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DIE BEDEUTUNG VON EMOTIONSREGULATION  
FÜR DIE ENTSTEHUNG  
UND AUFRECHTERHALTUNG DER DEPRESSION

The Significance of Emotion Regulation for Development and Maintenance of  
Depression

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## **ABKÜRZUNGSVERZEICHNIS**

ER	Emotionsregulation
KVT	Kognitive Verhaltenstherapie
MDD	Major Depression (engl. Major Depressive Disorder)
TEK	Training Emotionaler Kompetenzen

# 1 ZUSAMMENFASSUNG UND ABSTRACT

## 1.1 Zusammenfassung

Nachweise für die Annahme, dass Kindheitstraumata mit der Entstehung und Wiederkehr von depressiven Störungen assoziiert sind (Chapman et al., 2004; Ferguson & Dacey, 1997; Nanni, Uher, & Danese, 2012), gibt es viele. Was hingegen noch nicht ausreichend erforscht ist, sind deren kausale Mechanismen. Bis heute hat keine Studie die allgemeine Emotionsregulation als mediierenden Mechanismus zwischen Kindheitstraumata und Depressionsschwere sowie Depressionspersistenz in einer klinischen Stichprobe untersucht. Darüber hinaus hat sich die Forschung in diesem Zusammenhang bislang nur auf die allgemeine Emotionsregulation oder auf einzelne dysfunktionale Emotionsregulationsstrategien (z.B. Grübeln) fokussiert. Eine Vielzahl an unterschiedlichen Emotionsregulationskompetenzen sind noch nicht berücksichtigt worden.

Die Rückfallrate für Major Depression (engl. Major Depressive Disorder, MDD) ist sehr hoch (Vittengl, Clark, Dunn, & Jarrett, 2007; Westen & Morrison, 2001), weshalb ein dringender Bedarf besteht, potenzielle Faktoren zu identifizieren, welche die Wiederkehr von depressiven Symptomen verhindern und welche helfen, erzielte Behandlungserfolge aufrechtzuerhalten. Prospektive Studien haben gezeigt, dass es mithilfe von Emotionsregulation möglich ist, depressive Symptome vorherzusagen (Berking, Wirtz, Svaldi, & Hofmann, 2014; Radkovsky, McArdle, Bockting, & Berking, 2014; Wang et al., 2014). Unklar ist hingegen, ob Emotionsregulation nach erfolgter Psychotherapie wegen Depression ein Prädiktor für nachfolgende depressive Symptome bleibt. Des Weiteren gibt es noch keine Studien, die untersuchen, ob Emotionsregulation die Zeit bis zu einem Depressionsrückfall bei Remittierten nach Psychotherapie vorhersagt. Es gibt bislang keine Forschungsergebnisse bezüglich der potenziell unterschiedlichen Relevanz einer Vielzahl von spezifischen Emotionsregulationskompetenzen für die Vorhersage von depressiven Symptomen und für die Vorhersage der Zeit bis zu einem Depressionsrückfall nach einer Behandlung.

Ziel vorliegender Dissertation ist der Nachweis, dass allgemeine adaptive Emotionsregulation eine entscheidende Rolle für die Entstehung und Aufrechterhaltung der Depression spielt. Ein weiterer Schwerpunkt liegt bei der Relevanz spezifischer adaptiver Emotionsregulationskompetenzen.

In einer längsschnittlichen Studie untersuchten wir die Hypothese adaptiver Emotionsregulation als Prädiktor depressiver Symptome bis zu einem Jahr nach stationärer MDD-Behandlung (Studie 1). Effektivere allgemeine Emotionsregulation sagte nur unter den Therapie-Respondern weniger depressive Symptome drei Monate, jedoch nicht zwölf Monate nach der Behandlung vorher. Die effektive Emotionsregulationskompetenz *Konfrontationsbereitschaft* sagte weniger depressive

Symptome zwölf Monate und die Emotionsregulationskompetenz *Akzeptanz* weniger depressive Symptome sowohl drei als auch zwölf Monate nach der Behandlung vorher.

In einer querschnittlichen Studie untersuchten wir die Hypothese von Emotionsregulation als Mediator des Effekts von Kindheitstraumata auf die Depressionsschwere sowie auf die Depressionspersistenz bei stationär behandelten Personen mit MDD (Studie 2). Die allgemeine Emotionsregulation sowie die Emotionsregulationskompetenz *Konfrontationsbereitschaft* erwiesen sich als partielle Mediatoren des Zusammenhangs zwischen Kindheitstraumata und späterer Depressionsschwere sowie bisheriger Depressionspersistenz.

In einer längsschnittlichen Studie untersuchten wir den prospektiven Zusammenhang zwischen adaptiver Emotionsregulation und der Zeit bis zu einem Rückfall in die MDD nach erfolgreicher stationärer Behandlung (Studie 3). Die effektivere allgemeine Emotionsregulation sowie die effektiveren spezifischen Emotionsregulationskompetenzen emotionale *Akzeptanz* und *Toleranz*, mitfühlende *Selbstunterstützung*, zielbezogene *Konfrontationsbereitschaft* mit belastenden Situationen sowie die Fähigkeit zur *Modifikation* negativer Affekte sagten eine längere Zeit bis zu einem MDD-Rückfall vorher.

Zukünftige Untersuchungen wie beispielsweise randomisierte, kontrollierte Studien werden zeigen müssen, inwieweit gezielte Interventionen zur Verbesserung der Emotionsregulation bei ehemals depressiven sowie missbrauchten Personen zu einer Verringerung des nachfolgenden Depressionsrisikos beitragen können. Des Weiteren müssten zukünftige Studien zeigen, inwieweit gezielte Interventionen zur Verbesserung der Emotionsregulation bei ehemals Depressiven zu einem Schutz vor Rückfällen in die Depression beitragen können.



## 1.2 Abstract

Ample evidence exists for the assumption that childhood trauma is associated with the onset and recurrence of depressive disorders (Chapman et al., 2004; Ferguson & Dacey, 1997; Nanni et al., 2012). However, the causal mechanisms between childhood trauma and the subsequent development of depression have not been sufficiently studied. To date, no studies have investigated general emotion regulation as the mediating mechanism between childhood trauma and depression severity as well as depression persistency in a clinical sample. Moreover, research on this topic has been focused thus far on only general emotion regulation or single dysfunctional emotion regulation strategies (i.e., rumination), not taking a variety of different emotion regulation skills into account.

Since the relapse rate for Major Depressive Disorder (MDD) is very high (Vittengl et al., 2007; Westen & Morrison, 2001), there is a pressing need to identify potential factors that prevent recurrence of depressive symptoms and that help maintain treatment success once it is achieved. Prospective studies have indicated that emotion regulation is capable of predicting depressive symptoms (Berking et al., 2014; Radkovsky et al., 2014; Wang et al., 2014). However, it is not known whether emotion regulation remains a predictor for subsequent depressive symptoms following psychotherapy for depression. Furthermore, there are yet no studies analyzing whether emotion regulation predicts time to MDD relapse in depression remitters after psychotherapy. There is yet no research on the potentially different relevance of a variety of specific emotion regulation skills in predicting depressive symptoms and time to MDD relapse following treatment.

This dissertation aims to identify general adaptive emotion regulation as a crucial factor for development and maintenance of depression. Another emphasis was put on the relevance of specific emotion regulation skills.

In a longitudinal study, we tested the hypothesis of adaptive emotion regulation as a predictor of depressive symptoms up to one year after inpatient depression treatment (Study 1). Among treatment responders only, higher general emotion regulation predicted lower depressive symptoms three months, but not twelve months after treatment. The specific emotion regulation skill *willingness to confront* predicted lower depressive symptoms twelve months after treatment and the emotion regulation skill *acceptance* predicted lower depressive symptoms three and twelve months after treatment.

In a cross-sectional study, we tested the hypothesis of emotion regulation as a mediator of the effect of childhood trauma on depression severity and depression lifetime persistency in inpatient treated persons with MDD (Study 2). General emotion regulation and the emotion regulation skills

*willingness to confront* were partial mediators of the association between childhood trauma and later depression severity as well as depression lifetime persistency.

In a longitudinal study, we investigated prospective effects of adaptive emotion regulation and the time to relapse into depression after successful inpatient treatment (Study 3). More effective general emotion regulation as well as the specific emotion regulation skills emotional *acceptance* and *tolerance*, compassionate *self-support*, *willingness to confront* challenging situations as well as the ability to *modify* negative affects predicted longer time to MDD relapse.

Future studies such as randomized controlled studies on formerly depressed and maltreated persons will have to examine whether increasing adaptive emotion regulation with specific interventions can help to reduce the subsequent depression risk. Furthermore, future studies on formerly depressed will have to show whether increasing adaptive emotion regulation can contribute to a protection against a relapse into depression.

## 2 EINLEITUNG

### 2.1 Notwendigkeit zur Identifizierung von Faktoren, welche die Behandlung von Major Depression verbessern

Major Depression (MDD) ist eine hoch prävalente, oft rezidivierende und chronische psychische Störung (Andrews, 2001; Kessler, Zhao, Blazer, & Swartz, 1997; Solomon et al., 2004), die für enorme Krankheitskosten verantwortlich gemacht wird (Donohue & Pincus, 2007; Kessler, 2012). In einer Studie mit 3784 Patienten mit MDD remittierten 67 % während der Akutbehandlung, bei 33 % schlug die Behandlung nicht an (Sackheim, Kupfer, Luther, & Fava, 2006). Auch andere Studien berichten, dass einige Patienten trotz teils aggressiverer Behandlungsformen wie der Elektrokrampftherapie oder Tiefenhirnstimulation depressiv bleiben (Bewernick et al., 2010; Mayberg et al., 2005). Aktuelle Metaanalysen zeigen jedoch, dass psychotherapeutische Methoden sowie Psychopharmaka zur Behandlung von MDD in der Reduktion der depressiven Symptombelastung wirksam sind (Cuijpers, Berking, et al., 2013; Cuijpers, Hollon, et al., 2013). Hierbei ist allerdings anzumerken, dass die Wirksamkeit verschiedener Behandlungsformen vermutlich aufgrund des Publikationsbias überschätzt wird. Zudem behalten einige Patienten nach einer Behandlung Residualsymptome (Judd et al., 1998; Paykel, Ramana, Cooper, & Hayhurst, 1995) und ein Großteil der Therapie-Responder erleidet einen Rückfall in die Depression (Vittengl et al., 2007). Aufgrund dieser Befunde besteht ein dringender Bedarf, die Behandlung von MDD zu verbessern. Um die Wirksamkeit und Nachhaltigkeit einer MDD-Therapie zu verbessern, ist es notwendig, Faktoren zu identifizieren, welche Schutzfaktoren gegen die Entstehung, Aufrechterhaltung und Wiederkehr von Depressionen darstellen. Wenn solche Schutzfaktoren beispielsweise das Risiko eines MDD-Rückfalls verringern oder erzielte Therapieerfolge länger aufrechterhalten, könnte man sie gezielt als therapeutischen Ansatzpunkt nutzen und in die MDD-Behandlung integrieren.

### 2.2 Major Depression als eine Störung der Emotionsregulation

Defizite in der Emotionsregulation werden als Risikofaktor für die Entstehung, Aufrechterhaltung und Wiederkehr von MDD diskutiert (Brockmeyer et al., 2012; Ehring, Fischer, Schnülle, Bösterling, & Tuschen-Caffier, 2008; Ehring, Tuschen-Caffier, Schnülle, Fischer, & Gross, 2010). Emotionsregulation bezieht sich auf eine Reihe von Prozessen, mit welchen Menschen versuchen, den spontanen Verlauf ihrer Gefühle zu überwachen, zu bewerten und zu leiten, um ihre Bedürfnisse und Ziele zu erreichen (Koole, 2009). Emotionsregulation bezieht sich allgemein auf den Umgang mit Gefühlen unterschiedlicher Wertigkeit (Berking & Whitley, 2014; Gross, 1999), wobei sich diese Arbeit sowohl auf den Umgang mit negativen als auch mit positiven Gefühlen im Kontext der MDD bezieht. Um das Regulieren von angenehmen Gefühlen geht es beispielsweise, wenn wir Gefühle der Zuneigung in einem Kontext unterdrücken, in dem das offene Zeigen von Gefühlen als unangemessen

bewertet werden könnte. Emotionsregulation bedeutet nicht nur das Herunterregulieren von Gefühlen, es beinhaltet ebenso das Aufrechterhalten oder Steigern von Gefühlen (Gross, 2007), wenn wir beispielsweise eine gute Nachricht mit anderen teilen. Bestimmte Situationen wie eine Auseinandersetzung mit einem Nachbarn oder das Auffinden eines Strafzettels rufen bei den allermeisten Personen negative Gefühle hervor. Negative sowie positive Gefühle sind somit in einem gewissen Umfang Bestandteile des alltäglichen Lebens.

Schwierigkeiten in der Reduktion negativer Affekte aufgrund von Defiziten in der Emotionsregulation sind mit zu intensiven, zu lange anhaltenden oder situationsunangemessenen negativen Gefühlen assoziiert (Gross & Muñoz, 1995). Anhaltende und intensive negative Gefühle sind wesentliche Merkmale der MDD und weiterer psychischer Störungen (Dilling, Mombour, & Schmidt, 1991). Negative Gedanken und Gefühle, die mit Depressionen in Verbindung gebracht werden und die sich sogar in den Hauptkriterien für eine MDD finden, beinhalten depressive Verstimmung, Traurigkeit, Minderwertigkeits- und Schuldgefühle. Neben ihrer Rolle als Kriterium für die MDD werden anhaltende und starke negative Gefühle als entscheidende Risikofaktoren für die Entstehung und Aufrechterhaltung von MDD diskutiert. Kognitive Depressionstheorien (Beck, Rush, Shaw, & Emery, 1979; Teasdale & Barnard, 1993) betonen dabei die Rolle einer stimmungsabhängigen Aktivierung depressiogener kognitiver Prozesse wie dysfunktionale Annahmen oder Verzerrungen in basalen kognitiven Prozessen. Als Wirkmechanismus nimmt man eine reziproke Abhängigkeit zwischen negativen Gefühlen und kognitiven Prozessen an. Wechselseitige Zusammenhänge infolge einer stimmungsabhängigen Aktivierung depressiver Kognitionen können zu einer Intensivierung negativer Gefühle führen und schließlich zu der Entstehung und Aufrechterhaltung von MDD beitragen. Studien stützen eine stimmungsabhängige Aktivierung dysfunktionaler depressiogener Annahmen (Beevers & Carver, 2003; Beevers, 2005). Experimentelle Befunde stützen darüber hinaus stimmungskongruente Verzerrungen in kognitiven Prozessen wie Aufmerksamkeit (Levens & Gotlib, 2010), Interpretation (Wisco & Nolen-Hoeksema, 2010) und Erinnerung (Joormann, Siemer, & Gotlib, 2007) und bringen diese mit MDD in Zusammenhang.

Zahlreiche Studien belegen, dass Emotionsregulationsschwierigkeiten in einem engen Zusammenhang mit der Entstehung und Aufrechterhaltung von Depression stehen (z.B. Joormann & Gotlib, 2010; Wang et al., 2014). So berichteten beispielsweise in einer querschnittlichen Studie Menschen mit MDD im Vergleich zu Gesunden von größeren Emotionsregulationsschwierigkeiten (Brockmeyer et al., 2012) und in einer prospektiven Studie sagten Arditte und Joormann (2011) anhand der Verwendung von Emotionsregulationsstrategien den Genesungsstatus von MDD-Patienten sechs Monate später vorher. In einer experimentellen Untersuchung konnte gezeigt werden, dass Depression mit einer eingeschränkten Fähigkeit assoziiert ist, positive Erinnerungen zu nutzen,

um eine traurige Stimmung zu regulieren und dass diese Einschränkung sogar noch nach der Erholung von einer Depression besteht (Joormann et al., 2007). Zahlreiche neurowissenschaftliche Studien belegen ebenso den Zusammenhang zwischen Depression und veränderter Emotionsregulation (Farb, Anderson, Bloch, & Segal, 2011; Kanske, Heissler, Schönfelder, & Wessa, 2012; Ritchey, Dolcos, Eddington, Strauman, & Cabeza, 2011). Eine Magnetresonanzuntersuchung zeigte beispielsweise, dass eine erhöhte Präfrontalkortexaktivität während aversiver Emotionsregulation ein Prädiktor für depressive Symptomschwere über sechs Monate darstellt (Heller et al., 2013). Defizite in der Emotionsregulation werden über akute Phasen von MDD hinaus explizit auch als Vulnerabilitätsfaktoren, die ehemals depressive Personen anfällig für Rückfälle machen, diskutiert (Ehret, Joormann, & Berking, 2015; Ehring et al., 2010).

Während Defizite in der Emotionsregulation als Risikofaktor für die Entstehung, Aufrechterhaltung und Wiederkehr von MDD gelten, sollten Kompetenzen im Bereich der Emotionsregulation Betroffenen helfen, negative Gedanken und Gefühle bei Bedarf zu reduzieren. Befunde aus der Grundlagenforschung stützen einen Zusammenhang zwischen dem Rückgang dysfunktionaler Gedanken und dem Rückgang depressiver Symptome (Haaga, Dyck, & Ernst, 1991; Sheppard & Teasdale, 2004). In einer Behandlungsstudie mit MDD-Patienten sagte der erfolgreiche Einsatz von Emotionsregulation Verbesserungen in der depressiven Symptomschwere während der Behandlung vorher (Radkovsky et al., 2014).

### **2.3 Emotionsregulation als mögliche Verbindung zwischen Kindheitstraumata und Major Depression**

Die Forschung hat gezeigt, dass Kindesmissbrauch – im Sinne von Misshandlung und Vernachlässigung – erschreckend häufig ist (Häuser, Schmutzer, Brähler, & Glaesmer, 2011; Scher, Forde, McQuaid, & Stein, 2004). Kindheitstraumata sind assoziiert mit einer Reihe negativer Konsequenzen wie beispielsweise einem erhöhten Risiko für psychische Krankheiten (Hetzel & McCanne, 2005; Rogosch & Cicchetti, 2005). Es gibt zahlreiche Hinweise für die Annahme, dass Kindheitstraumata mit dem Entstehen und einem ungünstigen Krankheitsverlauf von depressiven Störungen assoziiert sind (Lok et al., 2013; Nanni et al., 2012). In einer Studie mit 9460 Personen zeigte sich beispielsweise, dass negative Kindheitserfahrungen mit einem stark erhöhten Risiko für depressive Störungen einhergeht, welches bis ins Erwachsenenalter bestehen bleibt (Chapman et al., 2004). Kindheitstraumata sind somit ein bekannter Prädiktor für Depressionen, allerdings stellt sich die Frage, wie es zu diesem Zusammenhang kommt.

Der kausale Mechanismus zwischen Kindheitstraumata und der nachfolgenden Entstehung von Depressionen ist noch nicht ausreichend geklärt. Potenzielle Mediatoren des Zusammenhangs zwischen Kindheitstrauma und Depression sind vielfältig und klärende Forschung hierzu ist selten. Eine

mögliche Verbindung zwischen einem Kindheitstrauma und einer späteren Depression könnte die suboptimale Entwicklung von Emotionsregulation nach erlebtem Kindesmissbrauch sein. Einige wenige Studien mit homogenen Stichproben (meist Studenten) haben Emotionsregulation als Mechanismus zwischen Kindesmissbrauch und späterer Depression untersucht (Raes & Hermans, 2008; Spasojević & Alloy, 2002). In einer Untersuchung mit vorwiegend einkommensschwächeren Afroamerikanern erwies sich beispielsweise die emotionale Dysregulation als Mediator zwischen emotionalem Missbrauch in der Kindheit und späterer Depression (Crow, Cross, Powers, & Bradley, 2014).

#### **2.4 Konzeptualisierung adaptiver Emotionsregulation**

Berking und Kollegen (Berking & Lukas, 2015; Berking & Whitley, 2014) haben frühere Modelle der Emotionsregulation (Gross, 2007; Larsen, 2000; Westen & Blagov, 2007) überarbeitet und definieren Emotionsregulation als situationsabhängiges Zusammenspiel aus den folgenden neun Komponenten, die in der Literatur als bedeutsame Bestandteile psychischer Gesundheit eingeschätzt werden: (1) das bewusste Wahrnehmen emotionaler Zustände (*Aufmerksamkeit*; Subic-Wrana, Bruder, Thomas, Lane, & Köhle, 2005), (2) die korrekte Interpretation von Körpersignalen (*Körperwahrnehmung*; Nielsen & Kaszniak, 2006), (3) das korrekte Erkennen und Benennen emotionaler Zustände (*Klarheit*; Vine & Aldao, 2014), (4) das Verstehen der Ursachen emotionaler Zustände (*Verstehen*; Southam-Gerow & Kendall, 2002), (5) die Akzeptanz schwieriger Gefühle (*Akzeptanz*; Braams, Blechert, Boden, & Gross, 2012), (6) die Toleranz aversiver Gefühle (*Toleranz*; Iverson, Follette, Pistorello, & Fruzzetti, 2011), (7) die emotionale Unterstützung der eigenen Person in belastenden Situationen (*mitfühlende Selbstunterstützung*; Gilbert, Baldwin, Irons, Baccus, & Palmer, 2006), (8) die Bereitschaft zur Konfrontation mit emotional belastenden Situationen (*Konfrontationsbereitschaft*; Frye & Spates, 2012) und (9) die zielgerichtete Modifikation emotionaler Zustände (*Modifikation*; Berking et al., 2008). Eine zentrale Annahme des Modells besteht darin, dass die Emotionsregulationskompetenzen Akzeptanz/Toleranz und Modifikation von besonderer Bedeutung für die Verbesserung und Aufrechterhaltung von psychischer Gesundheit sind. Von den anderen Emotionsregulationskompetenzen des Modells wird angenommen, dass sie nur insofern relevant sind, als dass sie die Akzeptanz/Toleranz und/oder Modifikation negativer Gefühle erleichtern (Berking & Znoj, 2008). Die Bestandteile des Modells sowie mögliche Zusammenhänge zwischen den Emotionsregulationskompetenzen sind in Abbildung 1 dargestellt.

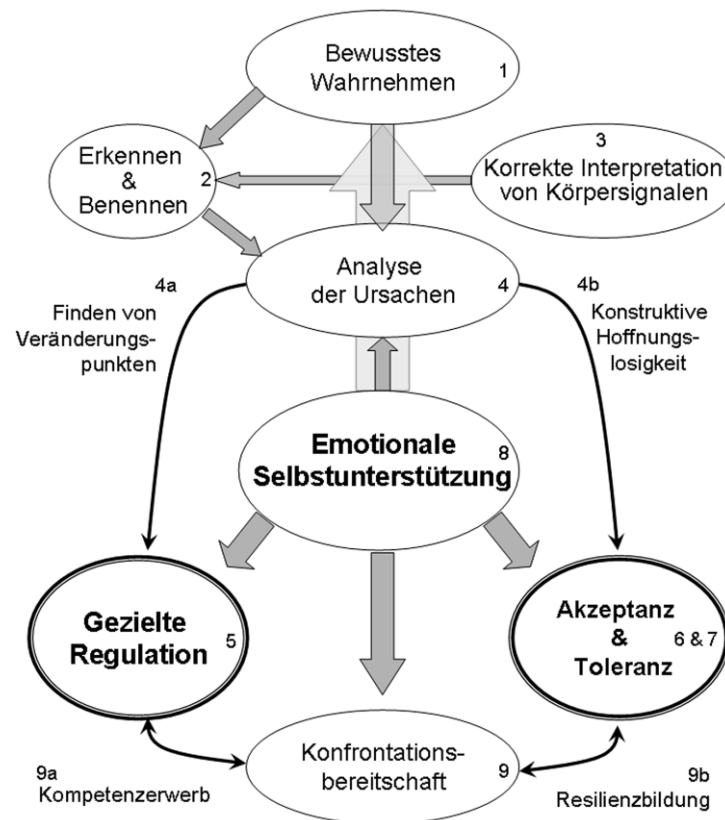


Abbildung 1. Modell adaptiver Emotionsregulation nach Berking

Querschnittliche (Berking, Orth, Wupperman, Meier, & Caspar, 2008; Ehret et al., 2015) und prospektive (Berking, Ebert, Cuijpers, & Hofmann, 2013; Berking et al., 2014) Studien belegen erwartungsgemäß negative Zusammenhänge zwischen der allgemeinen Emotionsregulation (Durchschnittswert der neun Emotionsregulationskompetenzen) sowie den einzelnen Emotionsregulationskompetenzen des Modells adaptiver Emotionsregulation nach Berking und dem Ausmaß an depressiven Symptomen. Die vorliegende Arbeit setzte Fragebogen ein, die auf dem Modell adaptiver Emotionsregulation nach Berking basieren.

Eine Emotionsregulationskompetenz, der eine bedeutsame Rolle in Behandlungskonzepten wie der Akzeptanz- und Commitmenttherapie (Hayes, Strosahl, & Wilson, 1999) zugesprochen wird und die in letzter Zeit verstärkt in den Aufmerksamkeitsfokus der empirischen Forschung zu psychischer Gesundheit gelangte, ist die *Akzeptanz*. Da dieser Emotionsregulationskompetenz zudem in dem zugrundeliegenden Modell der adaptiven Emotionsregulation eine wichtige Rolle zugesprochen wird, wird im Folgenden exemplarisch auf diese Kompetenz näher eingegangen. Da negative Gedanken und Gefühle in der Regel unangenehm sind, ist es nachvollziehbar, dass wir meist bemüht sind, jene rasch reduzieren zu wollen. Dies gestaltet sich allerdings schwierig, da Gefühle mit nur langsam veränderbaren physiologischen Veränderungen einhergehen (Sinha et al., 2009) und sie

von Zentren gesteuert werden, die nicht der direkten willentlichen Kontrolle unterliegen (Gyurak, Gross, & Etkin, 2011). Das Unvermögen der Emotionsveränderung kann als Kontrollverlust wahrgenommen werden (Tafet & Bernardini, 2003), welcher wiederum zu Anspannung und weiteren Angst- oder Ärgerreaktionen führen kann. Wie in einem Teufelskreislauf intensivieren vermutlich Bemühungen, negative Emotionen zu verändern, letztere, statt sie abzuschwächen. Das erhöhte Anspannungsniveau und die hinzugekommenen Angst- und Ärgerreaktionen können schließlich eine positive Beeinflussung der ursprünglichen aversiven Gefühle erschweren oder zu einer Steigerung der anfänglichen Gefühle führen (Berking, 2010). Das Modell adaptiver Emotionsregulation nach Berking sieht die Fähigkeit der Akzeptanz als Möglichkeit zur Durchbrechung dieses Teufelskreises. Es geht bei dieser Fähigkeit darum, emotionale Reaktionen zuzulassen, sie zu akzeptieren und sie zumindest für eine bestimmte Zeit auszuhalten. Berking (2010) beschreibt, dass die Flucht vor aversiven Gefühlen sowie der nicht zu gewinnende Kampf gegen negative Gefühle durch eine Bereitschaft zur Akzeptanz der Gefühle ersetzt werden kann. Im Detail geht es bei der Fähigkeit der Akzeptanz darum, sich innerlich die Erlaubnis zu geben, sich so zu fühlen, wie man sich gerade fühlt und es geht darum, überzeugt zu sein, dass man diese Gefühle für den Moment aushalten kann.

Neben der Erleichterung adaptiver Emotionsregulationsprozesse wird die Akzeptanz als eine eigenständige, adaptive Emotionsregulationskompetenz diskutiert (Beblo et al., 2011). Die Unterscheidung zwischen adaptiven und maladaptiven Kompetenzen ist vereinfacht und schenkt einem flexiblen und situationsabhängigen Einsatz von Emotionsregulationskompetenzen für die psychische Gesundheit wenig Beachtung (Bonanno, Papa, Lalande, Westphal, & Coifman, 2004). Dennoch geht man davon aus, dass manche Emotionsregulationskompetenzen die Aufrechterhaltung und Intensivierung negativer Gefühle begünstigen und andere Emotionsregulationskompetenzen eher dabei helfen, negative Gefühle bei Bedarf zu reduzieren (Aldao & Nolen-Hoeksema, 2011). Während maladaptive Kompetenzen verstärkt mit MDD und weiteren psychischen Störungen assoziiert werden (Aldao & Nolen-Hoeksema, 2010), geht man davon aus, dass adaptive Emotionsregulationskompetenzen negativ mit psychischen Störungen, inklusive MDD, korrelieren (Aldao & Nolen-Hoeksema, 2011).

Ergebnisse aus bisherigen Untersuchungen stützen erwartungsgemäß negative Zusammenhänge zwischen einem Einsatz der neun adaptiven Emotionsregulationskompetenzen nach Berking und depressiven Symptomen. (1) Aktuell Depressive zeigten weniger emotionale *Aufmerksamkeit* im Vergleich zu Gesunden oder ehemals Depressiven (Rude & McCarthy, 2003). (2) Depressive hatten im Vergleich zu Gesunden größere Schwierigkeiten *körperliche Zustände und Gefühle zu identifizieren* (Duddu, Isaac, & Chaturvedi, 2003). (3) Ehemalige depressive Studenten berichteten von mehr wahrgenommenen Schwierigkeiten bezüglich des Einsatzes der Kompetenz emotionale *Klarheit* als



gesunde Studenten (Ehring et al., 2008). (4) In einer Studentenstichprobe war emotionales *Verstehen* negativ assoziiert mit depressiven Symptomen (Mennin, Holaway, Fresco, Moore, & Heimberg, 2007). (5) In einer Studie mit Frauen, die an Brustkrebs erkrankt waren, sagte der Einsatz von *Akzeptanz* weniger depressive Symptome zu einem späteren Zeitpunkt vorher (Wang et al., 2014). (6) In einer Gruppe mit behandlungsresistenten MDD-Patienten, die ein Kompetenztraining erhielten, welches u.a. die *Toleranz* von Emotionen trainierte, waren Verbesserungen in der Emotionsverarbeitung mit einem Rückgang der depressiven Symptome assoziiert (Feldman, Harley, Kerrigan, Jacobo, & Fava, 2009). (7) In einer Studie von Ehret et al. (2015) berichteten derzeit Depressive von einem geringeren Einsatz an *Selbstunterstützung* als ehemals Depressive und Gesunde; die ehemals Depressiven berichteten wiederum von einem geringeren Einsatz an Selbstunterstützung als Gesunde. (8) In einer Studie mit Studenten war die emotionale Vermeidung (als Gegenstück zur *Konfrontationsbereitschaft*) positiv assoziiert mit depressiven Symptomen (Kahn & Garrison, 2009). (9) In einer Studentenstichprobe war die Erwartung, negative emotionale Zustände verändern/*modifizieren* zu können negativ assoziiert mit depressiven Symptomen (Catanzaro, Wasch, Kirsch, & Mearns, 2000). Radkovsky et al. (2014) sowie Berking et al. (2014) bestätigten die negativen Zusammenhänge der genannten Emotionsregulationskompetenzen des Modells nach Berking und der depressiven Symptomatik.

## 2.5 Das Training Emotionaler Kompetenzen

Das Training Emotionaler Kompetenzen (TEK) ist ein strukturiertes, standardisiertes, störungsübergreifendes und gruppenbasiertes Training, welches an einer Verbesserung der Emotionsregulation zur Verbesserung der psychischen Gesundheit entsprechend des Modells adaptiver Emotionsregulation von Berking (siehe Abbildung 1 bzw. Berking & Lukas, 2015) ansetzt. Das TEK kombiniert Elemente aus verschiedenen psychotherapeutischen Ansätzen wie der kognitiven Verhaltenstherapie (KVT; Hautzinger, 2003), der emotionsfokussierten Therapie (Greenberg, 2002), der dialektisch-behavioralen Therapie (DBT; Linehan, 1993) und achtsamkeitsbasierten Interventionen (Kabat-Zinn, 2003). Konkrete Bausteine des TEK umfassen Atementspannung, Muskelentspannung, bewertungsfreie Wahrnehmung, Akzeptanz und Toleranz gegenüber den eigenen Gefühlen, effektive Selbstunterstützung in emotional belastenden Situationen, sowie das Analysieren und Regulieren emotionaler Reaktionen. Eine Übersicht über die Bestandteile des TEK sind in Tabelle 1 abgebildet, eine detaillierte Beschreibung des Trainings findet sich in dem Therapiemanual (Berking, 2010).

Bisherige Evaluationsstudien stützen das TEK als ein effektives Programm zur Verbesserung der adaptiven Emotionsregulation (Berking, Meier, & Wupperman, 2010) und der Reduktion depressiver Symptome. In einer Studie wurden in einer zufällig ausgewählten Stichprobe von Patienten mit

unterschiedlichen psychischen Störungen Teile einer regulären KVT durch eine Kurzform des TEK ersetzt (Berking, Wupperman, et al., 2008). Patienten der kombinierten KVT- und TEK-Bedingung berichteten im Vergleich zu Personen der reinen KVT-Bedingung von einer größeren Zunahme der Emotionsregulation sowie einer stärkeren Abnahme der depressiven Symptome. In einer prospektiven randomisiert-kontrollierten Studie erzielten depressive Patienten, bei denen einige Teile ihrer KVT durch eine Kurzfassung des TEK ersetzt wurden, ebenfalls eine stärkere Zunahme der Emotionsregulation sowie eine stärkere Abnahme der depressiven Symptome als Patienten, die eine reine KVT-Behandlung erhielten (Berking et al., 2013).

Tabelle 1.

*Übersicht über die Therapiebestandteile des Trainings Emotionaler Kompetenzen*

<b>Atementspannung und Muskelentspannung</b>
Vermittlung einfacher Atemübungen und der Methode der progressiven Muskelrelaxation (Jacobson, 1938) zur Reduktion der psychophysiologischen Anspannung und der Erleichterung von Techniken, die mentale Ressourcen erfordern.
<b>Bewertungsfreie Wahrnehmung</b>
Vermittlung von Hilfen zur bewertungsfreien Wahrnehmung emotionaler Zustände inklusive (1) dem Benennen von Gefühlen, (2) der Einschätzung der Gefühlsintensität auf einer numerischen Skala und (3) der Wahrnehmung affektassoziierter Körperempfindungen.
<b>Akzeptieren und Tolerieren</b>
Erarbeitung eines mehrstufigen Akzeptanz- und Toleranzplans inklusive (1) der Zielsetzung von Akzeptanz bei emotionalen Zuständen, (2) der Verstärkung dieses Ziels durch eine Begründung, (3) der Betrachtung von Gefühlen als wichtige Partner, (4) der Erinnerung an die Vergänglichkeit von Gefühlen und (5) dem Bewusstmachen der eigenen Belastbarkeit.
<b>Mitfühlende Selbstunterstützung</b>
Erarbeitung einer warmen, anteilnehmenden und mitfühlenden Haltung gegenüber der eigenen Person. Mit dem Ziel sich selbst gegenüber Verständnis aufzubringen, sich innerlich zu ermutigen und sich selbst aufzumuntern, werden Selbstunterstützungshandlungen eingeführt.
<b>Analysieren</b>
Auslösende und aufrechterhaltende Faktoren für eigene emotionale Reaktionen werden erarbeitet und kurz- und langfristige Vor- und Nachteile der analysierten Gefühle werden zusammengetragen. Das zugrundeliegende Modell der Emotionsentstehung beinhaltet (1) ein Gefühl, (2) ein emotionsauslösendes Ereignis, (3) die Grundstimmung, (4) die Aufmerksamkeitslenkung und Bewertung auf/von emotionsauslösenden Ereignissen, (5) Bedürfnisse, Wünsche, Ziele und Erwartungen, (6) alte Bewertungsmuster, (7) Körperreaktionen, (8) sekundäre Emotionen, (9) motivationale Impulse und (10) Verhaltensweisen, die aus dem Gefühl resultieren und über Feedbackschleifen auf dieses zurückwirken können.
<b>Regulieren</b>
Mithilfe der 10 Komponenten des Modells der Emotionsentstehung (siehe Therapiebestandteil <i>Analysieren</i> ) wird ein Zielgefühl definiert und es werden Veränderungsmöglichkeiten zur Erreichung des Zielgefühls erarbeitet. Mögliche Verhaltensstrategien beinhalten dabei (1) die Nutzung emotionaler Informationen, (2) ein Verhalten entgegen des ursprünglichen Impulses und (3) Ablenkungsstrategien.

### 3 DARSTELLUNG DES DISSERTATIONSVORHABENS

#### 3.1 Herleitung der Fragestellungen

Kindheitstraumata sind weit verbreitet (Häuser et al., 2011; Scher et al., 2004) und werden mit einer Reihe negativer Konsequenzen wie einem erhöhten Risiko für psychische Krankheiten (Hetzl & McCanne, 2005; Rogosch & Cicchetti, 2005), darunter auch die Depression, assoziiert (Chapman et al., 2004; Lok et al., 2013). Obwohl Kindheitstraumata als gesicherter Prädiktor für depressive Störungen gelten (Nanni et al., 2012), ist bislang noch nicht ausreichend geklärt, welche kausalen Mechanismen zwischen einem Kindheitstrauma und dem nachfolgenden Ausbruch einer Depression wirken. Als mögliche Verbindung zwischen einem Kindheitstrauma und einer späteren Depression wird die suboptimale Entwicklung von Emotionsregulation nach erlebtem Kindesmissbrauch diskutiert (Crow, Cross, Powers, & Bradley, 2014; Raes & Hermans, 2008; Spasojević & Alloy, 2002). Bislang gibt es keine Studie, welche die allgemeine Emotionsregulation als mediierenden Mechanismus zwischen Kindheitstrauma und späterer Depression bzw. dem gesamten depressiven Krankheitsverlauf in einer klinischen Stichprobe untersucht hat. Darüber hinaus haben bisherige Studien entweder nur die allgemeine Emotionsregulation oder einzelne spezifische maladaptive Emotionsregulationskompetenzen untersucht, jedoch wäre wichtig herauszufinden, welche Emotionsregulationskompetenzen genau und ob auch adaptive Emotionsregulationskompetenzen eine entscheidende Rolle in dem Bedingungsgefüge spielen. Genaueres Wissen um den Mechanismus Emotionsregulation zwischen erlebten Traumata und dem daraufhin bestehenden hohen Depressionsrisiko würde die Möglichkeit bieten, mit entsprechenden Maßnahmen diesem Zusammenhang entgegenzuwirken. Eine genauere Kenntnis besonders relevanter Emotionsregulationskompetenzen würde es ermöglichen, gezielte Interventionen für Menschen mit traumatischen Kindheitserlebnissen, also für depressionsvulnerable Menschen, zu entwickeln.

Vor dem Hintergrund von Defiziten in der Emotionsregulation als entscheidender Risikofaktor für die Entstehung und Aufrechterhaltung depressiver Störungen (siehe 2.2 bzw. Brockmeyer et al., 2012; Ehring, Fischer, Schnülle, Bösterling, & Tuschen-Caffier, 2008; Ehring, Tuschen-Caffier, Schnülle, Fischer, & Gross, 2010), stellt die Identifikation von Ansatzpunkten zur Verbesserung der Emotionsregulation bei depressionsvulnerablen, depressiven und ehemals depressiven Personen in der psychologischen und therapeutischen Forschung eine wichtige Aufgabe dar. Speziell mit Blick auf die Identifikation und Reduktion von Defiziten in der Emotionsregulation in klinischen und Risikogruppen entwickelten Berking und Kollegen (2008) wie eingangs dargestellt ein Modell adaptiver Emotionsregulation, in dem effektive Emotionsregulation als ein situationsangepasstes Zusammenspiel neun verschiedener emotionaler Kompetenzen (siehe Abbildung 1)

konzeptualisiert wird. Querschnittliche und prospektive Studien ergaben erwartungsgemäß negative Zusammenhänge zwischen der allgemeinen Emotionsregulation sowie den einzelnen Kompetenzen des Modells und depressiven Symptomen (z.B. Berking et al., 2014; Duddu et al., 2003; Feldman et al., 2009; Rude & McCarthy, 2003).

Ohne eine funktionale bzw. adaptive Emotionsregulation könnten negative Zustände als aversiv, unkontrollierbar und zeitstabil eingeschätzt werden. Das Fehlen einer adaptiven Emotionsregulation könnte in einem Teufelskreislauf resultieren, welcher depressiogene Gedankenmuster aufrechterhält (Berking & Whitley, 2014; Teasdale & Barnard, 1993). Eine adaptive Emotionsregulation könnte im Gegensatz dazu maladaptiven Reaktionen auf negative Gefühle entgegenwirken und die Entstehung von depressiogenen, dysfunktionalen Gedankenmustern verhindern (siehe 2.4). In der klinischen Praxis könnten die allgemeine Emotionsregulation und die spezifischen Emotionsregulationskompetenzen wichtige therapeutische Ansatzpunkte für die Prävention und Behandlung von MDD liefern. Vorläufige Interventionsstudien zu dem TEK (siehe 2.5 bzw. Berking, 2010; Berking & Whitley, 2014) deuten auf die Wirksamkeit einer Verbesserung der adaptiven Emotionsregulation nach Berking sowie auf eine Reduktion depressiver Symptome hin (Berking et al., 2013; Berking, Wupperman, et al., 2008).

Erste längsschnittliche Studien zeigten, dass sich anhand von Emotionsregulation depressive Symptome vorhersagen lassen (Heber, Lehr, Riper, & Berking, 2014; Radkovsky et al., 2014; Wirtz, Radkovsky, Ebert, & Berking, 2014). In einer Studie mit Menschen mit Brandverletzungen ließ sich beispielsweise anhand einer geringen Fähigkeit zur positiven Umstrukturierung eine spätere schwerere Depressionssymptomatik vorhersagen (Van Loey et al., 2013). Da die Prädiktoren für den Erstausbruch einer Depression andere sein könnten als die Prädiktoren für weitere depressive Episoden (Monroe, Rohde, Seeley, & Lewinsohn, 1999), ist bislang unklar, inwieweit Emotionsregulation über akute Phasen von MDD hinaus einen stabilen Vulnerabilitätsfaktor für MDD darstellt bzw. ob Emotionsregulation auch nach einer Depressionstherapie ein Prädiktor für depressive Symptome bleibt.

Die Emotionsregulation könnte aus folgenden Gründen für den weiteren Verlauf der Depression nach Erstausbruch bzw. nach einer MDD-Behandlung wichtig sein. Erstens nehmen wir an, dass adaptive Emotionsregulation nicht nur depressiogene Gedankenmuster vorab verhindern kann (also einer Entstehung von MDD entgegenwirken könnte), sondern dass eine adaptivere Emotionsregulation auch eine Reaktivierung depressiogener Gedankenmuster verhindern kann (also einem MDD-Rückfall entgegenwirken könnte) (Jarrett et al., 2012; Segal et al., 2006). Zweitens, im Gegensatz zum Erstausbruch einer Depression, bei dem schwerwiegende Lebensereignisse als entschei-

dende Risikofaktoren identifiziert wurden (Sawyer, Pfeiffer, & Spence, 2009), werden für die Wiederkehr depressiver Episoden eher Alltagsstressoren als entscheidende Risikofaktoren verantwortlich gemacht (Bockting et al., 2006). Aus diesem Grund ist eine gute Fähigkeit zur Bewältigung von Alltagsstressoren (eine gute Emotionsregulation) von besonderer Bedeutung für Menschen mit MDD-Vergangenheit. Drittens, um Therapieerfolge aufrechtzuerhalten, ist es notwendig, bestimmte therapeutische Strategien in den Alltag zu integrieren. Dies kann trotz guter Vorsätze scheitern (Stadler, Oettingen, & Gollwitzer, 2009). Grund für das Scheitern könnten aversive Gefühle sowie Widerstände darstellen, die bei der Etablierung neuer Verhaltensweisen entstehen können (Schwarzer, 2008). Defizite in der Emotionsregulation werden als erschwerender Faktor in der erfolgreichen Umsetzung von Vorhaben eingeschätzt (Luszczynska, Diehl, Gutiérrez-Doña, Kuusinen, & Schwarzer, 2004). Es ist wichtig zu untersuchen, ob sich mithilfe von Emotionsregulation bei ehemals depressiven Personen das Rückfallrisiko vorhersagen lässt. Weitere Forschung zu Emotionsregulation bei depressiven und ehemals depressiven Personen ist vor der Diskussion um Defizite in der Emotionsregulation als Risikofaktor für MDD (siehe 2.2 bzw. z.B. Brockmeyer et al., 2012) und vor dem Hintergrund hoher Rückfallraten (siehe 2.1 bzw. Vittengl et al., 2007; Westen & Morrison, 2001) dringend erforderlich.

Bislang ist völlig unklar, welche spezifischen Emotionsregulationskompetenzen für den Verlauf der depressiven Symptomatik nach einer MDD-Behandlung relevant sein könnten. Um zukünftige Behandlungen sinnvoll konzipieren zu können, Behandlungserfolge aufrechterhalten zu können und schlechten Krankheitsverläufen entgegenwirken zu können, ist es von fundamentaler Bedeutung, herauszufinden, welche Emotionsregulationskompetenzen in diesem Zusammenhang eine Rolle spielen. Mit einer differenzierten Kenntnis um die Relevanz bestimmter Kompetenzen könnte man jene gezielt ansprechen und die MDD-Behandlung insgesamt entscheidend verbessern.

Die Emotionsregulationskompetenz *Akzeptanz* wurde beispielsweise in der Literatur mit am häufigsten als adaptive Emotionsregulationskompetenz diskutiert und stellt einen expliziten und wichtigen Bestandteil einiger bestehender Behandlungskonzepte dar (Öst, 2008; Roemer & Orsillo, 2002). Bei der Kompetenz der Akzeptanz geht es um das (zeitweise) Erlauben und Zulassen negativer Gefühle (Berking, 2010). Inkonsistente Befunde für Zusammenhänge zwischen Akzeptanz und depressiven Symptomen in früheren Studien (Garnefski & Kraaij, 2006; Martin & Dahlen, 2005) weisen auf die Notwendigkeit weiterer Forschung zur Klärung der Akzeptanz in ihrer Bedeutung für Entstehung und Aufrechterhaltung von MDD hin. Besonders aber auch bei bislang weniger erforschten Emotionsregulationskompetenzen wie beispielsweise der *Konfrontationsbereitschaft* oder der *mitfühlenden Selbstunterstützung* ist es wichtig herauszufinden, welche Rolle sie für den Krankheitsverlauf von MDD spielen.

### 3.2 Ziele und Hypothesen des Dissertationsvorhabens

Vor dem Hintergrund der aktuellen Forschungslage wurden dieser Arbeit folgende Ziele und Hypothesen zu Grunde gelegt:

1. In einer längsschnittlichen Studie untersuchten wir die Hypothese adaptiver allgemeiner Emotionsregulation als Prädiktor von depressiven Symptomen bis zu einem Jahr nach stationärer MDD-Behandlung. Explorative Analysen sollten die spezifischen Emotionsregulationskompetenzen (Aufmerksamkeit, Körperwahrnehmung, Klarheit, Verstehen, Akzeptanz, Toleranz, mitfühlende Selbstunterstützung, Konfrontationsbereitschaft sowie Modifikation) als potentiell relevante Prädiktoren der depressiven Symptome untersuchen (Studie 1).
2. In einer querschnittlichen Studie untersuchten wir die Hypothese von Emotionsregulation als Mediator des Effekts von Kindheitstraumata auf die Depressionsschwere sowie auf die Depressionspersistenz bei stationär behandelten Personen mit MDD. Explorative Analysen sollten die spezifischen Emotionsregulationskompetenzen (Aufmerksamkeit, Körperwahrnehmung, Klarheit, Verstehen, Akzeptanz, Toleranz, mitfühlende Selbstunterstützung, Konfrontationsbereitschaft sowie Modifikation) als potentiell relevante Mediatoren des Effekts von Kindheitstraumata auf die Depressionsschwere sowie auf die Depressionspersistenz untersuchen (Studie 2).
3. In einer längsschnittlichen Studie untersuchten wir den prospektiven Zusammenhang zwischen adaptiver Emotionsregulation und der Zeit bis zu einem Rückfall in die MDD nach stationärer MDD-Behandlung. Explorative Analysen sollten die spezifischen Emotionsregulationskompetenzen (Aufmerksamkeit, Klarheit, Verstehen, Akzeptanz, Toleranz, mitfühlende Selbstunterstützung, Konfrontationsbereitschaft sowie Modifikation) als potentiell relevante Prädiktoren der Zeit bis zu einem Rückfall in die MDD untersuchen (Studie 3).

### 3.3 Überblick über das Gesamtprojekt

Die Daten für Studie 1 stammen aus zwei Effektivitätsstudien, die unter der Leitung von Dr. David Daniel Ebert und Prof. Dr. M. Berking an einer Klinik der Routineversorgung durchgeführt wurden (Ebert, Tarnowski, Gollwitzer, Sieland, & Berking, 2013; Ebert, Gollwitzer, et al., 2013b). Die Daten für Studie 2 und 3 stammen aus einer internet- und telefonbasierten Nachsorgestudie für Menschen mit MDD. Diese Studie wurde unter der Leitung von Prof. Dr. M. Berking, Prof. Dr. Martin Hautzinger und Dr. David Daniel Ebert durchgeführt und betreute von Januar 2013 bis November 2015 die Studienteilnehmer aus neun Kliniken (fünf Psychiatrien, drei Rehakliniken sowie eine Psychosomatische Klinik).

## 4 ZUSAMMENFASSUNG DER STUDIEN

Im Folgenden werden die drei Studien, die im Rahmen der vorliegenden Dissertation durchgeführt wurden, zusammenfassend dargestellt.

### 4.1 Studie I: Längsschnittliche Untersuchung der Schutzfunktion von adaptiver Emotionsregulation gegen die Wiederkehr depressiver Symptome nach stationärer Psychotherapie

**Zitation:** Hopfinger, L., Berking, M., Bockting, C. L. H., & Ebert, D. D. (submitted). Emotion Regulation Protects against Recurrence of Depressive Symptoms. Manuscript submitted for publication in *Behavior Therapy*.

**Hintergrund.** Trotz zahlreicher Belege für die Wirksamkeit von Psychotherapie für MDD (Cuijpers, Berking, et al., 2013) bleiben einige MDD-Patienten depressiv. Zudem zeigten Metaanalysen, dass 40-60 % der Patienten mit MDD nach anfänglichem Therapie-Response einen Rückfall erleiden (Vittengl et al., 2007; Westen & Morrison, 2001). Aus diesem Grund besteht dringender Bedarf, potenzielle Schutzfaktoren gegen Rückfälle in die Depression zu identifizieren. Querschnittliche Studien zeigten, dass Depressive Schwierigkeiten in der Emotionsregulation aufweisen (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Barnow, Aldinger, Ulrich, & Stopsack, 2013; Ehring et al., 2008). Dass depressive Symptome eng mit Emotionsregulation verknüpft sind, zeigten auch die affektive Neurowissenschaft (Farb, Anderson, & Segal, 2012) und experimentelle Studien (Ehring et al., 2010; Joormann & Gotlib, 2010). In längsschnittlichen Studien ließen sich aufgrund der Emotionsregulation depressive Symptome vorhersagen (Berking et al., 2014; Van Loey et al., 2013; Wang et al., 2014). Radkovsky, McArdle, Bockting und Berking (2014) zeigten beispielsweise, dass erfolgreiche Anwendung von Emotionsregulation mit weniger depressiven Symptomen assoziiert und dass die Anwendung verbesserter Emotionsregulation mit einer Abnahme der depressiven Symptome über den Verlauf der MDD-Behandlung assoziiert war. Da die Prädiktoren für den Ausbruch einer ersten depressiven Episode andere sein können als die Prädiktoren für weitere Episoden (Monroe et al., 1999), sollte in dieser Studie untersucht werden, ob Emotionsregulation auch nach erfolgter Depressionstherapie ein Prädiktor für depressive Symptomatik bleibt. Keine Studie hatte bislang untersucht, ob die allgemeine adaptive Emotionsregulation depressive Symptome nach einer Psychotherapie vorhersagt. Zudem gab es bislang keine Untersuchung bezüglich der potenziellen Relevanz einer Reihe spezifischer adaptiver Emotionsregulationskompetenzen für den Verlauf der depressiven Symptomatik nach einer MDD-Behandlung.

Vorliegende Studie zielte auf die Untersuchung der Relevanz von Emotionsregulation für den weiteren Verlauf der depressiven Symptomatik nach einer stationären KVT ab. Da ungefähr die Hälfte



der Patienten nach KVT einen Rückfall erleidet (Vittengl et al., 2007), interessierte uns, ob Emotionsregulation die Wiederkehr von depressiven Symptomen nach KVT vorhersagt. Wir hatten mehrere Gründe, dafür zu argumentieren, dass Emotionsregulation besonders wichtig für den weiteren Verlauf der Depression nach der Behandlung ist. Erstens nahmen wir an, dass die Prozesse für Erstauftreten einer Depression und für spätere depressive Episoden ähnlich sein könnten, insofern als dass adaptive Emotionsregulation nicht nur depressive Gedankenmuster an ihrer Aktivierung, sondern auch an ihrer Reaktivierung hindern könnte und dass dies die Wahrscheinlichkeit für einen MDD-Rückfall reduziert (Jarrett et al., 2012; Segal et al., 2006). Zweitens, im Kontrast zum Erstausbruch einer Depression könnte Alltagsstress (Bockting et al., 2006) anstelle von bedeutsamen Lebensereignissen (Sawyer et al., 2009) ein größeres Risiko für einen Rückfall in die Depression darstellen. Demnach könnte die Fähigkeit, erfolgreich mit negativen emotionalen Konsequenzen aufgrund von Alltagsstress umgehen zu können, von besonderer Bedeutung für Personen mit einer Depressionshistorie sein. Drittens kann angenommen werden, dass Patienten therapeutische Strategien in ihr Alltagsleben implementieren und fortsetzen müssen, um ihren Therapieerfolg langfristig aufrechterhalten zu können. Trotz hoher Umsetzungsabsichten könnten sich Patienten nicht nach ihren Vorhaben entsprechend verhalten und an der Implementierung therapeutischer Strategien in ihren Alltag scheitern (Stadler et al., 2009). Ein Grund hierfür könnte sein, dass die Implementierung von neuerlerntem Verhalten in den Alltag mit aversiven Gefühlen assoziiert ist (Schwarzer, 2008). Defizite in der Emotionsregulation wurden als relevanter Hinderungsfaktor für eine effektive Umsetzung von Vorhaben vorgeschlagen (Luszczynska et al., 2004). Aus diesem Grund nahmen wir an, dass Individuen mit effektiverer Emotionsregulation wahrscheinlich eher ihre therapeutischen Strategien in den Alltag integrieren können, als Individuen mit weniger effektiver Emotionsregulation. Insgesamt sahen wir viele Gründe, weshalb adaptive Emotionsregulation ein wichtiger Schutzfaktor gegen die Wiederkehr von depressiven Symptomen nach einer MDD-Behandlung sein könnte.

Effektive adaptive Emotionsregulation nach stationärer Behandlung sollte ein Prädiktor für depressive Symptome bei der drei- sowie zwölf-Monatskatamnese (über den Effekt von depressiver Restsymptomatik zum Entlassungszeitpunkt hinaus) sein. Explorativ untersuchten wir zudem, welche spezifischen adaptiven Emotionsregulationskompetenzen (*Aufmerksamkeit, Körperwahrnehmung, Klarheit, Verstehen, Akzeptanz, Toleranz, Selbstunterstützung, Konfrontationsbereitschaft* sowie *Modifikation*) depressive Symptome bei KVT-Patienten vorhersagen. Da sich Therapie-Responder und Non-Responder vermutlich unterscheiden (Kennedy & Lam, 2003; Mayberg et al., 2005; Sackheim et al., 2006) und relevante Prozesse wie die Emotionsregulation innerhalb dieser beiden

Gruppen unterschiedlich ablaufen könnten, untersuchten wir des Weiteren, ob der Zusammenhang zwischen Emotionsregulation nach Klinikentlassung und Veränderungen der depressiven Symptomatik während der Zeit der Nachuntersuchungen vom Level des Therapie-Responses abhängig ist.

**Methoden.** Die Studienteilnehmer wurden aus zwei vorhergehenden Wirksamkeitsstudien ausgewählt und waren Patienten aus einer Klinik der Routineversorgung (Ebert, Tarnowski, et al., 2013; Ebert, Gollwitzer, et al., 2013a). Die Stichprobe bestand aus 193 Personen (Durchschnittsalter: 47.40 Jahre; 78.8 % weiblich), welche aufgrund ihrer Depression (MDE nach ICD-10 Kriterien) stationär behandelt wurden. Die Studienteilnehmer erhielten eine depressionsspezifische KVT-Behandlung im Gruppen- und Einzelsetting, welche je nach individuellem Bedarf mit Physiotherapie, Entspannungstraining, Sporttherapie, berufsbezogener Therapie sowie medikamentöser Therapie ergänzt wurde. Bei komorbiden Störungen wurde die Behandlung mit störungsspezifischer Gruppentherapie ergänzt. In einer zufällig ausgewählten Gruppe von Teilnehmern (n = 51, 26.4 %) enthielt die KVT-Gruppentherapie eine gekürzte Version des Trainings Emotionaler Kompetenzen (TEK), welches gezielt die Emotionsregulation trainiert (Berking et al., 2010; Berking, 2010; Berking, Wupperman, et al., 2008). Nach drei Monaten gaben 84.5 % und nach zwölf Monaten 83.4 % der Teilnehmer an, dass sie in der Zeit seit der Klinikentlassung irgendeine Form von psychotherapeutischer Behandlung, wie beispielsweise eine Selbsthilfegruppe, in Anspruch genommen hatten.

Zur Erfassung von Emotionsregulation und den spezifischen Emotionsregulationskompetenzen des Modells adaptiver Emotionsregulation nach Berking füllten die Teilnehmer einen Selbstberichtfragebogen aus (Emotion-Regulation Skills Questionnaire; ERSQ; Berking & Znoj, 2008). Zur Erfassung der depressiven Symptome bei Baseline und den Katamnesen diente der Selbstberichtfragebogen HEALTH-D der Hamburger Module zur Erfassung allgemeiner Aspekte psychosozialer Gesundheit für die therapeutische Praxis (Rabung, Harfst, Koch, Wittchen, & Schulz, 2007). Der HEALTH-D diente ebenso zur Einschätzung von Therapie-Response und wurde verwendet, um Therapie-Responder und Non-Responder zu unterscheiden (cut-off von .66; Rabung et al., 2007). Um depressive Residualsymptomatik zu ermitteln, wurde das Beck-Depressions-Inventar (BDI; Beck, 1995) eingesetzt.

Zur Vorhersage der depressiven Symptome aufgrund der allgemeinen Emotionsregulation führten wir zwei hierarchische lineare Regressionsanalysen durch. Depressive Symptome (je drei- sowie zwölf-Monatskatamnese) dienten als abhängige Variable, mögliche Kovariaten (Alter, Geschlecht, TEK während der stationären Behandlung, depressive Restsymptome bei Entlassung sowie Aufrechterhaltungsbehandlung nach stationärer Behandlung) wurden als unabhängige Variablen in

Schritt 1 aufgenommen und die allgemeine Emotionsregulation wurde als Prädiktor in Schritt 2 hinzugefügt. Um festzustellen, ob die Vorhersage vom Level des Therapie-Responses abhängt, führten wir nachfolgend hierarchische Regressionen mit einer Interaktion zwischen allgemeiner Emotionsregulation und Level des Therapie-Responses durch. Im Fall einer signifikanten Interaktion wiederholten wir die hierarchischen Regressionen separat mit Therapie-Respondern und Non-Respondern (ohne die Interaktion).

Für die explorative Untersuchung der Vorhersage der depressiven Symptome aufgrund der spezifischen Emotionsregulationskompetenzen führten wir zweimal neun hierarchische lineare Regressionsanalysen durch, bei denen mögliche Kovariaten (Alter, Geschlecht, TEK während der stationären Behandlung, depressive Restsymptome bei Entlassung sowie Aufrechterhaltungsbehandlung nach stationärer Behandlung) als unabhängige Variablen in Schritt 1 aufgenommen wurden und die spezifischen Emotionsregulationskompetenzen jeweils einzeln als Prädiktor in Schritt 2 hinzugefügt wurden. Um herauszufinden, ob die Ergebnisse stabil bleiben, wenn alle Emotionsregulationskompetenzen gleichzeitig berücksichtigt werden, wiederholten wir die Rechnungen mit hierarchischen linearen Regressionen, welche die oben genannten Kontrollvariablen und alle Emotionsregulationskompetenzen gleichzeitig enthielten. Um festzustellen, ob die Vorhersage vom Level des Behandlungs-Responses abhängt, testeten wir nachfolgend, ob eine Interaktion aus Emotionsregulationskompetenzen und Level des Behandlungs-Responses vorlag.

**Ergebnisse.** Im vollständigen Untersuchungssample sagte die allgemeine Emotionsregulation nicht die depressive Symptomatik bei der drei- und der zwölf-Monatskatamnese vorher. Da die nachfolgende moderierte hierarchische Regression mit allgemeiner Emotionsregulation bei der drei-Monatskatamnese eine signifikante Interaktion zwischen Level des Behandlungs-Responses und allgemeiner Emotionsregulation aufwies, wurde die Regression anschließend separat für Behandlungs-Responder und Non-Responder wiederholt. Effektive allgemeine Emotionsregulation bei Klinikentlassung sagte signifikant niedrigere depressive Symptomatik (über die Restsymptomatik hinaus) bei der drei-Monatskatamnese bei Behandlungs-Respondern, aber nicht bei Non-Respondern vorher. Die moderierte hierarchische Regression mit der allgemeinen Emotionsregulation bezüglich der zwölf-Monatskatamnese zeigte eine nicht-signifikante Interaktion, weshalb die Analyse nicht separat für Therapie-Responder und Non-Responder wiederholt wurde.

Im Hinblick auf die separaten Regressionen mit jeweils einer spezifischen adaptiven Emotionsregulationskompetenz sagte bei der drei-Monatskatamnese lediglich die Emotionsregulationskompetenz *Akzeptanz* und bei der zwölf-Monatskatamnese sagten die beiden Emotionsregulationskompetenzen *Akzeptanz* und *Konfrontrationsbereitschaft* im gesamten Untersuchungssample (unter Kontrolle der Kontrollvariablen) signifikant weniger depressive Symptome vorher.

Bei den Regressionen mit der Berücksichtigung aller spezifischen Emotionsregulationskompetenzen erwies sich *Akzeptanz* bei der drei-Monatskatamnese und bei der zwölf-Monatskatamnese erwiesen sich *Akzeptanz* sowie *Konfrontationsbereitschaft* als signifikante Prädiktoren für weniger depressive Symptomatik im Gesamtsample. Die nachfolgende moderierte hierarchische Regression mit *Akzeptanz* bezüglich der drei-Monatskatamnese zeigte eine nicht-signifikante Interaktion, weshalb die Rechnung nicht wiederholt wurde. Die nachfolgenden moderierten hierarchischen Regressionen mit den anderen Emotionsregulationskompetenzen bezüglich der drei-Monatskatamnese zeigten signifikante Interaktionen, weshalb die Rechnungen separat mit Behandlungs-Respondern und Non-Respondern wiederholt wurden. Unter den Non-Respondern sagte keiner der Emotionsregulationskompetenzen depressive Symptome zur drei-Monatskatamnese vorher. Unter den Behandlungs-Respondern sagten *Aufmerksamkeit*, *Klarheit*, *Verstehen*, *Toleranz*, *Selbstunterstützung*, *Konfrontationsbereitschaft* sowie *Modifikation* weniger depressive Symptome bei der drei-Monatskatamnese vorher. In der nachfolgenden moderierten Regression mit den einzelnen Emotionsregulationskompetenzen bezüglich der zwölf-Monatskatamnese zeigte nur die Regression mit *Selbstunterstützung* eine signifikante Interaktion zwischen Level von Therapie-Response und Emotionsregulationskompetenz. Die nachfolgenden Regressionen zeigten, dass *Selbstunterstützung* weder ein Prädiktor für depressive Symptome unter Behandlungs-Respondern, noch unter Non-Respondern war.

Die nachfolgenden moderierten Regressionen, welche alle Emotionsregulationskompetenzen auf einmal berücksichtigten, zeigten keine signifikanten Interaktionen, weshalb die Rechnungen nicht separat für Therapie-Responder und Non-Responder wiederholt wurden.

**Diskussion.** Entgegen unserer Erwartungen sagte im Gesamtstudiensample die allgemeine Emotionsregulation nicht die depressive Symptomatik bei der drei- oder der zwölf-Monatskatamnese vorher. Allerdings sagte innerhalb der Gruppe der Therapie-Responder effektive allgemeine Emotionsregulation weniger depressive Symptome (über die Restsymptomatik hinaus) bei der drei-Monatskatamnese vorher. Unabhängig davon, ob die spezifischen Emotionsregulationskompetenzen mithilfe von explorativen Analysen einzeln oder gemeinsam untersucht wurden, erwies sich die Emotionsregulationskompetenz *Akzeptanz* als signifikanter Prädiktor für weniger depressive Symptome (über die Restsymptomatik hinaus) für die drei-Monatskatamnese. Unter den Therapie-Respondern sagten zudem die Emotionsregulationskompetenzen *Aufmerksamkeit*, *Klarheit*, *Verstehen*, *Toleranz*, *Selbstunterstützung*, *Konfrontationsbereitschaft* sowie *Modifikation* weniger depressive Symptome zur drei-Monatskatamnese vorher. Unabhängig davon, ob die spezifischen Emotionsregulationskompetenzen mithilfe von explorativen Analysen einzeln oder gemeinsam un-

tersucht wurden, erwiesen sich die Emotionsregulationskompetenzen *Akzeptanz* und *Konfrontationsbereitschaft* als signifikante Prädiktoren für weniger depressive Symptome (über die Restsymptomatik hinaus) für die zwölf-Monatskatamnese im Gesamtstudiensample.

Dass unsere Ergebnisse für Therapie-Responder und Non-Responder unterschiedlich sind, gibt Anlass zur Vermutung, dass sich die Prädiktoren für den Verlauf der depressiven Symptomatik zwischen Therapie-Respondern und Non-Respondern unterscheiden. Da es Unterschiede gibt, inwiefern Individuen auf eine Behandlung reagieren – einige Patienten bleiben beispielsweise trotz Standardbehandlung oder auch aggressiverer Methoden depressiv (Kennedy & Lam, 2003; Mayberg et al., 2005; Sackheim et al., 2006) – ist es nachvollziehbar, dass die relevanten Prozesse der Emotionsregulation innerhalb dieser beiden Gruppen unterschiedlich ablaufen. Die Befunde stimmen mit der Idee adaptiver Emotionsregulation als Schutzfaktor gegen Depressionen überein (Berking et al., 2014; Radkovsky et al., 2014; Wirtz, Radkovsky, et al., 2014) und erweitern die Annahme für die Zeit nach einer erfolgreichen MDD-Behandlung.

Folgende Gründe für den Vorhersagewert von *Akzeptanz* nach erfolgter Therapie sind denkbar: (1) Obwohl das Auftreten von negativen Gefühlen völlig natürlich ist, könnten solche Gefühle Personen nach abgeschlossener Therapie stark beunruhigen. Die Fähigkeit, negative Gefühle zu akzeptieren anstatt sie zu unterdrücken oder sie für ein Zeichen eines Rückfalls zu halten, könnte depressive Gedankenkreise an einer Reaktivierung hindern und damit entscheidend für die Zeit nach der Behandlung sein. (2) Die Studienteilnehmer befanden sich in einer kritischen Phase, da die Zeit nach einer Behandlung mit einer erhöhten Rückfallrate assoziiert ist (Thase et al., 1992; Vittengl et al., 2007; Westen & Morrison, 2001) und sie aufgrund der Entlassung den geschützten Raum Klinik verließen und somit einer erhöhten Anzahl an Alltagsstressoren ausgesetzt waren. Da Alltagsstressoren unvermeidbar sind und als entscheidender Risikofaktor für einen Rückfall angesehen werden (Bockting et al., 2006; McIntosh, Gillanders, & Rodgers, 2010), ist die Fähigkeit zur Akzeptanz von Alltagsstress für die Erreichung und Aufrechterhaltung von mentaler Gesundheit entscheidend. Im Gegensatz zum Ausbruch einer Depression scheinen nicht schwerwiegende Lebensereignisse (Kendler, Karkowski, & Prescott, 1999; Lewinsohn, Allen, Seeley, & Gotlib, 1999; Monroe et al., 1999; Sawyer et al., 2009), sondern die Fähigkeit, mit Alltagsstress umzugehen, für den Verlauf der depressiven Symptome nach einer Behandlung entscheidend zu sein. (3) Nach einer Behandlung müssen die Patienten therapeutische Strategien in ihren Alltag integrieren, was vermutlich mit zahlreichen aversiven Gefühlen wie Ängsten und Zweifeln verbunden ist. Die Fähigkeit, aversive Gefühle zu akzeptieren und Vorhaben im Alltag trotz aversiver Gefühle umzusetzen, scheint ein wichtiger Punkt nach einer Behandlung zu sein.

Die gefundene Vorhersagefähigkeit von *Konfrontationsbereitschaft* nach erfolgter Therapie kann mit einem gut bekannten Mechanismus erklärt werden. Nach der Klinikentlassung mussten die Studienteilnehmer eine Menge an Herausforderungen und dazu gehörige schwierige Gefühle meistern. Es ist gut möglich, dass Menschen, die unter emotional anspruchsvollen Situationen leiden, jene vermeiden, was wiederum mit depressiven Symptomen assoziiert ist (Aldao et al., 2010). Die Konfrontation mit emotional anspruchsvollen Situationen anstelle ihrer Vermeidung ist eine gut belegte Strategie bei Expositionsbehandlungen (Grosse Holtforth et al., 2012), welche zu einer Reduktion von aversiven Gefühlen (Emmelkamp et al., 2014) und schließlich auch zu weniger depressiver Symptomatik führen kann. Ein Grund dafür, dass sich Konfrontationsbereitschaft nur als Prädiktor für die zwölf-Monatskatamnese, nicht aber für die drei-Monatskatamnese erwies, könnte sein, dass die Patienten erst eine Weile nach ihrem Aufenthalt mit größeren Herausforderungen, wie beispielsweise wieder Vollzeit zu arbeiten, konfrontiert wurden. Die Fähigkeit zur Konfrontationsbereitschaft kam wohl erst nach einer anfänglichen Schonungsphase nach der Klinikentlassung zum Tragen.

Eine Steigerung der spezifischen Emotionsregulationskompetenzen *Akzeptanz* und *Konfrontationsbereitschaft* könnte vor dem Hintergrund der Ergebnisse dieser Studie zu einer Aufrechterhaltung der psychischen Gesundheit nach erfolgter Therapie beitragen.

Eine wesentliche Einschränkung dieser Studie liegt in der Vorhersage von depressiven Symptomen anstelle einer Vorhersage von Rückfällen in die Depression. Weitere Studien sind notwendig, welche die Vorhersagekraft von Emotionsregulation bezüglich eines Rückfalls in die Depression mittels strukturierter diagnostischer Interviewkriterien für MDD untersuchen (siehe Studie 3).

#### 4.2 Studie II: Querschnittliche Untersuchung bezüglich Emotionsregulation als Mediator des Effektes von Kindheitstraumata auf Depressionsschwere sowie Depressionspersistenz

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**Hintergrund.** Studien zeigen, dass Misshandlung in der Kindheit beunruhigend häufig vorkommt (Häuser et al., 2011; Kilpatrick & Saunders, 2000; Scher et al., 2004). Kindheitstraumata werden neben einer Reihe negativer Konsequenzen (Hetzel & McCanne, 2005; Rogosch & Cicchetti, 2005; Walker et al., 1999) auch mit dem Entstehen und Wiederkehren von depressiven Störungen assoziiert (Chapman et al., 2004; Lok et al., 2013; Nanni et al., 2012). Potenzielle Mediatoren des Zusammenhangs zwischen Kindheitstraumata und Depressionen sind vielfältig und Untersuchungsergebnisse inkonsistent. So werden Defizite in der Emotionsregulation (Alink, Cicchetti, Kim, & Rogosch, 2009; Burns, Jackson, & Harding, 2010; Cole, Martin, & Dennis, 2004) als Mediator zwischen Kindheitstraumata und Depressionen diskutiert (Crow et al., 2014; Raes & Hermans, 2008; Spasojević & Alloy, 2002). Zahlreiche Studien weisen darauf hin, dass Defizite in der Emotionsregulation bei der Entstehung und Aufrechterhaltung von MDD eine entscheidende Rolle spielen (Arditte & Joormann, 2011; Brockmeyer et al., 2012; Diedrich, Grant, Hofmann, Hiller, & Berking, 2014; Heller et al., 2013). Bislang hat keine Studie die allgemeine Emotionsregulation sowie spezifische Emotionsregulationskompetenzen als mediiierende Mechanismen zwischen Kindheitstraumata und Depressionen in einer klinischen Studie untersucht. Wir testeten deshalb die Hypothese, dass die allgemeine Emotionsregulation den Effekt von Kindheitstraumata auf Depressionsschwere sowie Depressionspersistenz mediiert. Weiterhin untersuchten wir explorativ, welche spezifischen Emotionsregulationskompetenzen (*Aufmerksamkeit, Körperwahrnehmung, Klarheit, Verstehen, Akzeptanz, Toleranz, Selbstunterstützung, Konfrontationsbereitschaft* sowie *Modifikation*) den Effekt von Kindheitstraumata auf Depressionsschwere und Depressionspersistenz mediiieren.

**Methode.** Die Stichprobe bestand aus 269 aktuell depressiven Personen (Durchschnittsalter: 43.51 Jahre; 55 % weiblich), welche die DSM-IV-TR Kriterien für eine MDD erfüllten (SKID-I; Dilling, Mombour, & Schmidt, 1991; Wittchen, Zaudig, & Fydrich, 1997) und sich am Anfang einer stationären Therapie befanden. Weitere Einschlusskriterien umfassten beispielsweise die schriftliche Zustimmung zur Studienteilnahme sowie ein Alter zwischen 18 und 70 Jahren. Ausschlusskriterien waren bipolare und psychotische Störungen, primärer Substanzmissbrauch oder derzeitige Substanzabhängigkeit, hohe Suizidgefährdung, primäre Essstörung, schizotype Persönlichkeitsstörung, substanzinduzierte oder organisch bedingte affektive Störungen oder starke kognitive Einschränkungen. Emotionsregulation wurde mithilfe eines Fragebogens erfasst (ERSQ; Berking & Znoj,

2008), welcher auf dem Modell adaptiver Emotionsregulation (Berking & Lukas, 2015; Berking & Whitley, 2014) von Berking und Kollegen basiert. Zur Erfassung der Depressionsschwere diente ein klinisches Interview (24-item Hamilton Rating Scale for Depression; HRSD-24; Hamilton, 1967; Miller, Bishop, Norman, & Maddever, 1985) und als Grundlage für die Berechnung der Depressionspersistenz wurde neben dem SKID-Interview eine vereinfachte Variante des Life Chart Interviews (Lyketsos, Nestadt, Cwi, Heithoff, & Eaton, 1994) durchgeführt. Der berechnete Wert der Depressionspersistenz spezifiziert in Prozent, wie lange ein Studienteilnehmer in Abhängigkeit von seinem Alter bislang an einer MDD gelitten hatte. Unter Verwendung von Mediatoranalysen (Regressionen) berechneten wir den möglichen indirekten Effekt von allgemeiner Emotionsregulation bezüglich des Zusammenhangs von Kindheitstraumata und Depressionsschwere sowie Depressionspersistenz. Mithilfe explorativer Mediatoranalysen untersuchten wir zudem, welche spezifischen Emotionsregulationskompetenzen den Effekt von Kindheitstraumata auf Depressionsschwere sowie Depressionspersistenz erklären.

**Ergebnisse.** Es zeigte sich ein signifikanter indirekter Effekt von Kindheitstraumata auf die Depressionsschwere durch allgemeine Emotionsregulation ( $b = 0.03$ , BCa CI [.004, .063]). Unsere Hypothese unterstützend, medierte die allgemeine Emotionsregulation den Effekt von Kindheitstraumata auf die Depressionsschwere (partielle Mediation von 27 %). Es zeigte sich ebenso ein signifikanter indirekter Effekt von Kindheitstraumata auf die Depressionspersistenz durch allgemeine Emotionsregulation ( $b = 0.01$ , BCa CI [.003, .031]): Die allgemeine Emotionsregulation medierte den Effekt von Kindheitstraumata auf die Depressionspersistenz (8 % Varianzaufklärung). Die spezifischen Emotionsregulationskompetenzen *Wahrnehmung*, *Akzeptanz*, *Toleranz* sowie *Konfrontationsbereitschaft* erwiesen sich als partielle Mediatoren des Effekts von Kindheitstraumata auf die Depressionsschwere. Lediglich die spezifische Emotionsregulationskompetenz *Konfrontationsbereitschaft* erwies sich zudem als partieller Mediator des Effekts von Kindheitstraumata auf die Depressionspersistenz.

**Diskussion.** Die Ergebnisse dieser Studie unterstützen die Annahme, dass Defizite in der Emotionsregulation einen wichtigen Faktor auf dem Weg von Kindheitstraumata zu späteren Depressionen darstellen. Die Befunde stimmen mit ersten Forschungsergebnissen zu Emotionsregulation als Mediator zwischen Kindheitstrauma und Depression überein (Crow et al., 2014; Raes & Hermans, 2008; Spasojević & Alloy, 2002). Sie gehen über bisherige Befunde hinaus, da sie erste Hinweise auf die Rolle von Emotionsregulation als Mediator in einer großen klinischen Studie mit Patienten mit



MDD liefern. Zudem untersuchten wir ein breiteres Spektrum spezifischer Emotionsregulationskompetenzen und deren Auswirkungen auf den Verlauf der Depression über die gesamte bisherige Lebenszeit.

Eine Verbesserung der allgemeinen Emotionsregulation sowie der Emotionsregulationskompetenz *Konfrontationsbereitschaft* durch gezielte Interventionen (z.B. durch das TEK) könnten missbrauchten Personen dabei helfen, depressive Stimmung und so das Risiko für die Entstehung und Aufrechterhaltung depressiver Episoden zu reduzieren. Bisherige Interventionen zur Behandlung von MDD mittels der Emotionsregulation setzen primär an der kognitiven Neubewertung oder an einer Verbesserung von Akzeptanz an (Beck, 2011; Hayes et al., 1999). Interventionen, die an einer Verbesserung der allgemeinen Emotionsregulation sowie weiterer Emotionsregulationskompetenzen ansetzen, könnten vor dem Hintergrund der Ergebnisse dieser Studie zu einer Verringerung der schwerwiegenden Auswirkungen von Kindheitstraumata beitragen.

#### 4.3 Studie III: Längsschnittliche Untersuchung der allgemeinen Emotionsregulation und spezifischer Emotionsregulationskompetenzen als Prädiktoren der Zeit bis zu einem Rückfall in die Major Depression nach erfolgreicher Depressionsbehandlung

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**Hintergrund.** Einige Patienten mit Depression (MDD) sprechen weder bei Standardbehandlungen noch bei aggressiveren Behandlungsansätzen auf eine Depressionsbehandlung an (Kennedy & Lam, 2003; Mayberg et al., 2005). Obwohl immerhin die Mehrheit der Patienten mit MDD in der akuten Behandlungsphase auf eine Depressionsbehandlung anspricht, erleidet etwa die Hälfte von ihnen einen Rückfall (Vittengl et al., 2007). Defizite in der Emotionsregulation gelten als Risikofaktor für die Entstehung und Aufrechterhaltung einer Depression (Teasdale & Barnard, 1993). Berking und Kollegen konzeptualisierten adaptive Emotionsregulation als situationsabhängiges Zusammenspiel folgender Kompetenzen, welche in der Literatur als bedeutsam für einen gesundheitsförderlichen Umgang mit Emotionen diskutiert werden: Aufmerksamkeit, Körperwahrnehmung, Klarheit, Verstehen, Akzeptanz, Toleranz, mitfühlende Selbstunterstützung, Konfrontationsbereitschaft und Modifikation (Berking & Lukas, 2015; Berking & Whitley, 2014). Bisherige querschnittliche (Aldao et al., 2010; Garnefski & Kraaij, 2006; Joormann & D’Avanzato, 2010) und erste längsschnittliche (Berking et al., 2014; Van Loey et al., 2013; Wirtz, Radkovsky, et al., 2014) Studien zeigten erwartungsgemäß negative Zusammenhänge zwischen der allgemeinen Emotionsregulation sowie einzelnen Emotionsregulationskompetenzen und depressiven Symptomen. Eine systematische Untersuchung prospektiver Effekte der allgemeinen adaptiven Emotionsregulation sowie einzelner adaptiver Emotionsregulationskompetenzen bezüglich der Zeit bis zu einem Rückfall in die Depression nach einer erfolgreichen Depressionsbehandlung steht noch aus. Zudem gibt es bislang kaum längsschnittliche Studien, die Emotionsregulation als Prädiktor für einen Rückfall in eine vom Kliniker erfasste MDD untersuchen, anstatt sie nur als Prädiktor für selbstbeurteilte depressive Symptome zu untersuchen.

Wir testeten die Hypothese, dass eine effektive allgemeine Emotionsregulation die Zeit bis zu einem Rückfall in die MDD nach erfolgreicher stationärer Depressionsbehandlung vorhersagt. Explorative Analysen dienten der Untersuchung prospektiver Zusammenhänge zwischen den potentiell relevanten Emotionsregulationskompetenzen *Aufmerksamkeit, Klarheit, Verstehen, Akzeptanz, Toleranz, mitfühlende Selbstunterstützung, Konfrontationsbereitschaft* und *Modifikation* und der Zeit bis zu einem MDD-Rückfall.

**Methode.** Die Daten wurden in neun Fachkliniken für Psychiatrie, Psychotherapie und Psychosomatik in Deutschland erfasst. Patienten wurden in die Studie aufgenommen, wenn sie u.a. die DSM-IV-TR Kriterien für eine MDD erfüllten, der Teilnahme schriftlich zustimmten und zwischen 18 und 70 Jahre alt waren. Explizite Ausschlusskriterien waren bipolare und psychotische Störungen, primärer Substanzmissbrauch oder derzeitige Substanzabhängigkeit, hohe Suizidgefährdung, primäre Essstörung, schizotype Persönlichkeitsstörung, substanzinduzierte oder organisch bedingte affektive Störungen oder starke kognitive Einschränkungen. Die finale Stichprobe umfasste 104 Patienten mit der Diagnose einer MDD (Durchschnittsalter: 45.04 Jahre; 49 % weiblich). Alle Patienten erhielten stationäre kognitiv-verhaltenstherapeutische Interventionen zur Behandlung von MDD. Diese wurden bei Bedarf durch medikamentöse und zusätzliche Interventionen (z.B. Ergotherapie) ergänzt. Interventionen, die explizit an einer Verbesserung der adaptiven Emotionsregulation ansetzen, waren keine Bestandteile der Behandlung. Die adaptive Emotionsregulation wurde am Ende des stationären Aufenthaltes erhoben. Der Fragebogen zur Selbsteinschätzung emotionsspezifischer emotionaler Kompetenzen (ERSQ-ES; engl. Emotion-Regulation Skills Questionnaire – emotion-specific; Berking & Lukas, 2015; Berking & Whitley, 2014) diente der Erfassung der allgemeinen Emotionsregulation sowie acht einzelner Emotionsregulationskompetenzen des Modells adaptiver Emotionsregulation nach Berking bezüglich der Affekte Stress, Angst, Ärger, Traurigkeit, depressive Verstimmung, Scham, Schuld sowie positive Gefühle. Die klinischen Katamneseinterviews zur Erfassung möglicher MDD-Rückfälle wurden drei, sechs sowie zwölf Monate nach der stationären Therapie durchgeführt (Erfassung des gesamten Zeitraums). Im Mittelpunkt der statistischen Auswertung standen Cox Regressionen. Die Zeit bis zu einem MDD-Rückfall bzw. bis zur letzten Erfassung wurde für jeden Patienten berechnet und Patienten, die nicht rückfällig geworden waren, wurden zensiert. Um die Hypothese zu testen, dass allgemeine adaptive Emotionsregulation ein Prädiktor für die Zeit bis zu einem MDD-Rückfall ist, wurden Cox Regressionen durchgeführt, welche für die Kontrollvariablen Alter, Geschlecht und Erhaltungsbehandlung sowie für die Prädiktoren depressive Restsymptome und Anzahl bisheriger depressiver Episoden kontrolliert wurden. Neben der allgemeinen adaptiven Emotionsregulation testeten wir in acht explorativen Analysen Cox Modelle mit den einzelnen Emotionsregulationskompetenzen (Aufmerksamkeit, Klarheit, Verstehen, Akzeptanz, Toleranz, mitfühlende Selbstunterstützung, Konfrontationsbereitschaft und Modifikation).

**Ergebnisse.** Im Untersuchungszeitraum erlitten 25 Studienteilnehmer (24 %) einen Rückfall in die MDD. Da sich in einem Cox Modell mit der allgemeinen adaptiven Emotionsregulation und den oben genannten Kontrollvariablen und potenziell relevanten Prädiktoren nur die Anzahl vergangener depressiver Episoden sowie die allgemeine Emotionsregulation als signifikante Prädiktoren der

Zeit bis zu einem MDD-Rückfall erwiesen, wurden die Variablen ohne Effekte nachfolgenden Modellen nicht hinzugefügt. Die Anzahl vergangener MDD-Episoden sagte die Zeit bis zu einem MDD-Rückfall innerhalb des Untersuchungszeitraums insofern vorher, als dass eine weitere Episode die Wahrscheinlichkeit eines Rückfalls um 8.9 % erhöhte (HR = 1.09, CI = 1.01 – 1.17,  $p = .020$ ). Passend zu unserer Hypothese sagte die allgemeine adaptive Emotionsregulation die Zeit bis zu einem MDD-Rückfall innerhalb des Untersuchungszeitraums insofern vorher, als dass eine Verbesserung der Emotionsregulation (um eine Einheit) das Rückfallrisiko um 37.3 % erniedrigte (HR = .37, CI = .191 - .729,  $p = .004$ ). Die Berechnung und Analyse eines Risikowertes (Bao et al., 2014; Singer & Willett, 2003; Stahrenberg et al., 2013) zur Veranschaulichung der Ergebnisse zeigte, dass effektive Emotionsregulation beispielsweise ein erhöhtes Rückfallrisiko aufgrund von einer erhöhten Anzahl vergangener MDD-Episoden entschärfte: Eine Person mit überdurchschnittlich effektiver Emotionsregulation und einer erhöhten Anzahl vergangener depressiver Episoden erhielt ein ähnliches Rückfallrisiko wie eine Person mit einer durchschnittlichen Emotionsregulation und einer weniger problematischen Depressionsvergangenheit. In explorativen Analysen erwiesen sich die spezifischen adaptiven Emotionsregulationskompetenzen *Akzeptanz*, *Toleranz*, *Selbstunterstützung*, *Konfrontationsbereitschaft* und *Modifikation* als signifikante Prädiktoren für eine längere Zeit bis zu einem MDD-Rückfall nach erfolgreicher Therapie.

**Diskussion.** Die Ergebnisse wiesen die allgemeine adaptive Emotionsregulation als signifikanten Prädiktor für eine längere Zeit bis zu einem MDD-Rückfall nach erfolgreicher Depressionsbehandlung aus. Diese Fähigkeit zur Vorhersage bestand unabhängig davon, ob für Kontrollvariablen oder potenzielle weitere Prädiktoren kontrolliert wurden. Folgende spezifische adaptive Emotionsregulationskompetenzen sagten eine längere Zeit bis zu einem MDD-Rückfall vorher: emotionale *Akzeptanz* und *Toleranz*, mitfühlende *Selbstunterstützung*, zielbezogene *Konfrontationsbereitschaft* mit belastenden Situationen sowie *Modifikation* von Gefühlen.

Die Ergebnisse erweitern die in der Literatur bislang gezeigte Fähigkeit von Emotionsregulation als Prädiktor des Depressionsverlaufs (Berking et al., 2014; Martin & Dahlen, 2005; Van Loey et al., 2013; Wang et al., 2014) für die Zeit nach einer erfolgreichen MDD-Behandlung. Eine adaptive Emotionsregulation hält den Erfolg einer MDD-Behandlung länger aufrecht und könnte zu einer Verringerung des MDD-Rückfallrisikos beitragen. Da die adaptive Emotionsregulation als Schutzfaktor gegen einen MDD-Rückfall nach erfolgreicher Psychotherapie wirkt, könnte der Erfolg einer Behandlung vermutlich durch eine Schwerpunktsetzung der Behandlung auf die Emotionsregulation entscheidend verbessert und aufrechterhalten werden.

## 5 ZUSAMMENFASSENDE DISKUSSION UND AUSBLICK

Defizite in der Emotionsregulation und damit assoziierte erhöhte negative Affekte gelten als Risikofaktor für die Entstehung und Aufrechterhaltung depressiver Episoden (Barnow, 2012; Berking & Wupperman, 2012; Gross & Muñoz, 1995). Effektive adaptive Emotionsregulation sollte Personen helfen, negative Affekte bei Bedarf herunter zu regulieren und könnte so der Entstehung, Aufrechterhaltung und Wiederkehr von depressiven Episoden entgegenwirken. Ziel vorliegender Dissertation war die Identifikation von adaptiver Emotionsregulation als entscheidender Faktor für den Verlauf der Depression bei Menschen mit MDD vor und nach einer stationären Behandlung. Ein weiterer Schwerpunkt wurde dabei auf die Relevanz spezifischer adaptiver Emotionsregulationskompetenzen gelegt.

In einer längsschnittlichen Studie untersuchten wir, ob adaptive Emotionsregulation depressive Symptome drei sowie zwölf Monate nach einer Behandlung vorhersagt. Entgegen unserer Erwartung sagte effektivere allgemeine Emotionsregulation weniger depressive Symptome nur unter Therapie-Respondern und nur drei Monate und nicht zwölf Monate nach der Behandlung vorher. In der Gesamtstichprobe sagte die Emotionsregulationskompetenz *Konfrontationsbereitschaft* weniger depressive Symptome zwölf Monate nach der Behandlung und die Emotionsregulationskompetenz *Akzeptanz* weniger depressive Symptome sowohl drei und als auch zwölf Monate nach der Depressionsbehandlung vorher (Studie 1).

In einer querschnittlichen Studie untersuchten wir, ob adaptive Emotionsregulation ein Mediator des Effekts von Kindheitstraumata auf die Depressionsschwere sowie auf die Depressionspersistenz bei stationär behandelten Personen mit MDD ist. Depressionspersistenz spezifizierte in Prozent, wie lange die jeweilige Person in Abhängigkeit ihres Alters bislang an einer MDD gelitten hat. Wie vor dem Hintergrund bisheriger Befunde zu Zusammenhängen zwischen Kindheitstraumata, Emotionsregulation und Depression (Crow et al., 2014; Raes & Hermans, 2008; Spasojević & Alloy, 2002) zu erwarten war, erwies sich die allgemeine Emotionsregulation als partieller Mediator des Zusammenhangs zwischen Kindheitstraumata und späterer Depressionsschwere sowie bisheriger Depressionspersistenz. *Konfrontationsbereitschaft* erwies sich unter den untersuchten spezifischen Emotionsregulationskompetenzen als einziger partieller Mediator des Effekts von Kindheitstraumata auf sowohl Depressionsschwere als auch Depressionspersistenz (Studie 2).

In einer längsschnittlichen Studie untersuchten wir den Zusammenhang zwischen adaptiver Emotionsregulation und der Zeit bis zu einem Rückfall in die MDD nach erfolgreicher stationärer MDD-Behandlung. Neben der allgemeinen Emotionsregulation erwies sich ebenso die Anzahl vergangener MDD-Episoden als Prädiktor für die Zeit bis zu einem MDD-Rückfall. Die Berechnung

und Analyse eines Risikowertes (Bao et al., 2014; Singer & Willett, 2003; Stahrenberg et al., 2013) verdeutlichte, dass effektivere Emotionsregulation beispielsweise ein erhöhtes Rückfallrisiko aufgrund einer erhöhten Anzahl vergangener MDD-Episoden entschärfte. In explorativen Analysen konnten die spezifischen Emotionsregulationskompetenzen emotionale *Akzeptanz* und *Toleranz*, mitfühlende *Selbstunterstützung*, zielbezogene *Konfrontationsbereitschaft* mit belastenden Situationen sowie die Fähigkeit zur *Modifikation* negativer Affekte als Prädiktoren für eine längere Zeit bis zu einem MDD-Rückfall gezeigt werden (Studie 3).

Ein Überblick über die Fragestellungen, Hypothesen und das Eintreffen der Hypothesen findet sich in Tabelle 2.

Tabelle 2

*Entscheidung über das Eintreffen der Hypothesen*

Fragestellung	Hypothese	Verifikation
Wie hängen effektive allgemeine Emotionsregulation sowie einzelne effektive Emotionsregulationskompetenzen (Aufmerksamkeit, Körperwahrnehmung, Klarheit, Verstehen, Akzeptanz, Toleranz, Selbstunterstützung, Konfrontationsbereitschaft und Modifikation) mit depressiven Symptomen nach erfolgter Depressionsbehandlung zusammen? (Studie 1)	Effektive Emotionsregulation sagt weniger depressive Symptome nur drei Monate und nur nach erfolgreicher Depressionsbehandlung vorher.	(✓)
Wie hängen allgemeine Emotionsregulation sowie einzelne Emotionsregulationskompetenzen (Aufmerksamkeit, Körperwahrnehmung, Klarheit, Verstehen, Akzeptanz, Toleranz, Selbstunterstützung, Konfrontationsbereitschaft und Modifikation) mit dem Effekt von Kindheitstraumata auf die spätere Depressionsschwere sowie den Depressionsverlauf zusammen? (Studie 2)	Adaptive Emotionsregulation mediiert den Effekt von Kindheitstraumata auf die Depressionsschwere und auf die Depressionspersistenz.	✓
Wie hängen effektive allgemeine Emotionsregulation sowie einzelne effektive Emotionsregulationskompetenzen (Aufmerksamkeit, Klarheit, Verstehen, Akzeptanz, Toleranz, Selbstunterstützung, Konfrontationsbereitschaft und Modifikation) mit der Zeit bis zu einem Rückfall in die MDD nach erfolgreicher Depressionsbehandlung zusammen? (Studie 3)	Effektive Emotionsregulation sagt eine längere Zeit bis zu einem Rückfall in die MDD nach erfolgreicher Depressionsbehandlung vorher.	✓

## 5.1 Limitationen

Bei der Interpretation der Ergebnisse sind neben Stärken der Studien auch Einschränkungen zu berücksichtigen. Bezüglich der Stichproben liegt eine Schwäche der drei Studien darin, dass sich alle Patienten in stationärer Behandlung befanden. Für eine breitere Generalisierung sollten weitere Studien auch ambulant behandelte Patienten mit einschließen. Eine Stärke bezüglich der Stichproben liegt in der Verwendung sorgfältig diagnostizierter klinischer Stichproben in der Auswahl und Einschätzung depressiver und ehemals depressiver Personen. Einschränkend ist zu erwähnen, dass der Katamnesezeitraum von Studie 3 auf 1 Jahr begrenzt war und in diesem Zeitraum nur 24 % der Patienten einen MDD-Rückfall erlitten. Obwohl die Rückfallgefahr in diesem Zeitraum am höchsten ist (Vittengl et al., 2007), könnte der begrenzte Überwachungszeitraum eine vollständige Erfassung der wahren Relevanz von Emotionsregulation für den langfristigen Verlauf der Depression verhindert haben. Positiv hervorzuheben ist bei Studie 3, dass die komplette Vorgeschichte sowie der komplette Untersuchungszeitraum bezüglich der depressiven Symptomatik mittels Life Chart Interviews exploriert wurden.

Obwohl wir in Studie 1 und 3 einige potenziell relevante Prädiktoren und Kontrollvariablen berücksichtigt haben, könnte es andere relevante Patientencharakteristiken geben, welche wir nicht berücksichtigt haben, welche aber einen Einfluss auf die Vorhersage der Depression haben. Zukünftige Studien sollten unsere Befunde mit einer Kontrolle eines breiteren Sets an Prädiktoren replizieren (für eine Übersicht: Kessler et al., 2016).

Bezüglich Studie 2 stehen noch längsschnittliche Untersuchungen des Potentials von Emotionsregulation (und weiterer potentiell relevanter Emotionsregulationskompetenzen der Emotionsregulation) zur Reduktion des Risikos für die Entstehung oder Wiederkehr von MDD nach erlebten Kindheitstraumata aus. Eine längsschnittliche Studie mit traumatisierten Personen würde Analysen von intraindividuellen und interindividuellen Unterschieden in der Entwicklung der vermutlich beeinflussten Variablen ermöglichen. Um mögliche Einflüsse von Scarring-Effekten zu vermeiden, könnten zukünftige Studien, welche Defizite in der Emotionsregulation als Mediator des Effekts von Kindheitstraumata auf den Verlauf der psychischen Gesundheit untersuchen, auch vulnerable, aber zuvor nicht depressive Personen berücksichtigen. Bei Studie 1 und 3 enthielten unsere Studiendesigns keine Kontrollgruppe bislang niemals Depressiver, weshalb es uns nicht möglich war, etwas über die spezielle Relevanz von Emotionsregulation im Vergleich von MDD-Krankheitserstausbruch zu MDD-Aufrechterhaltung und Wiederkehr zu schließen. Solch ein Vergleich könnte zu einem umfassenden Verständnis von adaptiver Emotionsregulation in ihrer Bedeutung als Schutzfaktor für mentale Gesundheit beitragen.



Eine wesentliche Einschränkung der Studien 1 bis 3 liegt in der ausschließlichen Verwendung von Selbstberichtsdaten bezüglich der Emotionsregulation. Zukünftige Studien sollten Emotionsregulation mittels unterschiedlicher Methoden (z.B. Fremdbbericht, Beobachtung, experimentelle Untersuchungen, ambulantes Assessment) erfassen (Kerns, Mennin, Farach, & Nocera, 2014). Solche Studien könnten Einblicke in Zusammenhänge zwischen Emotionsregulation und psychischer Gesundheit gewähren und einige Limitationen von Selbstberichtsdaten wie soziale Erwünschtheit oder kognitive Verzerrungen durch retrospektive Befragung überwinden. Multitrait-Multimethod Analysen könnten dabei Gemeinsamkeiten und Unterschiede zwischen den unterschiedlichen Messverfahren aufzeigen.

Kritisiert werden kann an der vorliegenden Arbeit die Unterscheidung zwischen maladaptiven (z.B. Grübeln und Selbstkritik) und adaptiven (z.B. Akzeptanz und Konfrontationsbereitschaft) Reaktionen auf Gefühle sowie der ausschließliche Fokus auf adaptive Emotionsregulationskompetenzen. Diese Unterscheidung unterschlägt die Bedeutung eines situationsabhängigen und flexiblen Umgangs mit Gefühlen für die psychische Gesundheit (Bonanno et al., 2004). Hervorzuheben ist, dass bei Studie 3 die Emotionsregulationskompetenz bezüglich einer Reihe von Emotionen berücksichtigt wurde. Zudem wurde hier nicht nur wie in vielen bisherigen Studien der Umgang mit aversiven Gefühlen, sondern auch der Umgang mit positiven Gefühlen untersucht.

## **5.2 Theoretische und klinisch-praktische Implikationen sowie Perspektiven**

Aus vorliegender Arbeit lassen sich einige theoretische und klinisch-praktische Implikationen ableiten. Befunde zu negativen Zusammenhängen zwischen der Emotionsregulation des Modells adaptiver Emotionsregulation nach Berking (siehe Abbildung 1 bzw. Berking & Lukas, 2015; Berking & Whitley, 2014) und depressiver Symptomatik (bzw. Depressionsschwere und Depressionspersistenz; siehe Studie 2) reihen sich in eine Vielzahl von Studien ein, die die Validität dieses Modells stützen. Negative Zusammenhänge von Emotionsregulation und depressiver Symptomatik über einen zeitlichen Verlauf (Studie 1 und 3) stimmen darüber hinaus mit der Relevanz von Defiziten in der adaptiven Emotionsregulation für die Entstehung und Aufrechterhaltung von MDD überein (z.B. McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011; Radkovsky et al., 2014). Negative Zusammenhänge von Emotionsregulation und depressiver Symptomatik über einen zeitlichen Verlauf nach erfolgter Depressionsbehandlung hinaus (Studie 1 und 3) erweitern ausserdem die Relevanz adaptiver Emotionsregulation für die Aufrechterhaltung bzw. die Wiederkehr von MDD für den Zeitraum nach erfolgter bzw. erfolgreicher MDD-Behandlung.

Die vorliegenden Ergebnisse der explorativen Analysen deuten auf eine unterschiedliche Relevanz der einzelnen Emotionsregulationskompetenzen des Modells adaptiver Emotionsregulation nach

Berking für den Verlauf der MDD hin. Die beiden Kompetenzen emotionale *Akzeptanz* und zielbezogene *Konfrontationsbereitschaft* mit belastenden Situationen waren in allen drei Studien mit dem jeweiligen Maß der depressiven Symptomatik assoziiert.

Dass die Emotionsregulationskompetenz *Akzeptanz* in unseren klinischen Stichproben eine wichtige Rolle spielt, steht im Einklang mit dem TEK Modell, welches als theoretische Basis für die verwendeten Emotionsregulationsfragebogen diente und in welchem Akzeptanz als eine der wichtigsten Emotionsregulationskompetenzen für die mentale Gesundheit angesehen wird (Berking & Whitley, 2014). Der Zusammenhang zwischen hoher Akzeptanz und niedriger Psychopathologie passt auch zu anderen Forschungsergebnissen (Berking, Wupperman, et al., 2008) und ist nicht überraschend angesichts der bedeutenden Rolle dieser Kompetenz in Behandlungskonzepten wie der Akzeptanz- und Commitmenttherapie (Hayes et al., 1999).

Die Emotionsregulationskompetenz *Konfrontation* wird in Literatur und Therapie als eine funktionale Alternative zur Strategie der Vermeidung vorgeschlagen und eingesetzt (Foa & Kozak, 1986). Während Vermeidung langfristig als Garant für eine Aufrechterhaltung von Symptomen zählt (Kashdan, Breen, & Julian, 2010; Tull, Gratz, Salters, & Roemer, 2004), wird die Konfrontationsbereitschaft als eine adaptive Emotionsregulationskompetenz diskutiert, die dabei helfen kann, negative Gefühle langfristig zu reduzieren (Grosse Holtforth et al., 2012) und die so der Entstehung und Aufrechterhaltung depressiver Episoden entgegenwirken sollte. Ergebnisse dieser Arbeit stützen entsprechende negative Zusammenhänge zwischen Konfrontationsbereitschaft und MDD (Studie 2). Die Ergebnisse von höherer Konfrontationsbereitschaft als Prädiktor weniger depressiver Symptome (Studie 1) sowie höherer Konfrontationsbereitschaft als Prädiktor für eine längere Zeit bis zu einem MDD-Rückfall (Studie 3) stimmen mit der Hypothese überein, dass eine funktionale, adaptive Konfrontationsbereitschaft über akute Phasen von MDD hinaus einen Schutzfaktor gegen MDD darstellt.

Da MDD-Rückfallraten hoch sind (Vittengl et al., 2007), ist es für Kliniker von großer praktischer Relevanz, bei der Entlassung der Patienten mithilfe des Niveaus der vorhandenen Emotionsregulationskompetenzen (beispielsweise Akzeptanz und Konfrontationsbereitschaft) vorhersagen zu können, welcher der für die Entlassung geplanten Patienten besser gegen einen Rückfall geschützt ist und welcher ein hohes Rückfallrisiko trägt. Diese Information kann von Klinikern genutzt werden, um die Patientenbehandlung und die Rückfallprophylaxe zielgerecht zu modifizieren. Die Behandlung der Patienten mit höherem Risiko könnte beispielsweise verlängert werden oder dieser Patientengruppe könnten gezielt Nachsorgeprogramme angeboten werden.

Die gezielte Verbesserung der Emotionsregulation könnte einen vielversprechenden Behandlungsbestandteil darstellen, welchen man in MDD-Behandlungsprogramme integrieren sollte. Eine Integration des Trainings der Emotionsregulation in die Akutbehandlung könnte die Behandlungserfolge steigern, wie es schon die Ergebnisse zweier Studien gezeigt haben (Berking et al., 2013; Berking, Wupperman, et al., 2008). Wenn die Ergebnisse unserer Studien (Studie 1 und 3) in weiteren Studien repliziert werden, könnte das Behandlungsergebnis einer Akutbehandlung mithilfe eines Behandlungsfokus auf die Emotionsregulation maßgeblich verbessert werden und zwar besonders mit Hinblick auf die Rückfallprophylaxe. Mithilfe einer verbesserten Emotionsregulation könnte zum Behandlungsende eine niedrigere Restsymptomatik erzielt werden und die verbesserte Emotionsregulation könnte die Behandelten länger (vielleicht sogar dauerhaft) vor weiteren MDD-Episoden schützen.

Da Defizite in der Emotionsregulation und damit assoziierte anhaltende negative Gefühle als Risikofaktor für eine Vielzahl unterschiedlicher psychischer Störungen gelten (Gross & Muñoz, 1995), könnte die Implementierung eines Emotionsregulationstrainings in die Behandlung über MDD hinaus auch in der Behandlung weiterer psychischer Störungen (z.B. Angststörungen oder somatoformer Störungen) wirksam sein. Im Umgang mit Komorbiditäten könnte diese Intervention zu einer Verbesserung der Behandlungseffizienz führen. Vor dem Hintergrund hoher Komorbiditätsraten als enorme Herausforderungen in der Behandlung von MDD (Burcusa & Iacono, 2007) könnte die Implementierung eines Emotionsregulationstrainings in die MDD-Behandlung einen vielversprechenden Ansatz zur Verbesserung der Depressionsbehandlung darstellen.

Aus den Ergebnissen der Studie 2 lassen sich wertvolle klinisch-praktische Implikationen sowie vielversprechende Perspektiven ableiten. Steigende Flüchtlingszahlen und hohe Prävalenzraten Posttraumatischer Belastungsstörung (PTBS) unter Asylbewerbern (Gäbel, Ruf, Schauer, Odenwald, & Neuner, 2006) weisen auf einen aktuellen und zukünftigen dringenden Handlungsbedarf hin. Die PTBS zeigt eine beträchtliche Komorbidität mit affektiven Störungen und erhöht das Risiko für das Auftreten von Depressionen (Breslau, Davis, Andreski, Peterson, & Schultz, 1997; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Faktoren, die einen Einfluss auf den weiteren Krankheitsverlauf bei Traumatisierten haben und die zudem einen erfolgversprechenden Behandlungsansatzpunkt bieten, sind aktuell von höchster praktischer Relevanz. Neben der dringenden Notwendigkeit einer umfassenden weiteren Forschung stellt beispielweise das TEK ein Behandlungskonzept dar, welches perspektivisch mit traumatisierten Asylbewerbern durchgeführt werden könnte und somit den zahlreichen negativen Konsequenzen der erlebten Traumata entgegen wirken könnte.

Zusammenfassend ist festzuhalten, dass unter der Prämisse von Defiziten in der Emotionsregulation als entscheidender Risikofaktor für die Entstehung, Aufrechterhaltung und Wiederkehr von

MDD (Brockmeyer et al., 2012; Ehring et al., 2008, 2010) Interventionen zur Steigerung von allgemeiner Emotionsregulation sowie spezifischer Emotionsregulationskompetenzen (z.B. Akzeptanz und Konfrontationsbereitschaft) vor dem Hintergrund dieser Arbeit zu einer Verbesserung der Effektivität und Nachhaltigkeit einer Depressionsbehandlung beitragen könnten.

## 6 LITERATUR

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## **7 APPENDIX**

### **7.1. Study I**

Hopfinger, L., Berking, M., Bockting, C. L. H., & Ebert, D. D. (submitted). Emotion Regulation Protects against Recurrence of Depressive Symptoms. Manuscript submitted for publication in *Behavior Therapy*.

### **7.2. Study II**

Hopfinger, L., Berking, M., Bockting, L. H., & Ebert, D. D. (2016). Emotion Regulation Mediates the Effect of Childhood Trauma on Depression. *Journal of Affective Disorders*. 198, 189-197.

### **7.3. Study III**

Hopfinger, L., Berking, M., Hannig, W., Hautzinger, M., Bockting, C. L. H., & Ebert, D. D. (submitted). Emotion Regulation Predicts Time to Depression Relapse. Manuscript submitted for publication in *Journal of Consulting and Clinical Psychology*.

**7.1 Study I**

Hopfinger, L., Berking, M., Bockting, C. L. H., & Ebert, D. D. (submitted). Emotion Regulation Protects against Recurrence of Depressive Symptoms. Manuscript submitted for publication in *Behavior Therapy*.

## Emotion Regulation Protects against Recurrence of Depressive Symptoms

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## Abstract

Relapse following response in psychotherapy for Major Depressive Disorder is a major concern. Emotion regulation has been discussed as a putative emerging and maintaining factor for depression. This prospective study aimed to examine whether emotion regulation protects against recurrence of depressive symptoms in a sample of 193 German inpatients (mean age 47.40 years, 78.8 % female) treated with Cognitive Behavioral Therapy (CBT). Emotion regulation was assessed by the Emotion-Regulation Skills Questionnaire, and depressive symptoms were measured using the depression subscale of the Hamburg Modules for the Assessment of Psychosocial Health in Clinical Practice. Multiple hierarchical regressions were used to examine predictors of depressive symptoms at 3- and 12-month follow-ups, and moderated regressions were utilized to determine if the association between emotion regulation at treatment discontinuation and changes in depression during the follow-up period depends on the level of treatment response. General emotion regulation did not predict depressive symptoms at both follow-ups in the full study sample, but higher general emotion regulation predicted lower depressive symptoms beyond the residual symptoms of depression at the 3-month follow-up among treatment responders. In the full study sample, the *readiness to confront* specific emotion regulation skill predicted lower depressive symptoms beyond the residual symptoms of depression after twelve months only, whereas the *acceptance* emotion regulation skill significantly predicted lower depressive symptoms at both three months and twelve months after treatment. Among only treatment responders, various additional specific emotion regulation skills predicted depressive symptoms three months after treatment. These results indicate that general emotion regulation, as well as *acceptance* and *readiness to confront* are valuable protective factors against recurrence of depressive symptoms after treatment. Thus targeting these skills through methods such as relapse-prevention interventions may help to maintain treatment success of CBT.

Keywords: Depression, Emotion regulation, Predictor, Acceptance, Readiness to confront

## Introduction

Major Depressive Disorder (MDD) is a highly prevalent mental disorder (Donohue & Pincus, 2007). Due to its often recurrent nature and chronic effects, MDD is the leading cause of disability in the world, and it ranks fourth among mental disorders in terms of mortality (Andrews, 2008; Eaton et al., 2008). Despite ample evidence for the efficacy of psychotherapy in treating MDD (Cuijpers, Berking, et al., 2013), recent meta-analyses show that between 40 to 60 percent of patients with MDD relapse after initial response to acute phase treatment (Vittengl et al., 2007; Westen & Morrison, 2001). Therefore, there is a pressing need to identify potential risk factors of relapse as well as potential preventative factors for relapse in depression. Such knowledge could improve depression care, long

term treatment response, and may result in reducing the lifetime disabling effects of depression (Bockting et al., 2011).

Emotion regulation has been discussed in terms of emotion regulation deficits as a putative emerging and maintaining factor for depression (Brockmeyer et al., 2012). Emotion regulation refers to the set of processes through which people seek to monitor, evaluate, and redirect the spontaneous flow of their emotions to accomplish their needs and goals (Koole, 2009). Based on the assumption that deficits in emotion regulation may be accountable for the development, maintenance, and recurrence of numerous mental disorders, Berking (2010) proposed the Adaptive Coping with Emotions (ACE) model (Berking & Lukas, 2015; Berking & Whitley, 2014). The ACE model has been empirically validated (Berking et al., 2010; Berking, Orth, et al., 2008; Berking & Znoj, 2008) and serves as the underlying model for the current study. It synthesizes and extends previous models of emotion regulation, and it facilitates the utilization of the previously abstract and broad concept of emotion regulation in clinical research (Berking & Whitley, 2014; Wirtz, Hofmann, Riper, & Berking, 2014). The ACE model conceptualizes adaptive emotion regulation as a situation-dependent interaction of the skills to (1) be aware of emotions, (2) correctly interpret emotion-related body sensations, (3) identify and label emotions, (4) understand the prompts of emotions, (5) accept aversive emotions, (6) tolerate aversive emotions, (7) provide compassionate self-support in challenging situations, (8) confront and approach situations likely to trigger aversive emotions, and (9) modify aversive emotions to feel better (Berking & Whitley, 2014). In the ACE model, the emotion regulation skills of acceptance, tolerance, and modification of aversive emotions are assumed to be most significant for mental health, whereas the other skills are assumed to play solely a facilitating role in the successful application of the three aforementioned skills (Berking & Whitley, 2014; Berking et al., 2012a; Berking, Wupperman, et al., 2008). Empirical evidence for the relevance of the skills included in the ACE model comes from numerous studies. For example, cross-sectional results showed that depressed individuals find difficulty in using emotion regulation skills to accept aversive emotions (Ehring et al., 2008), to compassionately support themselves when experiencing negative emotions (Gilbert et al., 2006), and to modify emotions effectively (Brockmeyer et al., 2012). Furthermore, other cross-sectional studies have indicated that depressive symptoms negatively correlate with additional emotion regulation strategies that are considered adaptive, such as positive reappraisal and problem solving (Aldao et al., 2010; Chen et al., 2012; Sugawara et al., 2012). Cross-sectional findings have also provided evidence that depressive symptoms positively correlate with emotion regulation strategies that are considered to be dysfunctional (Aldao et al., 2010; Aldao & Nolen-Hoeksema, 2010; Barnow et al., 2013). Moreover, the reported finding that emotion regulation is closely tied to depressive symptoms is strengthened by evidence

from affective neuroscience (Farb et al., 2012; Heller et al., 2013; Rive et al., 2013) as well as by evidence from experimental studies (Campbell-Sills, Barlow, Brown, & Hofmann, 2006; Ehring et al., 2010; Joormann & Gotlib, 2010).

Furthermore, longitudinal studies suggest that deficits in emotion regulation are not only a symptom of depression but may also be a relevant factor for development of depression. For example, prospective studies indicated that self-reported ruminative handling of aversive emotions was a predictor of symptoms and diagnoses of depression (Aldao et al., 2010; Nolen-Hoeksema, 2000). Similarly, in a study of patients with burn injuries, depressive symptoms at 2-year follow-up were associated with lower levels of positive refocusing and higher levels of rumination 9-months post-burn (Van Loey et al., 2013). A study with women newly diagnosed with breast cancer showed that emotion regulation strategies were a predictor of depressive symptoms over and above baseline levels of depression one month after diagnosis (Wang et al., 2014). Additionally, in a study including individuals suffering from at least some depressive symptoms, emotion regulation skills predicted subsequent depressive symptom severity even after a 5-year period (Berking et al., 2014). Recently, Radkovsky, McArdle, Bockting, and Berking (2014) showed that a successful application of emotion regulation skills was associated with lower levels of depressive symptoms, and improved successful skill application was associated with a decrease in depressive symptoms over the course of MDD treatment.

Beyond the demonstrated importance of emotion regulation for the development and maintenance of depression, we are interested in the significance of emotion regulation during the course of depression following treatment. Since predictors for the onset of the first depressive episode and for subsequent episodes may be different (Monroe et al., 1999), it is important to investigate whether emotion regulation remains a predictor for depression even after treatment of MDD. To the best of our knowledge, there are no studies analyzing whether general emotion regulation predicts subsequent depressive symptoms following psychotherapy for MDD at this point. Moreover, there is yet no research on the potentially different relevance of specific emotion regulation skills on the course of depression following treatment. However, a preliminary study of MDD patients who responded to cognitive therapy provided the first evidence that both competence in and performance of cognitive therapy coping skills predicted a reduced risk for relapse (Strunk, DeRubeis, Chiu, & Alvarez, 2007).

We argue that emotion regulation may be especially important for the subsequent course of depression after treatment because of several reasons. First, we assume that processes for the first onset of depression and recurrence or relapse may be similar in the sense that adaptive emotion regulation may not only prevent depressive thought patterns from activation but also from reactivation, decreasing the likelihood for MDD relapse (Jarrett et al., 2012; Segal et al., 2006). Second, in contrast to the

first onset, daily hassles, not serious life events (Sawyer et al., 2009), may present a higher risk for relapse into depression (Bockting et al., 2006). Thus, the ability to successfully deal with negative emotional consequences activated by daily hassles may be of particular importance for persons with a history of depression. Third, it can be assumed that patients need to implement and continuously maintain therapeutic strategies (e.g., training of cognitive strategies) into their daily life in order to sustain success of therapy in the long run. Despite high implementation intentions, patients may not behave in accordance with their intentions and fail to implement therapeutic strategies into their daily life (intention–behavior gap) (Stadler et al., 2009). This may happen because the implementation of newly developed behavior into daily life is associated with aversive emotions (Schwarzer, 2008). Deficits in emotion regulation have been proposed as a relevant hindrance to effective intention implementation (Luszczynska et al., 2004). Therefore, we assume that individuals with more effective emotion regulation may be more likely to implement their strategies into daily life compared to those with less effective emotion regulation. In summary, we have promising grounds to assume that adaptive emotion regulation may act as a valuable protective factor against recurrence of depressive symptoms after treatment of MDD.

Thus, the aim of this study was to investigate the relevance of emotion regulation on the subsequent course of depression following CBT. As emotion regulation skills have been shown to be associated with symptoms of depression (Barnow et al., 2013), and residual symptoms of depression have also been shown to be powerful predictors of relapse (Fava, Rafanelli, Grandi, Conti, & Belluardo, 1998; Judd et al., 1999; Paykel et al., 1999), our hypothesis was that more effective post-treatment general emotion regulation would be a predictor of lower symptoms of depression beyond the effects of the residual symptoms of depression at discharge at both 3- and 12-month follow-ups. Given that treatment responders and non-responders might differ (Kennedy & Lam, 2003; Mayberg et al., 2005; Sackheim et al., 2006), and relevant processes like emotion regulation might operate differently across these groups, we also aimed to explore whether the association of emotion regulation at treatment discontinuation and changes in depression during the follow-up period is dependent by level on treatment response. We additionally aimed to identify what specific emotion regulation skills would predict improved symptoms of depression beyond the residual symptoms of depression after CBT and whether the association between emotion regulation and the subsequent course of depressive symptoms depends on the level of response at the end of treatment.

## Method

### *Research Design*



Study participants were selected from a database from two preceding effectiveness studies and included patients from a German clinic providing routine mental health care (Ebert, Tarnowski, et al., 2013; Ebert, Gollwitzer, et al., 2013a). All participants provided written informed consent. Ethical approval was given for the primary studies from the institutional review board of Leuphana University Lueneburg and the institutional review board of Dr. Ebel Fachklinik Vogelsbergklinik. Diagnoses were assessed upon intake for psychiatric hospitalization by experienced psychologists or physicians with Master's degrees or higher, who all had been trained extensively in administering the Structured Clinical Interview for *DSM-IV* (SCID; German version; Wittchen, Zaudig, & Fydrich, 1997). Study outcomes were assessed using self-report measures that were completed at end of treatment, three months after treatment, and twelve months after treatment.

### *Study Population*

To participate in the present study, patients needed to meet the following criteria: (1) undergoing treatment in the cooperating mental health clinic and participation in one of the two precedent studies (Ebert, Tarnowski, et al., 2013; Ebert, Gollwitzer, et al., 2013a), (2) receiving a diagnosis of a Major Depressive Episode (MDE) according to ICD-10 criteria (Dilling et al., 1991), and (3) obtaining no specific psychological maintenance treatment besides treatment-as-usual immediately following discharge. The mean age of the participants was 47.40 (SD = 9.60, range 22 - 66), 78.8 % of the participants were female (n = 152), and 21.2 % were male (n = 41).

### *Treatment*

Study participants received disorder-specific CBT-based individual and group therapy interventions focusing on symptoms of MDD. Interventions for depression were structured through modules typically used in CBT for depression (A. T. Beck, Rush, & Shaw, 2001). Modules included: (1) behavioral activation (Lewinsohn, 1974), (2) behavioral analyses (A. T. Beck et al., 2001), (3) cognitive restructuring (A. T. Beck et al., 2001), and (4) problem solving (Nezu, Nezu, & Perri, 1989). Depending on the specific needs of the individual patient, the treatment was also supplemented with disorder-specific group therapy focusing on comorbid disorders (if present). All treatments for comorbid disorders used disorder-specific CBT interventions (e.g., cognitive restructuring and exposure to treat anxiety) (Barlow, 2008). In a randomly allocated group of patients (n = 51, 26.4 %), the group based CBT program included a shortened version of Affect Regulation Training (ART), which specifically teaches emotion regulation (Berking et al., 2010; Berking, 2010; Berking, Wupperman, et al., 2008). ART is a transdiagnostic program which can be added to empirically validated interventions whenever emotion regulation difficulties are identified. ART integrates techniques from CBT (Butler, Chapman, Forman, & Beck, 2006), mindfulness-based interventions (Kabat-Zinn, 2003), dialectical behavioral therapy

(Linehan et al., 1999), emotion-focused therapy (Greenberg & Watson, 2006), problem-solving therapies (Bell & D’Zurilla, 2009) and self-compassion trainings (Gilbert et al., 2006) in order to systematically enhance emotion regulation. ART teaches that vicious cycles maintain negative emotions (e.g., amygdala activation increases muscle tension and vice versa) and it teaches certain techniques that interrupt these cycles, including: (1) breathing relaxation, (2) muscle relaxation, (3) non-judgmental emotional perception, (4) acceptance and tolerance of emotional responses, (5) compassionate self-support, (6) finding the causes of emotional reactions, and (7) modification of emotions.

Depending on medical comorbidity and the specific needs of the individual patient, the psychotherapeutic treatment was supplemented with physiotherapy, relaxation training, sports therapy, occupational therapy, and/or medical treatment. Physiotherapy used manual therapy or certain physical exercises to reduce physical complaints caused by a medical condition. For example, relaxation training was given to patients with comorbid anxiety disorders, sports therapy utilized physical exercises to increase the rate of positive activities, occupational therapy aimed to engage patients in reinforcing creative activities (e.g., drawing, making pottery, taking pictures, weaving), and medical treatment included consultations, examinations, and treatment of physical medical conditions. Patients received one session of individual therapy and an average of six sessions of group therapy per week.

Psychotherapeutic treatment was delivered by six experienced therapists and therapists in training, ART was led by clinical psychologists (Master’s degree) who were enrolled in an advanced post-graduate psychotherapy training, physiotherapy was provided by licensed physiotherapists, relaxation training was administered by licensed therapists and specifically trained and licensed nurses, sports and occupational therapies were provided by licensed sports and occupational cotherapists, and medical treatment was administered by medical doctors. Adherence to the CBT rationale in the therapeutic treatment was ensured via weekly supervision and team meetings attended by the licensed senior therapists and medical doctors. ART trainers had been specifically trained in leading ART sessions and additionally received weekly supervision by experienced clinicians and experienced ART trainers. Duration of treatment ranged between 28 and 77 days ( $M = 45.29$ ,  $SD = 7.79$ ). Standard duration of treatment in the clinic was six weeks, but there were deviations depending on treatment success and treatment guarantee of health insurances. At three and twelve months after treatment, respectively 84.5 % ( $n = 163$ ) and 83.4 % of the patients ( $n = 161$ ) reported that they had utilized some form of psychotherapeutic (maintenance) treatment (e.g., psychological counseling, self-help groups) in the interval since acute phase treatment discontinuation.

### *Measures*

### *Predictors.*

In order to assess the emotion regulation skills included in the Adaptive Coping with Emotions (ACE) model proposed by Berking (2010), the Emotion-Regulation Skills Questionnaire (ERSQ; Berking & Znoj, 2008) was used. The ERSQ is a 27-item self-report instrument that utilizes a five point Likert-type scale (0 = *not at all* to 4 = *almost always*) to assess the respondent's adaptive emotion regulation skills in the previous week. Each of the nine skills is assessed with three items measuring awareness (e.g., 'I paid attention to my feelings'), clarity (e.g., 'I was clear about what emotions I was experiencing'), understanding (e.g., 'I was aware of why I felt the way I felt'), modification (e.g., 'I was able to influence my negative feelings'), acceptance (e.g., 'I accepted my emotions'), tolerance of emotions (e.g., 'I could endure my negative feelings'), the use of sensations to identify emotions (e.g., 'My physical sensations were a good indication of how I was feeling'), readiness to confront distressing situations (e.g., 'I did what I had planned, even if it made me feel uncomfortable'), and compassionate self-support (e.g., 'I supported myself in emotionally distressing situations'). A confirmatory factor analysis showed a satisfactory to good fit for the nine-factor model (Berking & Znoj, 2008). In addition to these skills, the ERSQ produces a total score, computed as the average score across all items, with higher scores indicating more advanced emotion regulation. Previous studies have demonstrated sufficient retest reliability, good internal consistency, good factorial, convergent, and discriminant validity, and significant sensitivity to change for all subscales of the ERSQ (Berking et al., 2013; Berking, Orth, et al., 2008; Berking & Znoj, 2008; Berking, Wupperman, et al., 2008; Ebert, Tarnowski, et al., 2013; Wirtz, Hofmann, et al., 2014). Numerous cross-sectional and longitudinal studies have shown that the ERSQ is negatively associated with various dimensions of psychological problems in healthy, at-risk, and clinical populations (Berking et al., 2011, 2010; Radkovsky et al., 2014; Wirtz, Hofmann, et al., 2014). In the present study, the ERSQ total score displayed very good internal consistency (Cronbach's  $\alpha = .97$ ) and the subscales of the ERSQ displayed good internal consistencies with Cronbach's  $\alpha$  ranging from .79 to .92.

#### *Primary Outcome.*

The depression subscale (HEALTH-D) of the Hamburg Modules for the Assessment of Psychosocial Health in Clinical Practice (HEALTH-49; Rabung, Harfst, Koch, Wittchen, & Schulz, 2007) was the primary outcome measure of this study, which served to estimate the level of treatment response and was utilized to classify treatment responders and non-responders. The HEALTH-49 is an open-source self-report instrument with sound psychometric properties that assesses patients' level of impairment and changes over time and is widely used in the German health care system (Hausberg et al., 2012; Puschner, Becker, & Bauer, 2015; Volkert, Schulz, Brütt, & Andreas, 2014). The HEALTH-D assesses six different aspects of depression (feelings of sadness, guilt, worthlessness, anhedonia, hopelessness,

and suicidal ideation) with 6 items (e.g., 'In the past two weeks, I suffered from a feeling of hopelessness') on a 5-point Likert-type scale (0 = *not at all* to 4 = *very much*) with a score range of 0 to 4 (lower scores indicate lower impairment). Based on large healthy ( $n = 5630$ ) and clinical samples ( $n = 1548$ ), the HEALTH-D has been psychometrically analyzed (Rabung et al., 2009) and reveals high reliability, indicated by high internal consistency (Cronbach's  $\alpha = .88$ ). Evidence of construct validity is provided by high correlations ( $r = .87$ ) with the depressive symptoms subscales of the widely used symptom-checklist (SCL; Derogatis, 1977; German version: Harfst et al., 2002) and by reasonably high correlations ( $r = .73$ ) with the Depression Screening Questionnaire (DSQ; Wittchen & Perkonig, 1997). In the present study, this outcome measure displayed good internal consistency (Cronbach's  $\alpha = .89$ ). The HEALTH-D distinguishes very well between healthy and mentally ill people (AUC = 91.1 %; Rabung et al., 2009). Good sensitivity to change of the HEALTH-49 and subsequently the HEALTH-D has been shown in a number of studies, indicated by at least mean effect sizes ( $SES > .50$ ) following psychological intervention (Berking et al., 2013; Ebert, Tarnowski, et al., 2013; Rabung et al., 2009). The cut-off score of .66 indicates a near to symptom-free state (response) and was determined based on a sample of 2284 healthy recipients of primary medical care and 1523 psychosomatic inpatients (Rabung et al. 2007.)

The BDI is a 21-item self-report measure that assesses severity of depressive symptoms on a 4-point Likert-type scale that was used in the present study to determine residual symptoms of depression. Numerous studies disclose good reliability (Cronbach's  $\alpha = .88$ ) and good construct validity, provided by high correlations ( $r = .87$ ) with the Hamilton Depression Rating Scale (Barth, Paul, Klesse, Bengel, & Härter, 2007; Kobak, 2004), and a large number of studies reported therapy-related changes in the BDI (A. T. Beck, 1995; Brähler, Holling, Leutner, & Petermann, 2002). In the present study, the BDI displayed very good internal consistency (Cronbach's  $\alpha = .91$ ).

### *Data Analyses*

We used hierarchical linear regression models (J Cohen & Cohen, 1983) to test the hypotheses whether more effective post-treatment emotion regulation predicts lower symptoms of depression at 3- and 12-month follow-ups beyond the residual symptoms of depression at discharge in individuals after CBT. In the models regarding general emotion regulation, the ERSQ total score at discharge was the predictor variable, and the HEALTH-D at 3- and 12-month follow-ups were the dependent variables while controlling for age, sex, whether patients had received ART during acute phase CBT, residual symptoms of depression at discharge (BDI), and whether patients had received maintenance treatment following acute phase CBT. To determine whether the predictions depend on the level of treatment response, we subsequently utilized hierarchical regression models with the interaction between

the ERSQ total score and the HEALTH-D score (level of treatment response). In the case of a significant interaction, the particular hierarchical regression was repeated separately for treatment responders and non-responders (without the interaction).

To explore what specific emotion regulation skills predict lower depressive symptoms at 3- and 12-month follow-ups beyond residual symptoms at discharge, we first used hierarchical regression models with only one emotion regulation skill at a time. In these models, the HEALTH-D at 3- and 12-month follow-ups were the dependent variables, and each of the ERSQ subscales at discharge were the predictor variable while controlling for the above mentioned covariates. In order to counteract Type II error increase due to low power (relatively small sample size), Type I error was not corrected in these explorative analyses. To analyze whether results remain stable when all emotion regulation skills are simultaneously taken into account, we repeated the analyses with hierarchical linear regression models including all emotion regulation subscales at once while controlling for the aforementioned confounders and predictors. To determine whether the predictions depend on the level of treatment response, we subsequently utilized hierarchical regression models with the interaction between the ERSQ subscale(s) and the HEALTH-D score. In the case of a significant interaction, the particular hierarchical regression was repeated separately for treatment responders and non-responders (without the interaction).

For all analyses, we set  $\alpha$  at .05 and used two-sided tests. SPSS Version 21.0 for Windows (SPSS, Inc., Chicago, Illinois) was used for all analyses. We also tested whether the underlying assumptions had been met for the regression models (e.g., homoscedasticity).

## Results

Table 1 shows means and standard deviations for all study outcomes.

The Breusch Pagan Tests (Breusch & Pagan, 1979; Koenker, 1981) showed that there were no heteroscedastic disturbances, indicating that the residuals at each level of the predictor variables had equal variances. For example, the regression for general emotion regulation yielded  $\chi^2(6) = 6.27, p = .39$ . Therefore, the underlying assumptions of homoscedasticity for the regressions had been met.

In the full study sample of treatment responders and non-responders, general emotion regulation at discharge did not predict depressive symptoms at 3-month or 12-month follow-up. Because the subsequent moderated hierarchical linear regression with general emotion regulation at the 3-month follow-up displayed a significant interaction between level of treatment response and general emotion regulation, the regression was repeated separately for responders and non-responders. The regressions showed that higher general emotion regulation at discharge significantly predicted lower

depressive symptoms beyond residual symptoms at discharge at 3-month follow-up for treatment responders (see Table 2), but not treatment non-responders. The subsequent moderated hierarchical linear regression with general emotion regulation at the 12-month follow-up displayed non-significant interaction, and therefore the analysis was not repeated with responders and non-responders separately.

With regard to specific emotion regulation skills analyzed one at a time, only the emotion regulation skill *acceptance* predicted lower symptoms of depression at 3-month follow-up, and the emotion regulation skills *acceptance* and *readiness to confront* predicted lower symptoms of depression at 12-month follow-up (beyond residual symptoms of depression at discharge) in the full study sample. The regressions considering all emotion regulation skills at once showed that only *acceptance* predicted lower symptoms of depression at 3-month follow-up, and *acceptance* and *readiness to confront* significantly predicted lower depressive symptoms at 12-month follow-up beyond residual depressive symptoms in the full sample (see main findings in Table 3).

The subsequent moderated hierarchical regression with the *acceptance* skill at the 3-month follow-up showed a non-significant interaction, and thus the analysis was not repeated. The subsequent moderated regressions on the other emotion regulation skills at the 3-month follow-up showed significant interactions, and therefore the analyses were repeated for treatment responders and non-responders separately. Among treatment non-responders, none of these emotion regulation skills predicted depressive symptoms at 3-month follow-up. Among treatment responders, the emotion regulation skills *awareness*, *clarity*, *understanding*, *tolerance*, *self-support*, *readiness to confront*, and *modification* predicted depressive symptoms at 3-month follow-up. In the subsequent moderated regressions with the individual emotion regulation skills at the 12-month follow-up, only the regression with the emotion regulation skill *self-support* displayed significant interaction between level of treatment response and the emotion regulation skill. The further regressions showed that the skill was not a significant predictor for depressive symptoms among treatment responders, nor among treatment non-responders. The subsequent moderated regression considering all emotion regulation skills at once at both 3- and 12-month follow-ups displayed non-significant interaction, and the analyses were not repeated for treatment responders and non-responders separately.

## Discussion

Data on the role of emotion regulation as a potential predictor of the further course of depression after treatment of MDD are lacking. The purpose of this study was to investigate whether more effective emotion regulation predicts lower symptoms of depression after inpatient CBT. Contrary to our hypotheses, general emotion regulation did not predict depressive symptoms three months nor

twelve months after treatment in the full study sample. However, among treatment responders, more effective general emotion regulation predicted lower symptoms of depression beyond the residual symptoms of depression three months after treatment.

Explorative analyses in the 3-month follow-up data showed that only the emotion regulation skill *acceptance* predicted lower symptoms of depression beyond the residual symptoms of depression in the full study sample, regardless of whether the other emotion regulation skills were simultaneously taken into account or whether the skills were analyzed separately. Among only treatment responders, the emotion regulation skills *awareness*, *clarity*, *understanding*, *tolerance*, *self-support*, *readiness to confront*, and *modification* predicted depressive symptoms at 3-month follow-up. Explorative analyses for the 12-month follow-up showed that the two emotion regulation skills *acceptance* and *readiness to confront* significantly predicted lower depressive symptoms beyond residual depressive symptoms among treatment responders and non-responders, again regardless of whether the other emotion regulation skills were simultaneously taken into account or whether the skills were analyzed separately.

The result that general emotion regulation is not a predictor for depressive symptoms both three and twelve months after treatment and controlling for residual depressive symptoms is surprising, since Berking et al. (2014) found in a non-clinical sample that successful emotion regulation skill application was a significant predictor for depressive symptom severity even at five-year follow-up after controlling for the effects of initial symptoms of depression. The predictors for the subsequent course of depression seem to be different in a clinical sample after treatment of CBT. However, our results are partly in line with findings suggesting that emotion regulation plays an important role in predicting intensity, duration, and recurrence of depressive symptoms (Berking et al., 2014; Martin & Dahlen, 2005; Radkovsky et al., 2014) since our results demonstrated that general emotion regulation is a predictor for depressive symptoms three months after treatment among treatment responders even when controlling for residual symptoms of depression as powerful predictors of relapse (Judd et al., 1999; Thase et al., 1992). Thus, the current study suggests that general emotion regulation may at least in the short-term act as a protective factor after response to treatment. Thus, this result extends previous findings by demonstrating that general emotion regulation is not only capable of predicting depressive severity in general (Berking et al., 2014), but it is also capable of predicting the recurrence of depressive symptomatology after successful treatment.

Our finding that specific emotion regulation skills are predictive for depressive symptoms contributes to the assumption that specific emotion regulation skills are strongly associated with depression. These associations have been shown in different studies. For example, patients with MDD reported

greater difficulties in the attenuation and modulation of emotions (Brockmeyer et al., 2012), rumination was positively associated with depression (McLaughlin & Nolen-Hoeksema, 2011), and depressive symptoms were highly correlated with a poor understanding of emotions (Mennin et al., 2007).

Our result that the emotion regulation skill *acceptance* plays an important role in our clinical sample is in line with the ACE model as the theoretical basis for the applied Emotion-Regulation Skills Questionnaire, in which *acceptance* is one of the most important emotion regulation skills for mental health (Berking & Whitley, 2014). It is also in line with other research results, which found that the greatest difference between scores of a clinical sample and a non-clinical control sample occurred for *acceptance*, indicating that individuals in the clinical sample reported least mastery of *acceptance* (Berking, Wupperman, et al., 2008). Our finding that *acceptance* is closely associated with subsequent psychopathology is not surprising, given the prominent role of this emotion regulation skill in treatment models such as acceptance-based interventions (Hayes et al., 1999). Reasons for the crucial and long-lasting predictive value of *acceptance* after treatment may include the following: (1) Even though the appearance of negative emotions is quite natural, their appearance may highly distress persons after the end of their inpatient stay. The ability to accept numerous negative emotions (as opposed to suppressing them or seeing these emotions as a sign of relapse) may prevent vicious depressive thought patterns from reactivation and thus may be an important factor in the time after treatment. (2) The current sample underwent a crucial phase with an increase of daily hassles since participants had recently left a protective clinical environment, and research has shown that the period immediately after treatment is associated with a high relapse rate (Thase et al., 1992; Vittengl et al., 2007; Westen & Morrison, 2001). Also, several studies have confirmed the link between daily hassles and depression (Bockting et al., 2005; Moriya & Takahashi, 2013; Stefanek, Strohmeier, Fandrem, & Spiel, 2012), and daily hassles have been detected as a critical risk factor for relapse (Bockting et al., 2006; McIntosh, Gillanders, & Rodgers, 2010). Since small daily disappointments following treatment are unfortunately inevitable, the ability to effectively apply the *acceptance* skill may have been crucial for the attainment and maintenance of mental health. In contrast to the initial onset, where serious life events often play a crucial role in disorder onset (Kendler et al., 1999; Lewinsohn et al., 1999; Monroe et al., 1999; Sawyer et al., 2009), the competence to successfully deal with the emotional consequences of daily hassles (i.e., negative emotions) may be of crucial importance after treatment. (3) After treatment, patients need to implement and continuously maintain therapeutic strategies (e.g., behavioral activation) into their daily lives. This process may be associated with numerous aversive emotions such as fears or doubts. Aversive emotions may hinder the implementation of intended actions. The ability to accept aversive emotions may therefore play a key role after treatment by not only respecting upcoming negative emotions but also by implementing learned strategies as intended.



Rationales for the predictive value of the emotion regulation skill *readiness to confront* may be understood by a well-known mechanism. After the clinic stay, a lot of challenges (e.g., finding the way back into working life) and its associated negative emotions have to be mastered. It is quite conceivable that people who suffer from emotionally challenging occurrences take refuge in avoidance, which is in turn associated with symptoms of depression (Aldao et al., 2010). Confronting emotionally challenging situations instead of avoiding them is a crucial and well-proven strategy (in exposure-based interventions; Grosse Holtforth et al., 2012) which leads to a natural reduction of aversive emotions (e.g., less depressive symptoms) in the long run (habituation; Emmelkamp et al., 2014). The capability of the *readiness to confront* skill in predicting depressive symptoms at 12-month follow-up and not at 3-month follow-up among both treatment responders and non-responders could be due to the fact that patients who are discharged from their inpatient stay may not experience certain challenges until more time has passed (e.g., return to work with full work-load). The ability to confront aversive emotions may play a key role for psychological health especially after an initial period of protection and potential assistance for reintegration.

Our finding that additional emotion regulation skills predicted depressive symptoms at 3-month follow-up among only treatment responders may hint at the assumption that predictors for the course of depression may be different among treatment responders and non-responders. Since there are individual differences in treatment response, e.g., some patients remain depressed despite standard interventions and even more aggressive approaches (Kennedy & Lam, 2003; Mayberg et al., 2005; Sackheim et al., 2006), it is feasible that the relevant processes of emotion regulation may operate differently across these groups.

There were limitations to the study. The assessments relied exclusively on self-reported symptoms of depression and emotion regulation skills. Future studies should also include independent outcome evaluations, such as observer-based depression measures and emotion regulation measures, and biological outcome indicators and performance-based emotion regulation measures (Kerns et al., 2014). Likewise, future studies should also examine the predictive value of emotion regulation on relapse and recurrence of depression tested with structured diagnostic interview criteria for MDD. Also, we used the depression subscale of the Hamburg Modules for the Assessment of Psychosocial Health in Clinical Practice as the primary outcome measure instead of for example the Beck Depression Inventory, even though the BDI is more widely used and more generalizable to non-German samples and populations. This was because the HEALTH-D was the standard routine method in the participating clinic and there were no BDI follow-up data. Furthermore, the utilized measure of emotion regulation (ERSQ) determines successful application of the item (regarding the particular emotion regulation skill) and not the applied emotion regulation strategies themselves. Future studies should also utilize

measures which determine whether an emotion regulation skill was applied (such as the ERSQ-ES; Ebert, Christ, & Berking, 2013). Additionally, it would be valuable to compare scores for emotion regulation and symptoms of depression and their reciprocal longitudinal associations between never-depressed, currently-depressed, and formerly-depressed persons. Such a comparison may lead to a better understanding of the role of effective emotion regulation in their value as a buffer in mental health. Finally, the fact that all participants were recruited from only one German mental health care clinic limits the generalizability of our results to a similar population of patients. Future research should focus on attempting to replicate these findings with patients treated in different outpatient settings.

Even while keeping these methodological limitations in mind, this study has relevant implications for both research and clinical practice. First, as relapse rates after acute phase treatment of MDD are high and the underlying process is not yet sufficiently understood, this study demonstrates two variables which may be capable of predicting recurrence of depressive symptoms. With the knowledge of the emotion regulation skills *acceptance* and *readiness to confront*, it may be possible to foresee who of the released patients are better protected against recurrence of depressive symptoms, which is of high practical value for clinicians. If other samples and studies replicate our findings, greater power of analyses through meta-analysis will be feasible for a deeper understanding of relapse processes. Second, as research has shown that deficits in emotion regulation may be a risk factor for depression, and the findings from the present study suggest that increased specific emotion regulation skills may help to prevent recurrence of depression symptoms, these emotion regulation skills may be promising treatment targets to be integrated in relapse prevention interventions. Finally, integrating emotion regulation into CBT may improve CBT results, as indicated by other studies (Berking et al., 2013; Berking, Wupperman, et al., 2008). If the current findings are replicated in future studies, it is likely that the success of CBT may be sustainably maintained by strengthening the treatment's focus on emotion regulation with an emphasis on the skills *acceptance* and *readiness to confront*. We conclude that emotion regulation may be an important anti-depression buffer after CBT.

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Table 1

*Means and standard deviations for all study outcomes*

<i>Time</i>	<i>Variables</i>	<i>M</i>	<i>SD</i>
Discharge	HEALTH-D	1.05	0.82
	BDI	10.24	9.28
	ERSQ <sub>total</sub>	2.46	0.79
	Awareness	2.78	0.86
	Sensations	2.72	0.82
	Clarity	2.61	0.91
	Understanding	2.55	0.90
	Acceptance	2.39	0.94
	Tolerance	2.11	1.01
	Self-support	2.40	0.90
	R. to Confront	2.36	0.87
	Modification	2.19	0.91
Three month follow-up	HEALTH-D	1.23	0.95
Twelve month follow-up	HEALTH-D	1.35	1.09

Abbreviations: ERSQ<sub>total</sub>, Emotion-Regulation Skills Questionnaire total score; R. to confront, Readiness to Confront Distressing Situations.

Table 2

*Hierarchical linear regression analyses using residual symptoms of depression, age, sex, Affect Regulation Training, maintenance treatment, and general emotion regulation as predictors for depressive symptoms*

<i>Symptoms of depression</i>	<i>3-month follow-up<sup>a</sup></i>					<i>12-month follow-up<sup>b</sup></i>				
	<i>B</i>	<i>SE B</i>	<i>β</i>	<i>p</i>	<i>ΔR<sup>2</sup></i>	<i>B</i>	<i>SE B</i>	<i>β</i>	<i>p</i>	<i>ΔR<sup>2</sup></i>
Model 1					.04					.24
Residual symptoms	.03	.03	.11	.35		.05	.01	.44	< .001***	
Age	.00	.01	.06	.66		-.00	.01	-.02	.80	
Sex	.17	.22	.10	.44		.31	.18	.12	.08	
ART	.04	.19	.03	.83		.27	.16	.11	.10	
Maintenance treatment	.24	.24	.13	.31		.31	.19	.11	.10	
Model 2					.19					.25
Residual symptoms	-.01	.03	-.02	.84		.04	.01	.38	<.001***	
Age	.01	.01	.15	.22		-.00	.01	-.01	.91	
Sex	.09	.20	.05	.65		.30	.18	.11	.10	
ART	.03	.18	.02	.87		.27	.16	.11	.10	

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Maintenance treatment	.27	.22	.14	.22	.31	.19	.11	.10
ERSQ <sub>total</sub>	-.51	.14	-.42	< .001***	-.14	.12	-.10	.25

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Abbreviations: B, unstandardized regression coefficient; SE B, standard error of B;  $\beta$ , standardized regression coefficient; residual symptoms, residual symptoms of depression; ERSQ<sub>total</sub>, Emotion-Regulation Skills Questionnaire total score. <sup>a</sup> only treatment responders. <sup>b</sup> treatment responders and non-responders. \*\*\*  $p < .001$ .

Table 3

*Hierarchical linear regression analyses using residual symptoms of depression, age, sex, Affect Regulation Training, maintenance treatment, and the specific emotion regulation skills as predictors for depressive symptoms (main findings)*

	3-month follow-up				12-month follow-up			
	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Awareness	.14	.11	.13	.20	.05	.14	.04	.71
Sensations	.04	.13	.03	.78	-.04	.16	-.03	.83
Clarity	.03	.13	.03	.79	.14	.16	.11	.40
Understanding	-.03	.12	-.03	.81	-.17	.15	-.14	.26
Acceptance	-.32	.15	-.32	< .05*	-.52	.20	-.45	< .01**
Tolerance	.04	.12	.04	.74	.09	.16	.08	.57
Self-Support	.06	.13	.06	.61	.30	.16	.25	.07
R. to Confront	-.06	.12	-.05	.61	-.30	.15	-.24	< .05*
Modification	-.01	.13	-.01	.93	.27	.17	.23	.10

Abbreviations: *B*, unstandardized regression coefficient; *SE B*, standard error of *B*;  $\beta$ , standardized regression coefficient; R. to confront, Readiness to Confront Distressing Situations. \*  $p < .05$ , \*\*  $p < .01$ .

## Supplementary Material

Table 4

*Pearson intercorrelations of emotion regulation skills*

	1	2	3	4	5	6	7	8	9
1. Awareness	-								
2. Sensations	.75**	-							
3. Clarity	.73**	.83**	-						
4. Understanding	.73**	.77**	.81**	-					
5. Acceptance	.72**	.71**	.76**	.79**	-				
6. Tolerance	.59**	.62**	.66**	.70**	.86**	-			
7. Self-Support	.66**	.69**	.70**	.70**	.78**	.81**	-		
8. R. to Confront	.61**	.59**	.64**	.68**	.80**	.76**	.79**	-	
9. Modification	.66**	.66**	.70**	.71**	.85**	.85**	.80**	.76**	-

\*\*  $p < .01$ .

## **7.2 Study II**

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Research paper

## Emotion regulation mediates the effect of childhood trauma on depression



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### ABSTRACT

**Background:** Childhood trauma increases the risks of both depression and dysfunctional emotion regulation, which is a factor that has been strongly linked to depression. Because of these demonstrated relationships, it can be hypothesized that dysfunctional emotion regulation is a mediator of the association between childhood trauma and depression.

**Methods:** To test this hypothesis, we assessed the indirect effect of emotion regulation (Emotion Regulation Skills Questionnaire) on the relationship between childhood trauma (Childhood Trauma Questionnaire) and depression severity (24-item Hamilton Rating Scale for Depression) as well as depression lifetime persistency (i.e., lifetime percentage spent in major depressive episodes; assessed via SCID and Life Chart Interviews) in 269 patients with major depressive disorder (MDD).

**Results:** Bootstrapping-enhanced mediation analyses indicated that deficits in general emotion regulation mediated the association of childhood trauma to both depression severity and depression lifetime persistency. Further exploratory analyses indicated that specific emotion regulation skills (such as the ability to mindfully observe, accept, and tolerate undesired emotions or the willingness to voluntarily confront situations that prompt negative emotions in order to attain personally relevant goals) significantly mediated the association between childhood trauma and depression severity. Willingness to confront was a mediator for both depression outcomes (depression severity and lifetime persistency).

**Limitations:** The employed mediation analyses are cross-sectional in nature, which limits any firm conclusions regarding causality.

**Conclusions:** The findings support the assumption that a sophisticated emotion regulation may help prevent the onset or unfavorable course of depression in individuals who have experienced childhood trauma.

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### 1. Introduction

Research has shown that childhood maltreatment, in terms of abuse and neglect, is disturbingly common (Barnett et al., 1997; Briere and Elliott, 2003; Häuser et al., 2011; Scher et al., 2004). In a nationally representative US-run survey of 4023 American youth, 8% reported lifetime prevalence (LTP) of sexual assault, 17% reported LTP of physical assault, and 39% reported LTP of witnessing violence (Kilpatrick and Saunders, 2000).

Childhood trauma has been associated with a range of negative consequences including physical health problems (Walker et al.,

1999) and psychological disorders such as PTSD (Hetzel and McCanne, 2005; Rodriguez et al., 1996; Rowan et al., 1994; Schaaf and McCanne, 1998) or personality disorders (Johnson et al., 1999; Miller and Lisak, 1999; Rogosch and Cicchetti, 2005; Weaver and Clum, 1993). Ample evidence also exists for the assumption that childhood trauma is associated with the onset and recurrence of depressive disorders (Chapman et al., 2004; Ferguson and Dacey, 1997; Lok et al., 2013; Nanni et al., 2012).

However, the causal mechanisms between childhood trauma and the subsequent development of depression have not been sufficiently studied. Potential mediators of the relationship between childhood trauma and depression are diverse, but clarifying research is still scarce. In a mediation model, the relation between a predictor variable and an outcome variable can be further explained by their relation to a mediator variable (Field, 2013). A number of potential mediators of the relationship between

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childhood trauma and depression have been identified in the literature so far. Self-criticism has been found to be a mediator of the link between parental verbal abuse and internalizing symptoms (depression and anxiety) during adulthood in a national representative epidemiological survey (Sachs-Ericsson et al., 2006). Other studies indicate negative cognitive styles as mediators of the effect of childhood maltreatment on later depression in college students and young adults (Gibb et al., 2001; Hankin, 2006). Maciejewski and Mazure (2006) identified fear of criticism and rejection as mediators of the relationship between childhood emotional abuse and adult onset MDD in a case-control sample. Further, schemes of vulnerability to harm, shame, and self-sacrifice have been found to mediate the effect of emotional maltreatment on later symptoms of anxiety and depression in college students (O'Dougherty Wright et al., 2009).

Another significant link between childhood maltreatment and later depression may be the suboptimal development of successful emotion regulation following childhood maltreatment (Crow et al., 2014; Raes and Hermans, 2008; Spasojević and Alloy, 2002). Emotion regulation refers to a variety of processes through which individuals attempt to control and manage their spontaneous flow of emotions in order to accomplish their needs and goals (Gross,

2013; Koole, 2009; Thompson, 1994). The Adaptive Coping with Emotions model (ACE; Berking and Lukas, 2015; Berking and Whitley, 2014) conceptualizes effective emotion regulation as the interplay of the abilities to: (1) consciously perceive emotions, (2) utilize sensations to identify emotions, (3) correctly label emotions, (4) understand emotions, (5) accept aversive emotions, (6) tolerate aversive emotions, (7) provide oneself with compassionate support when self-regulating emotions, (8) confront emotionally challenging situations if necessary to attain personally relevant goals, and (9) modify aversive emotions (Berking, 2010; Braams et al., 2012; Gilbert et al., 2006; Kobasa et al., 1982; Marchesi et al., 2005; Margraf and Berking, 2005; Salovey et al., 1995; Southam-Gerow and Kendall, 2002; Subic-Wrana et al., 2005; Vine and Aldao, 2014). The capacity for emotion regulation is developed early in life, and a number of studies indicate that growing up with experiences of maltreatment may adversely affect a child's later emotion regulation capacity (Alink et al., 2009; Burns et al., 2010; Cole et al., 2004). Moreover, it has been shown that deficits in emotion regulation are associated with various mental health problems (Berking and Wupperman, 2012; Burns et al., 2012; Rosenthal et al., 2015).

In regard to depression, several correlational (Brockmeyer et al., 2012; Ehrling et al., 2008; Gamefski and Kraaij, 2006), prospective (Arditte and Joormann, 2011; Berking et al., 2014; Wang et al., 2014), experimental (Campbell-Sills et al., 2006; Diedrich et al.,

2014; Ehrling et al., 2010; Joormann and Gotlib, 2010; Liverant et al., 2008), treatment outcome (Berking et al., 2008b, 2013; Radkovsky et al., 2014) and neuroscience (Farb et al., 2012; Heller et al., 2013; Kanske et al., 2012; Ritchev et al., 2011; Rive et al., 2013) studies have indicated that deficits in emotion regulation contribute to the development and maintenance of depression.

A small number of preliminary studies with homogeneous samples (e.g., college samples) have examined emotion regulation as the mechanism between childhood maltreatment and later depression. For instance, in a mostly low-income African American sample, emotion dysregulation has been found to mediate the relationship between childhood emotional abuse and depressive symptoms (Crow et al., 2014). In addition, in a college sample, rumination (a specific dysfunctional emotion regulation skill related to depression; Nolen-Hoeksema, 2000) has shown to partially mediate the relationship between emotional maltreatment and the number of major depressive episodes experienced by participants during a follow-up period of 2.5 years (Spasojević and Alloy, 2002). Among the females of Spasojević and Alloy (2002)

study, rumination fully mediated the relationship between sexual maltreatment and the number of major depressive episodes. This has been replicated in a subsequent study in students who experienced emotional abuse, which found that brooding (a subtype of rumination, a dysfunctional emotion regulation skill) partially mediates the relationship between childhood emotional abuse and depressive symptoms (Raes and Hermans, 2008).

To date, no studies have investigated general emotion regulation as the mediating mechanism between childhood trauma and depression in a clinical sample or investigated general emotion regulation as the mediating mechanism between childhood trauma and depression experienced over a lifetime. Moreover, research has been focused thus far on only general emotion regulation or only single dysfunctional emotion regulation strategies (i.e., rumination), not taking a variety of different emotion regulation skills into account.

The aim of this study was to examine emotion regulation as a mediator of the relationship between childhood maltreatment and depression. Our hypothesis was that general emotion regulation mediates the effect of childhood trauma on adult depression severity. Further, we explored whether specific emotion regulation skills of the ACE model (awareness, sensations, clarity, understanding, acceptance, tolerance, self-support, willingness to confront, and modification; Berking and Lukas, 2015; Berking and Whitley, 2014) could be identified as particularly important in explaining the relationship between childhood maltreatment and depression severity. Finally, we expected all these relations to exist not only for adult depression severity but also for depression lifetime persistency.

## 2. Method

### 2.1. Design and procedures

The study's participants have all been treated for MDD in nine German clinics that offer standard psychotherapeutic treatment. All subjects provided written informed consent to participate in the study. Ethics approval was obtained from the responsible ethics boards. Diagnoses for the study were assessed with the Structured Clinical Interview for DSM-IV-TR (SCID; German version; Wittchen et al., 1997) at the beginning of the hospital treatment by experienced clinicians or diagnostic raters with extensive training in conducting this interview. The outcomes of interest were subsequently assessed using observer-based interviews and self-report measures.

### 2.2. Study population

To participate in the study, patients needed to have received treatment in one of the collaborating mental health clinics and be a part of an aftercare study that began after the clinic stay (DRKS-ID: DRKS00004811). Inclusion criteria for this study were: (1) diagnosis of MDD according to DSM-IV-TR criteria (Dilling et al., 1991; Wittchen et al., 1997), (2) 18–70 years of age, (3) German as first language or fluent, and (4) access to the Internet and telephone. Patients were excluded if they had a history of bipolar disorder, a current psychotic disorder, a current substance dependence, a primary substance abuse, a severe and current high risk of suicide, a primary eating disorder, a diagnosis of schizotypal personality disorder, a substance-induced or organically caused affective disorder, or a severe cognitive impairment. The exclusion criterion of severe cognitive impairment was checked with the interviewer's subjective impression during the interview (e.g., attention deficits, executive dysfunctioning, memory problems).

## 2.3. Measures

### 2.3.1. Emotion regulation skills

Emotion regulation skills were measured with the Emotion-Regulation Skills Questionnaire (ERSQ; [Berking and Znoj, 2008](#)) which is based on the Adaptive Coping with Emotions (ACE) model ([Berking and Lukas, 2015; Berking and Whitley, 2014](#)). The ERSQ asks for the respondent's adaptive emotion regulation skills in the previous week with a 27-item self-report questionnaire utilizing a 5-point Likert-type scale (0="not at all" to 4="almost always"). It assesses the following nine emotion regulation skills through three items each. Awareness (e.g., "I took care of my emotions"), sensations (e.g., "my body sensations give me a good indication how I felt"), clarity (e.g., "I clearly knew what emotions I experienced"), understanding (e.g., "I understood my emotions"), acceptance (e.g., "I accepted my emotions"), tolerance (e.g., "I felt strong enough to tolerate negative emotions"), self-support (e.g., "I tried to reassure myself in difficult situations"), willingness to confront (e.g., "I did what I had planned, even though I felt uncomfortable or frightened"), and modification (e.g., "I knew that I could modify my emotions"). The ERSQ additionally provides a total score for general emotion regulation, calculated as the average score across all emotion regulation skills. Previous studies

have demonstrated sufficient retest reliability; good internal consistency; good factorial, convergent, and discriminant validity; and significant sensitivity to change for all single skills of the ERSQ ([Berking et al., 2008a; Berking and Znoj, 2008, 2011, 2013, 2010; Ebert et al., 2013; Wirtz et al., 2014](#)). In the present study, the ERSQ total score displayed very good internal consistency (Cronbach's  $\alpha=.95$ ) and the individual ERSQ skills displayed good internal consistencies with alphas ranging from 0.76 (sensations) to 0.85 (clarity). In cross-sectional and longitudinal studies, the ERSQ has been shown to be negatively associated with various indicators of mental health problems (e.g., alcohol dependence, poor emotional adjustment, psychopathologic symptoms; [Berking et al., 2008a, 2011, 2008b](#)) and was particularly effective in predicting depression ([Berking et al., 2014; Radkovsky et al., 2014](#)).

### 2.3.2. Depression

The 24-item Hamilton Rating Scale for Depression (HRSD-24; [Hamilton, 1967; Miller et al., 1985](#)) was the measure used to rate the outcome severity of depression. This frequently utilized clinician-rated depression symptom rating scale includes 24 items, each ranging from 0 to 2, 0–3, or 0–4. Total values of 0–9 indicate no depression, 10–17 indicates mild depression severity, 18–26 indicates moderate depression severity, 27–38 indicates severe depression severity, and 39–75 indicates very severe depression

severity ([Swan et al., 2014](#)). Several previous studies have demonstrated high sensitivity to changes and high internal consistency for the HRSD-24 ([Rush et al., 2003, 2005](#)). In the present study, this outcome measure displayed good internal consistency (Cronbach's  $\alpha=.82$ ).

Depression lifetime persistency was assessed using the SCID interview (SCID DSM-IV-TR criteria) and methods taken from the Life Chart Interview ([Lyketsos et al., 1994](#)). Particularly, frequency and duration of lifetime major depressive episodes were assessed with the help of personal landmarks and life anchors as memory cues. Only if the core features "depressed mood" and "loss of interest or pleasure in nearly all activities" of a major depressive episode were present for a possible lifetime episode, the other DSM-IV-TR major depressive episode criteria were assessed. The beginning of a depressive episode was designated as the first day of any depressive episode that lasted at least 2 weeks. The end of a depressive episode was determined by the first day of a subsequent 2 months or longer period in which episode criteria were not met. If patients could not recall the exact day, they were asked

whether the first day of the period was at the beginning, middle, or end of the relevant month. In order to obtain a value for lifetime depression, the total time spent in depressive episodes was summed up, multiplied by 100, and divided by the patient's age at interview. The resulting depression lifetime persistency value specifies in percentage how long patients suffered from major depressive episodes while considering the participant's age.

All interviewers received intensive specific training in administering the HRSD-24, using the SCID interview, and assessing lifetime major depressive episodes. They had to obtain certification before interviewing for the study, which required that interviewers only differed no more than two points on the HRSD-24 and no more than one lifetime major depressive episode compared to an interview performed by an experienced diagnostic rater (gold standard). Inter-rater reliabilities were satisfactory, with a mean intra-class correlation (ICC; [Shrout and Fleiss, 1979](#)) of .96 for the HRSD-24 and a Cohen's  $\kappa$  ([Cohen, 1960](#)) of .89 for major depressive episodes.

### 2.3.3. Childhood trauma

Childhood trauma was assessed with the Childhood Trauma Questionnaire (CTQ-SF; [Bernstein et al., 2003; Wingenfeld et al., 2010](#)). This 28-item self-report inventory comprises of five types of

childhood maltreatment—physical, emotional, and sexual abuse and physical and emotional neglect – as well as a three-item denial scale to detect underreporting of maltreatment ([Bernstein et al., 1997; Bernstein and Fink, 1998](#)). Each type of childhood maltreatment is represented by the five items rated on a 5-point, Likert-type scale with answer options ranging from 1="never true" to 5="very often true". An example of a physical abuse item is "People in my family hit me so hard that it left me with bruises or marks". Previous studies have demonstrated good convergent and discriminant validity as well as good sensitivity and at least satisfactory specificity for the CTQ-SF ([Häuser et al., 2011; Thombs et al., 2007; Wingenfeld et al., 2010](#)). In the present study, the CTQ-SF total score displayed good internal consistency (Cronbach's  $\alpha=.83$ ).

## 2.4. Data analyses

In order to test the hypothesis that general emotion regulation mediates the effect of childhood trauma on depression severity, we estimated a simple mediation analysis (regression). In the model, the CTQ-SF total score (childhood trauma) served as the predictor variable, the HRSD-24 score (depression severity) served as the outcome variable, and the ERSQ total score (general emotion regulation) served as the mediator variable while controlling for age. To test that this mediation not only exists for depression

severity but also for lifetime depression, we repeated the analysis with lifetime depression persistency as the outcome variable.

To explore whether specific emotion regulation skills would be of importance in explaining the association between childhood trauma and depression severity, we also performed nine exploratory simple mediation analyses with each of the nine ERSQ subscales (emotion regulation skills: awareness, sensations, clarity, understanding, acceptance, tolerance, self-support, willingness to confront, and modification) as the mediator variable, the CTQ-SF total score (childhood trauma) as the predictor variable, and the HRSD-24 score (depression severity) as the outcome variable while controlling for age. We repeated all exploratory analyses with the outcome variable lifetime depression persistency.

The confidence interval (CI) for the indirect effect was a BCa bootstrapped CI based on 1000 samples, and the significance of the point estimate ( $p < .05$ ) was determined by the absence of zero within the CI ([Preacher and Hayes, 2008](#)). For all analyses, we set the critical  $\alpha$  at .05 and used one-sided tests for unidirectional hypotheses.

SPSS 21.0 and the PROCESS macro for SPSS v2.12.1 (Hayes, 2012) were used for the analyses.

### 3. Results

The mean age of the participants was 43.51 (SD=10.96; range 18–67), and 55% (n=148) of the participants were female. Clinical characteristics of the participants are shown in Table 1. The mean (SD) score of the CTQ-SF (childhood trauma) was 46.41 (16.11), with a possible range of 25.00–125.00. The CTQ-SF score of our sample can be classified between the mean CTQ-SF score of a representative sample of the German population (N=2500) of 35.97 (Klinitzke et al., 2012) and the mean CTQ-SF score of a depressed geriatric sample with severe childhood trauma experiences of 61.8 (Kuhlman et al., 2013). The mean (SD) score of the HRSD-24 (depression severity) was 11.66 (7.94), indicating currently mild mean depression severity (Swan et al., 2014). Participants suffered, in the mean, 6.11% (SD=8.22, range=0.08–62.62%) of their lifetime from major depressive episodes (depression persistency). The mean (SD) score of the ERSQ (general emotion regulation) was 2.36 (0.69, range=0.37–3.85), with greater mean general emotion regulation than a “currently depressed group” of a comparing

study (1.74, SD=0.62), lower mean general emotion regulation than those of a “remitted depressed group” (2.68, SD=0.56), and lower mean general emotion regulation of the “never depressed group” (2.90, SD=0.52) of the mentioned study (Ehret et al., 2015). Table 2 presents the means, standard deviations, and ranges for the specific emotion regulation skills. The Breusch Pagan Test (Field, 2009) showed that there were no heteroscedastic disturbances, indicating that the residuals at each level of the predictor variable have equal variances ( $\chi^2(1)=2.68, p=.10$ ; e.g., general emotion regulation). The underlying assumption of homoscedasticity for the regressions had therefore been met (Breusch and Pagan, 1979).

#### 3.1. General emotion regulation

Fig. 1 displays the model of childhood trauma as a predictor of depression severity, mediated by general emotion regulation. When general emotion regulation was excluded in the regression model, childhood trauma significantly predicted depression severity ( $b=0.12, t=3.92, p<.001$ ; i.e., path c in Fig. 1). Without

general emotion regulation in the model, childhood trauma explained 6.1% of the variance in depression severity.

The simple mediation analysis with depression severity as the outcome indicated that childhood trauma significantly predicted general emotion regulation ( $b=-0.01, t=-2.33, p<.05$ ; i.e., path a in Fig. 1). Childhood trauma explained 4.9% of the variance in general emotion regulation. The association was negative: as childhood

**Table 1**  
Clinical characteristics.

Comorbidity	Frequency	Percent
0 comorbid disorder	152	56.5
1 comorbid disorder	63	23.4
2 comorbid disorders	36	13.4
3 comorbid disorders	13	4.8
4 to 6 comorbid disorders	5	1.9
Most frequent comorbid disorder: Pain disorder	19	7.1
Most frequent comorbid disorder: Specific phobia	19	7.1
Second frequent comorbid disorder: Panic disorder with agoraphobia	17	6.3
Third frequent comorbid disorder: Social phobia	16	5.9
Third frequent comorbid disorder: Avoidant personality disorder	16	5.9

**Table 2**  
Means, standard deviations, and ranges for emotion regulation skills.

Variable	M	SD	Range
Awareness	2.83	0.84	0.33–4.00
Sensations	2.59	0.86	0.00–4.00
Clarity	2.58	0.88	0.00–4.00
Understanding	2.43	0.88	0.00–4.00
Acceptance	2.34	0.87	0.00–4.00
Tolerance	1.90	0.94	0.00–4.00
Self-support	2.18	0.88	0.00–4.00
W to Confront	2.39	0.89	0.00–4.00
Modification	2.01	0.88	0.00–4.00

Abbreviations: W to confront, Willingness to Confront.

trauma increased, emotion regulation declined (and vice versa).

Childhood trauma significantly predicted depression severity even with relationship general emotion regulation in the model ( $b=0.08, t=3.16, p<.001$ ; i.e., path c' in Fig. 1), and emotion regulation also significantly predicted depression severity ( $b=-5.39, t=-8.72, p<.001$ ; i.e., path b in Fig. 1). As general emotion regulation increased, depression severity decreased (and vice versa), and as childhood trauma increased, depression se-

verity increased as well. These associations were in the predicted direction.

There was a significant indirect effect of childhood trauma on depression severity through general emotion regulation ( $b=0.03, BCa CI [.004, .063]$ ). Consistent with our hypothesis, general emotion regulation significantly mediated the effect of childhood trauma on depression severity. The indirect effect did not explain the whole relationship between childhood trauma and depression severity, but displayed partial mediation (27.0%).

The simple mediation analysis with lifetime depression persistency as the outcome was in line with the results for depression severity as the outcome: There was a significant indirect effect of childhood trauma on lifetime depression persistency through general emotion regulation ( $b=0.01, BCa CI [.003, .031]$ ). Consistent with our hypothesis, general emotion regulation also significantly and partially (8.0% explained variance) mediated the effect of childhood trauma on depression lifetime persistency.

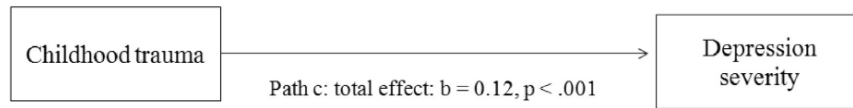
#### 3.2. Specific emotion regulation skills

As expected, the nine different emotion regulation skills showed high multicollinearity with variance inflation factors (VIF) of up to 3.4, indicating that the predictors correlated too high to conduct multivariable analyses (Breusch and Pagan, 1979). The underlying assumption of no perfect multicollinearity for a multiple regression including all nine emotion regulation skills had therefore not been met and the effects of the nine different emotion regulation skills had consequently been tested with separate mediation analyses.

Table 3 shows the results of the simple mediation analyses for all nine emotion regulation skills in regards to the effect of childhood trauma on depression severity. There were significant indirect effects of childhood trauma on depression severity through the emotion regulation skills awareness, acceptance, tolerance, and willingness to confront situations that cue negative emotions. Thus, these skills significantly and partially mediated the effect of childhood trauma on depression severity.

The simple mediation analyses with lifetime depression persistency as the outcome confirmed one (willingness to confront situations that cue negative emotions) of these four emotion regulation skills as a mediator of the relationship between childhood trauma and depression lifetime persistency (see Table 3).

## Simple relationship



## Mediated relationship

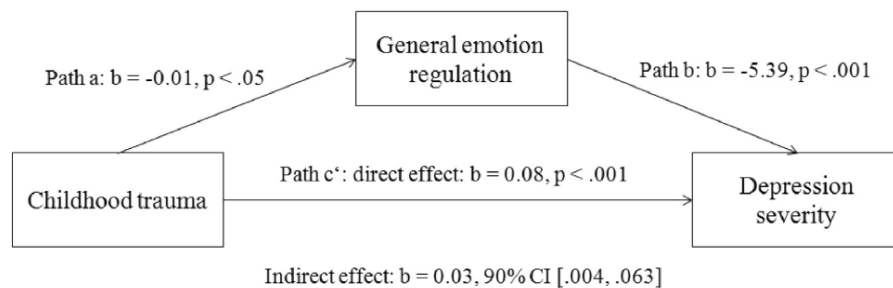


Fig. 1. Model of childhood trauma as a predictor of depression severity, mediated by general emotion regulation.

**Table 3**  
Simple mediation analyses for the relationships between childhood trauma and depression severity and childhood trauma and lifetime depression persistency.

Mediating variable (M)	Outcome depression severity				Outcome lifetime depression persistency			
	Effect of childhood trauma on M (a)	Effect of M on depression severity (b)	Direct effect (c')	Indirect effect (a × b)	Effect of childhood trauma on M (a)	Effect of M on lifetime depression persistency (b)	Direct effect (c')	Indirect effect (a × b)
Awareness	−0.01 <sup>b</sup>	−2.64 <sup>d</sup>	0.10 <sup>d</sup>	<b>0.02<sup>a</sup></b>	−0.01 <sup>b</sup>	−0.87	0.09 <sup>c</sup>	0.01
Sensations	−0.00	−2.02 <sup>d</sup>	0.11 <sup>d</sup>	0.01	−0.00	−1.46 <sup>c</sup>	0.09 <sup>c</sup>	0.00
Clarity	−0.01	−2.99 <sup>d</sup>	0.10 <sup>d</sup>	0.02	−0.01	−0.90	0.09 <sup>c</sup>	0.01
Understanding	−0.00	−3.53 <sup>d</sup>	0.11 <sup>d</sup>	0.01	−0.00	−1.42 <sup>c</sup>	0.09 <sup>c</sup>	0.00
Acceptance	−0.01 <sup>d</sup>	−3.69	0.08 <sup>c</sup>	<b>0.04<sup>a</sup></b>	−0.01 <sup>d</sup>	−0.88	0.08 <sup>c</sup>	0.01
Tolerance	−0.01 <sup>c</sup>	−3.61 <sup>d</sup>	0.08 <sup>c</sup>	<b>0.04<sup>a</sup></b>	−0.01 <sup>b</sup>	−1.09 <sup>a</sup>	0.08 <sup>c</sup>	0.01
Self-support	−0.01	−3.75 <sup>d</sup>	0.10 <sup>d</sup>	0.02	−0.01	−2.07 <sup>d</sup>	0.08 <sup>c</sup>	0.01
W to Confront	−0.01 <sup>c</sup>	−3.47 <sup>d</sup>	0.09 <sup>d</sup>	<b>0.03<sup>a</sup></b>	−0.01 <sup>c</sup>	−0.08 <sup>c</sup>	0.08 <sup>c</sup>	<b>0.01<sup>+</sup></b>
Modification	−0.00	−3.64 <sup>d</sup>	0.10 <sup>d</sup>	0.01	−0.00	−2.10 <sup>d</sup>	0.09 <sup>c</sup>	0.01

Abbreviations: W to confront, Willingness to Confront.

<sup>a</sup> Significant point estimates ( $p < .05$ ) as determined by absence of zero within the confidence interval.

<sup>b</sup>  $p < .05$ .

<sup>c</sup>  $p < .01$ .

<sup>d</sup>  $p < .001$ .

## 4. Discussion

Data on the causal mechanisms between childhood trauma and the subsequent development of depression are scarce. This study aimed to clarify whether emotion regulation would explain the effect of childhood trauma on MDD. For this purpose we conducted mediation analyses in a large clinical sample. Consistent with our hypotheses, general emotion regulation partially mediated the effect of childhood trauma on depression severity and on lifetime depression persistency in patients with MDD. Exploratory analyses of mediating effects of specific subskills indicated that four out of nine specific emotion regulation skills – awareness, acceptance, tolerance, and willingness to confront – partially

mediated the effect of childhood trauma on depression severity. However, only willingness to confront situations that cue negative emotions was also a partial mediator of the relation between childhood trauma and lifetime depression persistency.

Altogether, these results support the hypothesis that deficits in emotion regulation are an important factor in the pathway between childhood trauma and depression later in life. This is consistent with previous findings that also attempted to clarify the trauma to depression link (Crow et al., 2014; Raes and Hermans, 2008; Spasojević and Alloy, 2002). Our results extend these previous findings by investigating the mediating role of emotion regulation in a large clinical sample of patients with MDD.

Moreover, in comparison to the few studies that assess specific

emotion regulation strategies (Raes and Hermans, 2008; Spasojević and Alloy, 2002), we simultaneously covered a broader range of potentially important individual emotion regulation skills and explored their mediating effect on the trauma to depression link. The outcome that the emotion regulation skills acceptance and tolerance were significant mediators between the relationship of childhood trauma and depression severity is consistent with the assumptions in the ACE model (Berking and Lukas, 2015; Berking and Whitley, 2014). In the ACE model, the emotion regulation skills of acceptance, tolerance, and modification of aversive emotions are assumed to be the most relevant for mental health, whereas the other emotion regulation skills are primarily included in the model because they are hypothesized to play a facilitating role in the successful application of the three aforementioned skills (Berking and Whitley, 2014). Our findings that awareness, acceptance, and tolerance mediated the effect of childhood trauma on subsequent depression match with previous conclusions on the relevance of these skills for the onset and maintenance of depression (Berking et al., 2014; Radkovsky et al., 2014; Shallcross et al., 2010).

The strong effect of the emotion regulation skill willingness to confront can be understood by a well-known mechanism. Traumatized people who suffer from hyperarousal and negative emotions

(Litz and Gray, 2002) frequently take refuge in avoidance (Kashdan et al., 2010). Avoidance is even a major symptom of trauma related mental disorders like the posttraumatic stress disorder (Brewin and Holmes, 2003) and is also associated with symptoms of depression (Aldao et al., 2010). A main treatment goal of trauma therapies is the reduction of avoidance, which can be achieved by exposure or confrontation with trauma related stimuli (Richards et al., 1994). Confronting emotionally challenging situations (e.g., exposure to the perpetrator) instead of avoiding them is a crucial and well-proven strategy for traumatized persons (Frye and Spates, 2012; Riggs et al., 2006), which can lead to natural reduction of fear and sadness (e.g., less symptoms of depression) in the long run (habituation; Emmelkamp et al., 2014). The ability of the willingness to confront skill in not only explaining the effect of childhood trauma on depression severity at one time point but also on the lifetime course of depression could be due to the fact that maltreated people may experience prolonged confrontation with their perpetrator or with situations that remind them of their traumas.

Our result that increased childhood trauma was associated with lower general emotion regulation ability may be explained by attachment theory (Bowlby, 1977) in the sense that inappropriate child-caregiver interaction (i.e., maltreatment, O'Dougherty

Wright et al., 2009) leads to emotion regulation deficits (Gaensbauer, 1982; Garber and Dodge, 1991). Furthermore, this finding is in line with ample research results showing the association between childhood trauma and emotion regulation (Burns et al., 2010; Shipman and Zeman, 1999; Shipman et al., 2007).

Our result that lower general emotion regulation was associated with higher depression is consistent with a large number of correlational studies which demonstrated that depressed individuals show emotion regulation difficulties (Brockmeyer et al., 2012; Ehring et al., 2008; Garnefski and Kraaij, 2006). Similarly, longitudinal studies also show that lower emotion regulation results in higher depressive symptomatology. For example, in a study with women suffering from breast cancer, emotion regulation strategies accounted for considerable variance in depressive symptoms 1 month later (Wang et al., 2014). A study with cross-lagged panel analyses showed that emotion regulation predicted depression severity even over five years, while controlling for the effects of initial depressive symptoms (Berking et al., 2014).

The present study has a few limitations. First, childhood trauma and emotion regulation were assessed solely by self-report measures. Retrospective reports of childhood trauma may be prone to reporting bias. However, Brewin et al. (1993) reported that adults' retrospective

recall of childhood experiences is reasonably accurate. More precisely, the studies they analyzed offered little support for the assumption that recall of childhood experiences is distorted by depressed mood. Furthermore, Paivio (2001) provided proofs for the accuracy of retrospective self-reports of childhood maltreatment by showing stability of the Childhood Trauma Questionnaire in the context of significantly reduced psychopathology. Also, the chosen measures are well established and well validated. Our study could have been improved by interviewing the participants on emotion regulation and childhood trauma instead of using questionnaires. Second, even though the outcome lifetime depression persistency was assessed by trained and certified interviewers and ratings for the duration of major depressive episodes showed high Cohen's  $\kappa$ , this type of outcome always represents only an approximate value. Third, the mediation analyses we employed are cross-sectional in nature, which limits any firm conclusions regarding causality. While our results suggest that emotion regulation is an important mediator of the effect of childhood trauma on depression, longitudinal prospective studies are needed to rule out alternative explanations of the observed effects. A longitudinal study with traumatized individuals would enable analyses of intraindividual and inter-individual differences in the courses of the presumably affected

variables. Such a study should accompany traumatized individuals for several years and should test our examined models regarding the variables emotion regulation and depressive symptomatology.

If general emotion regulation and the emotion regulation skill willingness to confront could be replicated in future studies as powerful and crucial links between childhood maltreatment and depression, the therapeutic implications for interventions targeting people with high risk of depression after experiencing childhood trauma could be far reaching. Incorporating strategies to foster improved general emotion regulation and specifically the skill willingness to confront in interventions (e.g., affect regulation training; Berking et al., 2013; Berking and Lukas, 2015; Ehret et al., 2014) to prevent and treat MDD may help in strengthening current prevention strategies (Buntrock et al., 2014; van Zoonen et al., 2014), further enhancing the effectiveness of depression treatment.

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### **7.3 Study III**

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## Emotion Regulation Predicts Time to Depression Relapse

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## Abstract

*Background.* Relapse following psychotherapy-induced remission of Major Depressive Disorder (MDD) is a serious clinical concern. This study aimed to investigate the effects of emotion regulation (ER) on time to MDD relapse in treatment remitters.

*Methods.* Participants were 104 MDD inpatients that achieved remission to MDD through psychotherapy ( $\leq 10$  on the Hamilton Rating Scale for Depression; HRSD-24). Time to MDD relapse was assessed using the Structured Clinical Interview for DSM-IV-TR and a life chart interview at 3, 6, and 12 months after treatment termination. ER after treatment was assessed by the Emotion Regulation Skills Questionnaire (ERSQ-ES). Cox regressions were used to estimate hazard ratios.

*Results.* Higher proficiency in ER skills was found to be a significant predictor associated with delayed time to relapse even when the Cox regression was adjusted for residual depressive symptomatology, number of MDD episodes, and other potential relevant covariates (age, sex, maintenance treatment; HR = .319, CI = .160 - .638,  $p = .001$ ). Further exploratory analyses found that among a broad set of specific ER skills, the abilities to accept and tolerate undesired emotions, to compassionately support oneself, to willingly confront and to modify aversive emotions, significantly predicted delayed time to relapse.

*Conclusion:* Our results support the conclusion that ER is a valuable protective factor against MDD relapse, and interventions to improve ER skills may be promising. Seeking to improve ER skills through a specially designed ER training could therefore be an important addition to both acute interventions and relapse prevention interventions for MDD.

*Keywords:*

Emotion Regulation, Depression, Time to Relapse, Cox Regression

*Public Health Significance Statement:*

Enhancing adaptive emotion regulation may be an important anti-relapse buffer for encouraging health and well-being of MDD patients after treatment.

## Introduction

Major Depressive Disorder (MDD) is a highly prevalent, disabling, and frequently chronic mental disorder (Andrews, 2008; Donohue & Pincus, 2007). Although a large number of studies have shown that psychotherapy is an effective form of MDD treatment (Cuijpers, Huibers, Ebert, Koole, & Andersson, 2013; Cuijpers, van Straten, Andersson, & van Oppen, 2008; Cuijpers, van Straten, & Warmerdam, 2007; Cuijpers, van Straten, Warmerdam, & Andersson, 2009; Cuijpers, Berking, et al., 2013; Driessen et al., 2010), about half of initial responders suffer a relapse (Vittengl et al., 2007). Therefore, there is a pressing need to identify factors that help maintain treatment success once it is achieved.

Emotion regulation (ER) or specifically its deficits has been identified as a putative emerging and maintaining factor for depression (Brockmeyer et al., 2012; Joormann & D'Avanzato, 2010). Commonly, depression is also conceptualized as a consequence of dysfunctional ER (Gross & Muñoz, 1995). The concept of ER encompasses the intrinsic and extrinsic processes of monitoring, evaluation, and modification of emotional reactions and in particular their quality, intensity, and duration (Thompson, 1994). Therefore, it is a method through which individuals can attempt to achieve their personal goals. Given that perseverative negative affect is one of the key symptoms of depression, research on mood regulation provides essential information for an improved understanding of risk factors for the development and maintenance of MDD.

Assuming that development and maintenance of depression results from perseverative activation of depressogenic schemata which are initiated once situations are experienced as aversive, uncontrollable, and stable over time (Teasdale & Barnard, 1993), ER deficits can be hypothesized to contribute to depression development and maintenance in the following ways: First, the inability to modify reactions to an unpleasant life event draws an individual's attention away from any positive aspects of the situation and instead results in a fixation on the negative aspects. This leads to the perception of unpleasant experiences in a specific unfavorable way that enhances both the intensity and the frequency of subsequent aversive emotional experiences. This incident increases the risk that any following situations are also appraised as aversive. Assessing a situation as aversive is considered a relevant precondition of depressogenic information processing (Teasdale & Barnard, 1993). Second, the inability to effectively deal with aversive emotions once they have presented through a situation increases the risk that the situation is considered uncontrollable and stable over time. Third, as a result of evaluating emotions as aversive, uncontrollable, and stable over time, the initiated depressogenic schemata sustain depressed mood (Teasdale & Barnard,

1993). Without functional ER abilities, this mood is more likely to be judged as aversive, uncontrollable, and stable over time. Thus, the lack of functional ER may result in a vicious cycle that maintains depressogenic information processing (Berking & Whitley, 2014; Teasdale & Barnard, 1993).

To concretely conceptualize ER and to identify which specific ER skills are necessary for reacting to affective moods in a manner that does not promote depressogenic information processing, Berking and colleagues (Berking & Lukas, 2015; Berking & Whitley, 2014) revised previous models of ER (Gilbert & Procter, 2006; Greenberg, 2002; Gross, 1998; Larsen, 2000; Saarni, 1999) and have developed the Adaptive Coping with Emotions model (ACE; Berking & Lukas, 2015; Berking & Whitley, 2014). The ACE model served as the underlying model for this study and lists certain ER skills which are thought to be significant in the prevention or treatment of mental disorders such as depression. In this model, effective ER is conceptualized as a situation-adapted interaction of different emotional competences. These skills are as follows: (1) the conscious perception of emotions, (2) the accurate recognition and labeling of emotions, (3) the identification of the factors causing and maintaining the emotions, (4) the ability to accept undesired emotions, (5) the ability to tolerate aversive emotions, (6) the ability to support oneself through the ER process in order to prevent emotion deterioration, (7) the ability to intentionally manipulate the quality, intensity, and duration of emotions, and (8) the willingness to confront situations that may cause aversive emotions if they are necessary to reach personally relevant goals. The ACE model assumes that the ability to successfully modify negative emotions and to accept and endure burdening emotions if needed, are the primary ER components that impact mental health. The other components are considered auxiliary, and support the successful application of the primary skills (Berking & Lukas, 2015).

Several studies have shown that depressed individuals tend to use dysfunctional ER strategies. Specifically, MDD is positively associated with rumination (Joormann & D'Avanzato, 2010), avoidance, and suppression (Aldao et al., 2010). Only a few studies so far have examined the relationship between level of proficiency in ER skills and clinical mental health outcomes. These studies have suggested that depression is associated with decreased use of reappraisal (Aldao et al., 2010; Garnefski & Kraaij, 2006; Joormann & Gotlib, 2010) and negatively correlated with problem solving (Aldao et al., 2010) and acceptance (Garnefski & Kraaij, 2006). However, these studies were conducted to only assess the currently depressed, and more research is necessary on whether level of ER proficiency is predictive of the future course of depression. Prospective studies have indicated that ER is capable of predicting depressive symptoms. For example, it has been shown that better cognitive emotion regulation strategies predicted fewer depressive symptoms one month later in women diagnosed with breast cancer (Wang et al., 2014).

Moreover, Berking, Wirtz, Svaldi, and Hofmann (2014) showed that the functional application of ER skills negatively predicted subsequent depressive symptoms 5 years later. Similarly, in a sample of patients treated for MDD, successful ER application predicted a reduction in depressive symptoms during the course of psychotherapy treatment (Radkovsky et al., 2014). Finally, an explicit training in the ER skills identified in the ACE model has been shown to reduce depressive symptoms in patients treated for MDD (Berking et al., 2013; Berking, Wupperman, et al., 2008).

Beyond the proved importance of ER for the development and prediction of depression, we are interested in the relevance of ER in the course of depression after successful treatment. Since predictors for the onset of the first major depressive episode and for subsequent MDD episodes may be different (Monroe et al., 1999), it is important to investigate whether ER remains a predictor for depression even after successful recovery from depression.

ER may be important for the course of depression after successful MDD recovery for several reasons. First, the general processes for the initial onset of MDD and for any relapses partly overlap in the sense that ER proficiency may not only prevent depressive thought patterns from activation (depressogenic information processing) but also from reactivation, therefore reducing the likelihood of MDD relapse (Jarrett et al., 2012; Segal et al., 2006). Second, in contrast to the initial onset of MDD, where serious life events (Sawyer et al., 2009) present a high risk for occurrence, daily hassles have shown to play a more important role in the context of MDD relapses (Bockting et al., 2006). Thus, the capability to successfully handle negative effects activated by daily hassles may be of vital importance for individuals with a history of MDD. Third, patients often need to practice therapeutic strategies in their daily routine in order to maintain success of the therapy. Despite high implementation intentions, patients may not manage to act as intended and fail to implement these strategies into their daily lives (intention-behavior gap) (Stadler et al., 2009). A reason for this failure may be that the incorporation of newly developed behaviors into daily routines may evoke resistance and aversive emotions (Schwarzer, 2008). As deficits in ER have been proposed as important hindrances in effective intention implementation (Eckert et al., 2015; Luszczynska et al., 2004), individuals less proficient in ER may be less likely to implement therapeutic strategies into their daily routines compared to those with more proficient ER. Therefore, we hypothesize that individuals with less effective ER may suffer earlier of MDD relapse after successful treatment of MDD.

To the best of our knowledge, there are yet no studies analyzing whether ER predicts time to MDD relapse in initial remitters to psychotherapy. Moreover, most research has so far been focused on single ER strategies or on general ER. Thus, there is yet no research on the potentially

different relevance of a variety of specific ER skills in predicting time to MDD relapse following successful treatment. Finally, there are only a few longitudinal studies that examined ER as a predictor of clinician-rated MDD instead of self-reported depressive symptoms (Aldao & Nolen-Hoeksema, 2011; Nolen-Hoeksema, Stice, Wade, & Bohon, 2007; Nolen-Hoeksema, 2000).

Thus, the aim of this study was to examine the effects of ER on time to MDD relapse in initial remitters to inpatient MDD treatment. Our hypothesis was that general adaptive ER was a significant predictor of delayed relapse time over the one year follow-up period even when controlling for relevant known predictors of relapse such as the residual symptoms of depression (Paykel et al., 1999; Thase et al., 1992) and number of MDD episodes (Bockting et al., 2006; Kessing, Hansen, Andersen, & Angst, 2004) in order to examine the unique contribution of ER to depression relapse. Additionally, we wanted to explore whether any specific ER skills of the ACE model (awareness, clarity, understanding, acceptance, tolerance, self-support, willingness to confront, and modification; Berking & Lukas, 2015; Berking & Whitley, 2014) would be particularly important for the prediction of time to MDD relapse in initial remitters to treatment.

## Methods

### Design and Procedures

All participants in the current study were treated for MDD in one of nine German clinics that offer psychotherapeutic treatment as usual. Treatment approaches that explicitly and exclusively targeted ER were not included in the inpatient treatment. All participants provided written informed consent, and ethical approval was obtained from all applicable ethical committees. Current and past MDD diagnoses were assessed using the Structured Clinical Interview for DSM-IV-TR (SCID; German version; Wittchen, Zaudig, & Fydrich, 1997) during treatment and were administered by experienced clinicians or diagnostic raters that had received extensive training in conducting this interview. Additional study measures were assessed using observer-based interviews and self-report measures at the end of initial psychotherapeutic treatment (baseline). Participants were followed for one year after treatment discontinuation, and the outcome measure was assessed 3, 6, and 12 months after treatment termination.

### Study Population

Participants were derived from a study evaluating a maintenance treatment following treatment discontinuation (trial register: DRKS00004811). Inclusion criteria for this study were: (1) diagnosis of MDD according to DSM-IV-TR criteria (Dilling et al., 1991; Wittchen et al., 1997), (2) 18-70 years of age, (3) German as first language or fluent, and (4) access to the Internet or a telephone. Patients

were excluded if they had a history of bipolar disorder, a current psychotic disorder, a current substance dependence, a primary substance abuse, a high risk of suicide, a primary eating disorder, a diagnosis of schizotypal personality disorder, a substance-induced or organically-caused affective disorder, or a severe cognitive impairment. The analyses focused on patients with available data on any follow-up assessment and those who met criteria for at least partial remission at the end of acute-phase treatment as defined by a HRSD-24 score of 10 or less.

### Measures

**Emotion Regulation Skills.** ER skills were measured using the Emotion-Regulation Skills Questionnaire, Emotion-Specific version (ERSQ-ES; Ebert, Christ, & Berking, 2013) which is based on the Adaptive Coping with Emotions (ACE) model (Berking & Lukas, 2015; Berking & Whitley, 2014) and is the emotion-specific adaption of the well-validated Emotion-Regulation Skills Questionnaire (ERSQ; Berking & Znoj, 2008; Berking et al., 2011; Berking, Meier, & Wupperman, 2010; Berking et al., 2014; Wirtz, Hofmann, Riper, & Berking, 2014). The ERSQ-ES assesses adaptive ways of coping with general distress, anxiety, anger, sadness, depressed mood, shame, and guilt through a self-report questionnaire. The intensity of each of these emotions during the past week is assessed on a 10-point Likert-type scale (0 = 'not at all' to 10 = 'very strong'; e.g., "How strong was the most intense feeling of anger that occurred in the last week?"). For all emotions with a reported score greater than zero, participants were asked to what extent they were able to successfully utilize the eight adaptive ER skills (see ACE model in the Introduction) to control these emotions over the past week, assessed on a 5-point Likert-type scale (0 = 'not at all' to 4 = 'almost always'). Specifically, these skills were: (1) awareness ("I could assess my level of distress"), (2) clarity ("I could clearly realize that I was distressed"), (3) understanding ("I could figure out why I was distressed"), (4) acceptance ("I could accept that I was distressed"), (5) tolerance ("I could tolerate my distress"), (6) self-support ("I could reassure myself in distressing situations"), (7) willingness to confront ("I could pursue my goals, even though I could experience distress"), and (8) modification ("I knew that I could modify my levels of distress if necessary"). The ERSQ-ES additionally outputs a total score for general ER, which assesses additional adaptive ER skills regarding positive affects, and is calculated as the average score across all ER skills. Sound psychometric properties have previously been reported for this questionnaire in a number of studies (Dorn, Spindler, Kullik, Petermann, & Barnow, 2013; Ebert, Christ, et al., 2013; Ebert et al., 2016a, 2016b; Ehret, Kowalsky, Rief, Hiller, & Berking, 2014; Ehret, Radkovsky, Joormann, & Berking, 2014; Heber et al., 2013; Heber, Lehr, Ebert, Berking, & Riper, 2016; Heber et al., 2014). In the present study, the ERSQ-ES total score displayed very good internal consistency (Cronbach's  $\alpha = .93$ ) and the different ERSQ-ES skills displayed good to very good internal consistencies with alphas ranging from .73 (awareness) to .90 (modification).



Remission and Residual Symptoms of Depression. The 24-item Hamilton Rating Scale for Depression (HRSD-24; Hamilton, 1967; Miller et al., 1985) was the measure used to select initial remitters at the end of clinic stays (baseline) and to rate residual symptoms of depression. This commonly used clinician-rated depression symptom rating scale includes 24 items, each ranging from 0-2, 0-3, or 0-4. Total scores of 0-9 indicate no depression, 10-17 indicates mild depression severity, 18-26 moderate depression severity, 27-38 severe depression severity, and 39-75 very severe depressive symptomatology (Swan et al., 2014). Remission was defined as a HRSD-24 score of 10 or lower (cf., Garcia, Flynn, Pierce, & Caudle, 2010; Roose et al., 2004) at the end of acute-phase treatment. Several studies have demonstrated the good reliability, validity, and high sensitivity to change of the HRSD-24 (Rush et al., 2003, 2005). In the present study, this measure displayed good internal consistency (Cronbach's  $\alpha = .83$ ).

MDD Lifetime Episodes and MDD Relapse. MDD episodes were assessed using the SCID interview (SCID DSM-IV-TR criteria) and strategies from the life chart interview (Lyketsos et al., 1994). Particularly, MDD episodes were assessed with the help of personal landmarks and life anchors as memory cues. The full DSM-IV-TR criteria for a major depressive episode (MDE) were assessed only if the essential symptoms "depressed mood" and "loss of interest or pleasure in nearly all activities" were initially indicated for a potential episode. The onset of a depressive episode was determined by the first day of a depressive episode that persisted for at least 2 weeks. If the exact day of onset could not be established, the closest week (or month) was identified and the mid-point of that week (or month) was used. The end of a depressive episode was determined by the first day after onset of a period in which the episode criteria were not met that lasted at least 2 months. A relapse was recorded only if the period between the episodes fulfilling MDE criteria exceeded 2 months (Borcusa & Iacono, 2007). We used the term relapse throughout the manuscript because of readability, even though some of the relapses were technically recurrences (Bockting, Hollon, Jarrett, Kuyken, & Dobson, 2015).

All interviewers received intensive specific training in assessing the HRSD-24, the SCID interview as well as in assessing the MDD episodes and needed to get certified before interviewing for the study. The certification required that interviewers deviated no more than two points on the HRSD-24 and no more than one lifetime MDD episode from an interview completed by an experienced diagnostic rater (gold standard). In order to examine inter-rater reliabilities, a randomly selected sample of interviews were double-rated by an experienced diagnostic rater, resulting in a mean intra-class correlation (ICC; Shrout & Fleiss, 1979) of .96 for the HRSD-24 ( $n = 17$ ) and a Cohen's  $\kappa$  (Jacob Cohen, 1960) of .89 for MDD episodes ( $n = 27$ ).

Maintenance Treatment: The information on whether participants received maintenance treatment (antidepressant or psychological) after acute treatment termination was recorded. Maintenance treatment using antidepressant medication followed routine practice. Psychological maintenance treatment comprised of whether a participant received psychological maintenance treatment following termination of the acute treatment (i.e., outpatient psychotherapy, online-based maintenance treatment).

#### Data Analyses

The association between ER and risk for MDD relapse over the course of the one year follow-up was analyzed using survival analyses (Cox regression). Hazard ratios and their 95 % confidence intervals (95 % CI) were calculated and adjusted for covariates. The hazard ratio (HR) shows the relative risk of time to MDD relapse on the basis of a unit change in the predictor variables. An HR less than 1 indicates a decrease in risk, whereas an HR above 1 indicates an increase in risk (Schendera, 2008). For each participant, a time variable was calculated as follows: For participants who relapsed during the one year follow-up period, the time between baseline and first relapse was calculated in days. For participants who did not relapse within the follow-up period, the time from baseline to last observation (follow-up point 3, 6, or 12 months after hospital treatment) was calculated in days and these patients were treated as censored.

In order to test the hypothesis that general adaptive ER was a significant predictor of delayed MDD relapse over the one year follow-up period, we conducted a Cox regression model in which ERSQ-ES total score served as the predictor variable (independent variable) and time to relapse (in days) served as the dependent variable, while controlling for the potentially confounding variables age, sex, maintenance treatment, and the predictors residual symptoms of depression (HRSD-24) and number of MDD lifetime episodes. To communicate our findings and summarize significant effects, we calculated a risk score with estimated coefficients using  $\exp(-\Sigma[X * \beta])$  (Bao et al., 2014; Singer & Willett, 2003; Stahrenberg et al., 2013). Instead of summarizing the effects of only general ER, the risk score summarized the effects of general ER and number of MDD episodes simultaneously [risk score =  $\exp(\hat{\beta}_{\text{general emotion regulation}} * X_{\text{general emotion regulation}} + \beta_{\text{number of MDD episodes}} * X_{\text{number of MDD episodes}})$ ]. We centered our variables by subtracting the sample mean. Centering our variables ensured that the baseline hazard function for our model was conceptually appealing: it represents the hazard function for an individual of average general ER and average number of MDD episodes until release (0 = average). The higher the risk score, the higher the individual's predicted level of risk. Individuals who face no elevated risk will have risk scores of approximately 1.

To explore whether specific adaptive ER skills would be particularly important for the prediction of time to MDD relapse, we also estimated in explorative analyses eight single Cox regressions using each of the eight ERSQ-ES subscales (ER skills: awareness, clarity, understanding, acceptance, tolerance, self-support, willingness to confront, and modification) as the predictor variable and time to possible relapse (in days) as the dependent variable, while controlling for the same significant confounders and predictors as in the previous analyses.

All tests were two-tailed, and significance was determined using an  $\alpha$  of .05. SPSS 21.0 was used for the analyses.

## Results

Of the 104 included patients, 25 % ( $n = 26$ ) were being treated for their first major depressive episode, whereas 75 % ( $n = 78$ ) suffered from recurrent major depressive disorder. The mean age of the participants was 45.04 ( $SD = 11.25$ , range = 19.00 – 66.00), and 49.0 % ( $n = 51$ ) of the participants were female. Participants stayed an average 50.25 days in the clinic ( $SD = 24.39$ , range = 15.00 – 196.00), had an average score of 5.04 ( $SD = 2.62$ , range = 0.00 – 10.00) on the HRSD-24 at discharge, the mean number of lifetime MDD episodes was 3.69 ( $SD = 4.09$ , range = 1.00 – 25.00), and the mean age of MDD onset was 32.70 ( $SD = 12.73$ , range = 9.00 – 61.00). 24.0 % ( $n = 25$ ) had at least one comorbid mental disorder, with personality disorder the most frequent single comorbid diagnosis ( $n = 9$ , 8.7 %). Detailed clinical characteristics are summarized in Table 1. During the one year follow-up, 25 subjects (24.0 %) experienced a relapse in MDD. Mean time to relapse was 145.96 days ( $SD = 76.95$ , range = 61.00 – 308.00). Table 2 shows means, standard deviations, and ranges in ER variables assessed at treatment termination.

### *General Emotion Regulation*

The Cox regression analysis with general ER as the predictor variable with adjustment for the covariates of age, sex, and maintenance treatment, and the well-known predictors residual symptoms of depression and number of MDD episodes, showed the following results: Only number of MDD episodes and general ER score were found to be significant predictors of time to relapse over the one year follow-up period. Since the other confounders and predictors showed no significant effects ( $p = .20 - .98$ ), a subsequent analysis was conducted with general ER adjusted only for number of MDD episodes. This final analysis revealed that number of MDD episodes was a significant predictor of time to MDD relapse in the one-year follow-up period ( $HR = 1.09$   $CI = 1.01 - 1.17$ ,  $p = .020$ ). A one number increase of MDD episodes increased the prospective risk of relapse with a factor of .09 to 1, indicating an 8.9 % higher likelihood for a MDD relapse per MDD episode. Consistent with our hypothesis, the analysis revealed that baseline general ER also significantly predicted time to

relapse in the one year follow-up period (HR = .37, CI = .191 - .729,  $p = .004$ ) even when controlling for number of MDD episodes. A one unit increase of general adaptive ER score decreased the prospective risk of relapse with a factor .37 to 1, indicating a 37.3 % lower likelihood for a MDD relapse per one unit increase in ER score.

We chose two individuals to illustrate the varying effects of number of lifetime MDD episodes and general ER score on risk scores. The risk score for Person A (risk score of .95) indicates that his predicted hazard function is virtually identical to that of the baseline. This makes sense as this person had average lifetime MDD episodes (.31) and average ER (.07). In contrast, Person B illustrates that this predictor profile is not the only way of attaining a risk score of 1 (= no elevated risk). Person B also has a risk score of approximately 1 (.98) despite his history of several (namely 8) MDD episodes (4.31 more than the average;  $M = 3.69$ ,  $SD = 4.09$ ). Person B attained this relatively low risk score because of his greater proficiency in overall ER (.40 better than the average person). This proficiency in general ER counterbalances his history of repeated MDD episodes, placing him at identical risk of relapse as someone of average general ER with a less severe history of MDD. Thus, general ER can offset the negative impact that a more severe history of MDD episodes can cause on relapse.

#### *Specific Emotion Regulation Skills*

The eight different specific ER skills correlated highly with each other, and therefore the assumption of no multicollinearity for a multiple survival analysis including all eight ER skills was not met (Breusch & Pagan, 1979). The effects of the eight different ER skills were consequently tested with eight separate Cox regressions, adjusted for number of MDD episodes. Five out of the eight ER skills, acceptance, tolerance, self-support, willingness to confront, and modification, were found to be significant predictors of time to MDD relapse over the one year follow-up period. Table 3 shows detailed results of these regressions.

### **Discussion**

The purpose of this study was to investigate whether ER predicts time to MDD relapse after remission through psychotherapy. Consistent with our hypothesis, the analysis revealed that following remission in acute-phase psychotherapy, general adaptive ER significantly predicted delayed time to MDD relapse in the one year follow-up period, even after controlling for residual depressive symptomatology and other relevant predictors. Further exploratory analyses indicated that the following specific adaptive ER skills significantly predicted longer time to MDD relapse, when controlling for significant covariates and predictors (number of MDD episodes): the ability to accept and tolerate undesired emotions, to compassionately support oneself, to willingly confront situations

that trigger negative emotions if they are necessary to attain personally relevant goals, and to modify aversive emotions.

In summary, our results regarding the association between ER and depression are in line with previous findings from cross-sectional studies (Aldao & Nolen-Hoeksema, 2010; Garnefski & Kraaij, 2006; Kwon, Yoon, Joormann, & Kwon, 2013), longitudinal non-clinical populations (Berking et al., 2006; Kassel, Bornovalova, & Mehta, 2006; Martin & Dahlen, 2005), and a prospective clinical study during treatment (Radkovsky et al., 2014). The inclusion of an ER training in the treatment for Binge Eating Disorder has already been shown to effectively reduce depression (Clyne & Blampied, 2004), and a systematic training in ER skills in conjunction with CBT resulted in improved effectiveness in acute-phase treatment compared to CBT alone (Berking et al., 2013).

The present findings extend previous research by demonstrating in a clinical sample that even after successful treatment of MDD, ER is a predictor of depression (specifically a predictor of MDD relapse). Thus, the current study suggests that ER may act as a protective factor against MDD relapse after remission through psychotherapy. The finding that ER serves as a protective factor against relapse has so far only been shown for relapse regarding alcohol use during and after CBT for alcohol dependence (Berking et al., 2011).

The importance of the specific skills of acceptance, tolerance, and modification found in this study is in line with previous studies using the ACE model (Berking & Lukas, 2015; Berking & Whitley, 2014), which have shown that these three skills are particularly important for mental health (Berking et al., 2012b; Wirtz, Hofmann, et al., 2014). Our finding that specific ER skills are predictive of MDD relapse strengthens the hypothesis that specific ER skills are strongly associated with depression.

Our finding that the ER skills of acceptance and tolerance are closely associated with subsequent psychopathology is not surprising, given the prominent role of acceptance in acute treatment interventions such as Dialectical Behavior Therapy (DBT; Linehan, 1993) and Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999). The strong association between the acceptance ER skill and depression has been demonstrated in various studies. For example, in a study of women newly diagnosed with breast cancer, greater acceptance was associated with fewer subsequent depressive symptoms (Wang et al., 2014), and among MDD inpatients, the ability to tolerate negative emotions was significantly associated with subsequent improvement in depressive symptom severity over the course of treatment (Radkovsky et al., 2014). Reasons for the predictive value of the ER skills acceptance and tolerance after successful treatment may include: The appearance of aversive emotions may highly concern some individuals after successful treatment since

they may be worried that these emotions are early signs of relapse. The ability to tolerate and accept temporary negative emotions may lead to their natural reduction and may prevent vicious depressive thought patterns from reactivation. Thus, the acceptance and tolerance of mood swings may be an important factor in the time after successful treatment.

The finding in this study that the self-support ER skill is closely associated with depression is in line with evidence from previous studies (Ehret et al., 2015). For example, depressed individuals found it difficult to compassionately support themselves while experiencing negative emotions (Gilbert et al., 2006). One potential reason for the predictive value of self-support may be that the necessary process of implementing numerous therapeutic strategies into daily routine may not always succeed and thus be associated with aversive emotions. Aversive emotions such as self-doubt may hinder the implementation of intended actions. The ability to compassionately self-support, cheer up, and encourage instead of criticize oneself may therefore play a key role after treatment by not only respecting upcoming negative emotions and difficulties but also by implementing learned strategies as intended. This assumption is supported by findings that show that adaptive ER facilitates the implementation of health-related intentions in daily routine in a non-clinical sample (Eckert et al., 2015).

Our result of the strong correlation between the willingness to confront ER skill and depression has also been previously demonstrated. For example, readiness to confront was negatively correlated with Beck Depression Inventory scores of patients with MDD (Radkovsky et al., 2014). The predictive value of readiness to confront after remission may be understood by a well-known mechanism. Patients who are discharged from their inpatient stay may experience various challenges (e.g., return to work and regular routines) and their associated taxing emotions. Confronting emotionally challenging situations instead of avoiding them is a well-proven strategy (Grosse Holtforth et al., 2012) which can lead to a natural decrease of aversive emotions (e.g., less depressive symptoms; Emmelkamp et al., 2014). Thus, the ability to willingly confront situations that may trigger negative emotions if they are necessary to attain personally relevant goals may be critical to remain healthy after successful treatment.

Our demonstrated importance of the modification ER skill was also corroborated in a study where the effect of the ER skill utilization on psychopathological symptoms was mediated by modification for most ER skills in two independent samples of college students and psychiatric inpatients (Berking et al., 2012b). Our finding that modification is closely associated with subsequent psychopathology is also in line with a study with inpatients, in which modification was identified both as the strongest predictor of all CBT outcome measures and as the second strongest predictor

for depression (Berking, Wupperman, et al., 2008). Furthermore, our result supports theories that focus on active modification as essential for mental health (Greenberg & Watson, 2006; Linehan, 1993).

This study has the following limitations: First, the assessments of ER relied exclusively on self-report measures. Future studies should also include independent evaluations such as observer-based or performance-based ER measures (Kerns et al., 2014). Second, the timeframe of the present study was limited to a one year follow-up period in which only 24 % of the patient relapsed. Although relapse is common in the first year following acute-phase treatment (Vittengl et al., 2007), the limited timeframe may have prevented us from fully capturing the true relevance of ER on the long-term course of depression. Hence, future studies should be conducted with longer follow-up periods. Third, the present study solely investigated the relevance of ER for patients in remission, and the results therefore cannot be generalized to treatment non-responders. Fourth, we did not have any data on baseline ER before treatment, and future studies could analyze the change of ER during treatment as a predictor for MDD relapse. Fifth, although we controlled for relevant predictors of relapse, there may be other relevant patient characteristics that could be responsible for the observed effects that we did not identify. Future studies should replicate the findings while controlling for a broader set of known predictors of the long-term course of depression (for an overview: Kessler, van Loo, Wardenaar, Bossarte, Brenner, Ebert, et al., 2016). Additionally, our study did not include a control group of never-depressed individuals and therefore we are unable to make any conclusions about the particular importance of ER for recurrence of MDD compared to first onset. Such a comparison may lead to a comprehensive understanding of the role of effective ER in its value as a buffer in mental health. Finally, the fact that the participants were recruited from only inpatient mental health care clinics limits the generalizability of our results to a similar population. Future studies should seek to replicate these findings with patients treated in various outpatient settings.

This study has relevant implications for both clinical practice and research. As MDD relapse rates after initial response to treatment are high (Vittengl et al., 2007), this study demonstrates that a potentially modifiable variable, namely emotion regulation, predicts MDD relapse after remission. The specific targeting of ER may be a promising treatment to be integrated into already established relapse-prevention programs. Integrating ER into acute-phase treatment may improve the treatment's results, as have already been shown in Berking et al. (2008) and Berking et al. (2013). If the current findings are replicated in future studies, the success of acute-phase treatment may be reliably maintained by placing a strong emphasis on ER during treatment, especially on the skills of acceptance, tolerance, self-support, willingness to confront, and modification of negative

emotions. We conclude that enhancing emotion regulation may be an important anti-relapse buffer for encouraging health and well-being of MDD patients after treatment.

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**Table 1**

Clinical characteristics.

<b>Comorbidity</b>	<b>Frequency</b>	<b>Percent</b>
Number of comorbid disorders		
0 comorbid disorder	67	68.3
1 comorbid disorder	25	24.0
≥ 2 comorbid disorders	8	7.7
Type of comorbid disorders		
Personality disorders <sup>a</sup>	9	8.7
Pain disorder	6	5.8
Any other anxiety disorder	6	5.8
Specific phobia	5	4.8
Social phobia	4	3.8
Posttraumatic stress disorder	3	2.9
Substance abuse	3	2.9
Somatoform disorder	3	2.9
Obsessive-compulsive disorder	2	1.9
Eating disorder	2	1.9
Number of MDD episodes		
1	26	25.0
2	23	22.1
3	23	22.1
4	10	9.6
5	6	5.8
6+	16	15.4

<sup>a</sup>includes schizoid personality disorder, anankastic personality disorder, borderline personality disorder, avoidant personality disorder, passive-aggressive personality disorder, and personality disorders not otherwise specified

**Table 2**

Means, standard deviations, and ranges of the emotion regulation skills as measured by the ERSQ-ES.

Variables	M	SD	Range
ERSQ-ES <sub>total</sub>	2.63	0.60	0.91 – 4.00
Awareness <sup>a</sup>	2.28	0.91	0.00 – 4.00
Clarity <sup>a</sup>	2.68	0.75	0.67 – 4.00
Understanding <sup>a</sup>	2.62	0.82	0.71 – 4.00
Acceptance <sup>a</sup>	2.42	0.65	0.75 – 4.00
Tolerance <sup>a</sup>	2.73	0.73	1.00 – 4.00
Self-support <sup>a</sup>	2.40	0.86	0.00 – 4.00
W. to Confront <sup>a</sup>	2.47	0.79	0.60 – 4.00
Modification <sup>a</sup>	2.15	0.71	0.42 – 4.00

*Abbreviations:* ERSQ-ES<sub>total</sub>, Emotion regulation skills questionnaire total score; W. to confront, Willingness to Confront.

<sup>a</sup> N = 98.

**Table 3**

Possible predictors of time to depression relapse of the emotion regulation skills.

Risk factor	Hazard ratio	95 % CI	<i>p</i>
Awareness	0.68	0.45 – 1.03	.07
Clarity	0.90	0.50 – 1.59	.71
Understanding	0.86	0.51 – 1.44	.56
Acceptance	0.48	0.24 – 0.94	.03
Tolerance	0.41	0.21 – 0.77	.01
Self-support	0.52	0.31 – 0.88	.02
W. to Confront	0.41	0.23 – 0.73	.00
Modification	0.55	0.31 – 0.99	.05

*Abbreviations:* ERSQ-ES<sub>total</sub>, Emotion regulation skills questionnaire total score; CI, confidence interval; W. to confront, Willingness to Confront.

N = 98.

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## 8 PUBLIKATIONEN

### PUBLIKATIONEN

Artikel in Fachzeitschriften (peer-reviewed)

**Hopfinger, L.,** Berking, M., Bockting, C. L. H., & Ebert, D. D. (submitted). Emotion Regulation Protects against Recurrence of Depressive Symptoms. Manuscript submitted for publication in *Behavior Therapy*.

**Hopfinger, L.,** Berking, M., Bockting, C. L. H., & Ebert, D. D. (2016). Emotion Regulation Mediates the Effect of Childhood Trauma on Depression. *Journal of Affective Disorders*. 198, 189-197.

**Hopfinger, L.,** Berking, M., Hannig, W., Hautzinger, M., Bockting, C. L. H., & Ebert, D. D. (submitted). Emotion Regulation Predicts Time to Depression Relapse. Manuscript submitted for publication in *Journal of Consulting and Clinical Psychology*.

### KONGRESSBEITRÄGE

**Hopfinger, L.,** Etzelmüller, A., & Ebert, D. D. (2015). *Emotionsregulation mediert den Effekt von Kindheitstraumata auf Depression*. Poster präsentiert auf dem 9. Workshopkongress für Klinische Psychologie und Psychotherapie der DGPs, Dresden, Mai 2015.

Krisch, K., Etzelmüller, A., Berking, M., Fuhr, K., Hannig, W., **Hopfinger, L.,** Rosenau, C., Hautzinger, M., & Ebert, D. D. (2015). *Online-basierte Transferförderung nach stationärer Depressionstherapie. Erste Ergebnisse zur Wirksamkeit einer randomisiert kontrollierten Multicenter-Studie in neun Kliniken und drei Versorgungssettings*. Poster des 9. Workshopkongress für Klinische Psychologie und Psychotherapie der DGPs, Dresden, Mai 2015.

**Hopfinger, L.,** Ebert, D. D., & Berking, M. (2013). *Emotion-Regulation Skills Predict Depression after Remission in Inpatient Cognitive Behavioral Therapy*. Paper presented at the EABCT 43rd Annual Congress, Marrakech, September 2013.

## 9 ERKLÄRUNG

Ich versichere, dass ich meine Dissertation

„Die Bedeutung von Emotionsregulation für Entstehung und Aufrechterhaltung der Depression“

“The Significance of Emotion Regulation for Development and Maintenance of Depression”

selbstständig ohne unerlaubte Hilfe angefertigt und mich dabei keiner anderen als der von mir ausdrücklich bezeichneten Quellen und Hilfen bedient habe.

Die Dissertation wurde in der jetzigen oder einer ähnlichen Form noch bei keiner anderen Hochschule eingereicht und hat noch keinen sonstigen Prüfungszwecken gedient.

Wetzlar, Juni 2016

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Lisa Hopfinger