axis analysis with direct oblimin rotation. The three-factor structure was confirmed by visual examination of the scree plot. The explained variance of the first factor was 38.74%, of the second factor 9.96% and of the third factor 8.66%. The distributions of the factor loadings confirmed the original factor structure in the study conducted by Foa et al. [8].

The intra-factor item loadings document the good convergent validity of the PTCI-SV (Table 2).

With the exception of Item 4 ("I can't trust that I will do the right thing"), which had a secondary loading of 0.24, the secondary factor loadings (Table 2) were below 0.2. This demonstrates good discriminant validity. The component correlation matrix showed a moderate correlation between factors 1 and 2 with r=0.42, a weak correlation between factors 1 and 3 with r=0.19 and a very weak correlation between factors 2 and 3 with r=0.05.

A good to acceptable model fit for the PTCI-SV model developed was established using confirmatory factor analysis (Table 3).

Table 1: PTCI-SV Development Steps Based on Factor Loadings.

Exploratory sample (n=352)	Factor loadings $\lambda_{min}/\lambda_{max}$			TV (%)	h^2_i	P^2	r_{it}
items	I	II	III				
33 items (5 factors)	0.02/0.85	0.40/0.78	0.38/0.76	54.90	0.22/0.69	0.26-0.67	0.33-0.78
16 items (3 factors)	0.52/0.91	0.53/0.75	0.48/0.81	56.81	0.31-0.69.	0.31-0.65	0.41-0.75
12 items (3 factors)	0.55/0.92	0.79/0.79	0.66/0.75	62.10	0.51-0.69	0.31-0.57	0.39-0.77

Note: TV = total variance; h^2 = commonalities; P^2 = item difficulties; r_{it} = item total correlation

Table 2: Factor Loadings, Commonalities, Item Total Correlation and Item Difficulties in the Validation Sample (N=109) and the Exploratory Sample (n=352).

Items	Factor Loadings λ					
Validation sample (n=109)	I	II	III	h^2_i	P^2	r_{it}
1. I can't rely on myself	**0.65**	-0.16	0.15	0.55	42.20	0.53
2. I can't deal with even the slightest upset	**0.69**	0.15	-0.01	0.62	39.18	0.70
3. I am inadequate	**0.73**	-0.01	0.02	0.58	45.57	0.65
4. I can't trust that I will do the right thing	**0.62**	0.05	0.24	0.58	42.55	0.67
5. I am a weak person	**0.79**	-0.07	-0.02	0.66	48.94	0.65
6. My reactions since the event show that I am a lousy coper	**0.73**	-0.13	-0.03	0.63	57.17	0.57
7. I used to be a happy person but now I am always miserable	**0.76**	0.07	-0.14	0.66	59.04	0.67
8. I have permanently changed for the worse	**0.67**	0.19	-0.07	0.65	52.84	0.68
9. People can't be trusted	0.01	**0.79**	0.03	0.83	51.42	0.44
10. People are not what they seem	-0.06	**0.97**	0.00	0.87	55.50	0.46
11. There is something about me that made the event happen	-0.06	0.03	**0.93**	0.78	32.45	0.22
12. The event happened to me because of the sort of person I am	0.08	0.01	**0.42**	0.59	44.15	0.23
Eigenvalues	4.65	1.20	1.04	**6.89**		
Explained Variance (%)	38.74	9.96	8.66	**57.35**		
Exploratory sample (n=352)	I	II	III	h^2_i	P^2	r_{it}
1. I can't rely on myself	0.86	-0.07	-0.06	0.63	32.29	0.71
2. I can't deal with even the slightest upset	0.85	0.01	-0.07	0.68	25.88	0.75
3. I am inadequate	0.76	0.11	-0.12	0.61	31.75	0.71
4. I can't trust that I will do the right thing	0.74	0.07	0.06	0.66	32.88	0.76
5. I am a weak person	0.74	-0.07	0.08	0.54	34.69	0.68
6. My reactions since the event show that I am a lousy coper	0.67	0.06	0.05	0.53	36.08	0.69
7. I used to be a happy person but now I am always miserable	**0.65**	0.04	0.05	0.49	42.57	0.66
8. I have permanently changed for the worse	**0.58**	0.08	0.17	0.54	32.00	0.70
9. People can't be trusted	0.02	**0.80**	-0.01	0.66	42.53	0.53
10. People are not what they seem	0.03	**0.74**	0.03	0.60	50.44	0.53
11. There is something about me that made the event happen	-0.07	0.08	**0.79**	0.61	23.99	0.41
12. The event happened to me because of the sort of person I am	0.23	-0.04	**0.43**	0.32	35.82	0.43
Eigenvalues	5.57	0.68	0.61	**6.86**		
Explained Variance (%)	46.39	5.66	5.06	**57.11**		

Note: TV = total variance; h^2 = commonalities; P^2 = item difficulties; r_{it} = item total correlation

When tested using Cronbach's alpha, the total scale demonstrated an internal consistency of α=0.86, the "negative cognitions about the self" scale had α=0.89, the "negative cognitions about the world" scale had α= 0.86 and the "self-blame" scale α=0.61. The results of item total correlation are acceptable (Table 2). The different calculation steps are shown individually in Tables 1-5.

Discussion

A factor analytic approach was chosen as the basis for validating the shortened version of the PTCI [8] using a reduced item pool of 12 items. The three factors obtained correspond to the scales of the long version and permit meaningful interpretation.

The results suggest that the PTCI-SV, which demonstrated good internal consistency with α=0.86 for the total scale, is a sufficiently reliable and practicable instrument.

Compared to the original version, the explained variance of the individual scales in the PTCI-SV amounts to 57.35%. The explained variance of the "negative cognitions about the self" subscale is 38.74% compared to Foa et al. [8] with 48.5%. The explained variance of the "negative cognitions about the world" scale was 9.96%. Foa et al. [8] reported an explained variance of 4%. The explained variance of 8.66% of the "self-blame" scale was also higher than in the original study (3.4%).

The low to moderate degrees of Intercorrelations (0.09 to 0.40) in the shortened version demonstrate greater independence among the subscales compared to the long version.

The PTCI-SV is significantly shorter than the original version and can thus be used more economically in everyday clinical practice. With a completion time of less than 5 minutes for 12 items, its acceptance by future subjects may also improve, especially in a military context.

The time-efficient assessment of cognitive thought patterns of soldiers traumatised by war based on the PTCI-SV can thus contribute to a better understanding of diagnostic and therapeutic planning as part of the medical care provided to German soldiers.

Its use so far in the planning and evaluation of therapeutic interventions confirms the instrument's importance for clinical care [24-28].

Based on a look at the changes of the individual PTCI factors during cognitive-behavioural trauma therapy, indications can be given for an improvement in treatment offers provided to German soldiers in an in-patient setting. Especially soldiers with chronic and complex illnesses whose PTCI scores reveal a multitude of trauma-related, maladaptive cognitions would benefit from a further differentiation of trauma therapy methods [27]. The PTCI-SV could also be used as a meaningful instrument in further studies as part of the differential selection of appropriate trauma confrontation

Table 3: Goodness of Fit Indices for CFA Model Fit (n=109).

	χ2	*df*	*p*	*B-S p*	*χ2/ df*	CFI	RMSEA	SRMR	Pclose	TLI
Guidelines for good fit			≥ 0.05	≥ 0.05	0.00-2.00	>0.95	<0.06	<0.09	>0.05	≥ 0.95
acceptable fit					2.00-4.00	>0.90	0.05-0.10	<0.10		
Validation sample (N=111)	59.34	41	0.032	0.17	1.45	0.97	0.06	0.04	0.25	0.95

Note: $\chi 2$ = Chi² difference test; df = degrees of freedom; p = level of significance; B-S p= Bollen-Stine Bootstrap null hypothesis testing (5% significance level); $\chi 2$/ df = df to chi² ratio; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardised root mean square residual; Pclose = level of significance of RMSEA (<5%) for closeness of fit; TLI= Tucker Lewis Index; guidelines for good and acceptable model-fit [24-26].

Table 4: Confirmatory Factor Analysis Outcomes.

Validation sample (N=109)	**λ (β)**			***p***	**R^2 (h^2)**	**B**	**S.E.**
items	**I**	**II**	**III**				
F_1	0.62			< 0.001	0.48	0.88	0.13
F_2	0.76			< 0.001	0.57	1.09	0.20
F_3	0.75			< 0.001	0.60	1.03	0.15
F_4	0.72			< 0.001	0.68	1.00	n.a.
F_5	0.75			< 0.001	0.58	1.15	0.25
F_6	0.69			< 0.001	0.53	0.98	0.27
F_7	0.77			< 0.001	0.68	1.11	0.31
F_8	0.76			< 0.001	0.62	1.15	0.30
F_9		0.82		< 0.001	0.67	1.54	0.13
F_10		0.90		< 0.001	0.82	1.54	0.13
F_11			0.66	< 0.001	0.56	1.38	0.16
F_12			0.69	<0.001	0.48	1.38	0.16
x β	**0.73**	**0.86**	**0.68**				

Note: β = standardised regression weights; p = level of significance; R^2 = explained variance (commonalities); B = unstandardised regression weights;

Table 5: Factor and Correlation Matrix Validation and Reliability Criteria.

Validation sample (n=109)	**CR**	**AVE**	**MSV**	**MaxR(H)**	**Neg_Self**	**Neg_World**	**Self-blame**
Factors	**Validation and reliability criteria**				**Correlation matrix**		
Neg_Self	0.95	0.59	0.23	0.90	**0.77**		
Neg_World	0.87	0.73	0.23	0.94	0.48 (p<0.001)	**0.86**	
Self-blame	0.69	0.56	0.06	0.95	0.25 (p =0.12)	0.13 (p=0.33)	**0.72**

Note: CR = composite reliability; AVE = average variance extracted; MSV = maximum shared variance; MaxR (H) = maximal reliability (more robust than composite reliability); correlation matrix values on the diagonal = square root of the AVE

methods to treat different types of deployment-related trauma (e.g. fear as a result of having been under attack versus guilt as a result of killing adversaries).

Last but not least, the fact may be of importance in future that in addition to traumatic experiences associated with fear, soldiers in combat often encounter situations which involve their own moral wrongdoing (transgression) or moral wrongdoing by others (betrayal) which can be subsumed under the term "moral injury" [13,14].

A further differentiated analysis of the associated maladaptive cognitions and feelings of guilt and shame, war-related helplessness and powerlessness in relation to the self and the world is certainly indicated in the future. Larger samples should be used in such a study.

Limitations

The aim of designing a study of relevance to the practitioner in his/her everyday clinical work entails certain methodological limitations. Potentially confounding variables, such as comorbid disorders, were not excluded in the selection of the soldiers to be studied.

Also, no distinction was made between the individual deployment-related disorders in the development of the shortened version. Rather, all patients who stated that they had suffered traumatic experiences during deployment were included in the calculation and the different disorders combined in the shortened version. It was not until the subsequent validation of the PTCI-SV that only the data of soldiers with deployment-related PTSD was examined.

Further research should also address the issue of differentiation between potentially different patterns of cognition associated with different types of post-deployment disorder. Recent studies have shown that among other things, experiencing mental health problems before deployment abroad is an important predictor for developing trauma-related post-deployment disorders [1]. This constitutes a further limitation of this study, since it does not take into account the impact and severity of possible pre-existing illnesses.

The share of female soldiers in this sample, which totals 7%, is too small for the shortened version to be meaningfully used for female soldiers. The authors' view is that examining a female sample using the PTCI-SV will not yield reliable information because the shortened version was only validated on male soldiers. Hence, it is imperative that further research take account of gender-related characteristics in the military context when measuring maladaptive cognitions [29].

Conclusion

Despite the high prevalence of mental illness among soldiers with operational experience, only around 20% of those affected seek professional treatment [1]. It seems that there is still a significant barrier to accepting treatment for trauma suffered during deployment, and the special features of the Bundeswehr context mentioned in the introduction should not be overlooked either.

The PTCI-SV is a time-efficient and valid instrument which can in future be used in therapeutic care to improve understanding of the characteristics of maladaptive cognitions in this subgroup.

In addition, it is absolutely essential that deployment-related patterns of cognition in soldiers be considered in the further differential intervention planning of appropriate treatment measures. This could also help optimise the selection of an appropriate focus during confrontation therapy [30-31]. The study of specific patterns of cognition in soldiers suffering from deployment-related trauma could in future be expanded to include research regarding their own moral wrongdoing (transgression) and moral wrongdoing by others (betrayal) in combat situations in order to provide soldiers with better and more differentiated treatment in this context too.

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2.2 Effectivness of Eye Movement Desensitization and Reprocessing in German Armed Forces Soldiers with Post-Traumatic Stress Disorder under Routine Inpatient care conditions

(Köhler, K., Eggert, P., Lorenz, S., Herr K., Willmund, G., Zimmermann, P., Alliger-Horn, C. (2017). Effectivness of Eye Movement Desensitization and Reprocessing in German Armed Forces Soldiers with Post-Traumatic Stress Disorder under Routine Inpatient care conditions. Military Medicine, 182, 1672-1680. https://doi.org/10.7205/milmed-d-16-00307)

Der Einsatz von traumakonfrontativen Methoden in der Therapie einer PTBS gehört zum Standard der Versorgungspraxis in der Bundeswehr und richtet sich nach den Leitlinien der AWMF (Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaft e.V.) zur Behandlung von Traumatisierten. EMDR ist neben Kognitiv-behavioraler Therapie und der Anwendung imaginativer Expositionsmethoden seit Jahrzenten am Bundeswehrkrankenhaus Berlin etabliert.

Obwohl EMDR zu den etablierten Methoden der Traumatherapie gehört, ist die Wirkung unter Praxisbedingungen bei aktiven Soldaten mit komorbiden Störungsbildern kaum untersucht (Sharpless und Barber, 2011) und einige Autoren berichten zudem von einer unzureichenden Wirksamkeit dieser Methode (Albright, L. & Thyer, B., 2010; Schottenbauer et al. 2008). Vor diesem Hintergrund erscheint es von Relevanz, EMDR unter Praxisbedingungen bei aktiven Soldaten in einer Effectivness-Studie zu betrachten. Die folgende Publikation beschreibt an einer Untersuchung von 96 Patienten mit einsatzbedingter PTBS und zusätzlicher Komorbidität (Treatment vs. Wartelistengruppe) eine nur mäßige Effektivität für EMDR (d = .77) unter realen klinischen Bedingungen, die unter der berichteten Wirksamkeit in zivilen Stichproben liegt (Watts et al. 2013). Es werden Ursachen und Schlussfolgerungen für die weitere psychotraumatologische Versorgung diskutiert.

MILITARY MEDICINE, 182, 5/6:e1672, 2017

Effectiveness of Eye Movement Desensitization and Reprocessing in German Armed Forces Soldiers With Post-Traumatic Stress Disorder Under Routine Inpatient Care Conditions

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ABSTRACT Background: Post-traumatic stress disorder (PTSD) is one of the more commonly occurring mental disorders following potentially traumatizing events soldiers may encounter when deployed abroad. One of the first-line recommended treatment options is eye movement desensitization and reprocessing (EMDR). The number of studies assessing the effectiveness of EMDR in German soldiers under routine conditions is currently almost nil. Methods: A retrospective, quasi-experimental effectiveness study on EMDR in an inpatient setting is presented using a prepost design. The study compares symptom reduction in soldiers ($N = 78$) with a wait-list ($N = 18$). Effect sizes of EMDR were measured for PTSD, symptoms of depression, and general mental health. Results: Effect size for EMDR treatment of PTSD was $d = 0.77$; 95% confidence interval (CI): 0.51 to 1.36, for symptoms of depression $d = 0.99$; 95% CI: 0.31 to 1.36, and for general psychiatric symptoms $d = 0.53$; 95% CI: 0.17 to 1.21. The effects resulting from EMDR treatment were somewhat weaker than those reported in comparable studies in civilians. Conclusion: EMDR therapy is an effective treatment to reduce symptoms of PTSD and depression. However, in the military context it needs to be complemented by treatment options that specifically address further conditions perpetuating the disorders.

INTRODUCTION

German Armed Forces (GAF) have been participating in multinational military missions worldwide, since 1992. Over 90% of the 320,000 individual German soldiers since deployed went through potentially traumatizing events[1] that had not been part of their experience, since the end of World War II. Events like having to recover semidecayed bodies from mass graves, being subjected to injury and death by suicide bombers, improvised explosive devices, and intense combat[2–4] severely affected these soldiers' mental health and ability to serve. Treatments for deployment-related mental disorders in Germany's Centers for Military Mental Health (CMMH) have more than quintupled, since 1992.[5]

In parallel, research into trauma and stressor-related disorders such as post-traumatic stress disorder (PTSD) has intensified. The 12-month prevalence of PTSD in 1,599 German soldiers after deployment to Afghanistan was 2.9%, life-time prevalence 4.6%.[4] Here researchers estimated 45% case underreporting.[4] By comparison, prevalence rates in U.S. combat troops in the Afghanistan operations were 9% for low intensity combat, 17% for medium, and 29% for high intensity situations.[6] Meta-analysis of 28 studies from different nations shows affliction-probability for full-blown PTSD after military deployment to either Afghanistan or Iraq to be 10.3% to 13.2%[7]. Prevalence in the British Armed Forces falls between 4%[8] and 7%[9].

Today, many nations have established eye movement desensitization and reprocessing (EMDR) as treatment of choice for PTSD.[10–12] Previously, EMDR treatment outcomes were studied under controlled conditions through efficacy studies,[13] which routinely exclude comorbid conditions. The superiority of EMDR over other trauma-focused, cognitive-behavioral treatment methods was thus amply proven.[14,15] EMDR works better than pharmacotherapy alone and has lower nonadherence.[16] EMDR was shown to be efficacious in civilian populations,[17–19] in refugees,[20] and in soldiers.[21–25]

However, a fuller evaluation of EMDR for the military needs more than efficacy studies. It must be tested under real-life conditions in a typical treatment setting with the environmental variables and the comorbid conditions typical of deployed soldiers. A comprehensive assessment of post-traumatic ailments and their treatment will require the technical arsenal of effectiveness research to ascertain external validity.[26] New data showed that deployed soldiers experience far more than the widely studied and acknowledged potentially traumatizing A-criteria,[27] i.e., events which a person "experienced, witnessed, or was confronted with [. . .] that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others" and "where the person's response involved intense fear, helplessness, or horror." Rather, it was observed that deployed soldiers experience other military-specific stressors such as conflicts with peers or superiors, alienation from partners, family, and friends, long service hours, and witnessing

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of suffering and misery in the indigenous population[28] which, in combination, may increase the probability of maladaptive coping.[29] Dysfunctional normative and value shifts, even changes in the personal value orientation may further compound psychopathology,[29] as may feelings of guilt and shame,[30] or moral injury.[31–33] It was shown that 63% of soldiers with postdeployment PTSD suffered from one or more comorbid disorder such as severe depression, anxiety or panic attacks, and substance use disorders.[34–36] With its efficacy assured, there is presently not enough evidence on the effectiveness of EMDR in armed forces personnel.[36–38] EMDR, extended treatment modalities, and complementary integrative therapies for the treatment of postdeployment psychoreactive disorders are treated in the present study. To optimize treatment, all clinical methods commonly recommended and used in homeland civilian care were field tested in GAF CMMHs, over two decades. As a number of those yielded clearly unsatisfactory results in soldiers,[37–39] attention turned to why. Effectiveness studies are better suited to identifying the best treatments for disorder-specific mental health programs and the multiple comorbidities common postdeployment soldiers. The present effectiveness study adds to the body of knowledge on soldiers' PTSD and general mental health status changes through EMDR treatment in a routine military inpatient care.

SAMPLE

The study included N = 96 German soldiers, criteria-conforming to PTSD as per International Classification of Diseases, 10th Revision, Clinical Modification[40] and Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.[27] Participants were EMDR inpatients treated at Berlin CMMH.

Participant Selection

Indication for, referral to, and assignment to inpatient EMDR treatment (treatment group [TG]) or wait-list (control list/group [CL]) groups was done by the outpatient department. In 1 to 2 hour sessions, three commonly used psychometric instruments (post-traumatic stress diagnostic scale [PDS], Beck Depression Inventory-II, Symptom Checklist-90, Revised [SCL-90R]) were administered to support principal and comorbid diagnoses. All diagnoses were made clinically by experienced military psychiatrists and military psychologists, after a personal interview of each participant where a complete mental health history was obtained. Selection and psychometric assessment were random, following the real-life capacity of the department. This resulted in rich comorbidity data for 50% of participants, a feature of the chosen effectiveness design as explained under Limitations section.

Sample Structure

Average age was 32 years (SD = 7.95, range = 20–56 years). Of the 96 patients, n = 78 received a complete EMDR treatment, n = 18 were randomly assigned as controls to a wait-list. The proportion of women in the sample was n = 8 vs. men at n = 88, with gender distributions being similar in groups (CL: ♀ = 11.1%, ♂ = 88.9%; TG: ♀ = 7.7%, ♂ = 92.3%). Of the 96 patients, 4.8% (4 patients) showed moderate, 63.1% (53) moderate to severe, and 32.1% (27) severe PTSD symptoms. Additionally, 30.2% (29) qualified as mildly depressed, whereas 57.3% (55) showed clinically significant symptoms of depression. The prevalence of comorbid disorders was clinically ascertained in 34 randomly chosen respondents, due to resource restraints. As illustrated in Table I, the rate of comorbid disorders found was higher than in a sample of German soldiers with PTSD studied previously (Küster/Köhler et al, unpublished, 2016) (Table I).

Time between first clinical diagnosis and onset of treatment was defined wait time. It was 2 to 3 weeks and corresponded to average wait-times for inpatient treatment in comparable military settings.

ASSESSMENT METHODS

The TG was assessed psychometrically before (t_1) and after conclusion (t_2) of EMDR treatment. Participants in CL were similarly assessed at their first outpatient visit (t_1) and at the end of wait-time (t_2) with the identical psychometric self-report tests. The main outcome variable, PTSD symptom severity, was derived using the German version of the Posttraumatic Stress Diagnostic Scale (PDS) (Ehlers et al, unpublished data, 1996,). This 49-item self-report measure is recommended for use in clinical and research settings and assesses potentially traumatizing events according to

TABLE I. Numbers and Rates of Comorbid Mental Disorders in Comparison to a Study by Küster/Köhler et al

ICD-10 diagnosis	Present Study N = 34	In %	Küter et al N = 100	In %
F1x.x (Substance Use Disorders)	5	15	10	10
F3x.x (Affective or Mood Disorders)	9	26	13	13
F4x.x (Psycho-reactive Disorders)	9	26	11	11
F6x.x (Personality Disorders)	6	18	7	7
Z73 (Problems Related to Life-management Difficulty)	0	0	3	3
No Comorbid Mental Disorder	5	15	56	56
Comorbidity Not Assessed	(44)	—	—	—
N total/percentage	78	100	100	100

The percentages in the left column refer only to a subset of N = 34 of the total sample size of N = 78. Comorbid diagnoses of all included PTSD patients could not be assessed as is further explained under Limitations section.

Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition such as accidents, natural disasters, or combat experience. The PTSD symptoms are based on 17 items on a four-point scale (0 = "never/only once during the past month" to 3 = "5 times per week or more/nearly always"). The symptom severity score, ranging from 0 to 51, indicates from 1 to 10 a "mild," 11 to 20 a "moderate," 21 to 35 a "moderate to severe," and 36 or higher a "severe" PTSD symptom severity. It showed high internal consistency (Cronbach-α) for the subscale re-experiencing of 0.90, avoidance and emotional numbing of 0.89, and for hyperarousal of 0.88. The α across all subscales was 0.94.[41] Test-retest reliability was $r = 0.83$, after 3 weeks, across all subscales.[42]

To assess changes in comorbid depressive symptoms the German version of the 2nd edition Beck Depression Inventory (BDI-II) was used.[43] This self-report scale consists of 21 items rated on a 4-point scale from 0 = minimal to 3 = severe. The total score varies between 0 and 63 and indicates minimal depression from 0 to 13 points, mild depression from 14 to 19, moderate depression from 20 to 28, and severe depression from 29 to 63. Internal consistencies were $0.84 \leq \alpha \leq 0.94$ and test-retest reliability was $r = 0.78$ over a 5-month-period.[44]

To evaluate general psychiatric symptom severity the Symptom Checklist-90, Revised (SCL-90-R)[45] was employed. Using 90 items with a 4-point scale from 0 = never to 4 = very strongly it assesses subjective psychological symptom load and calculates a sum score, SCL-Global Severity Index (GSI). The German version SCL-90-R showed internal subscale-consistencies from $\alpha = 0.75$ to 0.88. The GSI shows a high $\alpha = 0.97$.[46] Test-retest reliability was $r = 0.90$, after 1 week.[47]

TREATMENT SETTING

Battalion level medical officers identify mental health needs and direct soldiers to the closest treatment facility.[28] For this study, a naturalistic, standard inpatient program was used. Participants start at Berlin CMMH with a week-long diagnostic assessment. Before trauma exposure treatment, they undergo symptom stabilization protocols by a clinician comprising techniques like progressive muscle relaxation or the "Safe-Place" imaginative method over 3 individual sessions of 50 minutes.

TREATMENT DESCRIPTION

EMDR is a psychotherapeutic approach, where memory representations of traumatic life experiences are processed to change dysfunctional beliefs that originated from negative experiences. Key in EMDR therapy is bilateral stimulation, therapist-guided 30-second eye movements which initiate information processing on targeted memory during which the patient focuses and holds in mind the currently most distressing traumatic event. This continues until the disturbance level associated with the target memory drops to zero. This is based on an Adaptive Information Processing model,[48] which holds that memories are organized in memory networks, linked to each other according to affective affinity by way of emotionally similar memories and forming so-called "channels." When trauma occurs, content of the implicit or procedural memory can become "frozen in time" and may become blocked from conscious, explicit, or narrative memory. It becomes conscious as state-dependent memory in the form of triggered flashbacks or intrusions in situations that remind the patient of the blocked memory by way of a trauma-related sensory stimulus (trigger). EMDR therapy takes advantage of this network by deliberately triggering the trauma network and by using eye movement to downregulate hyperarousal, thus desensitizing and reprocessing traumatic memories.

Participants at GAF CMMH are given 4 weeks of EMDR treatment by a certified trauma therapist. Trauma exposure takes place in 2 to 3 individual sessions of 90 to 100 minutes, each week. The sessions follow the EMDR Standard-Protocol[49,50] and consist of an eight-phase psychotherapy approach (1-history and treatment planning, 2-preparation, 3-assessment, 4-desensitization and reprocessing, 5-installation, 6-body-scan, 7-closure, and 8-re-evaluation). Adverse effects were monitored by observation during reprocessing, by active questioning at the beginning and the end of each EMDR session. During hospitalization, participants in TG also take part in multimodality companion treatments, such as aroma therapy, massage, sports, and exercise regimens as well as relaxation training, as proven to be useful.

STATISTICAL METHODS

Statistical analysis was done using SPSS 22.0 (IBM, Armonk, New York). Analysis of dropouts and missing data was unnecessary by virtue of the control group design. To check for means differences and interdependency effects we performed two-factor analysis of variance (ANOVA) with repeated measurements. Hypotheses expected to result in differences between the two assessment times were tested using Student's t tests, significance level $\alpha = 0.05$. On direct pre-post-comparisons parametric testing was used to maintain comparability to other studies in the literature. Calculations were checked by nonparametric test. In case of large-scale discrepancies, the results of the nonparametric tests were reported. Using purely nonparametric testing would have degraded the validity of parametric effect sizes for Cohen's d and would have diminished comparability with the existing literature. Because of dissimilar group sizes, effect size had to be corrected[51,52] and the subsequent interpretation of the effect sizes was done following Cohen.[51] To detect clinically relevant changes in symptom load by group on the Reliable Change Index (RCI),[53] where not the absolute value but the direction of change is detected. To eliminate inherent measurement error, we adjusted the RCI according to Christensen and Mendoza.[54] Whenever we encountered an RCI ≥ 1.96, we assumed reliable change at $p < 0.05$. Detecting significant

level changes, i.e., from a dysfunctional to a functional level and vice versa, was accomplished by setting a cutoff value for clinical significance (CS) in accordance with Jacobson and Truax.[55]

Combining these criteria we defined four treatment outcomes: If both criteria (sufficient RCI and CS above cut-off) are met, the patient's status is "recovered." If only the RCI-criterion is met, the patient is termed "improved." If neither criterion is met, the status becomes "unchanged." If the RCI shows negative values, status is set to "worsened."

RESULTS

Following Foa's guidelines of the $N = 96$ patients, at time t_1, 4 (4.8%) showed moderate, 53 (63.1%) moderate to severe, and 27 (32.1%) severe PTSD symptoms.[56] Total mental symptom load as measured by the SCL-90-R's GSI showed a mean index score of $M = 69.95$ (SD = 7.89). Expressed depression according to the classification by Hautzinger et al[43] showed the sample contained 29 patients (30.2%) who met the criteria for mild (subclinical) depression, whereas 55 patients (57.3%) met those for clinical depression. Twelve patients (12.5%) were without complaint.

According to Table II there were no significant differences between groups in the means of all primary parameters (Table II). ANOVA showed patients with EMDR-treatment experienced (t_2) a marked drop in all PTSD symptoms at $F_{(1,94)} = 11.818$, $p < 0.01$. Concretely, participants in TG who had, at t_1, score means equal to CL scored lower on the PDS total scale at t_2, after treatment, with $t(77) = 10.033$, $p < 0.001$. The observed effect size as illustrated in Table III was $d_{corr} = 0.77$; 95% confidence interval (CI) = 0.51 to 1.36. Likewise, results showed that for intrusive symptoms at ($F_{(1,94)} = 4.366$, $p < 0.05$), avoidance at [$F_{(1,94)} = 14.430$, $p < 0.001$], and hyper-arousal at [$F_{(1,94)} = 7.946$, $p < 0.01$] patients benefited greatly from EMDR (Table III). This means that patients in TG who had the same initial PDS scores as CL reported significantly lower score values, as depicted in Figure 1 at t_2, across three of the four subscales and in the sum score (Fig. 1).

Moving with PTSD symptom severity, some 79.5% of patients in TG showed reclassification into a lower status group at the end of treatment, whereas members of CL showed improvement of symptoms in only 38.9% (TG: χ^2 (6, $N = 78$) = 13.425, $p < 0.05$ vs. CL: χ^2 (3, $N = 18$) = 3.150, $p = 0.369$).

Testing score changes for clinical relevance showed that 50% ($N = 39$) of respondents in TG achieved reliable change. Of these, almost all ($N = 37$) showed clinically significant improvement. There was no detectable worsening in TG, while 72.2% ($N = 13$) of CL showed no change and only 22.2% ($N = 4$) showed reliable improvement in symptom severity. Of these, 2 had clinically significant improvement. The group difference between TG and CL was significant by χ^2 (2, $N = 96$) = 8.186, $p < 0.05$.

The study found a significant reduction in the overall mental health symptom load as per SCL-90-R GSI at $t(77) = 7.158$, $p < 0.001$, for patients treated with EMDR. Total symptom load did not change in the CL group. ANOVA revealed that EMDR-treatment led to a significant reduction in symptom load at $F_{(1,94)} = 6.42$, $p < 0.05$, and to a sizeable treatment effect of $d_{corr} = 0.53$; 95% CI = 0.17 to 1.21. Also for changes in symptoms of depression, TG could be shown to have accrued significant differences at $t(77) = 8.43$, $p < 0.001$. In CL there were no changes. Here too, ANOVA showed clear improvements in patients treated with EMDR by $F_{(1,94)} = 18.32$, $p < 0.001$, and an effect size of $d_{corr} = 0.991$; 95% CI = 0.31 to 1.36.

In sum and as assessed by RCI, the TG showed a clinically reliable improvement of 69.2% in the GSI-value in 43.6% ($N = 34$) of participants, whereas 25.6% ($N = 20$) were clinically recovered. Some 5.1% ($N = 4$) showed worsening in their psychiatric symptom load and 25.7% ($N = 20$) showed no change in the RCI. In CL, we found only slight changes: 55.6% ($N = 10$) were unchanged, 16.7% ($N = 3$) improved, 11.1% ($N = 2$) recovered, and 16.6% ($N = 3$) worsened. The 2 conditions are markedly different from each other at $\chi^2(3, N = 96) = 11.46$, $p < 0.01$. Finally, the expected group differences were present also with regard to changes in the diagnostic status on depression at χ^2 (3, $N = 96$) = 17.83, $p < 0.001$. The study saw 51.3% ($N = 40$) of patients in TG as recovered, whereas only one (5.6%) respondent in CL qualified as that. The status of improved was obtained by 9% ($N = 7$) of TG as opposed to none in CL. Within this group (CL), 77.8% of patients stayed unchanged, a status that pertained to only 34.6% ($N = 27$) in TG.

DISCUSSION

Although there has been scattered criticism of the use of EMDR,[18,38,57] this effectiveness study provides evidence that

TABLE 2. Mean Difference of PDS Scales by Group Affiliation

	EMDR ($N = 78$)		CL ($N = 18$)	
	M_{Pre} (SD)	M_{Post} (SD)	M_{Pre} (SD)	M_{Post} (SD)
PDS Total Symptom Severity	1.817 (0.417)	1.106 (0.703)*	1.860 (0.345)	1.701 (0.563)
Subscale Re-experiencing	1.839 (0.581)	1.205 (0.782)*	1.967 (0.424)	1.711 (0.618)
Subscale Avoidance and Numbing	1.643 (0.536)	0.921 (0.726)*	1.479 (0.712)	1.500 (0.599)
Subscale Hyperarousal	1.995 (0.555)	1.256 (0.841)*	2.144 (0.454)	1.967 (0.587)

M_{pre}, = mean at Premeasuring time; M_{post}, mean at postmeasuring time; N, sample size. *$p < 0.001$.

TABLE III. Results of the ANOVA, *t* tests, and Effect Size of PTSD Symptoms, Symptoms of Depression, and General Mental Health

				EMDR (N = 78)	CL (N = 18)	
		F(df)	p Value	t(df)	t(df)	d_{corr}
PDS total symptom severity	EMDR	6.797 (1,94)	<0.05			
	Measurement Time (MT)	29.327 (1.94)	<0.001			0.77[b]
	EMDR × MT	11.818 (1,94)	<0.01			
	Pre-Post-Difference			10.033 (77)*	1.206 (17)	
PDS Reexperiencing	EMDR	4.596 (1,94)	<0.05			
	Measurement Time (MT)	24.169 (1,94)	<.001			0.44[a]
	EMDR × MT	4.366 (1,94)	<0.05	7.954 (77)*	1.706 (17)	
	Pre-Post-Difference					
PDS Avoidance and Numbing	EMDR	2.327 (1,94)	n.s.			
	Measurement Time (MT)	12.857 (1,94)	<0.01			1.108[c]
	EMDR × MT	14.430 (1,94)	<0.001			
	Pre-Post-Difference			8.806 (77)*	−0.104 (17)	
PDS Hyperarousal	EMDR	8.430 (1,94)	<0.01			
	Measurement Time (MT)	21.200 (1,94)	<0.001			0.611[b]
	EMDR × MT	7.946 (1,94)	<0.01			
	Pre-Post-Difference			8.341 (77)*	1.147 (17)	
SCL 90-R GSI-Score	EMDR	8.388 (1,94)	<0.01			
	Measurement Time (MT)	14.776 (1,94)	<0.001			0.53[b]
	EMDR × MT	6.419 (1,94)	<0.05			
	Pre-Post-Difference			7.158 (77)*	0.848 (17)	
Beck-Depressions-Inventar II	EMDR × MT	18.322 (1,94)	<0.001			0.991[b]
	Pre-Post-Difference		<0.001	8.586 (81)*	—0.786 (19)	

F, test value of repeated-measure ANOVA; df, degrees of freedom; p, error probability, t test value of paired-samples t tests; d_{corr}, standardised difference between 2 means corrected according to Klauer. [a]Small effect size. [b]Medium effect size. [c]Large effect size. *$p < 0.001$.

EMDR is a solid and beneficial treatment option under real-life conditions in the framework of inpatient treatment of GAF soldiers with comorbid conditions and psychiatric multimorbidity. It can effectively reduce symptom load of PTSD and depression. However, the effect size in evidence here: d_{corr} = 0.77 for EMDR treatment of PTSD, compares unfavorably with those reviewed in meta-analyses of efficacy studies in civilian populations with similar prepost designs. There, effect size values in the order of d = 1.01,[58] d = −1.17; 95% CI = −2.04 to −0.30,[15] or d = −1.08; 95% CI = −1.83 to −0.33[59] were obtained. Compared to corrected effect sizes of TG vs. CL, our results were comparable to those of Davidson and Parker[60] at d = 0.85 and stronger than those of Chen et al[11] at g = −0.662; 95% CI = −0.887 to −0.436. Comparing the results of efficacy studies in the military context, the study found them to yield effect sizes in the range of d = −0.36 to d = −1.73.[38] When assessing the effect of EMDR on overall mental symptom load the results for depression at d_{corr} = 0.99 were stronger than those reported by Chen et al[11] at g = −0.643; 95% CI = −0.864 to −0.422 and weaker than those of Hase et al[61] at d = 1.02 or Cusack et al[59] at d = −1.13; 95% CI = −1.52 to −0.74. When comparing this to previous results of effectiveness studies at CMMH it shows a stronger effect of EMDR on PTSD than the d = 0.62 reported previously, but weaker effect on depression which was d = 1.17 in that study.[62] Comparing effect size of EMDR on PTSD with other psycho-therapeutic treatment methods places our EMDR-outcomes under real-life conditions (i.e., effectiveness study) into the lower third of all reported effect sizes. Cognitive Processing Therapy showed higher effect sizes in efficacy studies on civilians at d = −1.40; 95% CI = −1.95 to −0.85, whereas Cognitive Therapy showed d = −1.33; 95% CI = −1.99 to −0.67, pure CBT Exposure (PTSD Symptoms) d = − 1.27; 95% CI = −1.54 to −1.00, and Narrative Exposure Therapy d = −1.25; 95% CI = −1.92 to −0.58.[59] Furthermore, some studies show that veterans generally benefit less from established treatment methods for PTSD.[38] Steenkamp et al[37] showed that soldiers with war-related PTSD respond markedly less well to the two most commonly employed treatment methods, Cognitive Processing Therapy and Prolonged Exposure with d = 0.78 to 1.10. Studies also observed a high rate of nonresponse in both military and civilian PTSD patients of up to one-third,[37,63] an increased dropout rate from therapy,[64] and a high rate of persistent residual symptoms despite attained improvement.[37]

That war-related trauma poses additional challenges when compared to civilian causes of PTSD[38] is fittingly illustrated by the present study. It shows the moderate total ability of the otherwise highly effective and efficacious treatment method, EMDR, to adequately reduce PTSD symptom load in soldiers. Causes could be the higher number of A-criteria acting parallel in military patients,[65] the often delayed and incomplete care-seeking of military personnel,[66,67] which often result in higher rates of under-treatment and chronification. Possible motives for the observed delays in care-seeking could be unwillingness to face one's own fragility and fundamental

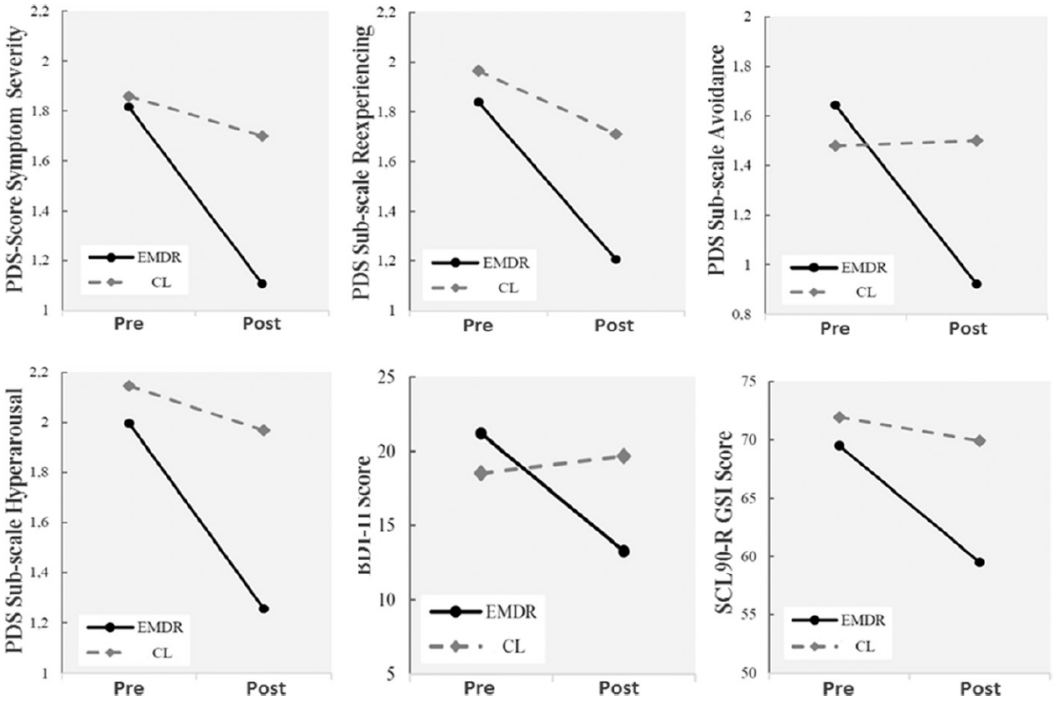

Figure 1. Means of PDS Score Symptom Severity and Subscales Re-experiencing, Avoidance, Hyperarousal, Mean of SCL90-R GSI-Score, and BDI-II Score pre-post-measurement (group comparison EMDR vs. CL). Difference between Pre-measurement time (t1) and Post-measurement time (t2) = five weeks.

psychologic vulnerability, further self-stigmatization through the label of "PTSD," [68] drinking and partnership trouble or the presence of moral injury and changes to one's moral orientation during deployment.[29] Another barrier to care may lie in a presumed danger to the military career perspective and the anticipated loss of status within one's unit.

So may feelings of guilt and shame,[69] the reduced ability to trust others,[33,70] the experience of diminished control or the perception of recognition not given where due for the accomplishments and sacrifices of war lead to bitterness and negative cognitions that can powerfully interfere with the healing. To capture and address the largest part of these many influencing variables, treatments and therapies have to be multimodal and interdisciplinary. Complementary medical and psychosocial offerings can help effect changes in the personality, in the comorbid disorder array, and in the systemic social and family arenas[71] and integrate them better with EMDR.[65] Standardized therapy is not enough. The frequent relationship problems of PTSD patients must be addressed and extend to the management of relations to family, friends, and coworkers. Failure to do so can result in an intolerably high level of additional stress, higher rates of verbal and physical aggression, and reduced emotional expressivity.[72] Complementary methods like communication and coping skills training along with interpersonal coaching have proven effective,[73,74] as have animal-assisted learning,[75,76] targeted partnership skills programs,[77] partner or family counseling,[78] and creative therapies or the use of modern media[79] show a great promise and can significantly enhance the interdisciplinary setting.[80] The reason that there has not been much more research into the improvement of the effectiveness of EMDR may have at its root the myopic perception that its efficacy was proven to be so laudably high.[38] It is time the evaluation of EMDR's effectiveness be given vastly greater attention within the framework of Comparative Effectiveness Research. The time of evidence-based evaluations of treatment variants through large-scale effectiveness studies has come.[81] Through it we will move from anecdote and personal clinical empiricism to the rigor of a clinical trial and distill into scientific fact those strategies that in the real-life provision of care really work.

LIMITATIONS

The present effectiveness study has certain weaknesses that may limit its application. The sample consisted of a homogenous group of active duty German soldiers, limiting representativity and transferability. Most respondents in both groups were male, reflecting the gender make up of GAF, limiting transferability to female soldiers. Assessing comorbidities of the entire sample would have been desirable but was impossible at the time of this study. Still, data obtained on some 50% show a high number of comorbid disorders as did the obtained comparison sample. Full follow-up data on both TG and CL for sustainability of changes and to detect later stage changes would have been ideal. Ethical concerns prohibited long-term follow-ups on CL: It would have meant denying them treatment. The possible influence of uncontrolled variables arising from lack of randomization in the prepost design and the unequal sample size of TG and CL is itself a consequence of the naturalistic military study design, which could not be avoided and is adequately corrected for. Finally, third party diagnosing would have been desirable, but was not realistically available. The results of the present study should be used with these limitations in mind as a complement to confirm EMDR's efficacy.

OUTLOOK

EMDR-effectiveness in the military context should be compared head to-head with other exposition based treatments, whereas complementary medicine interventions should be introduced and considered as moderating variables of overall treatment in line with clinical consensus. The referenced influencing variables specific to the military should be analyzed further as to their individual contribution to symptom perpetuation and treatment resistance. This research will profit from an emphasis on soldiers' personality accentuations (if not disorders), moral injury equivalents, and shifts in value orientation. This field remains wide open. It is quite conceivable that pretreatment regimens addressing these issues will drive overall treatment effectiveness and effect sizes up to levels seen in civilian samples.

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3. Therapeutische Ansätze unter Beachtung spezifischer traumaassoziierter Affekte der Schuld und Scham als zentrale Themen der Psychotraumatherapie bei Soldaten

3.1 Guilt, Shame and Compassionate Imagery in War – Traumatized German Soldiers with PTSD – a Pilot Study

(*Alliger-Horn, C., Zimmermann, P., Schmucker, M. (2016). Guilt, Shame and Compassionate Imagery in War – Traumatized German Soldiers with PTSD – a Pilot Study (Journal of Clinical Medicine, 5, 90. https://dx.doi.org/10.3390%2Fjcm5100090)*

Obwohl sich die Psychotraumatologie seit Jahren in ihren Effektivitätsstudien zur Wirksamkeit einzelner Traumakonfrontationsmethoden äußert und unterschiedliche Überlegenheitshypothesen der einen oder anderen Methode diskutiert, bleibt es für den Praktiker schwer zu entscheiden, mit welcher Methode er wann und warum den einzelnen Traumatisierten behandeln soll (Alliger-Horn et al., 2015a). Kognitive Erklärungsmodelle und verhaltenstherapeutischer Expositionsarbeit stehen netzwerkbetonten Denkansätzen und Methoden zur Auflösung blockierter traumatischer Informationsverarbeitung bei der Wahl der Traumakonfronationsmethode gegenüber (Alliger-Horn et al., 2015a; Schnyder et al., 2015). Dabei ist die Frage nach der differenziellen Indikationsstellung für den einzelnen Traumatisierten nur unzureichend beantwortete. Hinzukommt dass Ronconi et al. (2014) betont, dass viele Wirksamkeitsuntersuchungen von Traumaverarbeitungsmethoden an Patienten mit einfachen Traumastörungen (ohne erhöhte Komorbidität) durchgeführt werden.
Die folgende Publikation geht von einem emotionsfokussierten Denkansatz aus und von der Annahme, dass einsatztraumatisierte Soldaten spezifische traumaassoziierte Affekte der Schuld und Scham erleben, die u.a. durch die Art der erlebten Kriegserfahrung (z.B. Tötung von Gegner, moralische Traumatisierung) beeinflusst zu sein scheinen. Die Anwendung von mitgefühlsbasierter Imagination („compassionate imagery“) wird in ihrer Wirksamkeit auf die Veränderung der Trauma- und allgemeinen Beschwerdesymptomatik diskutiert.

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Article

Guilt, Shame and Compassionate Imagery in War: Traumatized German Soldiers with PTSD, a Pilot Study

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Abstract: Background: The consideration of specific trauma-associated emotions poses a challenge for the differential treatment planning in trauma therapy. Soldiers experiencing deployment-related posttraumatic stress disorder often struggle with emotions of guilt and shame as a central component of their PTSD. Objective: The purpose of this study was to examine the extent to which soldiers' PTSD symptoms and their trauma-related guilt and shame may be affected as a function of their ability to develop compassionate imagery between their CURRENT SELF (today) and their TRAUMATIZED SELF (back then). Method: The sample comprised 24 male German soldiers diagnosed with PTSD who were examined on the Posttraumatic Diagnostic Scale (PDS) and two additional measures: the Emotional Distress Inventory (EIBE) and the Quality of Interaction between the CURRENT SELF and the TRAUMATIZED SELF (QUI-HD: Qualität der Interaktion zwischen HEUTIGEN ICH und DAMALIGEN ICH) at pre- and post-treatment and again at follow-up. The treatment used was imagery rescripting and reprocessing therapy (IRRT). Results: Eighteen of the 24 soldiers showed significant improvement in their PTSD symptoms at post-treatment and at follow-up (on their reliable change index). A significant change in trauma-associated guilt and shame emerged when compassionate imagery was developed towards one's TRAUMATIZED SELF. The degree and intensity of the guilt and shame felt at the beginning of treatment and the degree of compassionate imagery developed toward the TRAUMATIZED SELF were predictors for change on the PDS scores. Conclusions: For soldiers suffering from specific war-related trauma involving PTSD, the use of self-nurturing, compassionate imagery that fosters reconciling with the traumatized part of the self can effectively diminish trauma-related symptoms, especially when guilt and shame are central emotions.

Keywords: PTSD; combat; military; imagery rescripting; emotions; compassionate imagery; IRRT

1. Introduction

In recent decades, clinical research in the field of psychotraumatology has made enormous advances. Today, many published studies are available pertaining to the efficacy of various trauma treatments [1], which has prompted scientific societies to begin recommending standards for the treatment of trauma patients (Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften (AWMF) [2]). Numerous studies and meta-analyses on the psychotherapeutic treatment of individuals suffering from posttraumatic stress disorder (PTSD) have examined the efficacy of empirically-established trauma therapies [1,3], as well as the effects of different treatment settings [4,5].

Schnyder et al. [6] described the central components that are, to a greater or lesser extent, part of all trauma-focused therapy approaches. Exposure-based, cognitive-behavioral therapies generally

emphasize emotional processing of traumatic events with a particular focus on identifying and restructuring the cognitive processes that underlie and maintain the traumagenic emotions [7,8]. What most trauma-focused therapies implicitly have in common is the regulation and reorganization of central memory processes. A further common component of trauma-focused treatments involves psychoeducation, which includes the acquisition and the development of appropriate emotion-regulation strategies. The use of imaginal exposure (reliving) to facilitate the activation and processing of painful, trauma-related emotions is likewise a central component of exposure-based approaches.

While a number of trauma-focused treatments have received broad-based empirical support, relatively little is known about when, why and under what conditions empirically-supported treatments for PTSD are likely to be effective (or ineffective), and it remains unclear which specific interventions are best suited for which specific trauma types and characteristics [6,9]. Deciding which empirically-based treatment to employ in a clinical setting is made even more difficult by the fact that much of the trauma outcome research has focused on mono-symptomatic PTSD (without co-morbidity), which in turn has limited applicability to clinical practice [10]. As such, the process by which practicing clinicians can make informed decisions regarding what the best treatment fit may be for the specific trauma characteristics of a given patient remains unclear, and clinicians are left virtually on their own to choose the trauma treatment that they regard as the most appropriate for their trauma patients, which is essentially limited to the treatment(s) that they have been trained to implement [11].

If, as suggested by Benecke [12], mental disorders are regarded as manifestations of emotional dysregulation, then the activation and regulation of trauma-related emotions will necessarily play a crucial role in trauma-processing therapy. In this context, prominent trauma-related emotions are not independent of the type and nature of the traumatic event experienced by the patient, which would appear to be particularly relevant to soldiers. Verstrael et al. [13] discussed the relatively limited effects that even empirically well-established exposure-based, trauma-processing treatments (e.g., prolonged exposure, eye movement desensitization) have on soldiers and draw attention to the fact that the specific trauma-related emotions that emerge following deployment have not been sufficiently examined. In addition to fear and helplessness, e.g., following direct combat action, attacks and battle injury during deployment, intense emotions of guilt and shame frequently accompany war experiences [14–16]. Such psychic trauma often leads to a deeply shaken self-image and worldview, together with a questioning of personal moral beliefs, which are at the core of solders' traumatic war experiences [15,16]. As with other soldiers throughout the world, German soldiers are confronted with highly disturbing events related to human suffering often associated with guilt and shame. In a sample of German soldiers conducted by Wittchen et al. [17], such events may include firing at the enemy (18%) and being confronted with destruction and violence in the country of deployment (70%).

A primary objective of exposure-based, trauma-focused therapies has been to activate and process the specific, central trauma-related emotions of patients and to challenge the underlying cognitions and beliefs that maintain them. In recent years, imagery rescripting approaches have been increasingly employed to treat overarching negative emotions, such as guilt and shame [9,18–21]. The use of imagery-based, trauma-focused interventions that emphasize the development of mastery and self-nurturing imagery has shown promising signs in the treatment of deployment-related traumata in soldiers, especially in helping them to cope more effectively with their trauma-related emotions. In particular, the development of self-nurturance and self-care imagery that facilitates a more compassionate and conciliatory view towards the wounded, injured parts of the self appears to be especially useful with soldiers [11].

The purpose of this pilot study, which draws on a sample of 24 war-traumatized male soldiers with PTSD, is three-fold: (1) to examine the effect that guilt and shame have on changes in trauma symptomatology through an exposure-based, imagery-focused trauma treatment: imagery rescripting and reprocessing therapy [21]; (2) to examine whether the development of mastery and self-compassionate imagery created in the IRRT sessions has an impact on trauma symptoms; and (3) to identify and describe any changes in the range of emotions that emerge as part of the imagery sessions.

Imagery Rescripting and Reprocessing Therapy

IRRT is an imagery-based, trauma-focused treatment that involves activating, confronting and modifying traumatic images and related maladaptive attributions, beliefs and schemas, which are processed both visually and verbally during high states of affective arousal within the context of a Socratic-facilitated intrapersonal dialogue between the patient's CURRENT SELF (today) and TRAUMATIZED SELF (back then). The primary goal of IRRT is to provide patients with a mental structural framework within which to activate, modify and emotionally process distressing traumatic imagery and to use compassionate imagery as a means of enhancing one's ability to self-calm, self-nurture and emotionally self-regulate. IRRT comprises three distinct phases: (1) imaginal exposure: visual and affective reliving of the entire traumatic scene; (2) mastery imagery: visualizing one's CURRENT SELF entering the trauma scene to confront and disempower the perpetrator; and (3) self-nurturing/self-compassionate imagery: visualizing one's CURRENT SELF nurturing, calming, understanding and reassuring the TRAUMATIZED SELF, which often involves the active processing and re-processing of an array of non-fear emotions (e.g., guilt, shame, anger, powerlessness, abandonment, betrayal).

2. Method

2.1. Study Participants and Intervention

Inclusion criteria for this study were: (a) PTSD as a primary diagnosis (in accordance with the International Classification of Diseases (ICD-10) and DSM-IV)) ensuing from traumatic events occurring during Bundeswehr missions abroad; (b) voluntary participation in the study involving eight weeks of inpatient treatment at the Bundeswehr Hospital Berlin; and (c) experiencing the traumatic event no less than 6 months and no more than 16 years before treatment.

Exclusion criteria were: (a) other types of trauma not associated with a Bundeswehr mission abroad (e.g., child sexual trauma); (b) complex Type II trauma (especially non-military traumata); (c) acute suicidal ideation; (d) acute psychotic disorders; (e) severe physical disorders; and (f) substance addiction.

All study participants underwent treatment during their inpatient stay at the Bundeswehr Hospital Berlin and were examined directly upon admission with the psychometric instruments noted in the next section. Participants were admitted via the outpatient Department of Psychiatry at the Bundeswehr Hospital Berlin, where a medical specialist for psychiatry and psychotherapy had previously determined, based on an initial clinical assessment, that inpatient trauma treatment was indicated.

Clinical diagnoses were established during the first inpatient week, which was then followed by a 3–4 week stabilization phase that included teaching the participants progressive muscle relaxation and safe-place imagery. In addition, all 24 participants received three 50-min individual sessions with their therapists. In accordance with regular treatment intervals, the patients were then temporarily discharged for 4–5 weeks, after which they were re-admitted as inpatients to the hospital.

During their second inpatient stay, patients received three weekly individual sessions of IRRT trauma treatment over a period of six weeks, with sessions lasting from 50 min to 100 min each. Therapists received a 90-min supervision session each week (from the senior author). The standard 3-phase IRRT treatment protocol (a modification in the standard 3-phase IRRT treatment protocol was made with patients when no identifiable perpetrator was present, which involved applying IRRT Phases 1 and 3 only) was implemented in accordance with Schmucker and Köster [21]. Special therapeutic emphasis was on the 3rd phase, which involved patients activating and processing deep-seated, negative internal representations of the self associated with their war traumas, with a particular focus on targeting and modifying their maladaptive beliefs relating to guilt and shame. A primary goal of these 3rd phase imaginal interactions between the different parts of the self was for the CURRENT SELF to develop compassionate imagery towards the TRAUMATIZED SELF as

a means of enhancing self-nurturance and developing a more conciliatory and empathic attitude towards oneself [11].

During their 6-week hospital stay, all 24 patients also participated in the general treatment program offered by the psychiatric ward, which included occupational therapy, sports and exercise therapy and massages. There were no patient dropouts.

2.2. Measuring Instruments

The clinical diagnoses were established with the SCID I and II instruments (Structured Clinical Interview for DSM-IV, Axis II: Wittchen et al. [22]). The PDS (German translation of the Posttraumatic Diagnostic Scale by Ehlers et al. [23], a self-rating, diagnostic instrument designed to assess PTSD in accordance with DSM-IV and ICD-10 criteria, was administered at pre-treatment, post-treatment and at 3-months' follow-up. The internal consistency for the total score of the German version of the PDS has been elsewhere reported to be 0.94 [24].

Prior to therapy, patients completed a self-report questionnaire assessing their current feelings about the most distressing traumatic experiences they had had during deployment. This questionnaire (Emotional Distress Inventory-Soldier-Version (EIBE-Soldier-Version)): Schmucker et al. [25]; see Appendix A.1) was adapted for use with military samples from the original EIBE version developed by Schmucker and Köster [21]. Patients were instructed to assess the intensity of their current emotions on a Likert scale of 0–5. Immediately following the first and last IRRT sessions and at 3-month follow-up, patients received an additional questionnaire (Quality of Interaction (QUI)-HD: translated form the Germen version: Qualität der Interaktion zwischen HEUTIGEN ICH UND DAMALIGEN ICH (QUI-HD Soldatenversion): Alliger-Horn et al. [26]; see Appendix A.2). The QUI-HD questionnaire was designed to analyze the quality of interaction between the CURRENT SELF and the TRAUMATIZED SELF. Participants were asked to assess their present feelings towards their TRAUMATIZED SELF. Two additional imagery-related questions were included in later data analyses: (1) How much emotional distance did you experience in the imagery session today between your CURRENT SELF and your TRAUMATIZED SELF? (2) How difficult was it for you to be supportive to your TRAUMATIZED SELF in the imagery session today?

As all questionnaires are used in regular clinical diagnoses and therapeutic treatment planning, no approval was required from the ethics committee. All participating patients had given their consent to the examination.

2.3. Data Analysis

In a first step, the PDS sample means and standard deviations were calculated and analyzed for statistical differences using χ^2 and t tests. Given the available dataset, a dropout and missing data analysis was not necessary. An analysis of variance with repeated measurements was conducted to determine the degree to which trauma severity overall had changed on the PDS over time. Effect sizes were estimated using Cohen's standardized mean difference d [27]. The effect size for the PDS was calculated at post-treatment and at 3-months' follow-up. A reliable change index (RCI) was calculated in accordance with Jacobsen and Truax [28]. Significant improvement in clinical symptoms was assumed for an RCI of ≤ -1.96 and for $p \leq 0.05$. In order to determine clinical significance, the number of PTSD-diagnosed patients and the PTSD symptom severity on the PDS were also analyzed in accordance with Foa et al.'s [29] recommendations: moderate, a PDS total score of 11–20; moderate to severe, a PDS total score of 21–35; severe, a PDS total score >35.

In the second part of the study, the EIBE questionnaire (Soldier Version) was used at pre-treatment to assess guilt and shame associated with the most distressing traumatic event witnessed during deployment. The change in the perceived emotional distance between the CURRENT SELF and the TRAUMATIZED SELF and the change in perceived emotional support offered by the CURRENT SELF to the TRAUMATIZED SELF (QUI-HD) were analyzed as predictors of therapeutic changes in trauma symptoms on the PDS total score at three different points of measurement (t1, t2, t3) by means of

regression analyses. Changes in the visualized distance between the TRAUMATIZED SELF and the CURRENT SELF, as well as changes in the visualized emotional support offered by the CURRENT SELF to the TRAUMATIZED SELF were calculated as the difference between t1 and t2 and between t1 and t3. The difference in the PDS total score was used as the dependent variable.

The third part of the study comprised the statistical analyses of the reported change in emotions vis-à-vis the CURRENT SELF and the TRAUMATIZED SELF at pre-treatment (t1), at post-treatment (t2) and at 3-months' follow-up (t3). For this purpose, mean values were compared.

3. Results

The 24 male patients participating in this study were all diagnosed with PTSD, as assessed on the SCID I. A majority of these patients (67%) also had co-morbid diagnoses, which included anxiety disorders (41.2%), depressive disorders (12.3%) and Axis II personality disorders (42.7%), of whom 31.2% presented with Cluster C disorders. The average age of the patients at the time of the initial examination was M = 39.3 years (SD = 9.0, range = 27–53 years). At the time of their hospitalization, all patients had been deployed in one or more missions abroad (Kosovo and Afghanistan) for an average total period of M = 14.6 months (SD = 15.5, range = 3–77 months in action), and all had experienced specific war-related traumata, which included participation in active combat, the killing of adversaries, witnessing atrocities against civilian populations, the killing of women and children, the opening of mass graves, the direct wounding of fellow soldiers in combat and the killing of adversaries at close range.

The pre-treatment total PDS score was M = 32.25 (SD = 8.67, range 14–45), which lies in the moderate to severe PTSD symptom range. At post-treatment, there was a significant change in total PDS scores (M = 25.88, SD = 8.57; χ^2 (1, N = 23) = 4.89, $p \leq 0.001$). At the three-month follow-up, the significant positive changes in clinical symptoms were maintained (M = 21.83, SD = 10.44; χ^2 (1, N = 23) = 4.99, $p \leq 0.001$). The ANOVAs also revealed significant positive changes in the PDS total score ($F(1,23) = 24$, $p \leq 0.001$; $\eta^2 = 0.510$) at all three measurement points. The post-treatment effect size was d = 0.98, while the effect size at three-months' follow-up was d = 0.99. The reliable change index (RCI) based on the post-treatment PDS scores revealed that 71% of the patients (n = 17) had shown a significant improvement in their PTSD symptoms (RCI ≤ -1.96; $p \leq 0.05$); for 21% (n = 5), the clinical symptoms had remained unchanged; and for 8% (n = 2), the symptoms had worsened (RCI ≥ 1.96; $p \leq 0.05$). Similarly, the reliable change index based on the three-month follow-up PDS scores indicated that for 75% (n = 18) of patients, the clinical symptoms had significantly improved (RCI ≤ -1.96; $p \leq 0.05$); for 17% (n = 4), the symptoms had remained unchanged; and for 8% (n = 2), the symptoms had worsened (RCI ≥ 1.96; $p \leq 0.05$). This worsening of symptoms appeared to be caused by crises experienced during the course of treatment (e.g., loss of partnership, denial of compensation by the Bundeswehr).

As expected, the regression analysis (see Table 1) revealed a significant effect of the experienced emotional distance between the CURRENT SELF and the TRAUMATIZED SELF. Specifically, trauma symptoms were more likely to improve in patients who perceived relatively less emotional distance between the CURRENT SELF and the TRAUMATIZED SELF at post-treatment and who demonstrated an enhanced ability to offer emotional support to the TRAUMATIZED SELF. The emotions of guilt and shame reported at pre-treatment were likewise found to be predictors of changes in trauma symptoms. Patients who had reported particularly strong feelings of shame and guilt at pre-treatment demonstrated more pronounced changes in their PDS total scores at the end of treatment. A similar picture emerged at follow-up. An improved ability to offer emotional support to one's TRAUMATIZED SELF and a reduced emotional distance between one's CURRENT SELF and TRAUMATIZED SELF also had a significant long-term effect on the positive changes noted in the PDS scores. The initially reported shame and guilt that patients felt when recalling the traumatic event were predictors of long-term changes in PDS scores as a result of the imagery treatment interventions.

Table 1. Hierarchical multiple regression analyses (differences at t1-t2 and t1-t3 with PDS total score as dependent variables).

	Variable	Regression Coefficient B	Standardised Coefficient Beta	Standard Error SE	Significance *p*
	PDS				
Short-term (N = 24)	Guilt	1.368	0.455	0.424	0.004
	Shame	1.307	0.381	0.419	0.006
	Diff_support	2.231	0.577	0.535	0.001
	Diff_distance	−1.873	−0.531	0.447	0.000
	PDS				
Long-term (N = 24)	Guilt	3.494	0.494	0.985	0.002
	Shame	0.391	0.080	0.682	0.574
	Diff_support	2.836	0.448	0.900	0.005
	Diff_distance	−2.471	−0.428	0.828	0.008

Note: R^2 (t1-t2)$_{PDS}$ = 0.736; R^2 (t1-t3)$_{PDS}$ = 0.648.

Table 2 shows the emotional changes between the CURRENT SELF and TRAUMATIZED SELF at the three measurement points. At post-treatment, significant positive changes were observed in nearly all of the emotions vis-à-vis the TRAUMATIZED SELF. The only reported emotions that had not significantly changed were "love" and "care". The follow-up data (t3) revealed that these results were largely robust. At each of the measurement points (t2, t3), reported feelings of shame, guilt and helplessness were found to have decreased significantly.

Table 2. Change in emotions between CURRENT SELF and TRAUMATIZED SELF (t1-t2 and t1-t3).

Attitude of the CURRENT SELF about the TRAUMATIZED SELF	t1-t2 t1-t3 N = 24 M (SD)	*t*-Test (t1-t2) *t*-Test (t1-t3) N = 24 M (SD)
Anger and Rage	0.667 (1.090) 0.458 (1.285)	2.996 ** 1.748 n.s.
Helplessness	2.208 (1.668) 2.042 (1.732)	6.488 *** 5.776 ***
Care	−0.667 (1.579) −0.375 (1.837)	−2.069 n.s. −1.000 n.s.
Sadness	1.458 (1.719) 1.125 (1.702)	4.156 *** 3.238 **
Love/Affection	−0.625 (1.861) −0.167 (2.180)	−1.646 n.s. −0.374 n.s.
Rejection/Aversion	0.958 (1.732) 0.708 (1.546)	2.711 * 2.245 *
Guilt	0.792 (1.382) 0.708 (1.459)	2.805 * 2.378 *
Shame	1.292 (1.459) 1.167 (1.494)	4.337 *** 3.826 ***

Note: *t*-test, $\alpha = 0.05$., $p \leq 0.01$ *, $p \leq 0.005$ **, $p \leq 0.001$ ***.

4. Discussion

During combat missions, soldiers are exposed to a range of traumatic events, some of which are not necessarily associated with fear and helplessness, but which may trigger a profound sense of moral injury [16,30]. In a military context, the killing of people is a notable predictor of PTSD and

depression, as well as of suicidal ideation [14] and is associated with specific emotions. Frequently, guilt and shame are the central trauma-related emotions reported by soldiers following combat missions. In their study, Nazarov et al. [31] noted a connection between moral traumas, deployment-related psychological disorders and symptoms of guilt and shame with soldiers. Similarly, the findings reported by Hellenthal et al. [32] underscored a direct link between posttraumatic symptoms and "moral injury" experienced by German soldiers deployed in Afghanistan.

The purpose of this pilot study was to examine the extent to which changes in specific trauma-related emotions like guilt and shame, experienced by soldiers with PTSD ensuing from war trauma, can affect therapeutic change in trauma symptoms. Also examined in this study was the role of compassionate imagery involving self-nurturance and self-care vis-à-vis the injured and traumatized parts of the self. This is based on the assumption that the expression of compassion is a basic, inborn human ability that can be weakened by traumatic experiences (e.g., war) or strengthened through focused training. The use of compassionate imagery as a means of enhancing one's ability to self-calm, self-nurture and emotionally self-regulate is a central component of IRRT. In this context, compassionate imagery is considered to be a special kind of "mastery imagery" in the treatment of traumatized soldiers in this pilot study.

In recent years, imagery rescripting approaches have been successfully used to treat depression and a range of anxiety disorders, as well as nightmares, OCD, bulimia nervosa and personality disorders [18,33–37]. Imagery interventions have also become a key element of empirically-demonstrated exposure-based approaches in the treatment of PTSD and other trauma-related symptoms [6,8,19,20,38]. In a study conducted with victims of industrial injury suffering from PTSD, Grunert et al. [9] demonstrated the effective use of IRRT (in contrast to extinction-based exposure therapy) in treating trauma-related guilt. The first documented use of IRRT in the treatment of German active-duty soldiers suffering from war trauma was reported in a recent study by Alliger-Horn et al. [11]. In particular, the focus on developing self-nurturing and self-conciliatory imagery with the TRAUMATIZED SELF in Phase 3 of IRRT appeared to play a decisive role in fostering significant positive therapeutic change. Results of this pilot study represent a promising first step in: (1) the use of imagery procedures as a means of producing changes in the trauma symptoms of soldiers experiencing intense feelings of guilt and shame; and (2) affecting long-term positive changes in trauma symptomology relating to the emotional quality of imagery interactions (verbal and non-verbal) between the CURRENT SELF and the TRAUMATIZED SELF (including positive changes in the way one views the TRAUMATIZED SELF).

These findings are in accordance with previously-published studies on the use of imagery rescripting for non-fear emotions [19,39] and builds on the results reported by Alliger-Horn et al. [11] in which IRRT was successfully employed with German soldiers. The use of imagery focused procedures has also been described in more recent training programs focusing on soldiers from other countries with PTSD resulting from war-related traumata [40]. As this is an initial non-randomized pilot study, direct causation cannot be inferred. Nonetheless, these are encouraging results for the use of imagery interventions, especially the use of compassionate imagery, in exposure-based, trauma therapy focused on specific war-related traumata. The emotional "reconciliation" of the two parts of the self, activated through a visual dialogue between the CURRENT SELF and the TRAUMATIZED SELF (in the third phase of IRRT), appears to have a particularly positive effect on trauma-related symptoms of guilt and shame stemming from deployment (e.g., killing of adversaries, recognition of one's own transgressions and those of others). The improved ability of soldiers to provide themselves with emotional support via imagery techniques (e.g., compassionate imagery) not only appears to foster positive changes in their trauma symptoms, but may play a central role in their overall recovery and general well-being, as well.

5. Limitations

Because of the small sample size, the results of this pilot study prohibit us from making generalized and causal statements or from drawing conclusions about the treatment of war-related guilt and shame with imagery interventions. Methodological limitations include the lack of randomization of patient selection, lack of a control group, limited usage of psychometric measures (including measures related to the DSM 4) and not including co-morbidity in the data analyses. In addition, the sample comprised male traumatized soldiers only, which limits the applicability of these findings to other trauma groups. In spite of these limitations, the results of this study may be viewed as an early indication of a promising treatment.

6. Conclusions

The therapeutic treatment of deployment-related disorders and especially of PTSD poses a challenge for healthcare systems. Psychotherapy and especially exposure-based trauma-focused approaches foster and promote emotion-regulation strategies with patients [12]. This suggests that exploring the significance of specific trauma-related emotions is a key component of trauma-focused therapies. For patients with an active military background, the type of trauma (e.g., fear-based vs. guilt- and shame-based) appears to play a significant role in the development of various deployment-related disorders. For patients suffering from the after-effects of specific war-related traumas, it appears particularly useful to enhance one's ability to reconcile with the TRAUMATIZED SELF by promoting self-nurturance, self-care and emotional self-regulation via compassionate imagery. This applies especially when guilt and shame are central trauma-related emotions.

In summary, identifying and labelling the specific emotions and idiosyncratic beliefs closely associated with a traumatic event could further help clinicians to make better, more informed decisions regarding what specific, trauma-focused interventions may be the best treatment fit for the specific trauma characteristics of a given patient. Targeted imagery rescripting interventions appear to be a promising element for the treatment of specific traumata and one that deserves further examination. Further studies that compare the various imagery methods in the treatment of guilt and shame, especially the use of compassionate imagery, could enhance our understanding of the underlying mechanisms at work in the treatment and recovery from trauma-related disorders and further enable therapists to respond more effectively to the special needs of specific traumatized subgroups.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Appendix A.1. EIBE–Soldier-Version (Emotional Distress Inventory) [25]

Name:_____ Date:_____

What incident during your mission abroad would you like to work on today in the IRRT session?

_____

How much time has passed since this incident? _____

What emotion(s) do you associate with this incident when you think about it *today*?

Anger

0	1	2	3	4	5
not at all					very strong

Helplessness					
0	1	2	3	4	5
not at all					very strong
Sadness					
0	1	2	3	4	5
not at all					very strong
Emotional numbing					
0	1	2	3	4	5
not at all					very strong
Guilt					
0	1	2	3	4	5
not at all					very strong
Shame					
0	1	2	3	4	5
not at all					very strong
Fear					
0	1	2	3	4	5
not at all					very strong
Disgust					
0	1	2	3	4	5
not at all					very strong
Horror					
0	1	2	3	4	5
not at all					very strong
Sense of unreality					
0	1	2	3	4	5
not at all					very strong

Appendix A.2. QUI-HD (Quality of interaction between the CURRENT SELF and the TRAUMATIZED SELF) [26]

Name:_____ Date:_____

How much emotional distance did you experience in the imagery session today between your CURRENT SELF and your TRAUMATIZED SELF?

0	1	2	3	4	5
not at all					very distant

How difficult was it for you to be supportive of your PAST SELF in this imagery session?

0	1	2	3	4	5
not at all					very difficult

What were your feelings about your PAST SELF on deployment in this imagery session?

Anger/Rage					
0	1	2	3	4	5
not at all					very strong
Helplessness					
0	1	2	3	4	5
not at all					very strong

Care					
0	1	2	3	4	5
not at all					very strong
Sadness					
0	1	2	3	4	5
not at all					very strong
Love/ Affection					
0	1	2	3	4	5
not at all					very strong
Rejection/ Aversion					
0	1	2	3	4	5
not at all					very strong
Guilt					
0	1	2	3	4	5
not at all					very strong
Shame					
0	1	2	3	4	5
not at all					very strong

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3.2 Adaptierte, stationäre Alptraumtherapie mit Imagery Rehearsal Therapy bei chronisch kriegstraumatisierten deutschen Soldaten mit PTBS

(Alliger-Horn, C., Zimmermann, P., Herr, K., Danker-Hopfe, H., Willmund, G. (2017). Adaptierte, stationäre Alptraumtherapie mit Imagery Rehearsal Therapy bei chronisch kriegstraumatisierten deutschen Soldaten mit PTBS. Zeitschrift für Psychiatrie, Psychologie und Psychotherapie, 65 (4), 251-260. https://doi.org/10.1024/1661-4747/a000328)

Neben den charakteristischen Symptomen einer PTBS, schildert eine Vielzahl an einsatzgeschädigten Soldaten eine hohe Belastung durch traumaassoziierte Alpträume (Mahler et al., 2006). Aus der Literatur ist außerdem bekannt, dass Einsatzveteranen auch nach abgeschlossener Traumatherapie oft eine nicht unbedeutsame Restsymptomatik beklagen (Verstrael et al., 2013).

Im folgenden Artikel wird die Anwendung einer modifizierten Form der Imagery Rehearsal Therapy (IRT) bei chronisch kriegstraumatisierten Soldaten auf die Beschwerdebelastung durch Alpträume beschrieben. Außerdem wird die Veränderung der Traumasymptomatik, der depressiven und allgemeinen Beschwerdebelastung durch IRT zu drei verschiedenen Messzeitpunkten analysiert.

Die Entwicklung von emotionalen Bewältigungsbildern unter Anwendung von mitgefühlsbasierter Imagination („compassion imagery“) und das vorstellungsbasierte Training zur Bearbeitung posttraumatischer Alpträume wird beschrieben. Neben der allgemeinen Anwendung dieser komplementären Methode im stationären Versorgungsangebot für betroffene Soldaten werden auch die unterschiedlichen Wirkkomponenten (Psychoedukation, Entspannungstraining, kognitive Techniken und mitgefühlsbasierte Imagination) der modifizierten IRT im Artikel für den Praktiker dargestellt und diskutiert.

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4. Die spezifische therapeutische Bedeutung von „moralischer Verletzung“ im Einsatz und Ansätze der Behandlung in der Psychotraumatherapie bei deutschen Soldaten

4.1 Combat Experiences, Moral Injuries, Personal Values, and Mental Health Problems among German Soldiers

(Hellenthal, A., Zimmermann, P., Willmund, G., Lovinusz, A., Fiebig, R., Maercker, A., Alliger-Horn, C. (2017). Combat Experiences, Moral Injuries, Personal Values, and Mental Health Problems among German Soldiers. Verhaltenstherapie, 27, 244-252. https://doi.org/10.1159/000470848)

Moralische Verletzungen („Moral Injury“) im Auslandseinsatz gehen mit einer tiefgreifenden Erschütterung eigener Wertvorstellungen und moralischer Standards einher (Litz et al. 2009). Sie stellen dabei neben angstbasierten traumatischen Situationen für den Soldaten eine besondere Belastung dar und sind primär mit Gefühlen der Schuld, Scham assoziiert (Maguen et al. 2010).

In der folgenden Publikation wurde an einer Stichprobe von 191 deutschen aktiven Einsatzsoldaten der ISAF-Mission (ISAF = International Security Assistance Force) der Einfluss moralischer Verletzungen („Moral Injury“) und Werteorientierungen auf die Pathogenes von PTBS, Depression und Alkoholmissbrauch untersucht. Es konnte u.a. gezeigt werden, dass der erfasste spezifische Stressor „Konfrontation mit Not, Leid, Gewalt in der Bevölkerung“ einen signifikanten Einfluss auf die Ausbildung psychischer Erkrankungen hatte. Dabei konnte die erlebte und empfundene moralische Verletzung der Soldaten als zentrale vermittelnde Variable zwischen dem o.g. Stressor und posttraumatischen, depressiven und alkoholmissbräuchlichen Symptomen ermittelt werden. Die Bedeutung von Einsatzerfahrungen mit belastender moralischer Dimension im Hinblick auf psychische Erkrankungen wird in der Publikation diskutiert. Konsequenzen für die präventive und therapeutische Arbeit werden dargelegt.

4.2 „Moral injury“ bei kriegstraumatisierten deutschen Soldaten. Wirksamkeit der wertebasierten kognitiv-behavioralen Gruppentherapie

(*Alliger-Horn, C., Hessenbruch, I., Fischer, C., Thiel, T., Varn, A. Willmund, G., Zimmermann, P. (2018). „Moral injury“ bei kriegstraumatisierten deutschen Soldaten. Wirksamkeit der wertebasierten kognitiv-behavioralen Gruppentherapie. Psychotherapeut, 63, 322-328. https://doi.org/10.1007/s00278-018-0287-z)*

Neben den angstbezogenen Themen (u.a. Teilnahmen an Gefechten und Kampfhandlungen), die für den Soldaten im Krieg traumatisch wirken können, ist die Betrachtung moralischer Verletzungen („Moral Injury“) während des Auslandseinsatzes für die therapeutische Begleitung von erkrankten Soldaten noch neu. Konzepte, die der Praktiker anwenden kann, um dieser speziellen Thematik gerecht zu werden, werden in Zukunft entwickelt und diskutiert werden müssen.

Der vorliegenden Artikel beschäftigt sich im deutschsprachigen Raum erstmals mit der Anwendung einer Gruppentherapie unter stationären Versorgungsbedingungen, die den Aspekt der „Moral Injury“ in den therapeutischen Prozess integriert. Dabei wurde eine Stichprobe von 21 kriegstraumatisierten Soldaten mit „Moral Injury“ in Hinblick auf ihr emotionales Copingverhalten von Scham untersucht. Im Rahmen einer Gruppentherapie kamen neben wertebasierten kognitiv-behavioralen Methoden erneut auch mitgefühlsbasierte Imaginationen und weiterer verhaltenstherapeutische Komponenten zur Anwendung. Zu drei Messzeitpunkten wurde der Einfluss der Gruppenmaßnahme auf das Copingverhalten von kriegsbedingter Scham mit dem Fragebogen Compass of Sham Scale (COSS von Elison et al., 2006) untersucht. Die Ergebnisse dazu und die verschiedenen Betrachtungen zur Anwendung spezifischer therapeutischer Maßnahmen in der Behandlung der „Moral Injury“ werden in dieser Publikation diskutiert.

5. Diskussion

Nach den Erfahrungen von zwei Weltkriegen beteiligt sich Deutschland in den letzten Jahrzehnten wieder an Kriegseinsätzen außerhalb der eigenen Grenzen. Diese Einsätze bergen für die beteiligten Soldaten ein nachweislich erhöhtes psychisches Gesundheitsrisiko (Wittchen et al., 2012) und bedeuten auch, dass sich Familie und Angehörige mit den Folgen einsatzbedingter psychischen Erkrankungen auseinandersetzten müssen.

Der politische Wille führte vor einigen Jahren zur Gründung eines Psychotraumazentrums der Bundeswehr in Berlin, das sich u.a. zur Aufgabe gestellt hat, durch wissenschaftliche Tätigkeit die psychotherapeutische Versorgung einsatzerkrankter Soldaten zu verbessern.
Die vorliegende Habilitationsarbeit möchte einen Beitrag zur Diskussion um die Verbesserung der diagnostisch und psychotherapeutischen Betreuung deutscher, einsatztraumatisierter Soldaten im stationären Versorgungsbereich liefern.

Vor dem Hintergrund des militärischen Kontextes beschäftigte sich diese Arbeit mit drei Fragekomplexen.

Im ersten Komplex wurde die Bedeutung der Erfassung maladaptiver traumabezogener Kognitionen im diagnostischen Prozess und der Einsatz von EMDR (Eye Movement Desensitization and Reprocessing) im stationären Kontext bei kriegstraumatisierten Soldaten betrachtet.

Der PTCI (Posttraumatic Cognitions Inventory) findet im diagnostischen Standardsetting des Bundeswehrkrankenhauses seit Jahren routinemäßige Anwendung. Der Umstand, dass die Änderung traumarelevanter kognitiver Prozesse bei Soldaten die Veränderung der PTBS Symptomatik unter Verhaltenstherapie entscheidend bedingt, konnte in neueren Studien belegt werden (Schumm et al., 2015) und unterstützt die Bedeutung des Einsatzes geeigneter diagnostischer Instrumentarien im Rahmen der Diagnostik und Therapie. Bereits in einer früheren Studie zur Evaluation einer kognitiv-behavioralen Gruppentherapie im stationären Bereich für deutsche traumatisierte Soldaten fand der PTCI erfolgreich Einsatz und zeigte unter der Gruppentherapie erfreuliche Veränderungen in den maladaptiven Denkprozessen der

erkrankten Soldaten (Alliger-Horn et. al., 2014a). Im Bundeswehrkrankenhaus wurden deshalb die Daten von über 300 Soldaten mit einer einsatzbedingten psychischen Erkrankung, die den PTCI im Rahmen der stationären Routinediagnostik ausgefüllt hatten, untersucht. Ziel war es, dem praktischen Kliniker ein zeitökonomisches Instrument zur Erfassung maladaptiver Kognitionen bei einsatztraumatisierten Soldaten zu liefern, dass in die täglichen kognitiv-behavioralen Therapiepraxis einbezogen werden kann. Dabei wurde die Itemanzahl des ursprünglichen Originalinstrumentes von 33 auf 12 reduziert und an einer weiteren Stichprobe von 109 Soldaten evaluiert. So konnten für die neu entwickelte Kurzvariante des PTCI gute bis ausreichende Testgütekriterien ermittelt werden (interne Konsistenz $\alpha = .86$; Subskalen: "negative Sicht auf sich selbst" $\alpha = .89$; "negative Sicht auf die Welt" $\alpha = .86$; "Selbstvorwürfe" $\alpha = .61$). Der PTCI liefert in seiner nun vorliegenden zeitökonomischen Kurzform wichtige Aussagen über typische negative Sichtweisen von Einsatztraumatisierten über sich selbst, die Welt und das Ausmaß der Selbstbeschuldigung und kann nutzbringend in der Praxis des Krankenhauses eingesetzt werden.
Die Erfassung maladaptiver kognitiver Denkmuster, die Betrachtung ihrer Veränderung unter therapeutischen Prozessen ist von unabdingbarer Bedeutung in der Routineversorgung von Soldaten und wird so durch den Einsatz valider zeitökonomischer Verfahren unterstützt.

Nach Abschluss der ca. einwöchigen stationären Diagnostik schließt sich im Rahmen der Versorgungspraxis an den Bundeswehrkrankenhäusern die Planung geeigneter therapeutischer Maßnahmen für die Einsatzgeschädigten an.
Neben kognitiv-behavioralen Methoden der Traumakonfrontationsarbeit wird am Bundeswehrkrankenhaus die bekannte EMDR-Methode seit Jahrzehnten eingesetzt. Da ihre Wirksamkeit in der Anwendung bei soldatischem Klientel international durchaus kritisch diskutiert wird, war es sinnvoll, sich der Frage nach der Wirksamkeit von EMDR in der gängigen stationären Versorgungspraxis der Bundeswehr zu stellen. Die präsentierte Publikation zur Anwendung von EMDR bei deutschen dienstaktiven Soldaten erbrachte im Rahmen einer Effectivness-Studie vergleichsweise gute bis mäßige Effekte. Insgesamt scheint EMDR in der Behandlung von einsatztraumatisierten Soldaten eine sinnvolle Methode zu sein, die allerdings durch erweiterte Behandlungskonzepte ergänzt werden sollte. Die hohe Komorbidität an Krankheitsbildern, die vergleichsweise lange Latenz bis zum Beginn der

Inanspruchnahmen der Behandlung durch Soldaten, die durch Stigmatisierungsängste in der soldatischen Kultur moderiert zu sein scheint und die oft hohe Anzahl an erlebten A-Kriterien (meist in mehreren Einsätzen) könnten ausschlaggebend für das vorliegende Wirksamkeitsergebnis der Untersuchung sein, das im Vergleich zu zivilen Populationen vergleichsweise schlechter ausfällt (Verstrael et al, 2013). Die o.g. Faktoren sind bisher noch nicht ausreichend auf ihrer Einflussnahme im therapeutischen Behandlungsprozess untersucht worden.

Hinzukommt, dass in der bisherigen Praxis der Bundeswehrkrankenhäuser primär angstbezogene Emotionen den Behandlungsschwerpunkt in der Therapie darstellten, wobei besonders Traumatisierungen, z.B. durch Gefechtshandlungen und Anschlagsszenarien im Behandlungsfokus standen.
Andere kriegsbedingte Themen, die mit nicht- angstbesetzten Gefühlen einhergingen (z.B. Schuld, Scham), finden erst in den letzten Jahren zunehmend Beachtung. Gerade die Betrachtung letztgenannter Traumatisierungen, die u.a. den spezifischen Bereich der moralischen Verletzung („moral injury“) beinhalten, haben bisher nur unzureichend Eingang in die Behandlungsplanung gefunden. Das liegt nicht zuletzt daran, dass das Thema der moralischen Verletzung bei deutschen Soldaten ein sehr junges und noch kaum untersuchtes Phänomen darstellt. Der Soldat wird im Kriegseinsatz nicht immer nur „Opfer“, sondern kann auch im übertragen Sinne zum „Täter“ werden, indem er gegen seine internalisierten eigenen moralischen Annahmen von sich selbst und der Welt verstößt bzw. im Krieg gezwungen ist, sich zutiefst unmoralisch zu verhalten (Litz et al, 2009, Alliger-Horn et al. 2018). Dieser Verstoß gegen die persönlichen internalisierten moralischen und wertebezogenen Annahmen und inneren Schemata führt häufig zu einem tiefgreifenden inneren Konflikt, der nicht selten mit schwerem Schuld- und Schamerleben für die Soldaten verbunden ist und entsprechende psychische Pathologien nach sich zieht (Dennis et al., 2017).

Der zweite Komplex der vorliegenden Habilitation beschäftigte sich vor diesem Hintergrund mit der Betrachtung therapeutischer Ansätze unter Beachtung spezifischer traumaassoziierter Affekte der Schuld und Scham bei deutschen Soldaten. Zwei Behandlungsansätze der verhaltenstherapeutischen Einzelbehandlung im Rahmen der Versorgungspraxis der

Bundeswehr wurden dazu vorgestellt und diskutiert.

Angesicht praktischer Erfahrungen im klinischen Versorgungsalltag und verschiedener Beiträge erscheint es von Interesse, sich mit spezifischen Formen der Traumatisierung bei Soldaten auseinanderzusetzten, die insbesondere mit maladaptiven Gefühlen der Schuld und Scham einhergehen (Zimmermann et al., 2011). Die soldatische Sozialisation mit ihrem oft typischen und spezifischen Männlichkeitsideal und dem Anspruch an Machbarkeit und Funktionieren führt nicht selten dazu, dass therapeutisch notwenige Prozesse der Versöhnung und Entwicklung von Verständnis sich selbst gegenüber erschwert sind. Demgegenüber findet der Kliniker in der Praxis häufig ausgeprägte destruktive Schemata der Selbstabwertung und des Selbsthasses kriegstraumatisierten Soldaten (Alliger-Horn et al., 2015a).

Bereits in einer vergleichenden Pilotuntersuchung der EMDR Methode mit der imaginativen verhaltenstherapeutischen Methode des IRRT (Imagery Rescripting & Reprocessing Therapy) konnte an einer Soldatenstichprobe diskutiert werden, dass imaginative, emotionsfokussierte Copingarbeit erste vielversprechende Beschwerdeverbesserungen in der Behandlung bei deutschen Soldaten erzielt (Alliger-Horn et. al, 2015a).
Das gab die Ermutigung, die Bedeutung der sogenannten mitgefühlsbasierten, verhaltenstherapeutischen, imaginativen Expositionsarbeit weiter zu betrachten.

So zeigte sich in der ersten Studie zum zweiten Komplex der Habilitationsarbeit, dass die Förderung der Entwicklung von emotionalem Coping durch den gezielten Einsatz imaginativer verhaltenstherapeutischer Traumakonfronationsarbeit Schuld- und Schamgefühle bei Soldaten verändern kann. Das scheint umso erklärlicher, wenn man beachtet, dass Soldaten neben der kampfbezogenen Angst besonderes unter kampfbezogener Schuld leiden, da sie im Einsatz kriegerische Handlungen vollziehen, dazu gezwungen sind bzw. diese nicht verhindern können, die zutiefst gegen ihre eigenen inneren Werte und Norme verstoßen (Frankfurt et al., 2017). Es wird von Frankfurt et al. (2017) berichtet, dass besonderes Schulderleben als zentraler Vermittler zwischen speziellen Einsatzthemen, PTBS und auch Suizidalität fungiert. Kampfbezogenen Angst scheint demgegenüber andere Prozesse der Krankheitsverarbeitung zu bedingen.

Diese Erkenntnisse zeigen die Notwendigkeit des Einsatzes gezielter Behandlungsoptionen für unterschiedliche Gruppen traumatisierter Soldaten.
Die dargelegte Untersuchung zur Nutzung von „compassionate imagery“ gibt erste Hinweise, dass die Verbesserung der Fähigkeit beim Aufbau eines versöhnlichen, würdigenden, verzeihenden und empathischen Umgangs mit den eigenen inneren traumatisierten Anteilen die Beschwerden von Betroffenen bessert, wenn Schuld zu Beginn der Therapie besonders belastend berichtet wird. Der eigene innere Umgang mit dem imaginierten verletzten und traumatisierten Ich-Anteil, die damit verbundene Fähigkeit sich selber zu unterstützen und empathisches Verständnis entgegen zu bringen, scheint eine besondere Bedeutung in der Verarbeitung von kriegsbedingter Schuld und Scham bzw. einsatzbedingter Beschwerden bei Soldaten zu haben und könnte in zukünftigen Untersuchungen verstärktes Augenmerk erfahren.

Die zweite Arbeit im Rahmen des zweiten Komplexes der Habilitation beschäftigte sich mit der Behandlung posttraumatischer Alpträume von Soldaten mit PTBS, die von Betroffenen nicht selten als belastende „Restsymptomatik“ nach stattgefundener stationärer Traumatherapie berichtet werden. Die Untersuchung zeigte, dass die Einzelbehandlung mit Imagery Rehearsal Therapy (IRT) bei chronischen, kriegsbedingten Alpträumen das stationäre Versorgungsangebot für komplex und mehrfach traumatisierte Soldaten gewinnbringend ergänzen kann. Dabei scheint gerade die Kombination der einzelnen therapeutischen Komponenten aus Edukation, Konfrontationsarbeit, kognitiver Umstrukturierung und mitgefühlsbasierter Imagination von vielversprechender Bedeutung für die Verbesserung der Beschwerdesymptomatik. Die erhöhte Alptraumbelastung der untersuchten Soldaten, die mit Gefühlen der Schuld und Scham assoziiert war, zeigte sich auch in dieser Arbeit. Das vorgelegte 10-stündige einzeltherapeutische IRT-Interventionsprogramm ist gut in den praktischen klinischen Alltag zu implementieren und gehört mittlerweile zum ständigen Behandlungsangebot des Bundeswehrkrankenhauses und ergänzt so sinnvoll die Versorgung.

Die nächste Arbeit des dritten Komplexes der Habilitation knüpfte an das Thema der moralischen Verletzung („moral injury“) im Rahmen von Einsätzen der Bundeswehr und deren Bedeutung für den Behandlungsprozess an.
Sie beschäftigte sich mit der Frage nach dem Zusammenhang zwischen moralisch verletzenden Einsatzerfahrungen und psychischen Erkrankungen bei Einsatzsoldaten. Dabei wurde deutlich, dass der Umstand der Konfrontation mit Leid und Gewalt in der Bevölkerung des Einsatzlandes für die Soldaten eine direkte Vorhersagekraft für psychische Erkrankungen darstellt. Die erlebte moralische Verletzung beeinflusst als vermittelnder Faktor u.a. die Symptome der PTBS. Die Autoren schlussfolgern, dass das Thema der moralischen Einsatzverletzung im präventiven und therapeutischen Kontext stärkere Bedeutung erhalten sollte.

Die zweite Arbeit im dritten Komplex der Habilitation versuchte anschlussnehmend erste Antworten auf Fragen der therapeutischen Umsetzung des Themas der moralischen Verletzung am Beispiel eines kognitiv-behavioralen Gruppenkonzeptes zu geben.

Die kognitiv-behaviorale Gruppentherapie hat im letzten Jahrzehnt in der Behandlung von traumatisierten Soldaten einen zentralen Stellenwert in der stationären Versorgung des Bundeswehrkrankenhauses bekommen und wurde bereits in früheren Studien evaluiert (Alliger-Horn et al., 2014a, b).
Seit einigen Jahren ist in Erweiterung bisheriger Therapiekonzepte die Bearbeitung moralischer Verletzungen im Gruppenprozess in den Fokus gerückt. Ausgehend vom Modell von Nathanson (1992) zum sog. „Kompass der Scham“, konnten in der vorgelegten Untersuchung erste vielversprechende Hinweise zur Veränderung maladaptiver Copingmechanismen einsatzbedingter Scham erbracht werden. Unter Anwendung einer kognitiv-behavioralen, wertebasierten Gruppentherapie, die modular halbstandardisiert, stationär angeboten wird, zeigte sich, dass sich dysfunktionale Bewältigungsmechanismen der Scham ändern können. Diese erste deutschsprachige Arbeit, die den Aspekt der moralischen Einsatzverletzung in das Behandlungskonzept einbringt, soll zukünftige Arbeiten zu diesem wichtigen Thema ermutigen. Die Autoren betonen, dass Themen der moralischen Verletzungen im Dienstalltag auch in der Betreuung anderer Einsatzkräfte (z.B. Polizei)

relevant sein könnten.
Insgesamt zeigt sich das mögliche therapeutische Potential einer Kombination aus klassischer kognitiv-behavioraler Therapiearbeit, wertebasierten Behandlungsmodulen und mitgefühlsbasierter, imaginativer Interventionsarbeit für Einsatzgeschädigte mit moralischem Verletzungsmuster und daraus resultierenden Schuld- und Schamgefühlen.

6. Zusammenfassung

In den hier vorgestellten Studien wurden neben diagnostischen vor allem spezifische therapeutische Komponenten der stationären psychotraumatologischen Behandlung einsatztraumatisierter deutscher Soldaten dargestellt.

Dabei zeigte sich, dass die Beachtung von Schuld und Scham als zentrale traumatische Affekte (oft im Zusammenhang mit moralischen Verletzungen im Kriegseinsatz) in der Behandlung von Soldaten eine besondere klinische Herausforderung darstellt. Anknüpfend an die jüngste Forderung internationaler Autoren für eine stärkere Beachtung von maladaptiver Schuld und Scham bei Soldaten (Frankfurt et al., 2017) geht es darum, bestehende therapeutische Ansätze entsprechend weiter zu entwickeln.

Der Einsatz zeitökonomischer valider, diagnostischer Verfahren in der stationären Versorgung kann dabei den therapeutischen Prozess entscheidend unterstützen und evaluieren.

Es wird in Zukunft wichtig sein, bestehende Behandlungsmethoden, die vorrangig klassisch angstbezogene Kriegstraumata (z.B. nach Ansprengung und Gefechtsszenarien) im Fokus haben, um Themen der kriegsbedingten Schuld und Scham im therapeutischen Kontext zielführend zu erweitern. Gezielte imaginative Expositionsarbeit kann dabei einen wichtigen Beitrag leisten, schwere moralische Konflikte, die aus der Teilnahme am Krieg resultieren, therapeutisch empathisch und wertungsfrei zu bearbeiten.

Die Kombination aus klassischen kognitiv- behavioralen Methoden, wertebasierter therapeutischer Schwerpunktarbeit und mitgefühlsbasierter Imaginationsarbeit, die

emotionales Coping befördert, könnte zur weiteren Verbesserung der Versorgung im stationären Kontext beitragen.

Komplementäre Methoden (z.B. für die Behandlung posttraumatischer Alpträume) sollten das bestehende Versorgungsangebot ergänzen und helfen, komplex, chronisch und multiple gestörte Einsatzgeschädigte umfassender zu versorgen.

Insgesamt kann davon ausgegangen werden, dass die zukünftige Weiterentwicklung von Behandlungsmethoden sich noch verstärkter auf die besonderen Bedürfnisse von einsatztraumatisierten deutschen Soldaten konzentrieren muss. Dabei ist ein multimodulares Vorgehen, das die Spezifik der Kriegstraumatisierung einschließt, vorhandene moralische Einsatzverletzungen psychotherapeutisch bearbeitet und emotionsfokussierte sowie kognitiv-behaviorale Elemente zielführend verbindet, notwendig.

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Eidesstattliche Erklärung

§ 4 Abs. 3 (k) der HabOMed der
Charité

Hiermit erkläre ich, dass

- weder früher noch gleichzeitig ein Habilitationsverfahren durchgeführt oder angemeldet wurde,
- die vorgelegte Habilitationsschrift ohne fremde Hilfe verfasst, die beschriebenen Ergebnisse selbst gewonnen sowie die verwendeten Hilfsmittel, die Zusammenarbeit mit anderen Wissenschaftlern/Wissenschaftlerinnen und mit technischen Hilfskräften sowie die verwendete Literatur vollständig in der Habilitationsschrift angegeben wurden,
- mir die geltende Habilitationsordnung bekannt ist.

Ich erkläre ferner, dass mir die Satzung der Charité – Universitätsmedizin Berlin zur Sicherung Guter Wissenschaftlicher Praxis bekannt ist und ich mich zur Einhaltung dieser Satzung verpflichte.

Dezember 2019 gez. Alliger-Horn

……. ……..
Datum Unterschrift