Aus der Klinik und dem Klinischen Institut
für Psychosomatische Medizin und Psychotherapie
Medizinische Fakultät
Heinrich-Heine-Universität Düsseldorf
Chefärztin: Univ.-Prof. Dr. rer. nat. Ulrike Dinger-Ehrenthal

Bindung und Kindheitstraumata im Zusammenhang mit psychischen Störungen im Erwachsenenalter

Schriftliche Habilitationsleistung zur Erlangung der Venia Legendi
für das Fach Medizinische Psychologie
an der Medizinischen Fakultät
der Heinrich-Heine-Universität Düsseldorf

vorgelegt von
Dr. phil. Eva Neumann
Düsseldorf, 2025

Für meinen Vater
Wolfram Neumann 1931 - 2024
Immer eine sichere Basis

Inhalt

Zusammenfassung

Der Einfluss von interpersonellen Erfahrungen, insbesondere Kindheitserfahrungen, auf die psychische Gesundheit stellt traditionell einen Schwerpunkt in der Forschung und den therapeutischen Ansätzen der Psychosomatischen Medizin dar. In der vorliegenden Arbeit werden Studien vorgestellt, in denen die Rolle dieser Erfahrungen vor dem Hintergrund der Bindungstheorie und des Konzepts der fünf Typen von Kindheitstraumata weiter aufgeklärt wurden. Dabei standen zwei psychische Erkrankungen im Fokus, die bisher eher selten in Bezug auf ihre Zusammenhänge mit Bindungserfahrungen betrachtet wurden, somatoforme Störungen und Störungen des schizophrenen Formenkreises. Weiterhin wurde am Beispiel von Depressionen untersucht, ob Erfahrungen in der Kindheit und in aktuellen Beziehungen sich in der Stärke des Zusammenhangs mit dem psychischen Befinden unterscheiden. Die Entwicklung und Validierung von zwei deutschsprachigen Fragebögen zur Erfassung der aktuellen partnerschaftlichen Bindung und der Bindungserfahrungen mit den Eltern in der Kindheit schließlich ermöglichte es, Zusammenhänge zwischen Bindung und psychischer Gesundheit weiter zu betrachten. In allen Studien kamen Fragebögen zur Selbsteinschätzung zum Einsatz, teilweise wurden auch Instrumente zur Fremdeinschätzung verwendet. Die Befunde bestätigten insgesamt die Annahmen. Für somatoforme Störungen, Schizophrenie und Depression zeigte sich gleichermaßen, dass eine unsichere Bindung und traumatische Erfahrungen in der Kindheit mit einer erhöhten Symptomschwere einhergehen. Für Depression konnte zusätzlich belegt werden, dass Kindheitserfahrungen dabei ein stärkeres Gewicht haben als aktuelle Erfahrungen in der Partnerschaft. Die Validierung der beiden neu entwickelten Fragebögen, die auch eine Überprüfung der Zusammenhänge mit Skalen zur Erfassung von psychischen Symptomen umfasste, bestätigte diese Befunde weiter. Zur Erfassung der aktuellen partnerschaftlichen Bindung wurde eine 10-Item-Version der deutschen Experiences in Close Relationships Scale entwickelt, die Bindung entlang der beiden Dimensionen Vermeidung und Angst erfasst. Die beiden Dimensionen wiesen erwartungsgemäße positive Korrelationen mit Depression, Angst und Neurotizismus auf. Die deutsche Version des Parental Caregiving Style Questionnaire ermöglicht eine Klassifizierung der retrospektiv eingeschätzten elterlichen Fürsorge in der Kindheit analog zum Modell der Bindungsstile. Hier zeigte sich, dass Depression und Angst höher ausfielen, wenn die elterliche Fürsorge einem Stil zugeordnet wurde, der einer unsicheren Bindung entspricht, wobei dies in Bezug auf beide Elternteile galt. Die Studien stellen insgesamt empirische Belege für die bindungstheoretische Annahme dar, nach der unsichere Bindungen bis hin zu traumatischen Erlebnissen ein Vulnerabilitätsfaktor in Bezug auf psychische Erkrankungen sind.

In dieser Schrift wird aus Gründen der besseren Lesbarkeit das generische Maskulinum verwendet in dem Sinne, dass hiermit Frauen, Männer und non-binäre Personen gemeint sind. Ebenso umfasst die Formulierung „Bindung an den Partner“ Frauen, Männer und non-binäre Personen als Bezugspersonen.

Übersicht der beitragenden Originalarbeiten

Neumann, E., Sattel, H., Gündel, H., Henningsen, P., & Kruse, J. (2015). Attachment in romantic relationships and somatization. *Journal of Nervous and Mental Disease, 203*(2)*,* 101-106. https://doi.org/10.1097/nmd.0000000000000241

Neumann, E. (2017). Recollections of emotional abuse and neglect in childhood as risk factors for depressive disorders and the need for psychotherapy in adult life. *Journal of Nervous and Mental Disease, 205*(11), 873-878. https://doi.org/10.1097/nmd.0000000000000748

Neumann, E., Rixe, J., Driessen, M., & Juckel, G. (2023). Psychosocial functioning as a mediator between childhood trauma and symptom severity in patients with schizophrenia. *Child Abuse and Neglect, 144,* 106372. https://doi.org/10.1016/j.chiabu.2023.106372

Neumann, E., Rohmann, E., & Sattel, H. (2023). The 10-item short form of the German Experiences in Close Relationships Scale (ECR-G-10) - Model fit, reliability, and validity. *Behavioral Sciences, 13*(11), 395. https://doi.org/10.3390/bs13110935

Neumann, E., & Rohmann, E. (2023). Attachment-based retrospective classifications of parental caregiving in childhood related to psychological well-being and mental health in young adults. *Current Psychology*. 1-9. https://doi.org/10.1007/s12144-023-04621-1

1. Einleitung

1.1 Der entwicklungspsychologische Ansatz der Bindungstheorie

Die Bindungstheorie, deren zentrales Thema enge Beziehungen in Kindheit, Jugend und Erwachsenenalter sind, war immer auch eine Theorie der Psychopathologie. Der Begründer dieses Ansatzes, John Bowlby, entwickelte das Modell des inneren Arbeitsmodells von Bindung, das Zusammenhänge zwischen frühen Bindungserfahrungen und dem späteren psychischen Befinden aufzeigt (Bowlby, 1969/82). Kinder entwickeln demnach in Abhängigkeit von der Qualität der elterlichen Fürsorge ein Bild des Selbst und ein Bild der anderen. Diese Bilder sind eher positiv, wenn die Hauptbezugspersonen sich liebevoll, aufmerksam und feinfühlig zeigen, während Erfahrungen von Gleichgültigkeit bis hin zu Zurückweisung eher zu negativen Bildern führen. Auf diese Weise haben die frühen Bindungserfahrungen einen Einfluss auf das Selbstwertgefühl und die Erwartungen an enge Beziehungen im weiteren Leben.

Die Konsequenzen ungünstiger früher Erfahrungen können über ein schwaches Selbstwertgefühl und negative Annahmen über die emotionale Zugänglichkeit und die Bereitschaft zu fürsorglichem Verhalten von Beziehungspartnern hinausgehen. Nach Bowlby (1973/1980) erhöhen diese Erfahrungen die Vulnerabilität für psychische Erkrankungen im Erwachsenenalter. Diese Zusammenhänge führte er insbesondere für Depression und Angst aus. Die Erfahrung, dass Bezugspersonen unzugänglich und nicht unterstützend sind, kann ein Gefühl der Verlassenheit und Hilflosigkeit hervorrufen (Bowlby, 1980). Häufen sich solche Erfahrungen, so verdichten sich diese zu der Erwartung, dass Situationen von Stress weder aus eigener Kraft heraus noch mit der Unterstützung anderer bewältigt werden können. Diese negativen Schemata erhöhen die Wahrscheinlichkeit einer depressiven Reaktion auf Stress, die auf der emotionalen Eben gekennzeichnet ist durch Traurigkeit oder Abgestumpftheit und auf der Verhaltensebene durch unzureichendes Coping.

Diese theoretischen Annahmen entsprechen dem Modell der erlernten Hilflosigkeit von Seligman (2007), nach dem reale Erfahrungen von Unkontrollierbarkeit zu der Annahme generalisieren, auch zukünftig keine Kontrolle zu haben. Dies führt zu einer resignativen, passiven Haltung auch in Situationen, die eigentlich beherrschbar wären. Da aufgrund dieser Haltung keine neuen, korrigierenden Erfahrungen gemacht werden können, verstärkt sich das Gefühl der Hilflosigkeit, was die Wahrscheinlichkeit einer depressiven Reaktion auf belastende Situationen erhöht.

Nach Bowlby (1973) können Situationen von Hilfsbedürftigkeit, in denen keine Unterstützung von Bezugspersonen erfolgt, auch Angstgefühle hervorrufen. Das allein gelassene Kind erlebt die Welt als einen gefährlichen Ort und hält bedrohliche Situationen für nicht

beherrschbar. Dieses Erleben erhöht die Wahrscheinlichkeit, im Erwachsenenalter eine Angststörung zu entwickeln.

Eine entscheidende Weiterentwicklung erfuhr die Bindungstheorie durch die empirischen Arbeiten von Mary Ainsworth (Ainsworth et al, 1978). Sie entwickelte die Erhebungsmethode der Fremden Situation, ein Beobachtungsverfahren, bei dem Kinder und ihre Hauptbezugsperson, meist die Mutter, eine festgelegte Abfolge von Trennungen und Wiedervereinigungen durchlaufen. Ainsworth et al. stellten fest, dass sich das Verhalten der Kinder in diesen Situationen drei Mustern zuordnen lässt, die sie als Bindungsstile bezeichneten: die sichere Bindung, bei der das Kind nach der Trennung von der Mutter beunruhigt wirkt, sich bei der Wiedervereinigung aber schnell wieder beruhigen lässt, die ängstlich-ambivalente Bindung, bei der das Kind bei der Trennung starke Angst zeigt und sich auch bei der Wiedervereinigung kaum trösten lässt, und die vermeidende Bindung, bei der das Kind bei der Trennung keinen sichtbaren Trennungsschmerz zeigt und bei der Wiedervereinigung kaum auf die Mutter reagiert.

Diesen drei Bindungsstilen fügten Main und Solomon (1990) später einen vierten hinzu, da sich die Reaktionen mancher Kinder in der Fremden Situation keinem der drei bereits bekannten Bindungsstile zuordnen ließen. Diese Kinder zeigten ungewöhnliches Verhalten wie ein plötzliches Erstarren, monotone Bewegungen wie Vor- und Zurückschaukeln des Oberkörpers oder Anzeichen starker Angst und Erregung. Main und Solomon interpretierten dieses Verhalten als einen Zusammenbruch geordneter Bindungsstrategien und bezeichneten das neu entdeckte Muster als desorganisierte Bindung.

Die Fremde Situation wurde in den Jahrzehnten nach ihrer Entwicklung in zahlreichen Studien weltweit eingesetzt. Madigan et al. (2023) legten hierzu eine umfangreiche Meta-Analyse vor, in die Studien eingingen, bei denen alle vier Bindungsstile Berücksichtigung fanden. Insgesamt analysierten sie 285 Studien, in denen mehr als 20 000 Eltern-Kind-Dyaden die Fremde Situation durchliefen. Über alle Studien hinweg zeigte sich folgende Verteilung der Bindungsstile: 52% sicher, 10% ängstlich-ambivalent, 15% vermeidend und 23% desorganisiert. Anders als es nach geschlechtsstereotypischen Vorstellungen zu erwarten wäre, fanden sich keine signifikanten Unterschiede in der Verteilung zwischen Müttern und Vätern. Klinisch relevante Variablen erwiesen sich allerdings als bedeutsam. Bei Kindern von Eltern mit psychischer Erkrankung wurde seltener eine sichere Bindung (45%) und häufiger eine desorganisierte Bindung (29%) gefunden. Noch deutlichere Unterschiede fanden sich in Bezug auf Kinder, die Misshandlung ausgesetzt waren, denn bei ihnen war der Anteil desorganisierter Bindungen mit 64% deutlich erhöht. Diese aktuellen Befunde zur Psychopathologie der Eltern und zu Kindesmisshandlung stehen im Einklang mit der bereits in den frühen Arbeiten der

Bindungstheorie postulierten Annahme, dass unzureichende oder inadäquate elterliche Fürsorge und negative bis hin zu traumatischen Erfahrungen mit geringer Bindungssicherheit einhergehen.

Die Arbeitsgruppe um Mary Main entwickelte erstmals ein Verfahren, mit dem auch die Bindung im Erwachsenenalter empirisch erfasst werden konnte, das Adult Attachment Interview (AAI, Main, Kaplan & Cassidy, 1985). Dieses Interview richtet sich an Erwachsene und dient der Einschätzung von mentalen Repräsentationen der Bindung an die Eltern in der Kindheit. Die Auswertung erfolgt in Form einer Klassifizierung der Bindungsrepräsentation, wobei hier analog zur Fremden Situation zwischen vier Stilen unterschieden wird. Bei einer sicher-autonomen Bindung sind die Erinnerungen an die Eltern-Kind-Beziehung meist positiv, und die Interviewten können darüber geordnet, widerspruchsfrei und gut verständlich berichten. Die verstrickte Bindung ist kennzeichnet durch Erinnerungen an wechselhaftes Verhalten der Bindungsfiguren sowie eine überlange und stark emotionalisierte Darstellung mit vielen inhaltlichen Sprüngen und teilweise widersprüchlichen Aussagen. Die abweisende Bindung wird bei einer sehr knappen Darstellung verbunden mit geringer emotionaler Beteiligung gewählt, wobei von eher negativen Bindungserfahrungen berichtet wird oder aber die Beziehung zu den Eltern allgemein als gut bezeichnet wird, sich im weiteren Verlauf des Interviews aber keine Belege für positive Erfahrungen finden. Die desorganisierte Bindung schließlich ist durch Fehler bzw. Aussetzer im Interview gekennzeichnet, die im Zusammenhang mit Erinnerungen an Traumata auftreten. Diese Fehler und Aussetzer können darin bestehen, dass die Interviewten im Interview emotional überwältigt werden, wenn sie über die Traumata sprechen, auch dann auf die Traumata zu sprechen kommen, wenn die vorausgegangene Frage sich auf ganz andere Inhalte bezog oder aber wenn bisher flüssig sprechende Interviewte bei Fragen nach Traumata plötzlich verstummen.

Wie die Fremde Situation wurde auch das AAI zu einem weithin anerkannten und in zahlreichen Studien eingesetzten Instrument. Bakermans-Kranenburg et al. (2025) konnten mehr als 26 000 Interviews, die nach dieser Methode durchgeführt und ausgewertet wurden, in eine aktuelle Meta-Analyse zur Verteilung von Bindungsrepräsentationen einbeziehen. Ähnlich wie in einer vorgehenden Meta-Analyse von der gleichen Autorengruppe (Bakermans-Kranenburg & van IJzendoorn, 2009) zeigten sich deutliche Unterschiede zwischen nicht-klinischen und klinischen Stichproben. In nicht-klinischen Stichproben fanden sich zusammengefasst 50% sicher-autonome, 8% verstrickte, 25% abweisende und 17% desorganisierte Bindungsrepräsentation. Anders als bei der Fremden Situation traten hier Geschlechtsunterschiede auf, denn Männer wiesen häufiger eine abweisende und seltener eine sicher-autonome oder desorganisierte Bindung auf. In klinischen Stichproben fanden sich deutlich andere Verteilungen als in der zusammengefassten nicht-klinischen Referenzgruppe. Die Häufigkei-

ten wurden von Bakermans-Kranenburg et al. (2025) getrennt für internalisierende und externalisierende psychische Störungen analysiert. Bei internalisierenden Störungen ermittelten sie 23% sicher-autonome, 12% verstrickte, 27% abweisende und 38% desorganisierte Repräsentationen; die entsprechenden Anteile lagen bei externalisierenden Störungen bei 13%, 16%, 32% und 40%. Damit fand sich in klinischen Stichproben vor allem eine auffallende Häufigkeit von desorganisierten Bindungsrepräsentationen, die der Konzeptualisierung des AAI zufolge auf unverarbeitete Traumata verweisen. Ähnlich wie bei der Fremden Situation hoben Studien mit dem AAI somit die Bedeutung von Traumata für psychische Störungen hervor, zeigten darüber hinaus aber auch auf, dass nicht allein das Auftreten eines Traumas, sondern auch die Frage, inwieweit es verarbeitet werden konnte, eine bedeutsame Rolle spielt.

1.2 Der sozialpsychologische Ansatz der Bindungstheorie

In der Sozialpsychologie entstand parallel zu diesen entwicklungspsychologischen Ansätzen ein neuer Forschungszweig der Bindungstheorie, der sich mit der Bindung an den Partner im Erwachsenenalter beschäftigt. Der Startpunkt dieses neuen Zweigs war ein Beitrag von Hazan und Shaver (1987). Sie gingen davon aus, dass sich die Bindungsstile von Kindern in modifizierter Form auch bei Erwachsenen finden, wobei die wichtigsten Bindungsfiguren hier nicht mehr die Eltern, sondern die Liebespartner sind. Zur Erfassung von Bindung an den Partner legten sie drei Items zur Selbsteinschätzung vor, die die drei Stile angepasst an das Erleben und Verhalten von Erwachsenen beschreiben. Dieses Klassifikationssystem fand empirische Bestätigung, denn Hazan und Shaver (1987) konnten belegen, dass die sichere Bindung mit hoher Zufriedenheit und Vertrauen in der Beziehung, die ängstlich-ambivalente mit einem starken Wunsch nach Nähe und emotionalen Extremen und die vermeidende mit einem Unbehagen in Situationen der Nähe einhergehen.

Auch diese Unterscheidung zwischen drei Stilen wurde in der Folge um einen vierten Stil ergänzt. Bartholomew und Horowitz (1991) unterteilten die vermeidende Bindung in Abhängigkeit von den Ursachen des vermeidenden Verhaltens. Bei einer abweisenden Bindung beruht die Vermeidung demnach auf Gleichgültigkeit dem Partner gegenüber, während die ängstlich-vermeidende Bindung durch einen Konflikt gekennzeichnet ist, denn hier besteht der Wunsch nach Nähe in einer Beziehung und gleichzeitig Angst davor.

Die Arbeit von Hazan und Shaver (1987) regte eine Fülle weiterer Forschungsarbeiten zur partnerschaftlichen Bindung an. Da die kategoriale Erfassung von Bindung entlang der drei oder vier Stile nur eine einfache Unterteilung ermöglichte, entstand in der Folgezeit eine Reihe von Mehr-Item-Fragebögen, die eine dimensionale Erfassung der partnerschaftlichen Bindung

ermöglichten. Brennan, Clark und Shaver (1998) unterzogen die zu diesem Zeitpunkt vorliegenden Fragebögen einer faktorenanalytischen Auswertung und stellten fest, dass alle eine zweidimensionale Struktur aufwiesen. Die beiden Dimensionen bezeichneten sie als Vermeidung und Angst. Vermeidung ist gekennzeichnet durch die Vermeidung von Nähe und die Betonung von Selbstständigkeit auch in engen Beziehungen, Angst durch eine übermäßige Beschäftigung mit der Partnerschaft bis hin zu der Befürchtung, dass diese zerbrechen könnte, sowie durch anklammerndes Verhalten. Bindungssicherheit zeichnet sich nach diesem Modell dadurch aus, dass die beiden Dimensionen schwach ausgeprägt sind, wenn also Personen wenig Vermeidung und Angst in Partnerschaften zeigen.

Brennan, Clark und Shaver (1998) wählten zur Erfassung von Vermeidung und Angst auf der Grundlage ihrer Faktorenanalyse jeweils 18 Items aus den vorhandenen Fragebögen aus. Dieses 36-Item Instrument erhielt den Namen Experiences in Close Relationships Scale (ECR). Eine modifizierte Version, die Experiences in Close Relationships Scale Revised (ECR-R), legten Fraley, Waller und Brenann (2000) vor. Dieses Instrument besteht ebenfalls aus 36 Items, wobei jedoch nur 19 aus dem ECR übernommen wurden, während die anderen 17 entweder umformuliert oder aus dem ursprünglichen Item-Pool von Brennan et al. (1998) auf der Grundlage der Item-Response-Theorie neu ausgewählt wurden. ECR und ECR-R haben somit die gleiche Zielsetzung, die Erfassung von Bindungsvermeidung und -angst, unterscheiden sich bei den Items aber deutlich voneinander. Beide Instrumente wurden in der Folgezeit in zahlreichen empirischen Studien eingesetzt und gelten als Goldstandard zur Erfassung der Bindung an den Partner im Erwachsenenalter.

Da die beiden Bindungsdimensionen sich auf die partnerschaftliche Bindung beziehen, haben empirische Arbeiten, in denen vorwiegend ECR oder ECR-R zum Einsatz kamen, erwartungsgemäß gezeigt, dass sie mit Indikatoren des Erlebens und Verhaltens in der Partnerschaft zusammenhängen. So konnte vielfach belegt werden, dass Vermeidung und Angst negativ mit der Zufriedenheit mit der Partnerschaft korrelieren (Mikulincer und Shaver, 2016). Dieser Befund fand sich sowohl für die eigene Zufriedenheit als auch für die des Partners (Candel & Turliuc, 2019). Weitere negative Korrelationen zeigten sich für Intimität und Nähe sowie die Verbindlichkeit (Commitment) in der Partnerschaft; mit aggressivem, gewalttätigem Verhalten dem Partner gegenüber hingen die beiden Dimensionen dagegen positiv zusammen, wobei dieser Zusammenhang vor allem bei hoher Bindungsangst zu beobachten war (Mikulincer und Shaver, 2016).

Bindungsvermeidung und -angst zeigten aber nicht nur die erwartbaren Zusammenhänge mit der Partnerschaftsqualität, sondern erwiesen sich darüber auch als bedeutsam für das psychische Befinden. Variablen, die für ein gutes Befinden stehen, gingen meist mit einer geringen Ausprägung von Vermeidung und Angst einher; so konnten wiederholt negative Kor-

relationen von Lebenszufriedenheit und Selbstwertgefühl mit den beiden Bindungsdimensionen belegt werden (Zhang et al., 2022). Dagegen zeigten sich positive Korrelationen bei Variablen, die ein schlechtes psychisches Befinden anzeigen, beispielsweise Stress (Mikulincer & Shaver, 2016) und Einsamkeit (Zhang et al., 2022).

Von besonderem Interesse für die vorliegende Arbeit sind Studien, die das psychische Befinden in Form von psychischen Störungen in den Blick nahmen. Am häufigsten wurde das zweidimensionale Modell von Bindung zu Depression und Angst in Beziehung gesetzt, wobei festzuhalten ist, dass oftmals nicht Patienten mit einer entsprechenden Diagnose untersucht wurden, sondern diese Konstrukte in klinisch nicht auffälligen Stichproben dimensional erfasst wurden. In fast allen dieser Studien korrelierten Depression und Angst positiv mit beiden Bindungsdimensionen; dabei fielen die Korrelationen bei Bindungsangst meist höher aus als bei Bindungsvermeidung (Mikulincer & Shaver, 2016; Zhang et al. 2022). Weitere Studien bezogen sich auf die Borderline-Persönlichkeitsstörung und fanden das gleiche Ergebnismuster, also positive Zusammenhänge dieser Persönlichkeitsstörung mit beiden Bindungsdimensionen, die bei Angst höher waren als bei Vermeidung (Smith et al., 2020; Zhang et al. 2022). Zu anderen Störungsbereichen liegen deutlich weniger bindungstheoretisch fundierte Studien vor, was auch auf häufig auftretende Störungen wie Schizophrenie oder somatoforme Störungen zutrifft.

ECR und ECR-R liegen auch in validierten deutschen Fassungen vor. Eine Bochumer Arbeitsgruppe, der auch die Autorin dieser Schrift angehörte, entwickelte die deutsche Version des ECR (Neumann, Rohmann & Bierhoff, 2007). Später legten Ehrenthal et al. (2009) eine deutsche Version des ECR-R vor.

Für beide Instrumente wurden in der Folgezeit Kurzversionen entwickelt. Derzeit gibt es mehrere solcher Versionen, da Arbeitsgruppen verschiedener Universitäten nahezu zeitgleich an der Entwicklung dieser Instrumente arbeiteten. Petrowski et al. (2020) überprüften zunächst, ob sich eine von Wei et al. (2007) vorgeschlagene Auswahl von 12 Items aus dem amerikanischen ECR auch für die deutschsprachige Version bewährt. Sie stellten allerdings fest, dass diese Auswahl bei den deutschen Items keinen zufriedenstellenden Model Fit aufwies, und schlugen daher eine aus sechs Items bestehende Alternative vor (ECR-S6). Auch für den ECR-R wurden Kurzversionen entwickelt, eine Version mit 12 Items (ECR-RD12, Brenk-Franz et al., 2018) und eine weitere mit acht Items (ECR-RD8, Ehrenthal et al., 2021).

1.3 Forschungsbedarf zum Zusammenhang zwischen Bindung und Psychopathologie im Erwachsenenalter

Die Einführung in die Bindungstheorie in dieser Schrift hat verdeutlicht, dass dieser Forschungsbereich von Beginn an einen Bezug zur Forschung zu psychischer Gesundheit und Krankheit hatte. Zahlreiche Studien haben gezeigt, dass eine sichere Bindung ein protektiver Faktor und eine unsichere Bindung ein Risikofaktor in Bezug auf die Entwicklung einer psychischen Störung sind. Es besteht allerdings ein Ungleichgewicht hinsichtlich der betrachteten Störungen, da sich die Mehrzahl der Studien auf Depression und Angst bezog. Vergleichsweise wenige Studien gibt es aus diesem Forschungsbereich zu somatoformen Störungen, ein Störungsbereich, der definitionsgemäß einen der Schwerpunkte der Psychosomatischen Medizin darstellt. In den wenigen Studien wurden zudem oft nicht Patienten mit einer diagnostizierten somatoformen Störung untersucht, sondern eine Selbsteinschätzung der Schwere von somatischen Symptomen wurde zugrunde gelegt, unabhängig davon, ob die Probanden in diesem Bereich klinisch auffällig waren oder nicht (z.B. Ciechanowski et al., 2002, Waldinger et al., 2006).

In einer eigenen Vorarbeit wurde daher der Frage nachgegangen, inwieweit Patienten mit der Diagnose einer somatoformen Störung spezifische Muster von Repräsentationen der Bindung an die Eltern in der Kindheit aufweisen (Neumann et al., 2011). Die Studie entstand im Rahmen eines deutschlandweiten Projekts zur psychodynamischen Therapie von somatoformen Schmerzstörungen, an der 202 Patienten mit der entsprechenden Diagnose teilnahmen (PISO-Studie, Sattel et al., 2012). Da die Erfassung von Bindung mit dem aufwändigen AAI erfolgte, konnte nur eine kleine Subgruppe von 15 Patienten betrachtet werden, die mit 15 Kontrollprobanden ohne diagnostizierte psychische Störung verglichen wurden. Während sich bei den Kontrollprobanden fast keine desorganisierten Bindungen fanden, wies die Patientengruppe zu 60% diesen Stil auf. Die explorative Studie konnte somit einen deutlichen Zusammenhang mit unverarbeiteten Kindheitstraumata aufzeigen.

In der ersten der für diese Schrift ausgewählten Publikationen ging es ergänzend zu diesem Befund um Bindungserfahrungen im Erwachsenenalter (Neumann et al., 2015). In der Gesamtstichprobe der PISO-Studie wurden Zusammenhänge der partnerschaftlichen Bindung mit somatischen und psychischen Symptomen untersucht, wobei der ECR zum Einsatz kam.

In der Bindungsforschung wurden auch bisher selten mögliche Zusammenhänge mit dem inhaltsnahen Modell der fünf Typen von Kindheitstraumata aufgegriffen. In Anlehnung an Bernstein et al. (2003) unterscheidet dieses Modell zwischen emotionalem, körperlichem und sexuellem Missbrauch sowie emotionaler und körperlicher Vernachlässigung. Überschneidungen mit dem Konzept der Bindungssicherheit sind hier vor allem in Bezug auf emotionalen Missbrauch und emotionaler Vernachlässigung erkennbar. Emotionaler Missbrauch kann sich

zeigen in einer Abwertung des Kindes, starkem Leistungsdruck oder Rollenumkehr durch die Bezugspersonen. Emotionale Vernachlässigung ist gekennzeichnet durch unaufmerksame, stark mit eigenen Angelegenheiten beschäftigte oder gleichgültige Bezugspersonen. Es ist naheliegend, davon auszugehen, dass Eltern-Kind-Beziehungen, in denen emotionaler Missbrauch und emotionale Vernachlässigung stattfinden, ein geringes Maß an Bindungssicherheit aufweisen.

Eine Reihe von Studien konnte belegen, dass die fünf Kindheitstraumata eng mit psychischen Störungen im Erwachsenenalter verknüpft sind (Carr et al., 2013). Speziell für depressive Störungen zeigte sich, dass diese mit Erinnerungen insbesondere an emotionalen Missbrauch und emotionale Vernachlässigung einhergehen (Nelson et al., 2017). Diese Befunde sprechen zusammengenommen für einen engen Zusammenhang zwischen traumatischen Kindheitserfahrungen und Depression im Erwachsenenalter. Da der sozialpsychologische Ansatz der Bindungsforschung gezeigt hat, dass auch aktuelle Repräsentationen der Bindung an den Partner diesen Zusammenhang aufweisen, stellt sich die Frage, welches Modell die Schwere von depressiven Symptomen im Erwachsenenalter besser vorhersagen kann. Es geht hier also darum aufzuklären, ob depressive Erkrankungen stärkere Zusammenhänge mit Erinnerungen an Kindheitstraumata oder aber mit aktuellen Erfahrungen in der Partnerschaft aufweisen. Mit dieser Fragestellung beschäftigte sich die zweite der für diese Schrift ausgewählten Studien (Neumann, 2017).

Dass interpersonelle Erfahrungen in der Kindheit eine bedeutsame Rolle für die spätere Psychopathologie haben, ist in der Psychosomatischen Medizin mit ihren meist psychodynamischen Therapiekonzepten eine der zentralen Grundannahmen. In jüngerer Zeit fand dieser Aspekt auch bei einem Störungsbereich Beachtung, der in der Psychiatrie behandelt wird, den Störungen des schizophrenen Formenkreises. Bei diesen Störungen kann von einem höheren Anteil genetischer Verursachung als bei den in der Psychosomatik behandelten Erkrankungen ausgegangen werden, doch auch hier konnten Studien einen Einfluss der sozialen Umweltfaktoren, die Gegenstand der vorliegenden Schrift sind, belegen. So zeigte eine Meta-Analyse auf, dass Kindheitstraumata mit einem deutlich erhöhten Risiko einhergehen, an einer Schizophrenie zu erkranken (Varese et al., 2012). Ähnliche Ergebnisse erbrachten zwei Studien, in denen Stichproben von Patienten mit der Diagnose einer Schizophrenie und Personen mit hohem Psychose-Risiko untersucht wurden: In der ersten Stichprobe wiesen 85% und in der zweiten 97% Anzeichen von Kindheitstraumata auf (Larsson et al., 2013, Thompson et al., 2009).

In einer eigenen Vorarbeit wurde die Rolle von Kindheitserfahrungen für schizophrene Störungen weiter untersucht (Neumann, Juckel & Haussleiter, 2020). In einer Stichprobe von Patienten mit dieser Diagnose und einer Kontrollgruppe ohne diagnostizierte psychische Störung erfolgte die Erfassung dieser Erfahrungen mit zwei Messinstrumenten, dem Fragebogen

zum erinnerten Erziehungsverhalten (FEE, Schumacher et al., 2000) mit den Unterskalen Emotionale Wärme, Kontrolle und Zurückweisung, die getrennt für die Mutter und den Vater eingeschätzt werden, sowie dem CTQ mit den bereits beschriebenen Unterskalen der fünf Typen von Kindheitstraumata. Es zeigten sich mehrere signifikante Unterschiede zwischen den beiden Gruppen: Die schizophrenen Patienten schätzten die emotionale Wärme beider Elternteile niedriger und das Ausmaß aller Arten von traumatischen Erfahrungen (mit Ausnahme des sexuellen Missbrauchs) höher ein als die Probanden der Kontrollgruppe.

In der dritten der für diese Schrift ausgewählten Publikationen ging es um die über diesen Befund hinausgehende Frage, inwieweit aktuelle Lebensumstände einen Einfluss auf den Zusammenhang zwischen Kindheitstraumata und Symptombelastung bei Schizophrenie haben (Neumann, Rixe, Driessen & Juckel, 2023). Es ist es naheliegend anzunehmen, dass der negative Effekt von Kindheitstraumata schwächer ausfällt, wenn die Person über psychosoziale Ressourcen wie ein gutes soziales Netzwerk oder eine als sinnvoll erachtete berufliche Tätigkeit verfügt. Umgekehrt könnte dieser Effekt stärker sein, wenn solche Ressourcen nicht oder nur unzureichend zur Verfügung stehen. Psychosoziale Ressourcen stellen nach dieser These einen protektiven Faktor dar, der die schädlichen Langzeitwirkungen von Kindheitstraumata abschwächen kann.

Die Studie entstand im Rahmen eines multizentrischen Forschungsprojekts, das in fünf psychiatrischen Kliniken und Universitätskliniken in NRW durchgeführt wurde (Rixe et al., 2023). Die Stichprobe bestand aus Patienten mit der Diagnose einer Schizophrenie. In der hier vorgestellten Teilstudie bestand somit die Möglichkeit, die Rolle von Kindheitstraumata bei einem Störungsbereich weiter aufzuklären, der diesbezüglich bislang weniger Aufmerksamkeit erfahren hat als die in der Psychosomatik behandelten Krankheitsbilder (Depression, Angststörungen u.a.). Darüber hinaus konnte die oben aufgeworfene, weiterführende These überprüft werden, nach der psychosoziale Ressourcen beim Zusammenhang zwischen Kindheitstraumata und Symptomschwere eine vermittelnde Rolle einnehmen.

Im Verlauf der eigenen Arbeit mit bindungstheoretisch fundierten Skalen wurde deutlich, dass es trotz des Vorliegens validierter und weit verbreiteter Instrumente für einige Fragestellungen bzw. Forschungsdesigns noch keine optimalen Erhebungsinstrumente gibt. So wurde zunehmend die Notwendigkeit einer kürzeren Version des ECR deutlich. Obwohl dieser Fragebogen mit 36 Items nicht übermäßig lang ist, gibt es dennoch Studiendesigns, die eine kürzere Version wünschenswert erscheinen lassen. Dies ist insbesondere dann der Fall, wenn neben dem ECR weitere Instrumente zum Einsatz kommen und das Fragebogenpaket insgesamt nicht zu lang werden soll. Eine übermäßige Beanspruchung von Probanden sollte nach Möglichkeit vermieden werden, zum Beispiel dann, wenn keine Aufwandsentschädigung gezahlt werden kann, was in Erhebungen im universitären Setting oft der Fall ist, oder wenn

Probanden aufgrund einer psychischen Erkrankung ohnehin bereits belastet sind, was für Studien mit klinischen Stichproben gilt. Aus diesen Gründen entwickelten Neumann, Rohmann und Sattel (2023) eine 10-Item-Fassung ihrer deutschen Version des ECR, die den Namen ECR-G-10 erhielt.

Wie weiter oben dargestellt wurden auch andere Kurzversionen zur Erfassung von Bindungsvermeidung und -angst entwickelt, beruhend auf dem ECR oder dem ECR-R. Daher stellt sich die Frage, inwieweit der ECR-G-10 einen sinnvollen Beitrag in diesem Forschungszweig leisten kann. Hierzu ist anzumerken, dass die drei anderen bisher vorgelegten Kurzversionen bezüglich der Itemauswahl und der Befunde zur Validität nicht vollends überzeugen können. Der ECR-S6 zeigte einen guten Model Fit und wies erwartungsgemäße Korrelationen mit Skalen zu Partnerschaft, Persönlichkeit und psychischem Befinden auf (Petrowski et al., 2020). Allerdings wurden die Items dieser Kurzversion nicht aus allen 36 Items der Langversion ausgewählt, sondern aus der 12-Item-Version von Wei et al. (2007). Daher ist es möglich und auch wahrscheinlich, dass die sechs von Petrowski et al. (2020) ausgewählten Items nicht in allen Fällen die Items aus dem gesamten ECR-Pool sind, die sich am besten für eine Kurzversion eignen. Zudem wurde diese Version bisher nur in einer Stichprobe überprüft, so dass eine Bestätigung dieser Befunde in weiteren Studien, vor allem auch in solchen mit klinischen Stichproben, aussteht.

Für den ECR-RD12 und den ECR-RD8 wurde in den Publikationen, in denen diese Instrumente erstmals vorgestellt wurden, ebenfalls ein guter Model Fit berichtet (Brenk-Franz et al., 2018; Ehrenthal et al., 2021). In einer Nachfolgestudie bestätigte sich dieser Befund allerdings nicht; hier zeigte sich für beide Instrumente ein Model Fit mit unzureichenden Kennwerten (Müller et al., 2024). Der ECR-RD12 wies darüber hinaus in einer weiteren Studie nicht die erwartete zweifaktorielle, sondern eine dreifaktorielle Struktur auf (Flemming et al., 2021). Weiterhin zeigte sich für den ECR-RD12 und den ECR-RD8 wiederholt eine signifikante positive Korrelation zwischen den beiden Skalen; Bindungsvermeidung und -angst werden mit diesen beiden Instrumenten also nicht unabhängig voneinander erfasst (Ehrenthal et al., 2021; Müller et al., 2024). Diese Befunde legen nahe, dass die ECR-R-Kurzfassungen das zweidimensionale Modell von Bindung nicht adäquat abbilden.

Somit kann für diese Kurzversionen des ECR und des ECR-R festgehalten werden, dass die externe Validität und die Konstruktvalidität bislang nicht ausreichend belegt sind bzw. dass einige der vorliegenden Befunde sogar eine unzureichende Konstruktvalidität nahelegen. Daher kann der ECR-G-10 eine Alternative sein, die eine möglicherweise validere Erfassung der Bindungsdimensionen ermöglicht, sofern sich für dieses Instrument überzeugendere Belege für die Validität finden. Die vierte der für diese Schrift ausgewählten Publikationen stellt ein aus mehreren aufeinander aufbauenden Studien bestehendes Projekt vor, in dem die Entwicklung und Validierung des ECR-G-10 erfolgte.

Des Weiteren gab es bislang keinen deutschsprachigen Fragebogen, mit dem die Qualität der Fürsorge durch die Eltern in der Kindheit auf der Grundlage bindungstheoretischer Modelle retrospektiv eingeschätzt werden kann. Es liegen zwar Fragebögen zu Kindheitserfahrungen mit den Eltern vor, zum Beispiel das Parental Bonding Instrument (PBI, Parker et al., 1979, deutsche Version Benz et al., 2022) und der Fragebogen zum erinnerten elterlichen Erziehungsverhalten (FEE, Schumacher et al., 2000), doch die Skalen dieser Instrumente beruhen nicht auf dem Modell der Bindungsstile oder Bindungsdimensionen. In der fünften der für diese Schrift ausgewählten Publikationen wird eine Studie vorgestellt, deren Ziel die Erstellung und Validierung einer deutschen Version des Parental Caregiving Style Questionnaire (PCS-Q) von Hazan und Shaver (1986, veröffentlicht in Collins & Read, 1990) war (Neumann & Rohmann, 2023). Dieses Instrument unterscheidet analog zum 3-Kategorien-Modell von Bindung in der Kindheit zwischen drei elterlichen Fürsorgestilen: warm/aufmerksam, ambivalent/inkonsistent und kalt/abweisend.

Erste Befunde zur Validität lagen bereits aus einer eigenen Vorgängerstudie vor, in der eine Vorversion des PCS-Q-G zu einem anderen Instrument zur retrospektiven Einschätzung der Qualität der Bindung an die Eltern in Beziehung gesetzt wurde, der Intrex-Kurzform mit den zwei Skalen „Affiliation“ und „Interdependenz“ (Neumann & Tress, 2007). Während sich die Interdependenz nicht in Abhängigkeit vom Fürsorgestil unterschied, zeigten sich bei der Affiliation signifikante Unterschiede. Erwartungsgemäß ging der warm/fürsorgliche Stil mit hohen, der ambivalent/inkonsistente Stil mit mittleren und der kalt/abweisende Stil mit niedrigen Werten für die Affiliation einher, wobei dieses Ergebnismuster auf die Einschätzungen beider Elternteile zutraf. Diese Befunde verdeutlichen, dass die drei Fürsorgestile die Sicherheit der Bindung an die Eltern widerspiegeln. Demnach steht warm/aufmerksam für ein hohes, ambivalent/inkonsistent für ein mittleres und kalt/abweisend für ein geringes Maß an Bindungssicherheit.

2. Eigene Originalarbeiten

2.1 Bindung an den Partner im Erwachsenenalter bei somatoformer Schmerzstörung

Neumann, E., Sattel, H., Gündel, H., Henningsen, P., & Kruse, J. (2015). Attachment in romantic relationships and somatization. *Journal of Nervous and Mental Disease, 203*(2)*,* 101-106.

Die in dieser Publikation vorgestellte Studie entstand im Rahmen eines deutschlandweiten Projekts zur psychodynamischen Psychotherapie bei Patienten mit somatoformer Schmerzstörung, der PISO-Studie (Sattel et al., 2012). Insgesamt nahmen 202 Patienten aus psychosomatischen Universitätskliniken in Düsseldorf, München, Hannover, Heidelberg, Münster und Regensburg teil, die diese Diagnose erhalten hatten und schon seit längerer Zeit in Behandlung waren. Die Datenerhebung erfolgte mit Fragebögen zur Selbsteinschätzung. Bindung wurde mit dem ECR erfasst (Neumann, Rohmann & Bierhoff, 2007), psychische Symptome mit drei Modulen des Patient Health Questionnaire, und zwar dem PHQ-9 (Kroenke et al., 2001), dem GAD-7 (Spitzer et al., 2006) und dem PHQ-15 (Kroenke et al., 2002) zur Erfassung depressiver, angstbezogener und somatischer Symptome. (Zur Unterscheidung zwischen Bindungsangst und allgemeiner Angst wird die erstgenannte im Folgenden als Angst und die zweitgenannte als Ängstlichkeit bezeichnet.)

Eine korrelative Analyse erbrachte, dass die beiden Bindungsdimensionen mit allen drei Skalen zu psychischen Symptomen zusammenhängen. Es zeigten sich signifikante positive Korrelationen von Vermeidung und Angst mit Depression, Ängstlichkeit und somatischen Symptomen. Die Korrelationen von Angst mit den drei Symptombereichen fielen etwas höher als die von Vermeidung, was dafür spricht, dass Bindungsangst stärker mit dem psychischen Befinden assoziiert ist als Bindungsvermeidung.

In einer Pfadanalyse wurde der These nachgegangen, dass der Zusammenhang zwischen Bindung und somatischen Symptomen über Depression und Ängstlichkeit vermittelt wird. In diesem Modell zeigten sich keine signifikanten direkten Effekte von Vermeidung und Angst auf somatische Symptome, mit Beta-Gewichten nahe 0. Dagegen wurden alle indirekten Effekte signifikant. Bindungsangst und -vermeidung waren beide sowohl über Depression als auch über Ängstlichkeit mit somatischen Symptomen verknüpft, mit Beta-Gewichten zwischen .16 und .48.

Die Studie zeigte somit, dass die für andere Störungsbereiche bereits gut belegten Zusammenhänge mit Bindung sich auch bei somatoformen Störungen finden, in diesem Fall speziell bei der somatoformen Schmerzstörung. Darüber hinausgehend konnte aufgezeigt werden, dass diese Zusammenhänge eher indirekt sind. Bindungsvermeidung und -angst sind

eher schwach direkt mit somatischen Symptomen verknüpft. Es finden sich aber deutliche indirekte Effekte, mit Depression und Ängstlichkeit als moderierende Variablen. Eine unsichere Bindung an den Partner wirkt sich demnach nicht unmittelbar auf das somatische Befinden aus. Vielmehr trägt sie dazu bei, dass Depression und Ängstlichkeit zunehmen, was beides wiederum zu einem schlechteren körperlichen Befinden führt.

2.2 Kindheitstraumata und Bindung an den Partner im Erwachsenenalter bei depressiver Störung

Neumann, E. (2017). Recollections of emotional abuse and neglect in childhood as risk factors for depressive disorders and the need for psychotherapy in adult life. *Journal of Nervous and Mental Disease, 205*(11), 873-878.

Diese Studie wurde in der Abteilung für Psychosomatische Medizin und Psychotherapie der Medizinischen Fakultät, Heinrich-Heine-Universität Düsseldorf, durchgeführt. Untersucht wurde, inwieweit depressive Störungen mit der aktuellen Bindung an den Partner und in der Kindheit erlebten Traumata zusammenhängen. Im Vordergrund stand dabei die Frage, ob sich diese beiden Konstrukte interpersoneller Beziehungen in der Stärke des Zusammenhangs mit Depression unterscheiden. Zur Klärung dieser Frage wurde untersucht, welches Konstrukt (Repräsentationen der aktuellen Bindung an den Partner oder Erinnerungen an Kindheitstraumata) die Schwere von Depression besser vorhersagen kann.

In der Studie wurde eine klinische Gruppe mit einer Kontrollgruppe verglichen. Die klinische Gruppe bestand aus 80 Patienten der Klinik für Psychosomatische Medizin und Psychotherapie der Heinrich-Heine-Universität Düsseldorf, deren Hauptdiagnose eine depressive Störung war. Diese Patienten erhielten in der Klinik eine psychodynamische Psychotherapie, in Abhängigkeit vom Schweregrad der Störung im ambulanten, teilstationären oder stationären Setting. Die Kontrollgruppe bestand aus Patienten zweier zahnmedizinischer Einrichtungen (Westdeutsche Kieferklinik des Universitätsklinikums Düsseldorf und Zahnarztpraxis in Düsseldorf), die zeitgleich für eine andere Studie rekrutiert worden waren (Makuch & Neumann, 2016, Wilke & Neumann, 2016). Da diese Patienten nicht wegen psychischer Störungen in medizinischer Behandlung waren, wurden sie als klinisch unauffällige Vergleichsgruppe herangezogen. Dieses Vorgehen rechtfertigte sich auch dadurch, dass das Geschlechterverhältnis und das Alter in den beiden Gruppen fast gleich ausfielen (Anteil der Frauen bei 64% und 63%, mittleres Alter 38 und 40 Jahre). Beide Gruppen erhielten Fragebögen zur Selbsteinschätzung, und zwar die Symptom-Checkliste (SCL, Franke, 2014), den ECR und den Childhood Trauma Questionnaire (CTQ, Bernstein et al., 2003, deutsche Version Wingenfeld et al., 2010). In der hier beschriebenen Studie wurde die SCL-Unterskala Depression zu den zwei Bindungsdimensionen und fünf Typen von Kindheitstraumata in Beziehung gesetzt.

Es zeigte sich zunächst, dass bei allen erhobenen Variablen signifikante Unterschiede zwischen den beiden Gruppen auftraten. Erwartungsgemäß war in der klinischen Gruppe nicht nur die Depression stärker, auch Bindungsvermeidung und -angst sowie alle fünf Kindheitstraumata fielen signifikant höher aus.

Korrelative Analysen, die getrennt für die beiden Gruppen durchgeführt wurden, zeigten in der Kontrollgruppe, dass Depression signifikant mit Bindungsangst und emotionalem Missbrauch korrelierte. Diese zwei Zusammenhänge fanden sich auch in der klinischen Stichprobe, wobei hier zusätzlich noch die Korrelation von Depression mit emotionaler Vernachlässigung signifikant wurde

Zur Klärung der Hauptfragestellung wurde eine logistische Regression zur Vorhersage der Gruppenzugehörigkeit (Kontrollgruppe versus klinische Stichprobe) durchgeführt. Die drei Variablen, die zuvor bedeutsame Zusammenhänge mit Depression aufgewiesen hatten (Bindungsangst, emotionaler Missbrauch und emotionale Vernachlässigung), wurden als abhängige Variablen in die Gleichung eingegeben. Das Gesamtmodell wurde signifikant ($X^2 = 85.26$, $p < .01$) und sagte die Gruppenzugehörigkeit in 78% der Fälle korrekt vorher. Als signifikante Prädiktoren der Gruppenzugehörigkeit erwiesen sich emotionaler Missbrauch und emotionale Vernachlässigung, wohingegen Bindungsangst in diesem Modell keinen signifikanten Beitrag mehr leistete.

Somit zeigte diese Studie, dass depressive Störungen sowohl mit Repräsentationen der aktuellen Bindung an den Partner als auch mit Erinnerungen an Kindheitstraumata verknüpft sind. Patienten mit dieser Diagnose wiesen mehr Unsicherheit in der partnerschaftlichen Bindung und eine stärkere Belastung durch Kindheitstraumata als Kontrollprobanden aus einem nicht-klinischen Setting auf. Ein direkter Vergleich der Zusammenhänge von aktueller Bindungsrepräsentationen und Kindheitstraumata erbrachte, dass letztere stärker mit Depression zusammenhängen. Traumata im emotionalen Bereich erwiesen sich als signifikante Prädiktoren der Zugehörigkeit zu einer Stichprobe von Patienten, bei denen eine depressive Störung diagnostiziert worden war und die in psychotherapeutischer Behandlung waren. Demgegenüber spielten die Bindungsdimensionen in diesem Vergleich eine untergeordnete Rolle. Die Befunde sprechen dafür, dass Kindheitstraumata im emotionalen Bereich ein Risikofaktor für die Entwicklung einer depressiven Störung im Erwachsenenalter sind, was als empirischer Beleg für Bowlbys These zu den Zusammenhängen zwischen negativen Bindungserfahrungen in der Kindheit und der Vulnerabilität für Depression im weiteren Leben angesehen werden kann.

Eine einschränkende Bedingung dieser Studie ist darin zu sehen, dass die Probanden der Kontrollgruppe nicht auf psychische Störungen hin untersucht wurden. Da Depressionen zu den häufigsten psychischen Störungen gehören, kann nicht ausgeschlossen werden, dass einige der Kontrollprobanden ebenfalls diese Störung aufwiesen. Wenn in dieser Gruppe eine klinische Diagnostik erfolgt wäre und Probanden mit einer depressiven Störung ausgeschlossen worden wären, hätten sich möglicherweise noch deutlichere Unterschiede zwischen den beiden Gruppen gezeigt.

2.3 Psychosoziale Ressourcen als vermittelnde Variable beim Zusammenhang zwischen Kindheitstraumata und schizophrener Symptomatik

Neumann, E., Rixe, J., Driessen, M., & Juckel, G. (2023). Psychosocial functioning as a mediator between childhood trauma and symptom severity in patients with schizophrenia. *Child Abuse and Neglect, 144,* 106372.

Die im Folgenden dargestellte Arbeit ist eine Teilstudie aus einer Multicenter-Studie, an der fünf psychiatrische Kliniken und Universitätskliniken in NRW (Bochum, Bielefeld, Bonn, Marsberg, Neuss) beteiligt waren (Rixe et al., 2023). In dem Projekt ging es um Behandlungsvereinbarungen in der stationären psychiatrischen Behandlung von Schizophrenie. Das primäre Ziel der hier vorgestellten Teilstudie war es aufzuklären, inwieweit psychosoziale Ressourcen beim Zusammenhang zwischen Kindheitstraumata und schizophrenen Symptomen eine vermittelnde Rolle einnehmen.

Die Stichprobe bestand aus 253 Patienten mit der Diagnose einer schizophrenen oder schizoaffektiven Störung, wobei die klinischen Eindrucksdiagnosen mit dem Modul B (Psychotische und assoziierte Symptome) des Strukturierten Klinischen Interviews für DSM-IV (SKID-IV) für das Projekt abgesichert wurden.

Als Messmethoden kamen in dieser Studie Instrumente zur Selbst- und Fremdeinschätzung zum Einsatz. Die Selbsteinschätzung von Kindheitstraumata erfolgte mit dem bereits beschriebenen Childhood Trauma Questionnaire (CTQ, Wingenfeld et al., 2010). Die schizophrene Symptomatik und das psychosoziale Funktionsniveau wurden mit zwei Instrumenten zur Fremdeinschätzung erhoben, wofür Experten - ärztliche und psychologische Mitarbeitende der beteiligten Kliniken mit guten Kenntnissen psychotischer Störungen - zunächst ein klinisches Interview mit den Patienten durchführten und anschließend die Einschätzungen vornahmen.

Die Beurteilung der schizophrenen Symptomatik erfolgte mit der Positive and Negative Syndrome Scale (PANSS, Kay et al., 1987). Dieses Instrument besteht aus 30 Items, die zu drei Subskalen zusammengefasst werden: Positive Symptome (z.B. Wahnvorstellungen, Halluzinationen), Negative Symptome (z.B. emotionaler Rückzug, stereotypes Denken) und Generelle Psychopathologie (z.B. Depression, Angst).

Das psychosoziale Funktionsniveau wurde anhand der Personal and Social Performance Scale (PSP) eingeschätzt (Schaub & Juckel, 2011). Hier erfolgt zunächst eine Einschätzung des Funktionsniveaus in vier Bereichen: Sozial nützliche Aktivitäten (einer beruflichen Tätigkeit und/oder anderen sozial nützlichen Tätigkeiten wie Betreuung von Kindern oder ehrenamtlichem Engagement nachgehen), Soziale Beziehungen (enge, unterstützende

Beziehungen zu anderen haben), Selbstfürsorge (Verhalten zeigen, das dem eigenen körperlichen und seelischen Wohlbefinden dienlich ist) und Störendes und aggressives Verhalten (sozial unangemessenes Verhalten unter Kontrolle haben). Abschließend wird, die Einschätzungen in diesen vier Bereichen zusammenfassend, ein Gesamtwert für das psychosoziale Funktionsniveau vergeben.

Die Ergebnisse für den CTQ zeigten zunächst, dass die Patienten eine starke Belastung durch Kindheitstraumata aufwiesen. Insbesondere die Werte für emotionalen Missbrauch und emotionale Vernachlässigung waren hoch. Die kategoriale Auswertung des CTQ, bei der für jedes der fünf Traumata zwischen keiner, niedriger, mittlerer und schwerer Ausprägung unterschieden wird, zeigte, dass 92% der Patienten mindestens ein Trauma mit mindestens niedriger Ausprägung aufwiesen, das heißt, dass fast alle Patienten Anzeichen von Kindheitstraumata aufwiesen.

In einer Mediationsanalyse wurden die Zusammenhänge zwischen Kindheitstraumata, psychosozialem Funktionsniveau und Symptomschwere überprüft, wobei hier als Variablen der CTQ-Gesamtwert, der PSP-Gesamtwert und die PANSS-Skala zur generellen Psychopathologie eingesetzt wurden. Kindheitstraumata sagten das psychosoziale Funktionsniveau signifikant vorher (a: $b = -.16$, $CI_{95} = [-.27; -.05]$, $p < .01$). Das psychosoziale Funktionsniveau wiederum sagte die generelle Psychopathologie signifikant vorher (b: $b = -.27$, $CI_{95} = [-.33; -.20]$, $p < .001$). Es gab einen indirekten Effekt von Kindheitstraumata auf die generelle Psychopathologie über das psychosoziale Funktionsniveau (ab: $b = .04$, $CI_{95} = [.01; .07]$). Der direkte Effekt von Kindheitstraumata auf das psychosoziale Funktionsniveau wurde signifikant (c': $b = .06$, $CI_{95} = [.00; .12]$, $p \leq .05$), ebenso wie der Gesamteffekt von indirekten und direkten Effekten (c: $b = .10$, $CI_{95} = [.04; .17]$, $p < .01$). Dieses Ergebnismuster zeigt, dass der Zusammenhang zwischen Kindheitstraumata und genereller Psychopathologie teilweise vom psychosozialen Funktionsniveau mediiert wird.

Somit bestätigte die Mediationsanalyse die Annahmen zur Rolle von psychosozialen Ressourcen weitgehend. Die Einbeziehung dieser Variable erbrachte, dass zwar weiterhin ein direkter Effekt von Kindheitstraumata auf die Psychopathologie zu beobachten ist. Darüber hinaus zeigte sich aber auch ein bedeutsamer indirekter Effekt mit dem psychosozialen Funktionsniveau als Mediatorvariable. Dieser Befund verdeutlicht, dass psychosoziale Ressourcen wie eine sinnvolle Beschäftigung und ein gutes soziales Netzwerk die negativen Folgen von Kindheitstraumata für das psychische Befinden im Erwachsenenalter zwar nicht aufheben, aber doch in einem gewissen Ausmaß abmildern können. Die Stärkung dieser Ressourcen sollte daher in der Behandlung schizophrener und anderer schwerer psychischer Erkrankungen Beachtung finden.

2.4 Entwicklung einer 10-Item-Kurzversion der deutschen Version der Experiences in Close Relationships Scale

Neumann, E., Rohmann, E., & Sattel, H. (2023). The 10-item short form of the German Experiences in Close Relationships Scale (ECR-G-10) - Model fit, reliability, and validity. *Behavioral Sciences, 13*(11), 395.

Diese Arbeit war eine Kooperation von wissenschaftlichen Mitarbeitenden der Abteilung für Psychosomatische Medizin und Psychotherapie der Medizinischen Fakultät, Heinrich-Heine-Universität Düsseldorf, der Abteilung für Sozialpsychologie der Fakultät für Psychologie, Ruhr-Universität Bochum, und der Abteilung für Psychosomatische Medizin und Psychotherapie des Klinikums Rechts der Isar, Technische Universität München. Das Ziel war die Entwicklung einer Kurzversion der deutschen Fassung des ECR, die den Namen ECR-G-10 erhielt. In die für die Item-Auswahl durchgeführte Analysen gingen vier Stichproben mit insgesamt 1747 Probanden ein, wobei hier sowohl studentische Probanden als auch Psychotherapie-Patienten mit diagnostizierter psychischer Störung (meist eine depressive oder eine somatoforme Störung) vertreten waren.

In schrittweisen konfirmatorischen Faktorenanalysen (SCOFA) zeigte sich, dass für die Kurzversion bei beiden Skalen jeweils eine 5-Item-Lösung optimal ist. Die Auswahl der Items aus der Langversion erfolgte auf der Grundlage einer Ant Colony Optimization (ACO) (Schroeders et al., 2016, Volz et al., 2021). Die ACOs führten in allen vier Stichproben zu einer Lösung mit einem guten Model Fit (Comparative Fit Index (CFI): Vermeidung .99, .99., .99., .97, Angst: .99, .99., .99., .98, Root Mean Square Error of Estimation (RMSEA): Vermeidung .02., .01, .05., .09, Angst .04, .05, .07, .06). Die beiden neuen Kurzskalen korrelierten hoch mit ihrer jeweils entsprechenden Langskala, mit Korrelationen zwischen .89 und .93, und niedrig mit der jeweils anderen Langskala. In einer 2-faktoriellen konfirmatorischen Faktorenanalyse bestätigte sich die faktorielle Struktur. Die 10 Items luden hoch auf dem Faktor, dem sie zugeordnet waren, mit Ladungen zwischen .40 und .94. Die Ladungen auf dem jeweils anderen Faktor waren niedrig und oft nahe 0.

Als Maß der Reliabilität wurde die interne Konsistenz überprüft. Für beide Skalen des ECR- G-10 zeigte sich eine akzeptable bis hohe interne Konsistenz. McDonald's Omega (ω) lag bei Vermeidung zwischen .78 und .84 und bei Angst zwischen .73 und .77, Cronbach's Alpha (α) bei Vermeidung zwischen .75 und .81 und bei Angst zwischen .72 und .76.

Die Interkorrelation (r) der beiden Kurzskalen war in allen Stichproben niedrig (zwischen -.03 und .14) und lag stets unterhalb des Grenzwerts für einen kleinen Effekt, was belegt, dass sie unabhängig voneinander sind.

Dem ECR-G-10 kann Augenscheinvalidität zugesprochen werden, da die Inhalte der Items sich eng an bindungstheoretischen Annahmen anlehnen. Die angenommene Validität des Verfahrens bestätigte sich durch eine Überprüfung der Korrelationen der beiden neuen Kurzskalen mit einer Reihe von Außenkriterien, und zwar Skalen zur Partnerschaft, zur Persönlichkeit und zur psychischen Gesundheit. Vermeidung wies signifikante negative Korrelationen mit der Zufriedenheit und der erotischen Anziehung in der Partnerschaft und den Persönlichkeitsmerkmalen Extraversion und Gewissenhaftigkeit sowie eine positive Korrelation mit Depression auf. Angst korrelierte positiv mit stark emotionalisiertem, besitzergreifendem Verhalten in der Partnerschaft, dem Persönlichkeitsmerkmal Neurotizismus und mit Depression und Ängstlichkeit. Die Zusammenhänge der beiden Skalen mit inhaltsnahen anderen Skalen belegen die konvergente Validität des ECR-G-10. Dass die beiden Skalen zudem unterschiedliche Korrelationsmuster aufweisen, verweist auf diskriminante Validität.

Der ECR-G-10 ermöglicht somit eine valide Erfassung der partnerschaftlichen Bindung im Erwachsenenalter, wobei er gegenüber der Langversion, dem ECR, ökonomischer ist. Das Instrument ist für Erwachsene aller Altersgruppen und für klinisch unauffällige ebenso wie für psychisch erkrankte Probanden geeignet.

Limitationen des Verfahrens bestehen darin, dass die Beurteilung auf einer Selbsteinschätzung beruht, so dass unbewusste Prozesse in der Partnerschaft möglicherweise nur unzureichend abgebildet werden können. Auch eine Tendenz zur sozialen Erwünschtheit kann nicht ausgeschlossen werden.

2.5 Entwicklung einer deutschen Version des Parental Caregiving Style Questionnaire

Neumann, E., & Rohmann, E. (2023). Attachment-based retrospective classifications of parental caregiving in childhood related to psychological well-being and mental health in young adults. *Current Psychology*. 1-9.

Diese Studie entstand im Rahmen einer Kooperation von wissenschaftlichen Mitarbeitenden der Abteilung für Psychosomatische Medizin und Psychotherapie der Medizinischen Fakultät, Heinrich-Heine-Universität Düsseldorf, und der Abteilung für Sozialpsychologie der Fakultät für Psychologie, Ruhr-Universität Bochum. Sie diente der Entwicklung einer deutschen Version des Parental Caregiving Style Questionnaire (PCS-Q), einem Instrument zur retrospektiven Erfassung der Fürsorge durch die Eltern in der Kindheit.

Hazan und Shaver (1986) entwarfen den PCS-Q parallel zu ihren drei Items zur Selbsteinschätzung der Bindung an den Partner (Hazan & Shaver, 1987). Wie dieser Fragebogen beruht auch der PCS-Q auf dem 3-Kategorien-Modell von Bindung und unterscheidet analog zu den drei Bindungsstilen sicher, ängstlich-ambivalent und vermeidend zwischen drei Stilen der elterlichen Fürsorge: Der warm/aufmerksame Stil ist durch Liebe, Zugewandtheit und Verlässlichkeit gekennzeichnet, der ambivalent/inkonsistente Stil durch wechselhaftes, unvorhersehbares Verhalten und der kalt/abweisende Stil durch Gleichgültigkeit bis hin zu offener Ablehnung.

Das Instrument ist in zwei Abschnitte unterteilt, einer für die Beurteilung des mütterlichen und einer für die Beurteilung des väterlichen Fürsorgeverhaltens. Die beiden Abschnitte bestehen jeweils aus drei kurzen Absätzen, die die drei Fürsorgestile beschreiben. Die Absätze sind in den Abschnitten für die Mutter und den Vater wortgleich bis auf die geschlechtsspezifischen Bezeichnungen. Die Beantwortung erfolgt im Forced-Choice-Verfahren, das heißt, es soll der Absatz ausgewählt werden, der das Verhalten des jeweiligen Elternteils am besten beschreibt.

Die Übersetzung des PCS-Q wurde von der Autorin dieser Schrift erstellt und erhielt den Namen „Parental Caregiving Style Questionnaire – German (PCS-Q-G)“. In der fünften der für diese Arbeit ausgewählten Publikationen ist die teststatistische Überprüfung dieser Version dargestellt. Hierfür wurde der PCS-Q einer studentischen Stichprobe zu zwei Messzeitpunkten vorgelegt. An der ersten Messung nahmen 197 Studierende der Ruhr-Universität Bochum teil, 74 von ihnen auch an der Messwiederholung zwei Monate später. Dieses Vorgehen ermöglichte die Überprüfung der Retest-Reliablität. Zudem erfolgte zur Validierung ein Abgleich mit Skalen zum Erleben und Verhalten im Erwachsenenalter, die sich auf zwei

Zufriedenheitsmaße (Zufriedenheit mit der Partnerschaft und allgemeine Lebenszufriedenheit), dem Selbstwertgefühl und zwei Maßen zur psychischen Gesundheit (Depression und Ängstlichkeit) bezogen.

Die Messwiederholung erbrachte eine deutliche Übereinstimmung zwischen den Klassifikationen des ersten und des zweiten Messzeitpunkts. Beim mütterlichen Fürsorgestil wurde in 90.4 % der Fälle zu beiden Messzeitpunkten der gleiche Stil gewählt. Der Kappa-Koeffizient (κ = .66, p < .001) zeigte eine substantielle Übereinstimmung an. Beim väterlichen Fürsorgestil wurde in 86.1 % der Fälle zu beiden Messzeitpunkten der gleiche Stil gewählt. Der Kappa-Koeffizient (κ = .76, p < .001) zeigte auch hier eine substantielle Übereinstimmung an.

Zur Validität ist zunächst festzuhalten, dass dem PCS-Q-G sicherlich Augenscheinvalidität zugeschrieben werden kann, da prägnante Merkmale von Bindungsbeziehungen in den Items angeführt werden und die drei Stile zudem klar voneinander unterscheidbar sind. Diese erste Einschätzung bestätigte sich empirisch durch den Vergleich mit den gewählten Außenkriterien, denn in Abhängigkeit vom gewählten Fürsorgestil zeigten sich hier erwartungsgemäße Unterschiede. Zufriedenheit mit der Partnerschaft, Lebenszufriedenheit und Selbstwertgefühl nahmen von warm/aufmerksam über ambivalent/inkonsistent bis kalt/abweisend immer mehr ab, während Depression und Ängstlichkeit umgekehrt über die drei Stile hinweg zunahmen. Dieses Ergebnismuster trat in Bezug auf beide Elternteile auf.

Der PCS-Q-G erwies sich damit als ein reliables und valides Instrument zur retrospektiven Klassifizierung des elterlichen Fürsorgeverhaltens. Da die drei Stile des PCS-Q-G analog zu den drei Bindungsstilen konzipiert sind, ist ein direkter kategorialer Vergleich zwischen erlebtem elterlichen Fürsorgeverhalten und Bindung im Erwachsenenalter möglich. Zudem können die kindheitsbezogenen Erfahrungen zur psychischen Gesundheit im Erwachsenenalter in Beziehung gesetzt werden. Aufgrund seiner Kürze ist das Instrument sehr ökonomisch.

Eine Begrenzung ist darin zu sehen, dass der PCS-Q-G lediglich eine kategoriale Zuordnung vorsieht. Kontinuierliche Werte können nicht gebildet werden, so dass einige statistische Verfahren (z. B. korrelative Analysen) nicht durchführbar sind. Weiterhin ist zu bedenken, dass die mit dem PCS-Q-G vorgenommenen Klassifizierungen aus der Retrospektive heraus erfolgen, so dass Erinnerungsverzerrungen auftreten könnten.

3. Zusammenfassende Bewertung

Die für diese Schrift ausgewählten fünf Publikationen stellen Studien vor, in denen es um Bindung und Kindheitstraumata und ihre Rolle für psychische Störungen im Erwachsenenalter ging. Die Studien führen in mehrfacher Hinsicht über frühere Studien hinaus. In zwei der Arbeiten wurden Störungsbilder betrachtet, die bisher eher selten hinsichtlich dieser interpersonellen Erfahrungen betrachtet wurden, somatoforme Störungen und Störungen des schizophrenen Formenkreises (Neumann et al., 2015, Neumann, Rixe, Driessen & Juckel, 2023). Beim ersten Störungsbild handelt es sich um Erkrankungen, deren Erforschung und Behandlung schon immer einen Schwerpunkt der Psychosomatischen Medizin bildeten. Mit dem zweiten Störungsbild rückte hier eine Gruppe von Erkrankungen in den Fokus, die den Bereich der Psychosomatischen Medizin überschreitet. Die darauf bezogene Studie ermöglichte daher einen Blick über den Tellerrand. Sie zeigte, dass bindungstheoretische Konzepte, die von dem Kinderpsychiater John Bowlby entwickelt und dann in der Psychologie und der Psychosomatischen Medizin entscheidend weiterentwickelt wurden, auch für psychiatrische Erkrankungen relevant sind.

Weiterhin wurden die zwei inhaltsnahen Konzepte von Bindung und Kindheitstraumata zusammengeführt (Neumann, 2017). Ein direkter Vergleich der Stärke des Effekts auf die aktuelle Belastung durch psychische Symptome, der hier für depressive Störungen erfolgte, erbrachte, dass beide Arten von interpersonellen Erfahrungen mit der Schwere depressiver Symptome zusammenhängen. Dieser Zusammenhang fiel allerdings für Kindheitstraumata stärker aus, was darauf verweist, dass frühe interpersonelle Erfahrungen einen stärkeren Einfluss als aktuelle Beziehungserfahrungen haben.

Ein weiterer Beitrag der eigenen Arbeiten besteht darin, dass deutschsprachige Fragebögen zur Erfassung von Bindung vorgelegt wurden. Die Fragebögen stellen Übersetzungen, Validierungen und die Entwicklung von Kurzversionen amerikanischer Originale dar.

In einer frühen eigenen Arbeit wurde die deutsche Version der Experiences in Close Relationships Scale (ECR) vorgelegt, die die Bindung an den Partner im Erwachsenenalter entlang der beiden Dimensionen Vermeidung und Angst erfasst (Neumann et al., 2007). In dieser Schrift wird eine darauf aufbauende, weitere Arbeit vorgestellt, in der eine Kurzversion dieses Instruments entwickelt wurde (ECR-G-10, Neumann, Rohmann & Sattel, 2023). Die resultierende 10-Item-Version wies ähnlich gute Kennwerte wie die 36-Item-Originalversion auf. Für die Kurzversion fand sich in einer großen studentischen Stichprobe ein guter Model Fit; dieser Befund konnte in einer weiteren studentischen sowie einer klinischen Stichprobe repliziert werden. Die beiden neuen Kurzskalen des ECR-G-10 korrelierten nicht signifikant miteinander; die Skaleninterkorrelation lag in allen drei Stichproben unterhalb eines kleinen

Effekts. Es zeigten sich aber erwartungsgemäße signifikante Korrelationen mit Skalen zu Partnerschaft, Persönlichkeit, Psychopathologie und Kindheitstraumata. Für dieses Instrument konnte somit wiederholt ein guter Model Fit gefunden werden, die beiden Skalen erwiesen sich als unabhängig voneinander, und die externe Validität wurde sehr umfassend anhand einer ganzen Reihe von Außenkriterien überprüft. Mit der Kurzversion ist somit zukünftig eine gegenüber der Langversion ökonomischere, aber weiterhin valide Erfassung der partnerschaftlichen Bindung möglich.

Insgesamt deuten diese Befunde darauf hin, dass unter den vorliegenden Kurzversionen des ECR und des ECR-R der ECR-G-10 für Studien zur partnerschaftlichen Bindung zu bevorzugen ist. Die Items dieses Instruments wurden aus allen 36 Items des ECR ausgewählt, die guten Kennwerte des Model Fit in der Ausgangsstichprobe konnten in weiteren Stichproben, darunter auch eine klinische Stichprobe, repliziert werden, und die Validierung erfolgte durch einen Abgleich mit Außenkriterien, deren inhaltliche Bandbreite größer war als in den Studien zur Validierung der anderen Instrumente. Für eine abschließende Beurteilung der Frage, welche Kurzversion wirklich die beste ist, wäre es allerdings wünschenswert, eine Studie durchzuführen, an der idealerweise eine höhere Zahl von Probanden sowohl aus der Normalbevölkerung als auch aus klinischen Settings teilnimmt und in der alle vier Kurzversionen eingesetzt und direkt miteinander verglichen werden.

Die Entwicklung eines weiteren deutschsprachigen Fragebogens, dargestellt in der fünften der für diese Arbeit ausgewählten Publikationen, hatte das Ziel, die Qualität elterlichen Fürsorgeverhaltens in Analogie zum Modell der drei Bindungsstile erfassen zu können (Neumann & Rohmann, 2023). Die deutsche Version des Parental Caregiving Style Questionnaire (PCS-Q-G), die hierfür entwickelt wurde, ermöglicht es, den elterlichen Fürsorgestil als warm/aufmerksam, ambivalent/inkonsistent und kalt/abweisend zu klassifizieren, was den Bindungsstilen sicher, ängstlich-ambivalent und vermeidend entspricht. Damit können Erfahrungen mit den Eltern in der Kindheit mit direktem Bezug zu bindungstheoretischen Konstrukten erfasst werden.

3.1 Limitationen

Alle vorgestellten Studien beruhen überwiegend auf Fragebögen zur Selbsteinschätzung bzw. dienten dem Ziel, solche Fragebögen zu entwickeln. Bei den Angaben, die mit dem CTQ und dem PCS-Q-G erhoben wurden, ist zudem zu beachten, dass es sich hier um retrospektive Einschätzungen lange zurückliegender interpersoneller Erfahrungen handelt. Selbsteinschätzungen und retrospektive Einschätzungen sind sicherlich nicht frei von kognitiven Verzerrungen. Bei den Items von ECR, PCS-Q und CTQ ist klar erkennbar, welche Aussagen

positive und welche negative Beziehungsmerkmale wiedergeben. Daher kann eine Tendenz zur sozialen Erwünschtheit nicht ausgeschlossen werden. Speziell bei Partnerschaftsfragebögen ist denkbar, dass Probanden dazu neigen, ihre aktuelle Beziehung positiv zu bewerten, um kognitive Dissonanz bezüglich ihrer Lebensentscheidungen zu vermeiden. Zudem besteht hier manchmal eine Tendenz zur Idealisierung. Vor allem vermeidende Personen neigen dazu, die Beziehung als enger und verbindlicher einzuschätzen, als andere das tun würden (von Sydow, 2001). Fragebögen zur Selbsteinschätzung des Erlebens und Verhaltens in Beziehungen könnten daher ein positiveres Bild zeichnen, als es sich zeigen würde, wenn andere Erhebungsmethoden wie zum Beispiel Fremdeinschätzungen oder Verhaltensbeobachtungen zum Einsatz kämen. Dass allerdings zahlreiche empirische Belege für die Zusammenhänge dieser Selbsteinschätzungen mit Erfassungen von inhaltsnahen Konstrukten vorliegen, spricht dafür, dass diese Messinstrumente dennoch genügend Validität aufweisen, um ihren Einsatz in empirischen Studien zu rechtfertigen.

Die Validität retrospektiver Einschätzungen von Kindheitserfahrungen ist eine weitere, viel diskutierte mögliche Limitation. Da die hier eingesetzten Instrumente für Erwachsene konzipiert sind, dienen sie der Beurteilung von Erfahrungen, die bereits viele Jahre zurückliegen. Daher stellt sich die Frage, inwieweit diese Erinnerungen noch den realen Erfahrungen entsprechen. Zudem ist es denkbar, dass Patienten mit einer psychischen Erkrankung Verzerrungen ihrer Erinnerungen aufweisen, die ihrem Krankheitsbild entsprechen. So könnten zum Beispiel depressive Patienten dazu neigen, ein besonders düsteres Bild ihrer Kindheit zu zeichnen. Bei Schizophrenie könnten sich paranoide Ideen in die Erinnerungen mischen.

Diese Bedenken aufgreifend haben sich mehrere Arbeiten mit der Validität retrospektiver Einschätzungen von Kindheitserfahrungen beschäftigt. Die Befunde sind insgesamt ermutigend. So konnte aufgezeigt werden, dass die Selbsteinschätzungen eine gute Übereinstimmung mit anderen Erhebungsmethoden wie zum Beispiel Einschätzungen der Herkunftsfamilie durch Geschwister oder Aufzeichnungen von staatlichen Behörden aufweisen (Hardt & Rutter, 2004). In Bezug auf depressive Störungen zeigte sich, dass die für diese Erkrankung typischen kognitiven Verzerrungen sich eher auf aktuelle als auf vergangene Erfahrungen erstrecken (ebenda). Auch für schizophrene Patienten konnte belegt werden, dass ihre Einschätzungen von Kindheitserfahrungen ausreichend reliabel und valide sind. So zeigte sich, dass ihre Angaben über mehrere Jahre hinweg weitgehend gleich blieben, mit den Fallberichten aus den behandelnden Einrichtungen inhaltlich gut übereinstimmten und unabhängig von der Schwere schizophrener Symptome waren (Fisher et al. 2011). Bei diesem insgesamt recht positiven Bild ergab sich allerdings eine Einschränkung: Die Unterskala zum sexuellen Missbrauch des CTQ scheint im Gegensatz zu den anderen Unterskalen dieses Instruments wenig valide zu sein, da Probanden speziell hier häufig Angaben machen, die sich nicht mit anderen Aufzeichnungen decken (Hardt et al., 2006).

Insgesamt konnte für die Selbsteinschätzungen aktueller und vergangener Beziehungserfahrungen belegt werden, dass Antworttendenzen zwar nicht ausgeschlossen werden können, die Belege für die Validität aber dennoch zufriedenstellend sind. Daher kann davon ausgegangen werden, dass der Einsatz dieser Instrumente in den in dieser Arbeit dargestellten Studien zu reliablen und ausreichend validen Ergebnissen geführt hat.

4. Literatur

Ainsworth, M, Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment. A psychological study of the Strange Situation*. Hillsdale: Lawrence Erlbaum.

Bakermans-Kranenburg, M. J., Dagan, O., Cárcamo, R. A., & van IJzendoorn, M. H. (2025). Celebrating more than 26,000 adult attachment interviews: mapping the main adult attachment classifications on personal, social, and clinical status. *Attachment & Human Development*, *27*(2), 191-228.

Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2009). The first 10,000 Adult Attachment Interviews: Distributions of adult attachment representations in clinical and non-clinical groups. *Attachment & Human Development*, *11*(3), 223-263.

Bartholomew, K., & Horowitz, L. (1991). Attachment styles among young adults: A test of a four-category-model. *Journal of Personality and Social Psychology*, *61*, 2, 226-244.

Benz, A. B., Kloker, L. V., Kuhlmann, T., Meier, M., Unternaehrer, E., Bentele, U. U., ... & Pruessner, J. C. (2022). Psychometrische Kennwerte einer deutschen Übersetzung des Parental Bonding Instrument. *PPmP - Psychotherapie·Psychosomatik Medizinische Psychologie*, *72*(01), 34-44.

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., ... & Zule, W. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse & Neglect*, *27*(2), 169-190.

Bowlby, J. (1969/82). *Attachment and loss: Vol. 1. Attachment.* New York: Basic Books.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger.* New York: Basic Books.

Bowlby, J. (1980). *Attachment and loss: Vol. 3. Loss, sadness and depression.* New York: Basic Books.

Brenk-Franz, K., Ehrenthal, J., Freund, T., Schneider, N., Strauß, B., Tiesler, F., ... & Gensichen, J. (2018). Evaluation of the short form of “Experience in Close Relationships” (Revised, German Version “ECR-RD12”) - A tool to measure adult attachment in primary care. *PloS one*, *13*(1), e0191254.

Brennan, K., Clark, C., & Shaver, P. R. (1998). Self-report measurement of adult attachment. An integrative overview. In J. Simpson & W. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46-76). New York: Guilford.

Candel, O. S., & Turliuc, M. N. (2019). Insecure attachment and relationship satisfaction: A meta-analysis of actor and partner associations. *Personality and Individual Differences*, *147*, 190-199.

Carr, C. P., Martins, C. M., Stingel, A. M., Lemgruber, V. B., & Juruena, M. F. (2013). The role of early life stress in adult psychiatric disorders. A systematic review according to childhood trauma subtypes. *Journal of Nervous and Mental Disease, 201,* 1007-1020.

Ciechanowski, P. S., Walker, E. A., Katon, W. J., & Russo, J. E. (2002). Attachment theory: a model for health care utilization and somatization. *Psychosomatic Medicine*, *64*(4), 660-667.

Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology, 58,* 644-663.

Ehrenthal, J. C., Dinger, U., Lamla, A., Funken, B., & Schauenburg, H. (2009). Evaluation der deutschsprachigen Version des Bindungsfragebogens „Experiences in Close Relationships-Revised" (ECR-RD). *PPmP - Psychotherapie Psychosomatik Medizinische Psychologie*, *59*(06), 215-223.

Ehrenthal, J. C., Zimmermann, J., Brenk-Franz, K., Dinger, U., Schauenburg, H., Brähler, E., & Strauß, B. (2021). Evaluation of a short version of the Experiences in Close Relationships-Revised questionnaire (ECR-RD8): results from a representative German sample. *BMC Psychology*, *9*(1), 140.

Fisher, H. L., Craig, T. K., Fearon, P., Morgan, K., Dazzan, P., Lappin, J., ... & Morgan, C. (2011). Reliability and comparability of psychosis patients' retrospective reports of childhood abuse. *Schizophrenia Bulletin*, *37*(3), 546-553.

Flemming, E., Lübke, L., Masuhr, O., Jaeger, U., Brenk-Franz, K., & Spitzer, C. (2021). Evaluation der deutschsprachigen Kurzform des Experiences in Close Relationships Questionnaire (ECR-RD 12) im stationären Psychotherapiesetting. *Zeitschrift für Psychosomatische Medizin und Psychotherapie*, *67*(1), 56-69.

Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item-response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology*, *78*, 350-365.

Franke, G. H. (2014). SCL-90®-S. *Symptom-Checklist-90®-Standard–Manual. Göttingen: Hogrefe*.

Hardt, J., & Rutter, M. (2004). Validity of adult retrospective reports of adverse childhood experiences: review of the evidence. *Journal of Child Psychology and Psychiatry*, *45*(2), 260-273.

Hardt, J., Sidor, A., Bracko, M., & Egle, U. T. (2006). Reliability of retrospective assessments of childhood experiences in Germany. J*ournal of Nervous and Mental Disease*, *194*(9), 676-683.

Hazan, C., & Shaver, P. R. (1986). *Parental Caregiving Style Questionnaire.* Unpublished questionnaire.

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52*, 511-524.

Kroenke, K., Spitzer, R. L., & Williams, J.B. (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of General Internal Medicine, 16,* 606-613.

Kroenke, K., Spitzer, R.L., & Williams, J. B. (2002). The PHQ-15: validity of a new measure for evaluating the severity of somatic symptoms. *Psychosomatic Medicine, 64*(2), 258-266.

Larsson, S., Andreassen, O. A., Aas, M., Røssberg, J. I., Mork, E., Steen, N. E., ... & Lorentzen, S. (2013). High prevalence of childhood trauma in patients with schizophrenia spectrum and affective disorder. *Comprehensive Psychiatry*, *54*(2), 123-127.

Madigan, S., Fearon, R. M., van IJzendoorn, M. H., Duschinsky, R., Schuengel, C., Bakermans-Kranenburg, M. J., ... & Verhage, M. L. (2023). The first 20,000 strange situation procedures: A meta-analytic review. *Psychological Bulletin*, *149*(1-2), 99-132.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), *Growing points of attachment theory and research*. Monographs of the Society for Research in Child Development, 50 (1-2, Serial No. 209), 66-104.

Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. In M.T. Greenberg, D. Cicchetti & E.M. Cummings (Eds.), *Attachment in the preschool years: Theory, research and intervention* (pp. 121-160). Chicago: University of Chicago Press.

Makuch, M.K., & Neumann, E. (2016, 20. April). *Zahnbehandlungsangst im Zusammenhang mit der Persönlichkeitsstruktur und dem allgemeinen psychischen Gesundheitszustand.* Poster präsentiert auf dem Symposium der Medical Research School, Heinrich-Heine-Universität, Düsseldorf.

Mikulincer, M., & Shaver, P.R. (2016). *Attachment in adulthood. Structure, dynamics, and change.* New York, London: Guilford Press.

Müller, S., Spitzer, C., Flemming, E., Ehrenthal, J. C., Mestel, R., Strauß, B., & Lübke, L. (2024). Measuring change in attachment insecurity using short forms of the ECR-R: Longitudinal measurement invariance and sensitivity to treatment. *Journal of Personality Assessment*, *106*(2), 218-229.

Nelson, J., Klumparendt, A., Doebler, P., & Ehring, T. (2017). Childhood maltreatment and characteristics of adult depression: meta-analysis. *British Journal of Psychiatry*, *210*(2), 96-104.

Neumann, E. (2017). Recollections of emotional abuse and neglect in childhood as risk factors for depressive disorders and the need for psychotherapy in adult life. *Journal of Nervous and Mental Disease, 205*(11), 873-878.

Neumann, E. Juckel, G., & Haussleiter, I.S. (2020). Quality of parental care and traumatic experiences in childhood related to schizophrenic disorders. *Journal of Nervous and Mental Disease, 208*(10), 818-821.

Neumann, E., Nowacki, K., Roland, I., & Kruse, J. (2011). Bindung und somatoforme Störungen: Geringe Kohärenz und unverarbeitete Bindungsrepräsentationen bei chronischem Schmerz. *PPmP - Psychotherapie Psychosomatik Medizinische Psychologie*, *61*(6), 254-261.

Neumann, E., Rixe, J., Driessen, M., & Juckel, G. (2023). Psychosocial functioning as a mediator between childhood trauma and symptom severity in patients with schizophrenia. *Child Abuse and Neglect, 144,* 106372.

Neumann, E., Rohmann, E., & Bierhoff, H. W. (2007). Entwicklung und Validierung von Skalen zur Erfassung von Vermeidung und Angst in Partnerschaften. *Diagnostica*, *53*(1), 33-47.

Neumann, E., & Rohmann, E. (2023). Attachment-based retrospective classifications of parental caregiving in childhood related to psychological well-being and mental health in young adults. *Current Psychology*. 1-9.

Neumann, E., Rohmann, E., & Sattel, H. (2023). The 10-item short form of the German Experiences in Close Relationships Scale (ECR-G-10) - Model fit, reliability, and validity. *Behavioral Sciences, 13*(11), 395.

Neumann, E., Sattel, H., Gündel, H., Henningsen, P., & Kruse, J. (2015). Attachment in romantic relationships and somatization. *Journal of Nervous and Mental Disease, 203*(2)*,* 101-106.

Neumann, E., & Tress, W. (2007). Enge Beziehungen in Kindheit und Erwachsenenalter aus der Sicht der Strukturalen Analyse Sozialen Verhaltens (SASB) und der Bindungstheorie. *PPmP - Psychotherapie Psychosomatik Medizinische Psychologie*, *57*(3-4), 145-153.

Parker, G., Tupling, H., & Brown, L. B. (1979). A parental bonding instrument. *British Journal of Medical Psychology, 52,* 1-10.

Perris, C., Jacobsson, L., Lindström, H. et al. (1980). Development of a new inventory for assessing memories of parental rearing behaviour. *Acta Psychiatrica Scandinavica, 61,* 265-274.

Petrowski, K., Brähler, E., Suslow, T., & Zenger, M. (2020). Revised short screening version of the attachment questionnaire for couples from the German general population. *Plos one*, *15*(4), e0230864.

Rixe, J., Neumann, E., Möller, J., Macdonald, L., Wrona, E., Bender, S., ... & Driessen, M. (2023). Joint crisis plans and crisis cards in inpatient psychiatric treatment: A multicenter randomized controlled trial. *Deutsches Ärzteblatt International*, *120*(8), 125.

Sattel, H., Lahmann, C., Gündel, H., Guthrie, E., Kruse, J., Noll-Hussong, M., ... & Henningsen, P. (2012). Brief psychodynamic interpersonal psychotherapy for patients with multisomatoform disorder: randomised controlled trial. *British Journal of Psychiatry*, *200*(1), 60-67.

Schaub, D., & Juckel, G. (2011). PSP-Skala—Deutsche Version der Personal and Social Performance Scale: Validiertes Messinstrument zur Erfassung des psychosozialen Funktionsniveaus in der Schizophrenietherapie. *Nervenarzt, 82,* 1178-1184.

Schroeders, U., Wilhelm, O., & Olaru, G. (2016). Meta-heuristics in short scale construction: Ant colony optimization and genetic algorithm. *PloS One, 11*(11), e0167110.

Schumacher, J., Eisemann, M., & Brähler, E. (2000). *Fragebogen zum erinnerten elterlichen Erziehungsverhalten*. Huber.

Seligman, M. E. (2007). *The optimistic child.* New York: Houghton Mifflin.

Smith, M., & South, S. (2020). Romantic attachment style and borderline personality pathology: A meta-analysis. *Clinical Psychology Review*, *75*, 101781.

Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of Internal Medicine, 166,* 1092-1097.

von Sydow, K. (2001). Forschungsmethoden zur Erhebung von Partnerschaftsbindung. In G. Gloger-Tippelt (Hrsg.), *Bindung im Erwachsenenalter. Ein Handbuch für Forschung und Praxis* (S. 275-294). Verlag Hans Huber.

Thompson, J. L., Kelly, M., Kimhy, D., Harkavy-Friedman, J. M., Khan, S., Messinger, J. W., ... & Corcoran, C. (2009). Childhood trauma and prodromal symptoms among individuals at clinical high risk for psychosis. *Schizophrenia Research*, *108*(1-3), 176-181.

Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., ... & Bentall, R. P. (2012). Childhood adversities increase the risk of psychosis: a meta-analysis of patient-control, prospective-and cross-sectional cohort studies. *Schizophrenia Bulletin*, *38*(4), 661-671.

Volz, M., Zimmermann, J., Schauenburg, H., Dinger, U., Nikendei, C., Friederich, H.C., & Ehrenthal, J.C. (2021). Erstellung und Validierung einer Kurzversion des Fragebogens zur Erfassung aversiver und protektiver Kindheitserfahrung (APK-18). *Diagnostica, 67*(4), 200–214.

Waldinger, R. J., Schulz, M. S., Barsky, A. J., & Ahern, D. K. (2006). Mapping the road from childhood trauma to adult somatization: the role of attachment. *Psychosomatic Medicine*, *68*(1), 129-135.

Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The Experiences in Close Relationship Scale (ECR)-short form: Reliability, validity, and factor structure. *Journal of Personality Assessment*, *88*(2), 187-204.

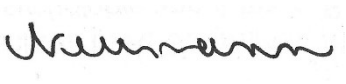
Wilke, L., & Neumann, E. (2016, 20. April). *Zahnbehandlungsangst im Zusammenhang mit partnerschaftlicher Bindung und Kindheitstraumata.* Poster präsentiert auf dem Symposium der Medical Research School, Heinrich-Heine-Universität, Düsseldorf.

Wingenfeld, K., Spitzer, C., Mensebach, C., Grabe, H. J., Hill, A., Gast, U., ... & Driessen, M. (2010). Die deutsche Version des Childhood Trauma Questionnaire (CTQ): Erste Befunde zu den psychometrischen Kennwerten. *PPmP - Psychotherapie·Psychosomatik Medizinische Psychologie*, *60*(11), 442-450.

Zhang, X., Li, J., Xie, F., Chen, X., Xu, W., & Hudson, N. W. (2022). The relationship between adult attachment and mental health: A meta-analysis. *Journal of Personality and Social Psychology*, *123*(5), 1089.

Eidesstattliche Erklärung

Hiermit erkläre ich, Dr. Eva Neumann, geboren am 13.08.1962 in Simmern, an Eides statt, dass die von mir vorgelegte schriftliche Habilitationsleistung eigenständig und nur unter Verwendung der angegebenen Hilfsmittel und Quellen angefertigt wurde.



Düsseldorf, den 07.08.2025 Dr. phil. Eva Neumann

Anhang: Ausgewählte Publikationen im Original

Anhang der Publikationen mit freundlicher Genehmigung der Verlage

Attachment in Romantic Relationships and Somatization

Eva Neumann, PhD, Heribert Sattel, Dipl-Psych,† Harald Gündel, MD,‡ Peter Henningsen, MD,† and Johannes Kruse, MD§‖*

Abstract: Adult attachment representations have been considered to play a role in the development and treatment of somatizing behavior. In this study, the associations between the two attachment dimensions avoidance and anxiety and dimensions of psychopathology (somatization, depression, and general anxiety) were explored. The sample consists of 202 outpatients diagnosed with a somatoform disorder. Data were collected via self-report measures. A path analysis shows that the two attachment dimensions are not directly associated with somatization. There are, however, significant indirect associations between attachment and somatization mediated by depression and general anxiety, which are more pronounced for attachment anxiety than for attachment avoidance. The findings reveal that a low level of attachment security in romantic relationships, especially an anxious stance toward the partner, comes along with poor mental health, which in turn is related to a preoccupation with somatic complaints. Implications for the treatment of somatizing patients are discussed.

Key Words: Adult attachment, Romantic relationships, Somatization, Depression, Anxiety

(*J Nerv Ment Dis* 2015;203: 101–106)

Somatoform disorders have been characterized in *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision* (*DSM-IV-TR)* by the experience of medically unexplained somatic symptoms (American Psychiatric Association, 2000). Medical treatment based purely on somatic interventions fails to alleviate the symptoms in most cases. This leads to severe distress for the patients, which makes many of them start new treatment attempts again and again. Because these attempts mostly prove as well to be unsuccessful, the patients tend to terminate the treatment or withdraw from it, which might leave both sides—the patients as well as their health care providers—frustrated and unsatisfied. As a result of this process, medical treatment of patients with somatoform disorders is often perceived as difficult (Lahmann et al., 2010; Taylor et al., 2012).

Attachment theory and research have been considered to be a useful approach for elucidating the development of somatoform disorders (Waller and Scheidt, 2002). Patients who experience medically unexplained symptoms often had adverse childhood experiences. The parents' behavior toward the child was probably cold and distant or inconsistent und unpredictable. In addition, the patients are likely to be intensely exposed to physical illness either in themselves or in a parent in their childhood (Craig et al., 2002; Hotopf et al., 2000). In their families of origin, there was often no warm response to an open expression of emotional distress, while showing symptoms of a physical disease caused others to be attentive and caring (Craig et al., 2004; Rudolf and Henningsen, 2003; Stuart and Noyes, 1999). By these experiences, the child learns that direct communication of emotional distress is not effective for gaining love and care, while somatizing behavior leads to that result. As a consequence, the child develops the tendency to experience and express inner conflicts in the form of somatic symptoms. Once established, this tendency is likely to persist from childhood to adulthood.

It is striking that in overviews of studies on the relation between attachment and mental illness, somatoform disorders are not usually considered. Bakermans-Kranenburg and van IJzendoorn (2009) or Dozier et al. (2008), for example, do not refer to studies on that disorder. Their overviews show that there is compelling empirical evidence for the negative correlation between attachment security and common mental disorders like depression, anxiety, and borderline personality disorder. The relation between attachment and somatoform disorders, however, seems to be largely unexplored.

Studies on attachment with patients diagnosed with a somatoform disorder were conducted by Waller et al. (2004) and Neumann et al. (2011). In both studies, attachment representations were measured with the Adult Attachment Interview (AAI; Hesse, 2008). The AAI is a semistructured interview in which adults are asked to describe retrospectively their attachment to parents in childhood and their current perspective of these attachment bonds. The interviews are classified with regard to the "state of mind with respect to attachment". Waller et al. (2004) used the three-category model of attachment, distinguishing among secure/autonomous, dismissive, and preoccupied states of mind, whereas the study of Neumann et al. (2011) is based on the four-category model, which additionally includes the unresolved/disorganized category. Both studies revealed a preponderance of insecure attachment representations among patients diagnosed with a somatoform disorder (Waller et al.: n = 35, 9 [26%] secure/autonomous, 17 [49%] dismissing, 9 [26%] preoccupied; Neumann et al.: n = 15, 0 secure/autonomous, 3 [20%] dismissing, 3 [20%] preoccupied, 9 [60%] unresolved/disorganized).

It is remarkable that the unresolved/disorganized category is the most frequent attachment representation among somatizing patients when this category is taken into account. This finding refers to the relevance of unresolved trauma for somatoform disorders. Because the validity of the two studies is limited because of the small number of participants who could be investigated with the demanding procedure of the AAI, the results need further empirical support. However, the high incidence of childhood trauma in patients with somatoform disorders has been evidenced in non–attachment-based studies, too (*e.g.*, Egle and Nickel, 1998; Spitzer et al., 2008; Subic-Wrana et al., 2011; for reviews, see Nelson et al., 2012; Roelofs and Spinhoven, 2007).

To our knowledge, romantic relationships of patients with somatoform disorders have not yet been investigated on the basis of attachment theory. There is, however, a series of studies in which relations between adult romantic attachment and somatic symptoms were investigated without distinguishing between medically explained and unexplained symptoms (Ciechanowski et al., 2002; Liu et al., 2011; Meredith et al., 2006; Waldinger et al., 2006). In these studies, attachment was measured with self-report measures. Attachment representations were classified according to the four-category model of Bartholomew and Horowitz (1991), which contrasts the secure style with three insecure styles (preoccupied, fearful, and dismissing). The findings of the studies indicate that both preoccupied and fearful attachment representations are linked with an intense experience of physical discomfort.

*Heinrich-Heine-University, Düsseldorf; †Technische Universität, Munich; ‡Ulm University, Ulm; §Justus-Liebig University, Giessen; and ‖Philipps-University, Marburg, Germany.

Send reprint requests to Eva Neumann, PhD, Department of Psychosomatic Medicine and Psychotherapy, Medical Faculty, Heinrich-Heine-University, Bergische Landstraße 2, D - 40629 Düsseldorf, Germany. E-mail: eva.neumann@uni-duesseldorf.de.

ISSN: 0022-3018/15/20302–0101
DOI: 10.1097/NMD.0000000000000241

Participants classified as preoccupied or as fearful report more symptoms, and they give higher ratings of the severity of the symptoms compared with secure or dismissing participants. Furthermore, they seek medical help more often. In sum, two of the three insecure attachment styles were shown to be associated with strong concerns regarding physical complaints, which points to the relevance of attachment insecurity for such exaggerated fears.

In current research on adult romantic attachment, a dimensional perspective has been gaining more and more support. Factor analyses of questionnaires used within this body of research show that romantic attachment is based on two dimensions: avoidance and anxiety (Brennan et al., 1998). Avoidance refers to discomfort in situations in which romantic partners might come close, which leads to an avoidance of such situations; in line with this, there is a strong emphasis on self-reliance. Anxiety is characterized by a preoccupation with relationship matters, which manifests in feelings of not being loved by the partner and worries that the relationship will break up. These worries lead to clingy behavior toward the partner.

In the present study, relations between adult romantic attachment and somatization were investigated, going beyond the current state of research in two respects: First, adult attachment was not measured according to the classic categorical model, which is still used in most of the studies on this topic. In this study, the current two-dimensional approach was used. Second, the study focuses on somatoform disorders, a diagnostic group that is largely unexplored in clinical attachment research. To ensure that the reported complaints were medically unexplained—a criterion that constitutes the key feature of somatoform disorders—potential participants were examined physically in somatic facilities. Only those patients whose complaints could not be explained by somatic conditions were asked to take part in the study.

In patients diagnosed with a somatoform disorder, comorbid depression and anxiety disorders are often observed (Henningsen et al., 2003, 2005). To provide a more complete picture of the relation between attachment and somatization, associations of bodily complaints with depression and anxiety were also explored in this study.

Theoretically, it is conceivable that both attachment avoidance and attachment anxiety are connected with the experience of medically unexplained somatic symptoms. In cases of intense avoidance, attachment-related emotions are suppressed. Limitations in the perception and expression of emotions are characteristic of alexithymia as well, a construct that has been shown to be associated with somatization (De Gucht and Heiser, 2003). In cases of intense anxiety, emotional awareness is not restricted in general, but there are difficulties in differentiating emotional arousal into specific emotions; that is, there is no nuanced awareness of feelings (Mallinckrodt and Wei, 2005). The suppression of emotions (in cases of high avoidance) and emotional confusion (in cases of high anxiety) might foster both the tendency to experience and express intrapersonal and interpersonal conflicts in the form of somatic complaints.

METHODS

Participants

The present study is part of the large multicenter randomized clinical trial "Psychosomatic Intervention of Pain-Dominant Multisomatoform Disorder" (PISO; Sattel et al., 2012). The PISO study was conducted at six German university clinics for psychosomatic medicine (Munich, Düsseldorf, Hannover, Heidelberg, Münster, and Regensburg) and intended to test the efficacy of psychodynamic short-time therapy for patients with a pain-dominant multisomatoform disorder. This construct characterizes a medium severe form of somatoform disorders. It requires that patients currently have at least three disabling symptoms, with one of them being present on at least half of the days over at least 2 years. The symptoms cannot be sufficiently explained by an organic condition or another mental disorder and result in frequent health care use (Kroenke et al., 1997). One of the three symptoms must be derived from the domain of pain, which, according to the *DSM-IV*, justifies the diagnosis of a somatoform pain disorder.

Potential participants for the PISO study were recruited in somatic facilities. Patients with a suspected diagnosis of a somatoform pain disorder were included in the study after confirmation of the diagnosis using the somatoform disorders and hypochondria sections of the Structured Clinical Interview for *DSM-IV* (First et al., 2002). Further inclusion criteria were a) an SF-36 physical component summary score lower than or equal to 40, indicating a markedly impaired physical quality of life (Ware and Sherbourne, 1992), b) a minimum age of 18 years, c) good German language skills, and d) confirmation of informed consent. The exclusion criteria comprised a severe comorbid mental disorder (*e.g.*, substance abuse or schizophrenia) as well as mental retardation.

After inclusion in the study, patients assigned to the intervention group received 12 sessions of psychodynamic interpersonal psychotherapy, whereas those assigned to the control group were treated with enhanced medical care in three sessions. Because the randomization had been successful, the two groups did not differ with regard to attachment variables; accordingly, the sample was analyzed as a whole in this study. All analyses are based on data gathered before the treatment started.

The sample consists of 202 patients with a mean (SD) age of 48 (11.60) years (range, 18–77 years). All of them fulfilled the criteria of a pain-dominant multisomatoform disorder. Table 1 shows the demographic data of the sample.

More women than men participated in the study; two thirds of the sample are women. Most of the patients (66%) lived in a committed relationship, either married or unmarried, which means on the other hand that there is also a substantial proportion of participants who did not have a romantic partner (34%). Educational attainment ranges from participants without any degree to those with a university degree, whereby most of the participants had a degree from a secondary school. A total of 42% was employed, which implies that most of the patients (58%) were not regularly occupied. Most participants, however, were persons of working age; only 18 participants (9%) were older than 65 years.

Measures

Experiences in Close Relationships Scale

The Experiences in Close Relationships Scale (ECR) by Brennan et al. (1998) is a self-report measure of adult attachment in romantic relationships. It consists of two 18-item scales, one to assess attachment avoidance (*e.g.*, "I prefer not to show others how I feel deep down") and the other to assess attachment anxiety (*e.g.*, "I worry about being rejected or abandoned." Items are rated on a 7-point Likert scale (1 = disagree strongly, 4 = neutral, 7 = agree strongly). In this study, the German version of the ECR developed by Neumann et al. (2007) was used. The German version has been shown to be valid in student as well as in clinical samples.

Somatization, Depression, and Anxiety Modules of the Patient Health Questionnaire

The Patient Health Questionnaire (PHQ) is a self-report measure for the screening of common mental disorders according to the *DSM-IV* (somatoform disorders, depression, anxiety disorders, eating disorders, and alcohol abuse) in primary care (Spitzer et al., 1999; German version by Löwe et al., 2002). In addition, it allows rating the severity of somatization, depression, and anxiety. The somatization module (PHQ-15) consists of a list 15 somatic symptoms (*e.g.*, "back pain"). The degree of distress caused by each of these symptoms is rated on a 3-point

TABLE 1. Demographic Data

	N	%
Sex		
Men	135	67
Women	67	33
Relationship status		
Single	20	10
Dating partner	16	8
Married	118	58
Divorced	41	20
Widowed	4	2
Other or no answer	3	2
Children		
No children	34	17
One child	56	28
Two or more children	90	44
Other or no answer	22	11
Educational attainment		
(Still) without any degree	12	6
Special needs school	3	2
Intermediate school leaving certificate	124	62
European baccalaureate	30	15
University degree	28	14
Other or no answer	5	3
Occupational status		
Still in school/student	6	3
Employed, full-time	56	28
Employed, part-time	29	14
Housewife	23	11
Unemployed	34	17
Retired	44	22
Other or no answer	10	5

Likert scale from "not bothered" to "bothered a lot." The depression module (PHQ-9) lists nine depressive symptoms (*e.g.*, "feeling down, depressed, or hopeless"), which are rated with regard to their frequency on a 4-point Likert scale from "not at all" to "nearly every day". The anxiety module (Generalized Anxiety Disorder 7-Item Scale) serves for the measurement of general anxiety (*e.g.*, "Feeling nervous, anxious, or on the edge"). The seven items are responded on a 4-point Likert-scale from "not at all" to "nearly every day."

Analyses

The intercorrelations between the observed dimensions were determined by Pearson's product-moment correlations. A linear regression model was computed to determine the amount of explained variance of the dependent variable "somatization." These analyses were performed using SPSS 20.0. The path model was estimated using AMOS 20.0. A full model was tested with all interesting dimensions entered; for the estimation of the goodness-of-fit indices, associations between both attachment dimensions and somatization that were close to zero were removed from the model. The level of statistical significance was set at $p < 0.05$.

RESULTS

Table 2 displays the descriptive data and the internal consistencies of the five scales. The internal consistencies ranged from satisfactory to good. The average attachment scale scores indicate that the sample is characterized by a medium extent of attachment avoidance and anxiety. The psychopathological measures indicate a mild to medium level of general anxiety and a medium level of depression, accompanied by a high level of somatization.

TABLE 2. Descriptive Statistics

Measure	Scale	*N*	Mean	SD	α
ECR	Attachment avoidance	202	3.13	1.16	0.89
	Attachment anxiety	202	3.18	1.18	0.89
PHQ	Somatization	201	16.16	5.46	0.76
	Depression	201	12.72	5.69	0.85
	Anxiety	198	8.86	3.78	0.77

The PHQ somatization, depression, and anxiety modules not only allow calculating scale scores but also provide information about the number of participants who meet the criteria for a somatoform, a depressive, and an anxiety disorder. According to this analysis, 179 patients (89%) have a somatoform disorder; 108 (54%), a major depressive syndrome; 121 (60%), another depressive syndrome; 43 (21%), a panic syndrome; and 71 (35%), another anxiety syndrome.

To control the confounding effects of sex and age, differences between men and women as well as correlations with age were calculated for each of the five scales. *t* Tests show that there were no significant sex effects. Men and women did not differ in terms of attachment dimensions, somatization, depression, and anxiety. Likewise, the correlations of the scales with age were not significant, with one exception: Avoidance was positively correlated with age ($r = 0.15$, $p < 0.05$). However, although this correlation was significant, it reflected a small effect only. In sum, the impact of sex and age on the variables measured with the five scales appeared to be marginal. Therefore, sex and age were not considered in the further analyses.

Table 3 shows the intercorrelations between the scales. The associations between all dimensions were significant and covered the range of small ($r = 0.18$ for attachment avoidance and somatization) to very strong ($r = 0.69$ for depression and anxiety) effects. Contrary to former studies (Neumann et al., 2007), the two attachment dimensions were not independent from each other. Both of the attachment dimensions were positively correlated with the psychopathological dimensions, with anxiety showing higher correlations than avoidance.

To evaluate differences in the relevance of attachment, depression, and anxiety for the main feature of somatoform disorders, somatization, a linear regression analysis was conducted. Somatization was entered as the dependent variable; attachment avoidance, attachment anxiety, depression, and general anxiety were entered as independent variables. The model accounts for 39% of the variance, $R = 0.62$, $R^2 = 0.39$, corrected $R^2 = 0.37$, $F(4, 193) = 30.30$, $p < 0.001$. Whereas the beta weights of attachment avoidance ($\beta_{in} = 0.02$) and attachment

TABLE 3. Scale Intercorrelations

	1	2	3	4
1. Attachment avoidance				
2. Attachment anxiety	0.39***			
3. Somatization	0.18*	0.25***		
4. Depression	0.28***	0.41***	0.58***	
5. Anxiety	0.24**	0.38***	0.51***	0.69***

*$p < 0.05$.
**$p < 0.01$.
***$p < 0.001$.

anxiety (β_{in} = −0.01) clearly failed to meet statistical significance, the beta weights of depression (β_{in} = 0.50, $p < 0.001$) and anxiety (β_{in} = 0.16, $p < 0.05$) proved to be significant.

The results of the regression analysis suggest that the effects of depression and anxiety on somatization were stronger than the effects of the two attachment dimensions. According to this finding, adult romantic attachment seems to be of minor importance for the experiencing of somatic symptoms. It is conceivable, however, that the attachment dimensions have an indirect effect on somatization mediated by depression and anxiety. To test this hypothesis, a path analysis was conducted, which is shown in Figure 1.

Goodness-of-fit indices confirm that the model adequately displays the full information stemming from all observed associations (χ^2 = 0.02, p = 0.98, parsimony adjusted root-mean-square error of approximation < 0.001; Jaccard and Wan, 1996). Both attachment dimensions had no significant direct effect on somatization; again, the beta weights were close to 0. The indirect effects of attachment avoidance and anxiety, however, became significant in all of the four paths. Attachment anxiety proved to be significantly associated with somatization via depression as well as via general anxiety. In addition, less strong but still significant links between attachment avoidance and somatization can be established via depression and anxiety as well.

DISCUSSION

The purpose of this study was to explore whether findings of clinical attachment research, according to which mental disorders are accompanied by a low level of attachment security, are true for somatoform disorders in particular. With regard to representations of attachment to parents, this correlation could already be verified (Neumann et al., 2011; Waller et al., 2004). In addition to these two studies, the present study focuses on the most important relationship in adult life, namely, the attachment bond to a romantic partner.

The results support the thesis that having medically unexplained somatic symptoms comes along with a low level of attachment security

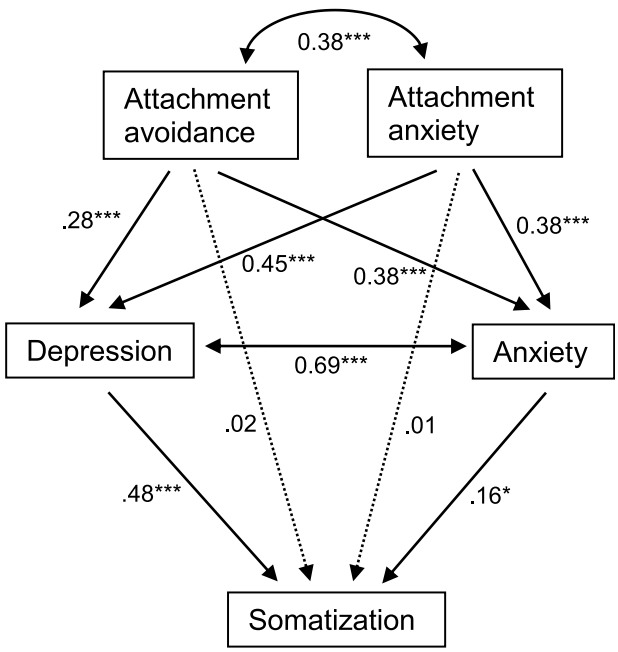


FIGURE 1. Path analysis of direct and indirect effects of attachment dimensions on somatization (solid lines indicate significant effects, broken lines indicate nonsignificant effects, standardized beta coefficients). *$p < 0.05$; **$p < 0.01$, ***$p < 0.001$.

in romantic relationships. The preliminary correlative analysis shows that both attachment anxiety and avoidance are positively correlated with somatization, with anxiety showing a higher correlation than avoidance. Further analyses that additionally include dimensions of psychopathology reveal that the link between attachment dimensions and somatization is indirect, with depression and general anxiety as moderating variables. These two dimensions of psychopathology are both positively and directly associated with somatization. Thus, in this study, it could be shown that attachment dimensions are associated with somatization via depression and general anxiety and that these associations are stronger for attachment anxiety than for attachment avoidance.

Interestingly, the findings support the results of the cited studies in which correlations between adult romantic attachment and somatic discomfort were investigated without distinguishing between medically explained and unexplained symptoms (Ciechanowski et al., 2002; Liu et al., 2011; Meredith et al., 2006, Waldinger et al., 2006). In the cited studies, the fearful and the preoccupied styles were shown to be associated with a more pronounced suffering from bodily complaints. Both these two attachment styles are characterized by high levels of anxiety; furthermore, the fearful style (but not the preoccupied style) is characterized by a high level of avoidance (Bartholomew and Horowitz, 1991). Thus, the present study and the former studies consistently show that both attachment avoidance and anxiety are related to the experience of physical complaints, with anxiety showing stronger relations than avoidance does. The correspondence of this study with the other studies indicates that the links between attachment and somatization seem to occur irrespective of whether the somatic symptoms can be medically explained.

This finding confirms the redefinition of somatoform disorders in *DSM-5* (American Psychiatric Association, 2013). In *DSM-5*, the diagnostic category of somatoform disorders is replaced by that of somatic symptom disorders. In this redefinition, the distinction between medically explained and unexplained symptoms has been given up. Instead of relying on a negative criterion, the absence of an adequate medical explanation for somatic symptoms, the new diagnostic group is defined by positive criteria, namely, the patient's difficulties in tolerating physical complaints and coping adaptively with them (Dimsdale and Creed, 2009; Voigt et al., 2010). These difficulties manifest in preoccupation with the bodily symptoms along with the fear of being seriously ill on one hand and in frequent utilization of health care on the other hand.

The overlap between the criteria for the new diagnostic group of somatic symptom disorders and the construct of attachment anxiety is immediately striking: preoccupation with somatic symptoms in the first case, preoccupation with relationship matters in the second. Because the important role of attachment anxiety could be proven in this study as well as in other studies, exaggerated fears in various personal affairs, together with an intense need for the support of others, appear as typical of somatizing patients. These patients tend to feel neglected in relationships with others, and this tendency may become evident toward not only the most important attachment figure in adult life, the romantic partner, but also further significant others such as health care providers. This conclusion is in accordance with a study by Landa et al. (2012), in which the relational world of patients with somatization syndromes was found to be characterized by the "unmet need for closeness with others."

By emphasizing the strong concerns of somatizing patients, in line with the innovations proposed in *DSM-5*, attachment theory proves to be a useful approach for elucidating the process of somatization. Furthermore, this theoretical approach also offers opportunities to refine the psychotherapeutic treatment of somatizing patients. Daly and Mallinckrodt (2009) investigated the strategies of experienced therapists toward patients with high levels of attachment avoidance and anxiety. In cases of intense avoidance, they consider that these patients have a strong need for autonomy and tend to feel uneasy when someone gets close to them. To avoid patients feeling strained, the therapists keep a

certain distance in the beginning of the therapy. When the treatment proceeds, they encourage the patients to open up more and more, which leads to a gradual rapprochement. In this way, they reduce the interpersonal distance up to an adequate level. In cases of intense anxiety, they use the reserve strategy. During the first sessions of the therapy, they do not reject the patients' strong need for closeness with others, but they adopt an empathic and caring attitude. In the further course of the therapy, they support the patients to become more autonomous, which gradually increases the distance within the therapeutic alliance.

Because attachment anxiety has been shown to be more relevant than attachment avoidance in this study, the strategy proposed for the treatment of anxious patients appears to be appropriate in most cases of severe somatization. According to this strategy, these patients need intense empathy and care in the initial phase and support for the development of autonomy in later phases of the therapy. This strategy is in accordance with the intervention developed within the PISO study, which focuses on the clarification of emotions and on interpersonal behavior (Sattel et al., 2012). If the patients learn to be more confidential and more self-reliant within the therapeutic alliance, they are enabled in the ideal case to transfer this favorable interpersonal attitude to attachment bonds in their private life.

Limitations

Because this study has a cross-sectional research design, the findings cannot elucidate the causal direction of the reported relations. It is possible that high levels of attachment avoidance and anxiety lead to symptoms of depression and general anxiety, which in turn intensify the perception of pain and other somatic complaints. But the reverse path is conceivable as well: Somatic complaints might lead to feelings of depression and anxiety, which have a negative impact on the romantic relationship and cause an increase of attachment avoidance and anxiety in the long run. Because attachment bonds are formed early in life—according to Bowlby (1979), "attachment behavior is held to characterize human beings from the cradle to the grave" (p. 129)—the path from attachment to somatization via depression and anxiety seems to be more plausible. More studies are needed, however, to support this assumption, in particular longitudinal studies that could provide information about the direction of causality.

The PISO study, from which the data of this study came from, was designed to evaluate the effectiveness of a brief psychodynamic interpersonal therapy. To obtain reliable data, a group of medium severe impaired patients was examined, namely, those diagnosed with a multisomatoform pain disorder. Milder forms of somatoform disorders were not taken into account, for example, patients who experience only one specific symptom or whose complaints occurred recently, that is, only some weeks or some month ago. Therefore, this study leaves open the question whether the findings are applicable to all kinds of somatization disorders. Future studies are needed in which the validity of the results obtained here is verified for the entire spectrum of somatoform or somatic symptom disorders.

Another restrictive condition results from the fact that only patients who were willing to undergo psychotherapy could take part in the PISO study. This limitation might have caused a bias related to attachment issues. The therapeutic setting leads to a high degree of interpersonal closeness between the patient and the provider. The patient's role is to open up to the therapist and to rely trustfully on him or her. These role requirements obviously contradict avoidant people's desire for self-reliance and distance toward others. It is therefore possible that some patients with a high level of attachment avoidance did not agree to participate in the trial. As a consequence, the average level of attachment avoidance among somatizing patients might have been underestimated in this study. Due to the possible underrepresentation of highly avoidant individuals, it is also conceivable that cases in which intense avoidance is associated with somatization are not reflected in the results of this study, which could have led to an underestimation of the importance of this attachment dimension for somatizing behavior.

CONCLUSIONS

The findings of this study reveal that somatization is related to adult attachment dimensions, mediated by dimensions of psychopathology. The results underline that social psychological approaches to romantic relationships contribute to a better understanding of the process of somatization. Furthermore, they offer the opportunity to refine diagnostic and therapeutic strategies for the treatment of somatizing patients. Future studies are needed in which the associations of attachment representations with dimensions of psychopathology and characteristics of the therapeutic relationship are further explored.

ACKNOWLEDGMENTS

This study is part of the clinical trial "Psychosomatic Intervention of Pain-Dominant Multi-Somatoform Disorder (PISO)." The PISO study was funded by the German Research Foundation (DFG; HE 3200/4-1).

DISCLOSURES

The authors declare no conflict of interest.

REFERENCES

American Psychiatric Association (2000) *Diagnostic and statistical manual of mental disorders* (4th ed, text rev). Washington, DC: Author.

American Psychiatric Association (2013) *Diagnostic and statistical manual of mental disorders* (5th ed). Washington, DC: Author.

Bakermans-Kranenburg MJ, van IJzendoorn MH (2009) The first 10,000 Adult Attachment Interviews: Distributions of adult attachment representations in clinical and non-clinical groups. *Attach Hum Dev.* 11:223–263.

Bartholomew K, Horowitz LM (1991) Attachment styles among young adults: A test of a four-category model. *J Pers Soc Psychol*. 61:226–244.

Bowlby J (1979) *The making and breaking of affectional bonds*. London: Tavistock.

Brennan K, Clark CL, Shaver PR (1998) Self report measurement of adult attachment: An integrative overview. In Simpson JA, Rholes WS (Eds), *Attachment theory in close relationships* (pp 46–76). New York: Guilford Press.

Ciechanowski P, Walker EA, Katon WJ, Russo JE (2002) Attachment theory: A model for health care utilization and somatization. *Psychosom Med*. 64:660–667.

Craig TKJ, Bialas I, Hodson S, Cox AD (2004) Intergenerational transmission of somatization behaviour: 2. Observations of joint attention and bids for attention. *Psychol Med*. 34:199–209.

Craig TKJ, Cox AD, Klein K (2002) Intergenerational transmission of somatization behaviour: A study of chronic somatizers and their children. *Psychol Med*. 32:805–816.

Daly KD, Mallinckrodt B (2009) Experienced therapist's approach to psychotherapy for adults with attachment avoidance or attachment anxiety. *J Couns Psychol*. 56:549–563.

De Gucht V, Heiser W (2003) Alexithymia and somatisation: A quantitative review of the literature. *J Psychosom Res*. 54:425–434.

Dimsdale J, Creed F (2009) The proposed diagnosis of somatic symptom disorders in *DSM-5* to replace somatoform disorders in *DSM-IV*—A preliminary report. *J Psychosom Res*. 66:473–476.

Dozier M, Stovall-McClough KC, Albus KE (2008) Attachment and psychopathology in adulthood. In Cassidy J, Shaver PR (Eds), *Handbook of attachment* (pp 718–744). New York: Guilford Press.

Egle UT, Nickel R (1998) Psychosocial childhood risk factors in patients with somatoform disorders. *Z Psychosom Med Psychother*. 44:21–36.

First MB, Spitzer RL, Gibbon M, Williams JBW (2002) *Structured Clinical Interview for DSM-IV-TR Axis I Disorders*. New York: Biometrics Research, New York State Psychiatric Institute.

Henningsen P, Jakobsen T, Schiltenwolf M, Weiss MG (2005) Somatization revisited. Diagnosis and perceived causes of common mental disorders. *J Nerv Ment Dis*. 193:85–92.

Henningsen P, Zimmermann T, Sattel H (2003) Medically unexplained physical symptoms, anxiety, and depression: A meta-analytic review. *Psychosom Med*. 65:528–533.

Hesse E (2008) The adult attachment interview: Protocol, method of analysis, and empirical studies. In Cassidy J, Shaver PR (Eds), *Handbook of attachment* (pp 552–598). New York: Guilford Press.

Hotopf M, Wilson-Jones C, Mayou R, Wadsworth M, Wessely S (2000) Childhood predictors of adult medically unexplained hospitalisations. Results from a national birth cohort study. *Br J Psychiatry*. 176:273–280.

Jaccard J, Wan CK (1996) . *LISREL approaches to interaction effects in multiple regression*. Thousand Oaks, CA: Sage Sage University Paper series on Quantitative Applications in the Social Sciences, series no. 07-114).

Kroenke K, Spitzer RL, deGruy FV, Hahn SR, Linzer M, Williams JB, et al. (1997) Multisomatoform disorder: An alternative to undifferentiated somatoform disorder for the somatizing patient in primary care. *Arch Gen Psychiatry*. 54:352–358.

Lahmann C, Henningsen P, Noll-Hussong M, Dinkel A (2010) Somatoform disorders. *Psychotherapeut*. 60:227–236.

Landa A, Bossis AP, Boylan LS, Wong PS (2012) Beyond the unexplainable pain. Relational world of patients with somatization syndromes. *J Nerv Ment Dis*. 200:413–422.

Liu L, Cohen S, Schulz MS, Waldinger RJ (2011) Sources of somatization: Exploring the roles of insecurity in relationships and styles of anger experience and expression. *Soc Sci Med*. 73:1436–1443.

Löwe B, Spitzer RL, Zipfel S, Herzog W (2002) *PHQ-D. Patient Health Questionnaire*. Karlsruhe, Germany: Pfizer.

Mallinckrodt B, Wei M (2005) Attachment, social competencies, social support, and psychological distress. *J Couns Psychol*. 52:358–367.

Meredith P, Strong J, Feeney JA (2006) Adult attachment, anxiety, and pain self-efficacy as predictors of pain intensity and disability. *Pain*. 123:146–154.

Nelson S, Baldwin N, Taylor J (2012) Mental health problems and medically unexplained physical symptoms in adult survivors of childhood sexual abuse: An integrative literature review. *J Psychiatr Ment Health Nurs*. 19:211–220.

Neumann E, Nowacki K, Roland I, Kruse J (2011) Attachment and somatoform disorders: Low coherence and unresolved states of mind related to chronic pain. *Psychother Psychosom Med Psychol*. 61:254–261.

Neumann E, Rohmann E, Bierhoff HW (2007) Development and validation of scales for measuring avoidance and anxiety in romantic relationships—The Bochum Adult Attachment Questionnaire. *Diagnostica*. 53:33–47.

Roelofs K, Spinhoven P (2007) Trauma and medically unexplained symptoms. Towards an integration of cognitive and neuro-biological accounts. *Clin Psychol Rev*. 27:789–820.

Rudolf G, Henningsen P (2003) Psychotherapy of somatoform disorders. *Z Psychosom Med Psychother*. 49:3–19.

Sattel H, Lahmann C, Gündel H, Guthrie E, Kruse J, Noll-Hussong M, Ohmann C, Ronel J, Sauer N, Schneider G, Henningsen P (2012) Brief psychodynamic interpersonal psychotherapy for patients with multisomatoform disorder: Randomised control trial. *Br J Psychiatry*. 100:60–67.

Spitzer C, Barnow S, Gau K, Freyberger HJ, Grabe HJ (2008) Childhood maltreatment in patients with somatization disorder. *Aust N Z J Psychiatry*. 42:335–341.

Spitzer RL, Kroenke K, Williams JB (1999) Validation and utility of a self-report version of PRIME-MD: The PHQ primary care study. *JAMA*. 282:1737–1744.

Stuart S, Noyes R (1999) Attachment and interpersonal communication in somatization. *Psychosomatics*. 40:34–43.

Subic-Wrana C, Tschan R, Michal M, Zwerenz R, Beutel M, Wiltink J (2011) Childhood trauma and its relation to diagnoses and psychic complaints in patients of a psychosomatic university ambulance. *Psychother Psychosom Med Psychol*. 61:54–61.

Taylor RE, Marshall T, Mann A, Goldberg DP (2012) Insecure attachment and frequent attendance in primary care: A longitudinal cohort study of medically unexplained symptom presentations in ten UK general practices. *Psychol Med*. 42:855–864.

Voigt K, Nagel A, Meyer B, Langs G, Braukhaus C, Loewe B (2010) Towards positive diagnostic criteria: A systematic review of somatoform disorder diagnoses and suggestions for future classifications. *J Psychosom Res*. 68:403–414.

Waldinger RJ, Schulz MS, Barsky AJ, Ahern DK (2006) Mapping the road from childhood trauma to adult somatization: The role of attachment. *Psychosom Med*. 68:129–135.

Waller E, Scheidt CE (2002) Somatoform disorders and attachment theory. *Psychotherapeut*. 47:157–164.

Waller E, Scheidt CE, Hartmann A (2004) Attachment representation and illness behavior in somatoform disorders. *J Nerv Ment Dis*. 192:200–209).

Ware JE, Sherbourne CD (1992) The MOS 36-item Short-Form Health Survey (SF-36): I. Conceptual framework and item selection. *Med Care*. 30:473–483.

Recollections of Emotional Abuse and Neglect in Childhood as Risk Factors for Depressive Disorders and the Need for Psychotherapy in Adult Life

Eva Neumann, PhD

Abstract: Theoretical and empirical works have pointed out that depression comes along with adverse interpersonal experiences in childhood and adult life. The purpose of this study was to explore whether past and current experiences differ in their relevance for depression. A clinical group of 80 psychotherapy patients diagnosed with a depressive disorder was contrasted with a control group of 111 nondepressed patients from somatic facilities. Child abuse, neglect, and adult attachment dimensions were measured with self-report scales. Depression was correlated with emotional abuse, neglect, and attachment anxiety. However, solely emotional abuse and neglect significantly predicted the probability to be in the group of depressed patients, whereas attachment anxiety did not contribute to this prediction. The findings reveal that childhood variables, namely, recollections of emotional traumas, are more closely associated with depression than representations of adult attachment bonds and therefore need special attention in the psychotherapeutic treatment of depressive disorders.

Key Words: Depression, child maltreatment, emotional traumas, adult attachment, romantic relationships

(*J Nerv Ment Dis* 2017;205: 873–878)

It is a well-established assumption that depressive disorders come along with adverse interpersonal experiences in childhood as well as in adult life (*e.g.*, Beach and O'Mahen, 2000; Goodman and Brand, 2009; Hammen, 2003). Attachment theory considered these associations from the beginning. In the second and third volume of his trilogy on attachment, Bowlby (1973, 1980) hypothesized that experiences of loss in childhood lead to a vulnerability for depression in later life. In this, he considers a broad concept of loss: not only physical deaths of a parent, but also repeated experiences of rejection or neglect evoke the feeling of being abandoned by the caregiver. The abandoned child feels powerless and helpless in attempting to gain love and support from a deceased or rejecting parent. These experiences are transformed into negative schemas about the self and others, implying that the self is not lovable and others are insensitive and rejecting. When being confronted with stressful events in later life, especially losses and hardships in close relationships, the negative schemas are reactivated, leading to feelings of helplessness and sadness, which form the basis of a depressive disorder.

Bowlby's assumptions are in line with Beck's cognitive model of depression, according to which experiences of loss and rejection in childhood can lead to the belief that traumatic events of this kind are uncontrollable and irreversible (Beck, 2002). In times of stress in later life, this irrational belief promotes the tendency to feel helpless again and to remain passive instead of trying to change the situation, which increases the risk of becoming depressed.

The first aim of the present study was to further clarify the role of adverse interpersonal experiences in childhood and adult life for depressive disorders. The second aim was to test whether these experiences differ in their relevance for depressive disorders; that is, this study addresses the question whether past experiences in childhood or current experiences in adult life are more important.

The thesis according to which adverse interpersonal experiences in childhood are associated with current depressive symptoms has been supported by attachment-based studies using the Adult Attachment Interview (AAI). This semistructured interview for adults focuses on representations of attachment to primary caregivers in childhood (Hesse, 2016). Studies based on the AAI have consistently shown that patients with a depressive disorder most often fall into one of the categories of organized insecurity, the preoccupied and the dismissing category (Bakermans-Kranenburg and van IJzendoorn, 2009). The disorganized category, however, which stands for unresolved trauma, is rather rare among such patients.

There is another line of research that follows a differentiated approach of child maltreatment. In this line, child maltreatment is subdivided into five types: emotional abuse, sexual abuse, physical abuse, emotional neglect, and physical neglect (Bernstein et al., 2003). A review of retrospective studies on the links between the five types of child maltreatment and mental disorders has shown that there is empirical evidence for associations of depressive disorders with four of the five types, namely, emotional abuse, sexual abuse, physical abuse, and emotional neglect (Carr et al., 2013). This finding suggests that depressive disorders are associated with child maltreatment in an unspecific way, as a wide range of adverse experiences with caregivers in childhood seems to be related to depressive symptoms.

There are, however, several studies that led to more refined results, suggesting that depressive disorders are specifically linked to an adverse emotional climate in the family of origin. Some studies point to the special relevance of emotional abuse only (*e.g.*, Chapman et al., 2004; Crow et al., 2014; Gibb et al., 2007; Martins et al., 2014), although other studies found emotional abuse and neglect both to be associated with depressive disorders (*e.g.*, Carvalho Fernando et al., 2014; Spertus et al., 2003).

Besides attachment-based studies using the AAI that focus on representations of attachment to caregivers in childhood, there is another tradition of research on attachment in adulthood, which focuses on representations of current attachment bonds, mostly attachment to the romantic partner. These representations are usually measured with self-report scales. An integrative overview has shown that most of these scales rely on two dimensions, avoidance and anxiety (Brennan et al., 1998). Avoidance refers to a feeling of discomfort in situations of intimacy and closeness, which leads to an avoidance of such situations or, as seen from the point of view of the partner, a refusal of the partner's needs for comfort and closeness. Anxiety stands for exaggerated fears and worries with regard to the romantic relationship accompanied by demanding, clingy behavior toward the partner (Neumann et al.,

Department for Psychosomatic Medicine and Psychotherapy, Heinrich Heine University Düsseldorf, Düsseldorf, Germany.
Send reprint requests to Eva Neumann, PhD, Department for Psychosomatic Medicine and Psychotherapy, Heinrich Heine University Düsseldorf, Bergische Landstraße 2, 40629 Düsseldorf, Germany. E-mail: eva.neumann@uni-duesseldorf.de.

ISSN: 0022-3018/17/20511–0873
DOI: 10.1097/NMD.0000000000000748

2007). In this two-dimensional model, attachment security is defined by low scores for both avoidance and anxiety.

Associations between the two attachment dimensions and depression have been explored in many studies (for a review, see Mikulincer and Shaver, 2016). These studies have consistently shown that depression comes along with attachment insecurity. Most of the studies found depression to be significantly correlated with both avoidance and anxiety; there are, however, some studies that found this correlation for anxiety only. The pattern of results reveals that both attachment dimensions are associated with depressive disorders; anxiety, however, seems to be more relevant.

In the present study, depressive disorders were related to recollections of interpersonal experiences in childhood as well as to representations of such experiences in adulthood. To explore these relations, a clinical sample of patients diagnosed with a depressive disorder and receiving psychotherapy was compared with a control group of patients from somatic facilities. Past experiences in childhood were measured according to the differentiation between five subtypes of child maltreatment (emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect). The measurement of current experiences in romantic relationships relied on the two-dimensional model of attachment.

It was hypothesized that childhood and adult interpersonal experiences are both correlated with depressive disorders, with emotional abuse, neglect, and attachment anxiety showing the strongest correlations with this disorder. Furthermore, childhood and adult experiences were directly contrasted to explore whether they differ in the strength of their relation with depression. If such a difference emerged, this would indicate that either past or current experiences are more relevant for the mental health status. By contrasting experiences from different periods of life, this study goes beyond former studies, because, in most studies, either childhood or adulthood variables, but not both of them, were related to depression.

METHODS

Samples

The clinical group ($n = 80$) was recruited among patients of the Department for Psychosomatic Medicine and Psychotherapy, Heinrich Heine University Düsseldorf, from summer to autumn of 2015. Patients with the main diagnosis of a major depressive disorder were asked to take part in the study. The diagnoses were made by medical and psychological psychotherapists after an unstructured clinical interview. All patients of the clinical group received psychodynamic therapy in the clinic. Depending on the severity of their mental diseases, the treatment was conducted in an outpatient ($n = 24$, 30%), a day patient ($n = 26$, 33%), or an inpatient setting ($n = 30$, 38%).

The control group ($n = 111$) consists of patients from another study (Wilke and Neumann, 2016). This study was conducted at the same time in two medical facilities for dental care, an outpatient department of the Düsseldorf University Hospital and a medical practice in Düsseldorf. As these patients sought treatment of somatic reasons, it was assumed that most of them did not have a depressive disorder,

TABLE 1. Demographic Data

	Control Group		Depressed Group			
	Mean	**SD**	**Mean**	**SD**	***df***	***t***
Age	38.48	14.74	40.39	12.76	189	−0.93
	n	**%**	***n***	**%**	***df***	χ^2
Sex						
Men	41	37	29	36	1	0.01
Women	70	63	51	64		
Relationship status						
Single	14	13	26	33	4	16.35*
Dating partner	44	40	15	19		
Married	40	36	30	38		
Divorced	11	10	6	8		
Widowed	2	2	3	4		
Children						
Childless	65	59	44	55	1	0.24
At least 1 child	46	41	36	45		
Educational attainment						
(Still) without any degree	3	3	0	0	4	2.40
Intermediate school leaving certificate	33	30	23	29		
European baccalaureate	31	28	22	28		
University degree	44	40	35	44		
Occupational status						
Still in school/student	17	15	9	11	8	24.29*
Employed	76	69	44	55		
Unemployed	2	2	14	18		
Housewife	7	6	4	5		
Retired	6	5	8	10		
Other	3	3	1	1		

* $P < 0.01$.

which would make them eligible to be the control subjects of this study. This assumption, however, had to be verified. The set of questionnaires of this study included the measures that were administered to the patients of the psychosomatic clinic, so that the same data were collected in the two groups.

The patients of both groups were informed about the aims of the study and asked for participation. Only those patients who gave their informed consent in written form were included in the study.

Table 1 shows the demographic data. A *t*-test (for age) and chi-square tests (for the categorical data) showed that the two groups do not differ significantly from each other with respect to mean age, sex distribution, number of children, and educational attainment. There are, however, significant differences in the relationship and the occupational status, indicating that, in the depressed group, there were fewer participants who had a romantic partner and more participants who did not work because of unemployment or early retirement. These differences were to be expected, as they reflect the problems of mentally ill persons in their private and professional lives.

Measures

Symptom Checklist-90-Revised

The Symptom Checklist-90-Revised (SCL-90-R) is a measure for the global assessment of mental stress (Derogatis and Unger, 2010; German version by Franke, 2014). The scale consists of 90 items that term a broad variety of psychological and physical symptoms. Participants have to rate how much each of these symptoms has bothered or stressed them during the last 7 days on 5-point Likert scales ranging from "not at all" (0) to "extremely" (4). The SCL-90-R leads to scores on nine subscales and three global scores. In this study, the depression subscale was included in the analysis.

Childhood Trauma Questionnaire

The Childhood Trauma Questionnaire (CTQ) serves for the retrospective measurement of child maltreatment (Bernstein and Fink, 1998; German version by Wingenfeld et al., 2010). In this study, the 25-item short form of the CTQ was used. The items begin with the phrase "When I was growing up" and continue with different statements describing a variety of experiences of abuse and neglect. They are rated on a 5-point Likert scale ranging from "never true" (1) to "very often true" (5). After the differentiation between five subtypes of child maltreatment, the CTQ leads to scores on the scales emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect, and, additionally, a total score.

Experiences in Close Relationships Scale

Representations of adult attachment to the romantic partner were measured with the Experiences in Close Relationships Scale (ECR) (Brennan et al., 1998; German version by Neumann et al., 2007). Based on the two-dimensional model of attachment, the ECR assesses avoidance and anxiety with 18 items each. The 7-point Likert scales range from "disagree strongly" (1) to "agree strongly" (7). As with the American original version, the German version of the ECR has been found to be correlated with depression (Neumann et al., 2015; Neumann and Tress, 2005; Schierholz et al., 2016); therefore, this measure seems to be appropriate for use in the present study.

RESULTS

Kolmogorov-Smirnov tests showed that most of the scales were not normally distributed. For this reason, the data were analyzed with nonparametric tests.

In the first step of the analysis, it was tested whether it seems appropriate to contrast the depressed patients from a psychosomatic clinic with patients from medical facilities for dental care. As expected, the two groups differ significantly from each other in the level of depression: the first row of Table 2 shows that the depressed group has higher scores on the depression subscale of the SCL-90-R. The effect size *r* indicates that the difference between the groups is large. This finding supports the assumption that the sample from the somatic facilities qualifies as a control group for the depressed patients.

Furthermore, Mann-Whitney's *U*-tests showed that the two groups differ significantly not only with regard to depression, but also to all of the other scales of this study (Table 2). The depressed group scored higher on the five subscales and the total score for the measurement of child maltreatment and the two attachment dimensions. All of these differences are significant at the 1% level. The effect size *r* is small for physical abuse and attachment anxiety, medium for physical neglect and attachment avoidance, and large for emotional abuse, emotional neglect, and the CTQ total score.

Table 3 shows the scale intercorrelations (Spearman's rho), separately for the two groups. Depression, the dependent variable of this study, is correlated with emotional abuse and neglect and with attachment anxiety in the depressed group. In the control group, similar results emerge; as in this group, depression is correlated with emotional abuse and attachment anxiety.

The five CTQ scales are not independent from each other; in most cases, they show low to moderate intercorrelations. The two attachment dimensions show a low positive correlation in both groups.

TABLE 2. Depression, Child Abuse, Neglect, and Attachment Dimensions in the Control and the Depressed Group

	Control Group		Depressed Group				
	Mean	(SD)	Mean	(SD)	*U*	*z*	*r*
Depression	0.47	0.59	1.68	0.90	923.50	−8.72*	−0.62
Emotional abuse	1.37	0.49	2.50	1.09	1474.50	−7.97*	−0.56
Physical abuse	1.13	0.40	1.41	0.70	3277.50	−3.99*	−0.24
Sexual abuse	1.06	0.33	1.39	0.800	3076.00	−5.12*	−0.26
Emotional neglect	1.69	0.76	2.93	1.07	1500.50	−7.83*	−0.56
Physical neglect	1.31	0.44	1.76	0.71	2463.00	−5.41*	−0.36
CTQ total score	1.31	0.33	2.01	0.72	1367.50	−8.16*	−0.53
Avoidance	2.76	0.87	3.46	1.07	2757.00	−4.39*	−0.34
Anxiety	3.25	1.16	3.93	1.25	2934.50	−3.92*	−0.27

* $P < 0.001$.

TABLE 3. Correlations Between Depression, Child Abuse, Neglect, and Attachment Dimensions in the Control and the Depressed Group

	1	2	3	4	5	6	7	8	9
1. Depression	—	0.29**	0.04	−0.02	0.15	0.13	0.24*	0.13	0.47***
2. Emotional abuse	0.25*	—	0.31**	0.12	0.36***	0.22*	0.60***	0.01	0.38***
3. Physical abuse	0.02	0.51***	—	0.23*	0.26**	0.21*	0.41***	0.06	0.11
4. Sexual abuse	0.09	0.35**	0.30**	—	−0.02	0.02	0.18	−0.04	−0.09
5. Emotional neglect	0.26*	0.76***	0.46***	0.40***	—	0.49***	0.82***	0.31**	0.14
6. Physical neglect	0.12	0.63***	0.35**	0.40***	0.64***	—	0.72***	0.27**	0.08
7. CTQ total score	0.27*	0.89***	0.59***	0.55***	0.90***	0.77***	—	0.27**	0.23*
8. Avoidance	0.04	0.28*	0.09	0.16	0.46***	0.26*	0.35**	—	0.21*
9. Anxiety	0.41***	0.26*	0.01	0.05	0.23*	0.07	0.21	0.22	—

Note: above the diagonal are the correlation coefficients for the control group, below the diagonal are the correlation coefficients for the depressed group.
* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Further significant correlations emerge between attachment avoidance and anxiety and the five subtypes of child maltreatment. Avoidance is correlated with emotional and physical neglect in both groups and with emotional abuse in the depressed group only; anxiety is correlated with emotional abuse in both groups and with emotional neglect in the depressed group only. Thus, the two groups show a similar pattern of correlations, with recollections of emotional abuse and neglect appearing particularly relevant for adult attachment representations.

Finally, it was tested whether recollections of child maltreatment and representations of adult attachment differ in the strength of their association with depression in adulthood. A logistic regression for the prediction of the probability to be in the group of patients diagnosed with a depressive disorder and receiving psychotherapy was conducted. The correlational analysis had shown that the five CTQ subscales were not independent from each other; the same was true for the two attachment dimensions; so the problem of multicollinearity had to be considered (Mac Nally, 2000). For this reason, only those scales that proved to be significantly correlated with depression in the foregoing analysis (emotional abuse, emotional neglect, and attachment anxiety) were entered as independent variables in the regression.

Table 4 shows that this model is significant at the 1% level. Group membership was predicted correctly in 78% of the cases. Although attachment anxiety did not contribute significantly to the prediction of group membership, emotional abuse and neglect both qualified as significant predictors.

DISCUSSION

The purpose of this study was to explore associations between depression and adverse interpersonal experiences. Going beyond many other studies on this subject, which usually address experiences either in childhood or in adulthood, this study considers both kinds of experiences and compares them regarding their relevance for depressive disorders. A clinical sample of patients diagnosed with a depressive disorder was contrasted with a control group of patients from medical facilities for dental care who were proven to score low on a depression scale.

TABLE 4. Logistic Regression for the Prediction of Group Membership by Emotional Abuse, Neglect, Attachment Anxiety

	β	SE	R^2_{pseudo}	*df*	χ^2
			0.49	3	85.26**
Emotional abuse	1.23*	0.37			
Emotional neglect	0.74*	0.27			
Anxiety	0.20	0.17			

* $P < 0.01$, ** $P < 0.001$.

Replicating the overall results of former studies, a correlational analysis showed that child maltreatment and adult attachment are both associated with depression. A closer look at the results, however, reveals that there are differences among the scales for child maltreatment and among attachment dimensions. In both groups, emotional abuse and attachment anxiety were correlated with depression; in the depressed group, emotional neglect additionally showed this correlation. Sexual abuse, physical abuse, neglect, and attachment avoidance did not show significant correlations with depression in both groups.

The results for the childhood variables, according to which depression is related to emotional abuse and neglect, but unrelated to sexual and physical abuse and physical neglect, offer an explanation for the distribution of AAI categories in samples of patients diagnosed with a depressive disorder. As mentioned in the introduction, these patients are often classified as preoccupied or dismissing, but rarely as disorganized (Bakermans-Kranenburg and van IJzendoorn, 2009). The findings of this study suggest that this distribution might rely on the fact that the preoccupied and the dismissing category refer to emotional traumas, whereas the disorganized category rather taps physical and sexual traumas. According to this assumption, depressive patients are often classified as preoccupied or dismissing, because they are highly affected by emotional traumas, and the disorganized category is rare among them because of the low incidence of physical and sexual traumas in such samples. Physical and sexual forms of child maltreatment are probably more relevant for other disorders, for example, externalizing disorders such as alcohol and substance abuse or disorders associated with aggressive and criminal behavior (Malinosky-Rummell and Hansen, 1993; Simpson and Miller, 2002). If the AAI was used in this study instead of the ECR, it is probable that most of the depressed patients were classified as preoccupied or dismissing and most of the nondepressed patients as secure.

To clarify whether recollections of child maltreatment and representations of current attachment bonds differ with regard to their relevance for depressive disorders, the central question of this study, a regression analysis for the prediction of group membership was conducted. This analysis showed that attachment anxiety no longer plays a significant role when being directly compared with emotional abuse and neglect. The two childhood scales qualified as significant predictors of the probability to be in group of patients diagnosed with a depressive disorder, whereas the attachment dimension did not contribute significantly to this prediction.

This result reveals that childhood recollections are more closely associated with the probability to develop a depressive disorder and to

need psychotherapy than representations of adult attachment bonds. More specifically, recollections of emotional abuse and neglect were shown to be risk factors for depressive disorders in adulthood. This finding might be based on the fact that childhood is a very sensitive period in life in which interpersonal experiences lead to the formation of relatively stable schemas about the self and others. Representations of adult attachment perhaps appear as less important because they are formed later in life and do not fundamentally modify the primary schemas, but function as secondary schemas that are less deep. In times of stress, particularly in interpersonal stress, schemas based on childhood experiences are therefore more likely to be reactivated than schemas based on current experiences.

Limitations

A limiting factor of this study is given by the retrospective nature of the data on child maltreatment. This limitation should be taken into account, particularly in light of the fact that depressive disorders usually come along with cognitive distortions. Depressed individuals tend to interpret their experiences negatively and often do not consider alternative, more positive interpretations (Beck, 2002). It is possible that this tendency leads to a negative view of one's own childhood even in cases in which individuals received warm and supporting parenting as a child. For example, in their longitudinal study on the stability of attachment security, Roisman et al. (2002) identified some participants for whom this applied. In a review on the validity of retrospective reports, however, Brewin et al. (1993) found that the cognitive distortions of depressed persons mainly refer to current life events, while autobiographical memory turned out to remain rather unaffected thereby. For example, autobiographical reports of depressed patients were shown to correspond well with siblings' reports and reports from outside agencies that were in contact with the family, a finding which underlines the validity of the patients' reports. Hence, there is reason to assume that the retrospective data from this study are reasonably valid and provide an appropriate picture of the participants' childhood experiences.

Another limitation might result from the fact that the diagnoses of a depressive disorder in the group of patients from the psychosomatic clinic are based on unstructured interviews only. This procedure is the standard routine of the clinic in which the patients were recruited. The physicians and psychologists who conducted the interviews are all trained and experienced psychotherapists; so it can be assumed that the diagnoses are valid in most cases. Nevertheless, it is probable that structured interviews such as the SKID would have enhanced the validity of the diagnoses.

Because this study is cross-sectional, it can show associations between childhood recollections and mental health status in adulthood, but it does not allow drawing conclusions on causal relationships. Therefore longitudinal studies are needed to further establish the role of emotional abuse and neglect for the development of depressive disorders. Going beyond this cross-sectional study, longitudinal studies could show that emotional abuse and neglect in childhood are causal factors for depressive disorders.

CONCLUSIONS

The findings of this study point to the need to pay particular attention to the emotional climate in the family of origin in the psychotherapeutic treatment of depressive disorders. Because recollections of emotional abuse and neglect were shown to be closely associated with depressive feeling and thinking, it seems important to support patients in coping not only with current life stress, but also with hurtful memories of adverse childhood experiences. Working through these experiences in the therapy can help the patients to accept them as a part of their lives and to reconcile with them. When recollections of emotional traumas are integrated in schemas of the self and others in such a favorable way, their harmful effects on mental health will probably decrease.

ACKNOWLEDGMENT

The author thanks Heribert Sattel, Technical University of Munich, for the helpful comments on the statistical procedures.

DISCLOSURE

The author declares no conflict of interest.

REFERENCES

Bakermans-Kranenburg MJ, van IJzendoorn MH (2009) The first 10,000 adult attachment interviews: Distributions of adult attachment representations in clinical and non-clinical groups. *Attach Hum Dev*. 11:223–263.

Beach SR, O'Mahen HA (2000) Depression in close relationships. In Hendrick C, Hendrick SS (Eds), *Close relationships: A sourcebook* (pp 345–356). Thousand Oaks: Sage.

Beck AT (2002) Cognitive models of depression. In Leahy R, Dowd ET (Eds), *Clinical advances in cognitive psychotherapy: Theory and application* (pp 29–61). New York: Springer Publishing Company.

Bernstein DP, Fink L (1998) *Childhood Trauma Questionnaire: A retrospective self-report*. San Antonio, TX: The Psychological Corporation.

Bernstein DP, Stein JA, Newcomb MD, Walker E, Pogge D, Ahluvalia T, Stokes J, Handelsman L, Medrano M, Desmond D, Zule W (2003) Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse Negl*. 27:169–190.

Bowlby J (1973) *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. New York: Basic Books.

Bowlby J (1980) *Attachment and loss: Vol. 3. Loss, sadness and depression*. New York: Basic Books.

Brennan KA, Clark CL, Shaver PR (1998) Self-report measurement of adult attachment. An integrative overview. In Simpson JA, Rholes WS (Eds), *Attachment theory and close relationships* (pp 46–76). New York: Guilford.

Brewin CR, Andrews B, Gotlib IH (1993) Psychopathology and early experiences: A reappraisal of retrospective reports. *Psychol Bull*. 113:82–98.

Carr CP, Martins CM, Stingel AM, Lemgruber VB, Juruena MF (2013) The role of early life stress in adult psychiatric disorders. A systematic review according to childhood trauma subtypes. *J Nerv Ment Dis*. 201:1007–1020.

Carvalho Fernando S, Beblo T, Schlosser N, Terfehr K, Otte C, Löwe B, Wolf OT, Spitzer C, Driessen M, Wingenfeld K (2014) The impact of self-reported childhood trauma on emotion regulation in borderline personality disorder and major depression. *J Trauma Dissociation*. 15:384–401.

Chapman DP, Whitfield CL, Felitti VJ, Dube SR, Edwards VJ, Anda RF (2004) Adverse childhood experiences and the risk of depressive disorders in adulthood. *J Affect Disord*. 82:217–225.

Crow T, Cross D, Powers A, Bradhley B (2014) Emotion dysregulation as a mediator between childhood emotional abuse and current depression in a low-income African-American sample. *Child Abuse Negl*. 38:1590–1598.

Derogatis LR, Unger R (2010) Symptom checklist-90-revised. *Corsini encyclopedia of psychology*.

Franke GH (2014) *SCL-90®-S Symptom-Checklist-90®-Standard -Manual*. Göttingen: Hogrefe.

Gibb BE, Chelminski I, Zimmerman M (2007) Childhood emotional, physical, and sexual abuse, and diagnoses of depressive and anxiety disorders in adult psychiatric outpatients. *Depress Anxiety*. 24:256–263.

Goodman SH, Brand SR (2009) Depression and early adverse experiences. In Gotlib IH, Hammen CL (Eds), *Handbook of depression* (pp 249–274). New York, London: Guilford Press.

Hammen C (2003) Interpersonal stress and depression in women. *J Affect Disord*. 74:49–57.

Hesse E (2016) The Adult Attachment Interview: Protocol, methods of analysis, and selected empirical studies: 1985–2015. In Cassidy J, Shaver PR (Eds), *Handbook of attachment, Theory, research, and clinical applications* (pp 553–597). New York, London: Guilford Press.

Mac Nally R (2000) Regression and model-building in conservation biology, biography and ecology: The distinction between – and reconciliation of – 'predictive' and 'explanatory' models. *Biodivers Conserv.* 9:622–671.

Malinosky-Rummell R, Hansen DJ (1993) Long-term consequences of childhood physical abuse. *Psychol Bull*. 114:68–79.

Martins CM, Von Werne Baes C, Tofoli SM, Juruena MF (2014) Emotional abuse in childhood is a differential factor for the development of depression in adults. *J Nerv Ment Dis*. 202:774–782.

Mikulincer M, Shaver PR (2016) *Attachment in adulthood structure, dynamics, and change*. New York: Guilford.

Neumann E, Rohmann E, Bierhoff HW (2007) Development and validation of scales for measuring avoidance and anxiety in romantic relationships. *Diagnostica*. 53:33–47.

Neumann E, Sattel H, Gündel H, Henningsen P, Kruse J (2015) Attachment in romantic relationships and somatization. *J Nerv Ment Dis*. 203:101–106.

Neumann E, Tress W (2005) Attachment and love in romantic relationships of psychotherapy patients. *Psychotherapeut*. 50:394–403.

Roisman GI, Padrón E, Sroufe LA, Egeland B (2002) Earned-secure attachment status in retrospect and prospect. *Child Dev.* 73:1204–1219.

Schierholz A, Krüger A, Barenbrügge J, Ehring T (2016) What mediates the link between childhood maltreatment and depression? The role of emotion dysregulation, attachment, and attributional style. *Eur J Psychotraumatol*. 7:32652.

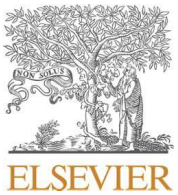
Simpson TL, Miller WR (2002) Concomitance between childhood sexual and physical abuse and substance use problems. A review. *Clin Psychol Rev.* 22:27–77.

Spertus IL, Yehuda R, Wong CM, Halligan S, Seremetis SV (2003) Childhood emotional abuse and neglect as predictors of psychological and physical symptoms in women presenting to a primary care practice. *Child Abuse Negl*. 27:1247–1258.

Wilke L, Neumann E (2016) Dental fear related to romantic attachment and childhood trauma. In *Poster presented at the Symposium of the Medical Research School*. Düsseldorf: Heinrich Heine University Düsseldorf.

Wingenfeld K, Spitzer C, Mensebach C, Grabe HJ, Hill A, Gast U, Schlosser N, Höpp H, Beblo T, Driessen M (2010) The German version of the Childhood Trauma Questionnaire: Preliminary psychometric properties. *Psychother Psychosom Med Psychol*. 60:442–450.

Child Abuse & Neglect 144 (2023) 106372



Contents lists available at ScienceDirect

Child Abuse & Neglect

journal homepage: www.elsevier.com/locate/chiabuneg

Psychosocial functioning as a mediator between childhood trauma and symptom severity in patients with schizophrenia

Eva Neumann [a,b,*], Jacqueline Rixe [c,d], Martin Driessen [c,1], Georg Juckel [a,1]

[a] Department of Psychiatry, Psychotherapy and Preventive Medicine, LWL University Hospital of the Ruhr University, Bochum, Germany
[b] Department of Psychosomatic Medicine and Psychotherapy, LVR University Hospital of the Heinrich Heine University, Düsseldorf, Germany
[c] Department of Psychiatry and Psychotherapy, University Hospital OWL of the Bielefeld University, Bielefeld, Germany
[d] Institute for Health and Nursing Science, International Graduate Academy, Martin Luther University Halle-Wittenberg, Germany

ARTICLE INFO

Keywords:
Schizophrenia
Childhood trauma
Emotional abuse
Emotional neglect
Psychosocial functioning
Mediation analysis

ABSTRACT

Background: There is empirical evidence that childhood trauma is associated with symptom severity and psychosocial functioning in schizophrenia.
Objective: The present study aimed to further elucidate these associations by examining which subdomains of schizophrenic symptoms and psychosocial functioning are associated with childhood trauma. In addition, it should be tested whether the association between childhood trauma and schizophrenic symptoms is mediated by psychosocial functioning.
Participants and Setting.
Participants of this study were 253 inpatients of five psychiatric hospitals diagnosed with schizophrenia. Clinical interviews were conducted with these patients towards the end of therapy.
Methods: Childhood trauma was assessed with the Childhood Trauma Questionnaire (CTQ), a retrospective self-report scale. Schizophrenic symptoms were measured with the Positive and Negative Syndrome Scale (PANSS) and psychosocial functioning with the Personal and Social Performance Scale (PSP), two measures for ratings by experts.
Results: Most participants were affected by childhood trauma, with 91.7 % reporting at least one trauma. Childhood trauma showed small but significant correlations with positive symptoms and general psychopathology, and also with psychosocial functioning in the occupational and social area and in control over aggressive behavior. Psychosocial functioning was shown to mediate the association between childhood trauma and symptom severity, whereby full mediation was found with regard to positive symptoms and partial mediation with regard to general psychopathology.
Conclusions: The findings suggest that good psychosocial functioning mitigates the negative impact of childhood trauma on illness severity in schizophrenic patients. Therapeutic interventions that promote personal and social resources are therefore useful in the treatment of schizophrenia.

* Corresponding author at: LVR University Hospital of the Heinrich Heine University Düsseldorf, Department of Psychosomatic Medicine and Psychotherapy, Bergische Landstr. 2, 40629 Düsseldorf, Germany.
E-mail address: eva.neumann@uni-duesseldorf.de (E. Neumann).
[1] These authors share the last authorship.

https://doi.org/10.1016/j.chiabu.2023.106372
Received 8 March 2023; Received in revised form 9 July 2023; Accepted 18 July 2023
Available online 25 July 2023

1. Introduction

Childhood trauma was found with striking frequency in the biography of schizophrenic patients. In patients diagnosed with schizophrenia, 85 % showed evidence of early trauma (Larsson et al., 2013), and an even higher proportion of 97 % was reported in individuals at high risk for psychosis (Thompson et al., 2009). Similarly, patients with psychosis were almost three times more likely to have been exposed to childhood trauma compared to healthy controls (Varese et al., 2012). In studies that considered different subtypes of trauma, an overall high level of traumatization was found in patients diagnosed with schizophrenia, with emotional abuse and neglect being the most pronounced subtypes (Kingdon et al., 2010; Neumann, Juckel, & Haussleiter, 2020; Schäfer et al., 2006). There is thus strong evidence of an association between childhood trauma and schizophrenia, suggesting that such adverse experiences are a risk factor for developing this disorder in adulthood.

Several empirical studies have examined the relationship between childhood trauma and the severity of schizophrenic symptoms. Two meta-analyses of such studies came to slightly different conclusions. Bailey et al. (2018) found that global scores of childhood trauma were correlated with positive symptoms, including hallucinations and delusions, while there was no significant correlation with negative symptoms. Alameda et al. (2021), however, found that both positive and negative symptoms were associated with childhood trauma, as the two symptom domains each correlated significantly with several trauma subtypes. This association also applied to further domains of psychopathology, such as depressive and manic symptoms. The findings of the two meta-analyses thus agreed with regard to positive symptoms but differed with regard to negative symptoms.

Another line of research focused on associations of childhood trauma with psychosocial functioning in schizophrenia. Patients diagnosed with this disorder often show impairments in psychosocial domains. Longitudinal studies found that among patients diagnosed with a first-time episode, only about one in three was employed and about one in five was in a romantic relationship at the end of follow-up, indicating that these patients were likely to be unemployed and single in the long term (Ajnakina et al., 2021). Childhood trauma proved to be associated with psychosocial functioning in patients with psychosis (Christy et al., 2022). This meta-analytic study found negative correlations of childhood trauma with global psychosocial functioning and with the subdomain of social functioning, while there was no significant correlation with occupational functioning. Furthermore, it could be shown that trauma subtypes were also negatively correlated with global psychosocial functioning, apart from sexual abuse, which showed no significant correlations. Emotional and physical abuse showed the strongest correlations in this analysis.

In summary, previous research found that childhood trauma in patients with schizophrenia was associated with both symptom severity and psychosocial functioning. The present study aimed to combine these two research areas. For this purpose, childhood trauma, psychosocial functioning and symptom severity were measured in a sample of psychiatric inpatients diagnosed with schizophrenia.

The first aim of the study was to describe the extent of childhood trauma in this patient sample. The second aim was to test whether childhood trauma is associated with different domains of schizophrenic symptoms and psychosocial functioning in order to clarify the question of which domains show these associations. The third aim was to test whether the association between childhood trauma and symptom severity is mediated by psychosocial functioning, a research question that, to our knowledge, has not yet been addressed in empirical studies.

2. Methods

2.1. Participants and procedure

The present study is part of the ADiP study, a multi-center research project on crisis plans in the treatment of schizophrenic patients (Rixe et al., 2023). Five psychiatric hospitals were involved in the study: LWL University Hospital Bochum, University Hospital OWL Bielefeld, LWL Hospital Marsberg, LVR Hospital Bonn and St. Alexius/St. Josef Hospital Neuss.

Inpatients from these hospitals with the main diagnosis of a schizophrenic disorder (ICD-10: F20) or a schizoaffective disorder (ICD-10: F25) were invited to participate. The Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I) – modules B (psychotic and associated symptoms) and C (differential diagnosis of psychotic disorders) – was conducted with all potential participants. Inclusion in the study required confirmation of the clinical diagnosis in this interview. Further inclusion criteria were: age 18–65 years, permanent residence in the catchment area of the hospital, inpatient treatment for at least the second time (i.e., no patients with first-time episodes) and written informed consent. Patients with moderate to severe mental retardation, severe somatic diseases and acute substance dependency (alcohol, illegal drugs, medication) were excluded from participation.

2.2. Measures

Data were collected using measures based on retrospective self-report and expert ratings of the current mental status.

2.3. Childhood Trauma Questionnaire (CTQ)

The CTQ is a self-report measure for the retrospective assessment of abuse and neglect in childhood (Bernstein et al., 2003; German version by Wingenfeld et al., 2010). The 25 items begin with the phrase “When I was growing up” and continue with different statements describing experiences of abuse and neglect. They are rated on a five-point Likert scale ranging from 1 (*never true*) to 5 (*very often true*). The CTQ leads to scores on five subscales (emotional abuse, physical abuse, sexual abuse, emotional neglect, physical

neglect) and a total score.

2.4. Personal and Social Performance Scale (PSP)

The PSP serves as an expert rating of psychosocial functioning (Schaub & Juckel, 2011). The rating refers to four domains:

- *Socially useful activities* – engagement in meaningful occupations, including paid work, training, study, housework, child rearing and voluntary work.
- *Personal and social relationships* – quality of close relationships, including the romantic relationship.
- *Self-care* – behavior that promotes one's mental and physical well-being.
- *Disturbing and aggressive behavior* – control over problematic behavior, ranging from disregard of other persons' needs to verbal and physical aggression.

These four domains are rated on six-point Likert scales ranging from 0 (*absent*) to 5 (*very severe*). Thus, low scores signify good psychosocial functioning and high scores represent poor psychosocial functioning. Furthermore, the general level of psychosocial functioning is rated on a scale of 0–100, with higher scores indicating better psychosocial functioning.

2.5. Positive and Negative Syndrome Scale (PANSS)

The PANSS is a 30-item measure for the assessment of schizophrenic symptoms by experts (Kay, Fiszbein, & Opler, 1987). The raters should be experienced psychiatrists or clinical psychologists with good knowledge of psychotic disorders. Based on an interview with the patient, the severity of schizophrenic symptoms is assessed on Likert scales ranging from 1 (*absent*) to 7 (*extreme*). The 30 items comprise 7 items on positive symptoms (e.g., delusions, hallucinations), 7 items on negative symptoms (e.g., emotional withdrawal, stereotyped thinking) and 16 items on general psychopathology (e.g., anxiety, depression). The scores for the three domains are obtained by summarizing the item answers.

2.6. Statistical analyses

Data were analyzed in three steps. First, the extent of childhood trauma was evaluated by reporting the descriptive data of the CTQ total score and the subscales. The frequencies of the five subtypes of abuse and neglect were determined by following the distinction between none, low, moderate and severe trauma. The next step involved testing the associations of the CTQ subscales with the PSP and PANSS by calculating Pearson correlation coefficients. Finally, mediation analyses were performed using the PROCESS macro by Hayes (2022) to test whether psychosocial functioning mediates the association between childhood trauma and symptom severity. This test uses ordinary least-squares regression, yielding unstandardized path coefficients for total, direct and indirect effects. Bootstrapping with 5000 samples, together with heteroscedasticity-consistent standard errors, was employed to compute the confidence intervals and inferential statistics. Effects are deemed significant when the confidence interval does not include zero.

Table 1
Demographic data.

		n	%
Gender	Male	154	60.9
	Female	99	39.1
Native language	German	205	81.0
	Other	48	19.0
Relationship status	Single	171	67.6
	Dating partner	24	9.5
	Married	27	10.7
	Separated/divorced	29	11.5
	Widowed	2	0.8
Children	No children	189	74.7
	1 child or more	64	25.3
School degree	Still in school	1	0.4
	No degree	14	5.5
	Secondary school graduation	136	53.8
	University entrance qualification	89	35.2
	Other	13	5.1
Occupational status	Still in school/student	11	4.3
	Employed, full-time	25	9.9
	Employed, part-time	21	8.3
	Unemployed	80	31.6
	Retired	72	28.5
	Other	44	17.4

3. Results

3.1. Sociodemographic data of the participants

A total of 253 patients fulfilled the inclusion criteria and provided complete datasets. The mean age was $M = 39.08$ years ($SD = 11.98$; range 18–62 years). Further demographic data are shown in Table 1. The majority of patients had no romantic partner and no children, were secondary school graduates and had no paid work due to unemployment or early retirement.

3.2. Severity and frequency of childhood trauma

The mean of the CTQ total score was $M = 49.08$ ($SD = 17.11$). Overall, only 21 patients (8.3 %) reported no trauma at all, while 232 (91.7 %) had evidence of at least one trauma of at least low severity.

Table 2 shows the descriptive data of the CTQ subscales. Emotional abuse and neglect had the highest means, followed by physical neglect. Accordingly, these three subtypes showed the highest frequencies of severe trauma. Both physical and sexual abuse were less pronounced in this sample.

3.3. Correlations of childhood trauma with psychosocial functioning and schizophrenic symptoms

The correlations of the CTQ subscales with the PSP and PANSS are shown in Table 3. Emotional abuse and neglect were most strongly associated with psychosocial functioning and symptom severity, as these two subscales correlated significantly with most of the domains of the PSP and PANSS. Physical abuse correlated only with disturbing and aggressive behavior, whereas physical neglect correlated with general psychosocial functioning and also with disturbing and aggressive behavior. Sexual abuse showed no significant correlations at all. None of the CTQ subscales correlated with negative symptoms.

The correlation coefficients that became significant ranged from $r = 0.14$ to 0.25, indicating small correlations.

3.4. Mediation between childhood trauma and schizophrenic symptoms by psychosocial functioning

Two mediation analyses were performed by considering the two domains of schizophrenic symptoms that turned out to be correlated with childhood trauma in the forgoing analysis: positive symptoms and general psychopathology. The CTQ total score and the score for general psychosocial functioning were entered in both analyses to represent childhood trauma and psychosocial functioning.

The first mediation was performed to analyze whether childhood trauma predicts positive symptoms and whether the direct path would be mediated by psychosocial functioning (Fig. 1). Childhood trauma predicted psychosocial functioning significantly (a: $b = -0.16$, $CI_{95} = [-0.27; -0.05]$, $p < .01$). Psychosocial functioning in turn predicted positive symptoms significantly (b: $b = -0.16$, $CI_{95} = [-0.21; -0.12]$, $p < .001$). There was an indirect effect of childhood trauma on positive symptoms via psychosocial functioning (ab: $b = 0.03$, $CI_{95} = [0.01; 0.05]$). There was no significant direct effect of childhood trauma on psychosocial functioning (c': $b = 03$, $CI_{95} = [-0.01; 0.06]$, $p = .16$), whereby the total effect of indirect and direct effects became significant (c: $b = 0.05$, $CI_{95} = [0.01; 0.09]$, $p < .05$), indicating that the relationship between childhood trauma and positive symptoms is fully mediated by psychosocial functioning.

The second mediation was performed to analyze whether childhood trauma predicts general psychopathology and whether the direct path would be mediated by psychosocial functioning (Fig. 2). Corresponding with the results of the first analysis, childhood trauma predicted psychosocial functioning significantly (a: $b = -0.16$, $CI_{95} = [-0.27; -0.05]$, $p < .01$). Psychosocial functioning in turn predicted general psychopathology significantly (b: $b = -0.27$, $CI_{95} = [-0.33; -0.20]$, $p < .001$). There was an indirect effect of childhood trauma on general psychopathology via psychosocial functioning (ab: $b = 0.04$, $CI_{95} = [0.01; 0.07]$). The direct effect of childhood trauma on psychosocial functioning was significant (c': $b = 0.06$, $CI_{95} = [0.00; 0.12]$, $p \leq .05$), as well as the total effect of indirect and direct effects (c: $b = 0.10$, $CI_{95} = [0.04; 0.17]$, $p < .01$), indicating that the relationship between childhood trauma and general psychopathology is partly mediated by psychosocial functioning.

4. Discussion

The present study aimed to elucidate associations between childhood trauma, psychosocial functioning and symptom severity in

Table 2
Severity and frequency of childhood trauma subtypes.

			None		*Low*		*Moderate*		*Severe*	
	M	*SD*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Emotional abuse	11.62	5.21	93	36.8	59	23.3	41	16.2	60	23.7
Physical abuse	8.14	4.39	156	62.2	30	12.0	28	11.2	37	14.7
Sexual abuse	7.27	4.28	158	64.0	23	9.3	37	15.0	29	11.7
Emotional neglect	13.00	5.11	69	27.6	94	37.6	36	14.4	51	20.4
Physical neglect	9.37	3.61	93	37.1	57	22.7	51	20.3	50	19.9

Table 3
Correlations of childhood trauma with adult psychosocial functioning and symptom severity.

	Emotional abuse	Physical abuse	Sexual abuse	Emotional neglect	Physical neglect	CTQ total score
Socially useful activities	0.17**	0.09	−0.02	0.16*	0.11	0.15*
Personal and social relationships	0.16**	0.05	0.02	0.15*	0.10	0.14*
Self-care	0.08	0.01	0.01	0.14*	0.08	0.09
Disturbing and aggressive behavior	0.15*	0.17**	0.12	0.09	0.18**	0.16*
General psychosocial functioning	−0.17**	−0.09	−0.06	−0.17**	−0.15*	−0.18**
Positive symptoms	0.18**	0.12	0.10	0.11	0.08	0.16*
Negative symptoms	−0.05	−0.08	−0.07	0.05	−0.07	−0.06
General psychopathology	0.25***	0.12	0.08	0.17**	0.07	0.20**

Note. * p < .05, ** p < .01, *** p < .001.

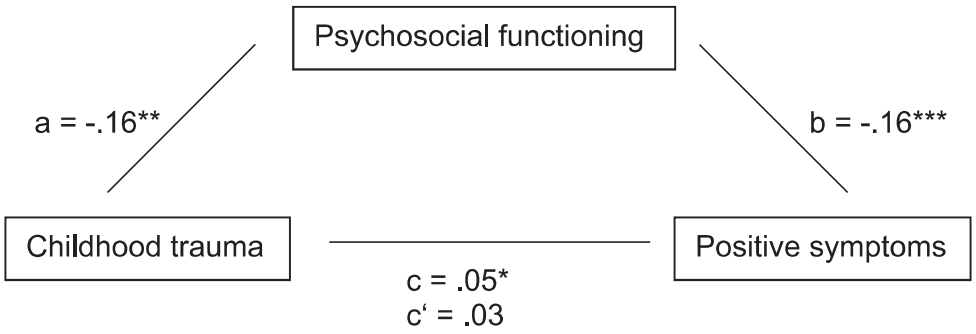


Fig. 1. Mediation between childhood trauma and positive symptoms by psychosocial functioning.

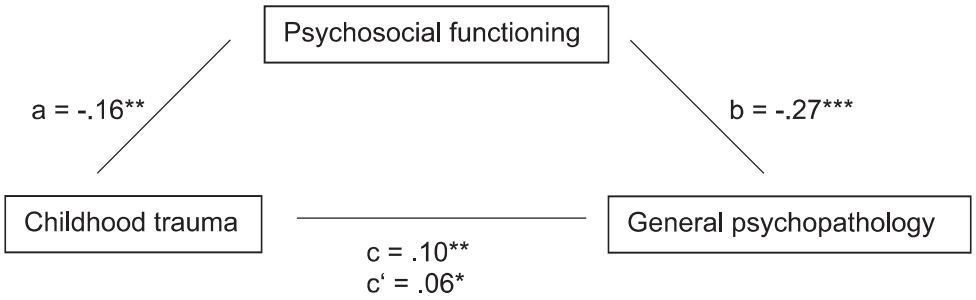


Fig. 2. Mediation between childhood trauma and general psychopathology by psychosocial functioning.

schizophrenia. Going beyond the well-established correlations between these variables, it should be shown that psychosocial functioning mediates the association between childhood trauma and symptom severity, a finding that would be new.

In accordance with previous findings, in this study a high frequency of childhood trauma was found in patients with schizophrenia, as evidenced by the rate of 91.7 % of patients reporting at least one trauma. Emotional abuse and neglect turned out to be particularly relevant for patients with schizophrenia, a finding again in line with previous studies. Among the subscales of childhood trauma, these two scales showed the highest scores and most commonly correlated significantly with the scales of psychosocial functioning and symptom severity in the sample of this study.

A more differentiated picture emerged when considering the subdomains of psychosocial functioning and schizophrenic symptoms. With regard to psychosocial functioning, the CTQ total score correlated with the two domains representing the occupational and social areas (socially useful activities and personal and social relationships). Christy et al. (2022) also found a significant relationship with the social but not the occupational area. The divergent result on the latter point could be based on the broad definition of occupation in the present study, since the respective domain of the PSP not only includes paid work but also other meaningful activities such as training, housework and child rearing.

Furthermore, childhood trauma turned out to be associated with two of the three domains of schizophrenic symptoms. The CTQ total score correlated with positive but not with negative symptoms. As stated in the Introduction, the results of the meta-analyses by Alameda et al. (2021) and Bailey et al. (2018) differed on this point. The present study is consistent with the results of Bailey et al. (2018). Another significant correlation found in this study – the correlation between the CTQ total score and general psychopathology – is in line with the findings reported by Alameda et al. (2021).

The domain of the PSP representing control over disturbing and aggressive behavior showed a particular correlational pattern. This domain not only correlated with the CTQ total score and emotional abuse but was also the only domain that correlated with physical

abuse and neglect. It appears that childhood trauma affecting the body is associated with poor control over aggressive behavior in adulthood. This finding is new, since previous studies on psychosocial functioning usually differentiated between the occupational and the social area but did not take behavioral control problems into account.

The final mediation analyses supported the hypothesis that psychosocial functioning mediates the relationship between childhood trauma and symptom severity in schizophrenia. Full mediation was found for positive symptoms and partial mediation for general psychopathology. These results suggest that good psychosocial functioning can mitigate the damaging effects of childhood trauma on adult psychological well-being. Symptoms appear to be less pronounced when an individual affected by trauma has access to psychosocial resources. The buffering effect of good psychosocial functioning was also demonstrated in a longitudinal analysis of the course of schizophrenia (Neumann et al., 2022). It therefore seems important to include therapeutic interventions that serve to strengthen psychosocial skills in the psychiatric treatment of schizophrenia.

4.1. Limitations

The measurement of childhood trauma was based on retrospective self-report in the present study. It is obvious that retrospective reports cannot accurately reflect past reality. In patients with schizophrenia, even more skepticism might be warranted, as this disorder is characterized by cognitive distortions, including hallucinations and paranoia. However, Fisher et al. (2011) found that retrospective reports of childhood abuse by schizophrenic patients are reasonably reliable and valid. The findings of their study suggest that the cognitive distortions typical of schizophrenia are more related to current life circumstances than to the past. The retrospective data obtained in the present study can therefore be viewed as subjective constructions of the past but have sufficient validity to justify their use as a measure of childhood trauma.

This conclusion probably does not apply to sexual abuse. Strikingly, this CTQ subscale did not correlate with any of the variables of psychosocial functioning and symptom severity, contrary to the other trauma subscales, all of which showed such correlations. It is unlikely that experiences of sexual abuse do not have an impact on adult mental well-being. Rather, it can be assumed that the validity of the sexual abuse scale was low. There is actually evidence that retrospective assessments of sexual abuse are more prone to measurement errors than assessments of other childhood adversities (Hardt, Sidor, Bracko, & Egle, 2006). The results of the present study on sexual abuse should therefore be interpreted with caution and require verification in future studies that use data sources other than retrospective self-reports.

The study was cross-sectional, like many studies on the associations of childhood trauma with adult mental state. This is certainly due to the fact that longitudinal studies require a lot of effort. Nevertheless, it would be interesting to explore whether the findings of this study could be replicated in longitudinal studies.

5. Conclusion

The present study showed that childhood trauma is associated with positive symptoms and general psychopathology in patients diagnosed with schizophrenia. This association is mediated by psychosocial functioning.

What is known?

Consistent with previous findings, this study found a high prevalence of self-reported childhood trauma in patients with schizophrenia, with emotional abuse and neglect being the most prominent trauma subtypes. Childhood trauma correlated with both symptom severity and psychosocial functioning.

What this study adds?

The association between childhood trauma and schizophrenic symptoms turned out to be mediated by psychosocial functioning. This finding underscores the relevance of therapeutic interventions that strengthen psychosocial resources in the psychiatric treatment of schizophrenia.

Funding

The study was funded by the Ministerium für Arbeit, Gesundheit und Soziales des Landes Nordrhein-Westfalen (2018–2019).

Study registration

The study was entered in the German Clinical Trials Register (DRKS00013985).

Ethics approval

The study was approved by the Ethics Committee of the Ruhr University Bochum (17–6059).

Informed consent

Written informed consent was obtained from all individual participants included in the study.

Declaration of competing interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

Data availability

Data will be made available on request.

References

Ajnakina, O., Stubbs, B., Francis, E., Gaughran, F., David, A. S., Murray, R. M., & Lally, J. (2021). Employment and relationship outcomes in first-episode psychosis: A systematic review and meta-analysis of longitudinal studies. *Schizophrenia Research, 231*, 122–133.

Alameda, L., Christy, A., Rodriguez, V., Salazar de Pablo, G., Thrush, M., Shen, Y., et al. (2021). Association between specific childhood adversities and symptom dimensions in people with psychosis: Systematic review and meta-analysis. *Schizophrenia Bulletin, 47*(4), 975–985.

Bailey, T., Alvarez-Jimenez, M., Garcia-Sanchez, A. M., Hulbert, C., Barlow, E., & Bendall, S. (2018). Childhood trauma is associated with severity of hallucinations and delusions in psychotic disorders: A systematic review and meta-analysis. *Schizophrenia Bulletin, 44*(5), 1111–1122.

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., et al. (2003). Development and validation of a brief screening version of the childhood trauma questionnaire. *Child Abuse & Neglect, 27*(2), 169–190.

Christy, A., Cavero, D., Navajeeva, S., Murray-O'Shea, R., Rodriguez, V., Aas, M., et al. (2022). Association between childhood adversity and functional outcomes in people with psychosis: A meta-analysis. *Schizophrenia Bulletin, 49*(1).

Fisher, H. L., Craig, T. K., Fearon, P., Morgan, K., Dazzan, P., Lappin, J., et al. (2011). Reliability and comparability of psychosis patients' retrospective reports of childhood abuse. *Schizophrenia Bulletin, 37*(3), 546–553.

Hardt, J., Sidor, A., Bracko, M., & Egle, U. T. (2006). Reliability of retrospective assessments of childhood experiences in Germany. *Journal of Nervous and Mental Disease, 194*(9), 676–683.

Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional Process analysis: A regression-based approach* (3rd ed.). New York, NY: Guilford Press.

Kay, S. R., Fiszbein, A., & Opler, L. A. (1987). The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophrenia Bulletin, 13*(2), 261–276.

Kingdon, D. G., Ashcroft, K., Bhandari, B., Gleeson, S., Warikoo, N., Symons, M., et al. (2010). Schizophrenia and borderline personality disorder: Similarities and differences in the experience of auditory hallucinations, paranoia, and childhood trauma. *Journal of Nervous and Mental Disease, 198*(6), 399–403.

Larsson, S., Andreassen, O. A., Aas, M., Røssberg, J. I., Mork, E., Steen, N. E., et al. (2013). High prevalence of childhood trauma in patients with schizophrenia spectrum and affective disorder. *Comprehensive Psychiatry, 54*(2), 123–127.

Neumann, E., Juckel, G., & Haussleiter, I. S. (2020). Quality of parental care and traumatic experiences in childhood related to schizophrenic disorders. *Journal of Nervous and Mental Disease, 208*(10), 818–821.

Neumann, E., Rixe, J., Haussleiter, I. S., Macdonald, L., Rabeneck, E., Bender, S., et al. (2022). Psychosocial functioning as a personal resource promoting a milder course of schizophrenia. *Journal of Psychiatric Research, 148*, 121–126.

Rixe, J., Neumann, E., Möller, J., Macdonald, L., Wrona, E., Bender, S., et al. (2023). Joint crisis plans and crisis cards in inpatient psychiatric treatment: A multicenter randomized controlled trial. *Deutsches Ärzteblatt International, 120*(8), 125–132.

Schäfer, I., Harfst, T., Aderhold, V., Briken, P., Lehmann, M., Moritz, S., et al. (2006). Childhood trauma and dissociation in female patients with schizophrenia spectrum disorders: An exploratory study. *Journal of Nervous and Mental Disease, 194*(2), 135–138.

Schaub, D., & Juckel, G. (2011). PSP scale: German version of the personal and social performance scale. Valid instrument for the assessment of psychosocial functioning in the treatment of schizophrenia. *Nervenarzt, 82*, 1178–1184.

Thompson, J. L., Kelly, M., Kimhy, D., Harkavy-Friedman, J. M., Khan, S., Messinger, J. W., et al. (2009). Childhood trauma and prodromal symptoms among individuals at clinical high risk for psychosis. *Schizophrenia Research, 108*(1–3), 176–181.

Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., et al. (2012). Childhood adversities increase the risk of psychosis: A meta-analysis of patient-control, prospective-and cross-sectional cohort studies. *Schizophrenia Bulletin, 38*(4), 661–671.

Wingenfeld, K., Spitzer, C., Mensebach, C., Grabe, H. J., Hill, A., Gast, U., et al. (2010). The German version of the childhood trauma questionnaire: Preliminary psychometric properties. *Psychotherapie Psychosomatik Medizinische Psychologie, 60*, 442–450.

behavioral sciences

MDPI

Article

The 10-Item Short Form of the German Experiences in Close Relationships Scale (ECR-G-10)—Model Fit, Reliability, and Validity

Eva Neumann [1,*,†], Elke Rohmann [2,†] and Heribert Sattel [3]

[1] Department of Psychosomatic Medicine and Psychotherapy, LVR University Hospital Düsseldorf, Heinrich Heine University, 40629 Düsseldorf, Germany
[2] Department of Social Psychology, Faculty of Psychology, Ruhr University, 447801 Bochum, Germany; elke.rohmann@rub.de
[3] Department of Psychosomatic Medicine and Psychotherapy, Klinikum Rechts der Isar, Technical University, 81675 Munich, Germany; h.sattel@tum.de
* Correspondence: eva.neumann@hhu.de
† These authors contributed equally to this work.

Abstract: The aim of the present work was the development and validation of a short form of the Experiences in Close Relationship Scale (ECR) in German. Three studies were conducted. In study 1, the best items for the short form were selected from the item pool of the original version based on ant colony optimization (ACO), a recently developed probabilistic approach. Data from three samples collected at a university, an online portal, and a psychosomatic clinic with a total of 1470 participants were analyzed. A 10-item solution resulted, measuring avoidance and anxiety with five items each. This solution showed a good model fit and acceptable reliability in all three samples. The two new short scales were independent of each other. In study 2, the 10-item solution was validated by correlating the new short scales with external criteria. Data from previous studies that included student, community, and clinical samples were reanalyzed. Both short scales showed expected correlations with measures of romantic relationships, personality, psychopathology, and childhood trauma, indicating convergent and discriminant validity. The significant correlations were moderate to strong. In study 3, the selected ten items alone and several content-related scales were presented online to 277 participants, most of them students. The good results in terms of model fit, reliability, and validity observed in studies 1 and 2 could be replicated here. The new short form, called ECR-G-10, allows the measurement of attachment avoidance and anxiety in an economic way in research and clinical practice.

Keywords: adult attachment; avoidance; anxiety; experiences in close relationships scale; ant colony optimization

Citation: Neumann, E.; Rohmann, E.; Sattel, H. The 10-Item Short Form of the German Experiences in Close Relationships Scale (ECR-G-10)—Model Fit, Reliability, and Validity. *Behav. Sci.* **2023**, *13*, 935. https://doi.org/10.3390/bs13110935

Academic Editor: Ignacio Montorio

Received: 5 October 2023
Revised: 3 November 2023
Accepted: 14 November 2023
Published: 16 November 2023

1. Introduction

In the 1980s, Hazan and Shaver [1] established a new tradition in attachment theory and research by presenting the first measure of attachment in adult romantic relationships. Based on the three-category model by Ainsworth et al. [2], they formulated an item related to romantic relationships in adulthood for each of the attachment styles: secure, anxious-ambivalent, and avoidant. Respondents are asked to select the item that best describes their experiences and behavior. The new measure made it possible to extend attachment research, which previously focused on children's relationships with their caregivers, to close relationships between adults. The pioneering work of Hazan and Shaver inspired researchers worldwide and led to numerous studies of adult attachment [3].

Another milestone was the introduction of the Experiences in Close Relationships Scale (ECR) by Brennan, Clark, and Shaver [4]. It quickly became clear that the 3-item measure by

Hazan and Shaver has methodological limitations due to its brevity. In the years following the publication of this measure, several multi-item questionnaires for the measurement of adult attachment were developed. Brennan et al. [4] factor-analyzed the items of all questionnaires available at the time, a total of 323 items. They found a two-dimensional structure. The first dimension, avoidance, stands for discomfort in situations of intimacy and an emphasis on self-reliance in romantic relationships. The second dimension, fear, represents intense worry about the relationship, including a fear of abandonment and a strong need for attention and care from one's partner. Brennan et al. [4] selected the best 18 items for each of the two dimensions, resulting in the final 36-item version of the ECR.

The ECR has become a widely used instrument and has been translated into 17 languages. It is often considered the gold standard for measuring adult attachment. The psychometric properties of this instrument have repeatedly proven to be excellent [3]. Most studies found alpha coefficients of around 0.90 for both scales, indicating high reliability. The correlation between the two scales is usually close to zero, showing that the scales are independent of each other.

Furthermore, the ECR has proven to be valid in hundreds of studies [3]. The two scales correlated as expected with other measures of romantic relationships. A variety of studies with different research designs (e.g., cross-sectional and longitudinal studies, diary studies, and experiments) found that low scores for avoidance and anxiety were associated with a positive view of the relationship and higher satisfaction with the relationship and sexuality [5]. Furthermore, significant correlations with measures of personality and psychopathology could be shown. For example, the ECR scales were found to correlate with the Big Five of personality, with the strongest correlation observed between anxiety and neuroticism [6]. Such associations have also been demonstrated for pathological personality traits in psychiatric patients. Here, the highest correlations were found between anxiety and negative affectivity and between avoidance and detachment [7]. Finally, the ECR scales turned out to correlate with measures of mental disorders. Many of the studies in this area have focused on depression, anxiety, or borderline personality disorder, with all three of these mental disorders showing positive associations with attachment avoidance and anxiety [3,8].

Fraley et al. [9] re-analyzed the 323 items from the study by Brennan et al. based on item-response theory. Their resulting selection of 36 items differed in part from that of Brennan et al. [4]. The new instrument, called the Experiences in Close Relationships Scale-Revised (ECR-R), proved to be equivalent to the ECR in terms of reliability and validity, but its two subscales showed a higher intercorrelation [10]. This is likely why the ECR-R has not replaced the ECR in the years since its release; both instruments continue to be used in adult attachment studies.

The ECR-R was also translated into German [11]. In addition to the long form, two short forms of the German ECR-R are available, a 12- and an 8-item version [12,13]. The two-dimensional structure of the long form could be replicated for the short forms in the two studies conducted to develop them. However, this result could not be confirmed recently in another study, where both the 12-item and 8-item versions showed poor model fit [14]. Therefore, the structural validity of the two German ECR-R short forms could not be consistently demonstrated, leaving open the question of whether these versions adequately measure the two attachment dimensions.

Our research group developed the German version of the ECR [15]. The aim of the present study was to establish a short form of this instrument, an endeavor that seemed worthwhile for several reasons. Although the ECR is not overly long, there are study designs that require an even shorter version. This is especially the case when several other instruments are used in addition to the ECR. Furthermore, sometimes participants cannot be expected to complete a lengthy survey, for example, if they do not receive payment or course credit or if they have limited resilience due to mental illness. We did not consider using the short forms of the ECR-R for such studies but decided to develop a short form of the ECR. This is based primarily on the view that the ECR and ECR-R should

be regarded as different instruments because they have different items, especially in the German versions due to divergent translations of some items. It is therefore likely that the constructs measured by the ECR and ECR-R are not exactly the same. Furthermore, another factor was that the test quality of the ECR-R short forms could not be consistently proven.

For the original American version of the ECR, 12-item versions have already been developed by Wei et al. [16] and Lafontaine et al. [17]. However, it was not promising to simply adopt one of these item selections for the German short form. Both selections include items that only showed average values for item characteristics (factor loadings, corrected item-total correlations) in our studies, in contrast to other items that performed better in this regard. Consistent with these concerns, the use of the selection by Wei et al. [16] in a sample from the normal population showed that this item selection in the German version lacks reliability and factorial validity [18]. Therefore, we decided to develop a new short version with the best items from the German long version of the ECR.

Another aim of this study was to overcome a shortcoming of the long version that emerged when we used it in our studies. As with the original American version, the term for the partner varies across the 36 items [3] (p. 85). The items refer to the romantic partner with the terms "my partner", "a partner", and "partners". In our studies, "my partner" did not cause any problems, while "a partner" and "partners" sometimes led to confusion and problems of understanding; some participants were not sure which person to refer to when rating items with these terms. In order to eliminate these inconsistencies, we wanted to achieve an item selection in which the partner is consistently referred to as "my partner".

We conducted three studies to develop and validate the short version of the German ECR, called ECR-G-10 in the following. The aim of the first study was to select the best items of the ECR long form for the short form. For this purpose, we analyzed data from studies in which we used the ECR long form, called ECR-G-36 in the following. The second study is based on re-analyses of data from former studies that also used the ECR-G-36. For the validation of the ECR short form, we examined whether the correlations with external criteria obtained with the short form correspond to those obtained with the long form. The aim of the third study was to prove that the ECR-G-10 is reliable and valid when its ten items are presented alone. Therefore, this instrument was used together with other content-related scales and analyzed with regard to its test quality.

2. Study 1

To select the best items for the short version of the ECR, we analyzed data from three samples. The data from the first and the third samples were collected in previous studies and re-analyzed for the present study, and the data from the second sample were newly collected. Data collection took place at a university, via an internet platform, and in a psychosomatic clinic. Since the first sample had the highest number of participants, these data were used for the initial selection of items for the short version. The data from the second and the third samples served as the replication of this selection.

2.1. Methods

2.1.1. Participants and Settings

Sample 1. Sample 1 was recruited at the Faculty of Psychology of the Ruhr University Bochum for a study on romantic relationships [19]. Participants had to fulfill the criterion of living in a heterosexual relationship. They were contacted by email, on internet platforms, and in the media. Data were collected online via Unipark (www.unipark.de, accessed on 4 October 2020). A total of 788 persons took part in the study, 552 women (70%) and 236 men (30%) with a mean age of 28.29 years (SD = 8.58, range 18–60 years). 380 (48%) were students, 312 (40%) were employed, 38 (5%) were in training, 28 (4%) were homemakers, 28 (4%) were unemployed, and 2 (<1%) did not report their professional status.

Sample 2. Sample 2 was recruited for the present study via the internet platform prolific (www.prolific.co, accessed on 4 October 2020). A total of 220 participants took part in the study, 108 women (49.10%), 111 men (50.5%), and 1 unspecified (0.5%) with a

mean age of 31.05 years (*SD* = 8.97). All participants had a romantic partner, 166 (75.5%) were dating, and 54 (24.5%) were married. A total of 78 (35.5%) were students, 4 (1.8%) apprentices, 115 (52.3%) employed, 11 (5.0%) unemployed, 8 (3.6%) homemakers, and 4 (1.8%) other.

Sample 3. Sample 3 included the participants of several clinical studies on associations between close relationships and psychopathology conducted in the Department of Psychosomatic Medicine and Psychotherapy of the LVR University Hospital Düsseldorf (e.g., published in [20,21]). Data were collected via paper-and-pencil surveys.

The sociodemographic and clinical data of the participating patients were quite similar across the studies. In all studies, about two-thirds of the patients were female and one-third were male, the mean age was between 38 and 48 years, and all patients were diagnosed with a mental disorder of moderate severity. It was therefore considered appropriate to combine the data from the various studies into one data set.

A total of 462 in- and outpatients from the hospital participated in the studies, 306 (66%) women and 156 men (34%) with a mean age of 43.59 years (*SD* = 12.51, range 18–77 years). The most common primary diagnosis was a somatoform disorder (*n* = 277, 60%), followed by a depressive disorder (*n* = 107, 23%); other diagnoses were less common (anxiety, adjustment, eating, or other disorders: *n* = 78, 17%).

2.1.2. Measures

Experiences in Close Relationships Scale—German version (ECR-G-36). In all three samples, the ECR-G-36 was used. The items are assessed on a 7-point Likert scale from 1 (*disagree strongly*) to 7 (*agree strongly*). The mean of the 18-item ratings per scale are the avoidance and anxiety scores.

2.1.3. Content-Based Pre-Selection

As argued above, 11 items of the ECR-G-36 had the problematic wording "partners" and "a partner" (1, 3, 9, 12, 13, 21, 23, 29, 31, 32, 34). (It should be noted that "romantic partner(s)" was also translated to "my partner" in the German version because there is no term in German that exactly corresponds with this American term.) In the following analyses, an item selection was considered that no longer contained these 11 items, but consisted of the 25 items without the problematic formulation mentioned above.

2.1.4. Statistical Analysis

The item selection for each subscale was based on consecutive analyses, which have been tailored for this purpose and were recently compared by Schroeders et al. [22]. Both subscales were evaluated separately, as their independence was theoretically suggested and proof of that assumption was integrated into the analysis procedure.

Firstly, a stepwise confirmatory factor analysis (SCOFA) was conducted on both scales. The SCOFA algorithm iteratively removed the item with the lowest factor loading from the item pool and indicated an optimal length for a short form according to the estimated information criteria.

Secondly, we conducted an ant colony optimization (ACO) following the approach of Schroeders et al. [22] and Volz et al. [23]. The generation of short versions of questionnaires can be understood as an optimization of the item selection procedure. The ACO provides a probabilistic algorithm for this purpose, which was reported and mathematically described by Feynman [24], from which its denotation is derived. This class of algorithms is based on an iterative and combinatorial process that imitates ants searching for food. For this purpose, ants aim to find the shortest path marked by a chemical trace of pheromones. Because these pheromones are constantly evaporating, shorter paths have a higher concentration of them and are therefore more attractive to following ants. The shortest path in the context of determining an item selection can be operationalized as an optimal quality criterion that must be determined mathematically.

The ACO starts with the selection of a random sample based on all suitable items. Then, predefined quality criteria of interest (e.g., model fit and reliability) of this sample are determined, and subsequently, a large number of different randomly selected samples are compared. The algorithm leaves the best at the top to identify an optimized solution. Considering the fact that this probabilistic approach cannot determine a theoretically existing optimal solution in every case, a series of repetitions of this procedure is recommended [23].

The calculation of the optimization criterion for our approach was based on four criteria. Firstly, the model fit was defined by a composite and equivalent score out of the comparative fit index (CFI) and the root mean square error of approximation (RMSEA), with CFI values beyond 0.95 and RMSEA values lower than 0.05 as indicators of appropriate model fit [25]. Secondly, the measurement precision of the scale was estimated, defined by McDonald's omega, an index that determines the saturation of a factor in a unidimensional model. We assumed that values greater than 0.70 indicate acceptable reliability. Thirdly, the correlation of the actual short form with the long form of the scale was calculated, as a measure of criterion validity. Here, a correlation of 0.80 was chosen as the criterion. Finally, as the independence of both subscales was theoretically postulated, we included this parameter in our estimation of the overall optimization criterion and set a correlation of less than 0.10 as desirable. Each of these four parameters was logit-transformed, resulting in a value range between 0 and 1. An additional weight term was introduced, so that small undesired differences close to the predefined cutoff led to a proportionally more pronounced decrease in the parameters' value (for details see [22,23]). The overall optimization criterion was built as the sum of all four logit-transformed parameters. While this procedure can identify solutions that come close to or meet all of the above criteria, it does not necessarily identify the potential best solution. Thus, ACOs were run with 80 ants per iteration, an evaporation rate of 0.9, and 50 iterations without improvement of the overall criterion as a stop condition. Each ACO was run 15 times with random initial seeds, and the best solution in sample 1 was selected. It was then checked whether the individual criteria were also met in the other two samples.

Finally, we conducted a two-factorial confirmatory factor analysis with the selected items to determine the factorial model. For reporting issues and the sake of comparability, Cronbach's alpha was additionally determined.

The analyses were conducted using R x64 version 4.0.4 including the packages lavaan and psychtools, as well as IBM SPSS 27.

2.2. Results

In the SCOFAs, all 36 items of the ECR were considered. The SCOFA for the subscale "anxiety" resulted in an elimination of all items with an unspecific reference to the partner in the first steps and identified a solution with satisfying model fit, reliability, and criterion validity, but not independence. The same procedure did not result in such a model for the subscale "avoidance". Both SCOFAs identified a 5-item solution as optimal, considering the information criteria of each stepwise generated model.

Then, an ACO was carried out for each subscale based on the pool of the 25 preselected items with the data from sample 1. For avoidance, one solution turned out to show the highest value of the overall optimization criterion (considering model fit, reliability, validity, and independence) in sample 1, the solution consisting of items 7, 15, 25, 27, and 35. These characteristics could be confirmed in both replication samples, except for independency within clinical sample 3, where a correlation of 0.18 with the full scale for anxiety was observed.

The same procedure for the subscale "anxiety" resulted in several solutions that met the prespecified requirements within the sample of study 1. The overall optimization criterion values were almost equal in these solutions. Therefore, additional content-related aspects were considered in further selection. Solutions that had one or more of the following weaknesses were not considered further:

- Selections containing both items 2 and 22 were rejected. These items have the same wording in the German version except for one word. A short version with only five items per subscale should not include two items with almost the same wording.
- Solutions where 4 of the 5 items started with the wording "I worry" were rejected. These solutions therefore have repetitive formulations, making the selected items for the anxiety scale very similar.
- Solutions containing item 28 were rejected. This item relates to periods of life when the subjects were single and is therefore difficult for people in a long-term relationship to answer.

After this step, two solutions remained that differed in only one item. These solutions both contained the four items 18, 20, 24, and 30. The fifth item was item 2 in one solution and item 8 in the other. Both items refer to the fear of being abandoned. Item 8 was given preference because this item specifically addresses romantic relationships, while the wording of item 2 is more general and does not refer to a specific kind of relationship. The final solution selected for the anxiety short scale was therefore 8, 18, 20, 24, and 30. The characteristics (considering model fit, reliability, validity, and independence) of the resulting model were confirmed in both replication samples, again except for independence within samples 2 and 3, where correlations of 0.18 and 0.15, respectively, with the full scale for avoidance were observed.

The top rows of Table 1 show the model fit of the two selected solutions. In all three samples of study 1, RMSEA was between 0.01 and 0.07, and CFI was larger than 0.99, thus reaching adequate to good parameters. The reliability, as indicated by McDonald's omega and Cronbach's alpha, was acceptable.

Table 1. Model fit, reliability, and correlation with the long scales of the ECR-G-10.

				Model Fit						Reliability		Correlation with Corresponding Long Scale	Correlation with Opposite Long Scale
Study	**Sample**	***n***		***df***	***X*²**	***p***	***RMSEA***	***90% CI***	***CFI***	***ω***	***α***	***r***	***r***
1	1	788	Avoid	5	5.88	0.32	0.02	0.00–0.05	0.99	0.80	0.77	0.93	0.07
			Anx	5	10.10	0.07	0.04	0.00–0.07	0.99	0.73	0.72	0.89	0.06
	2	220	Avoid	5	5.23	0.39	0.01	0.00–0.10	0.99	0.84	0.81	0.91	0.10
			Anx	5	7.57	0.18	0.05	0.00–0.11	0.99	0.76	0.76	0.91	0.18
	3	462	Avoid	5	10.90	0.05	0.05	0.00–0.09	0.99	0.78	0.75	0.88	0.18
			Anx	5	17.80	0.01	0.07	0.04–0.11	0.99	0.77	0.76	0.89	0.15
3		277	Avoid	5	16.59	0.01	0.09	0.05–0.14	0.97	0.78	0.78		
			Anx	5	10.29	0.07	0.06	0.00–0.12	0.98	0.73	0.73		

Note, *n* = number of participants, *df* = degrees of freedom, X^2 = chi-square, *RMSEA* = root mean square error of approximation, *CI* = confidence interval, *CFI* = comparative fit index, *ω* = McDonald's omega, *α* = Cronbach's alpha, *r* = Pearson correlation coefficient, Avoid = avoidance, Anx = anxiety.

The factorial model of the selected solution revealed sufficiently high loadings of all items on the respective factor to which they are assigned. Figure 1 shows the latent measurement model. Depicted are standardized factor loadings resulting from all three samples. The loadings were between 0.40 and 0.94 (all loadings $p < 0.001$). Both factors proved to be widely independent (standardized covariances of 0.01 to 0.14 for all samples).

The correlations between the two new short scales were low and did not reach statistical significance (correlation avoidance—anxiety in sample 1: $r = 0.06$, $p = 0.10$, in sample 2: $r = 0.08$, $p = 0.27$, in sample 3: $r = 0.03$, $p = 0.60$). These correlations, which did not reach the threshold for a small effect size [26], indicated that the two new short scales were independent of each other.

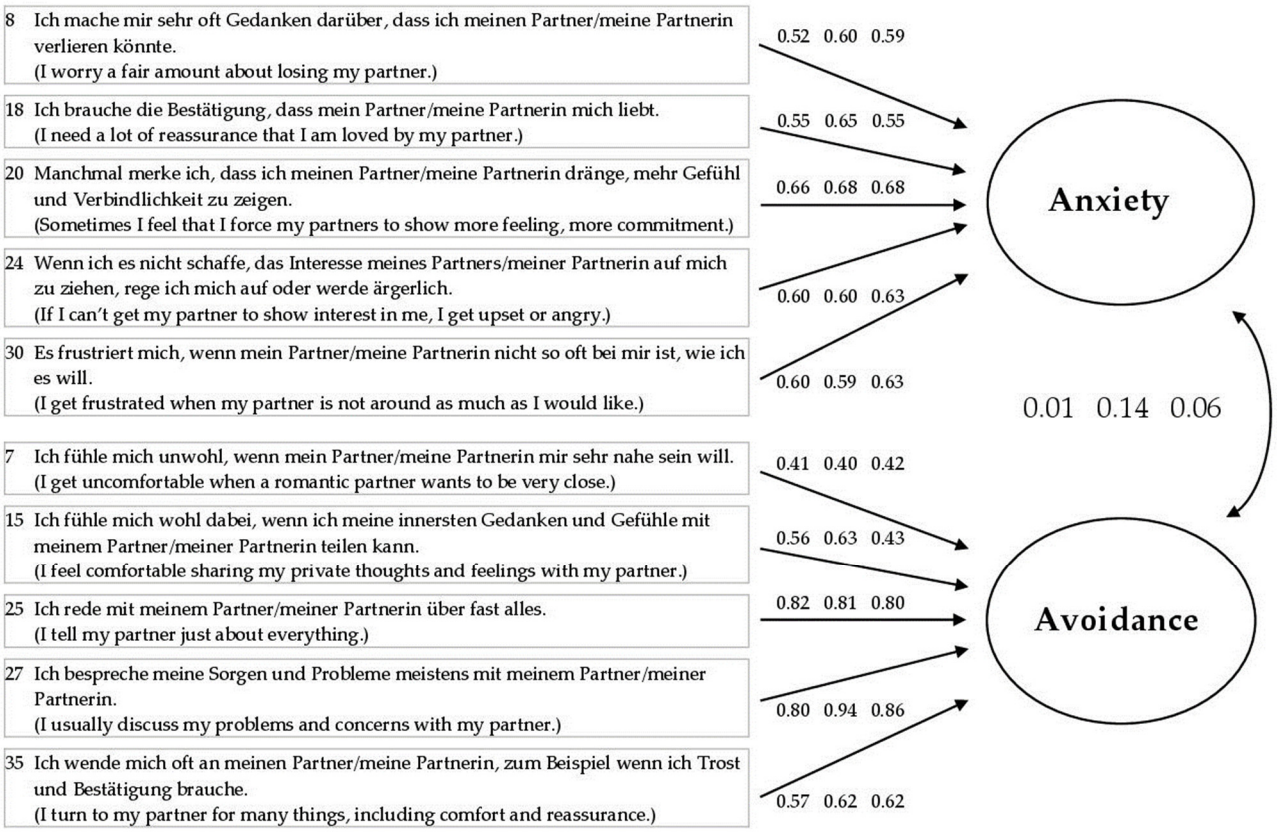


Figure 1. Standardized factor loadings of the ten items selected for the ECR-G-10.

3. Study 2

Study 2 served as the validation of the ECR-G-10. For this purpose, we re-analyzed data from former studies that used the ECR-G-36 [21,27–29]. In these studies, the ECR was correlated not only with alternative scales for the measurement of romantic relationships but also with scales measuring variables of personality, psychopathology, and childhood trauma. Rohmann et al. [27] focused on romantic relationships, Makuch and Neumann [28] on psychopathology and the Big Five of personality, Neumann [21] on personality disorders, and Neumann [29] on childhood trauma. We computed correlations of the ECR long and short form with these variables. The hypothesis was that the correlations of the two forms are equal in direction (positive or negative) and statistical significance, showing that the short form is equivalent to the long form.

3.1. Methods

3.1.1. Participants and Settings

The four studies considered in this analysis included samples from student, normal, and clinical populations.

In the study by Rohmann et al. [27], 92 participants were recruited at the Ruhr University Bochum, most of them students. The mean age was 24.03 years (*SD* = 5.40), 61 (66.3%) were women, and 31 (33.7%) were men. Participation in the study required that the participants were in a romantic relationship. The average relationship length was 37.08 months (*SD* = 40.87).

In the study of Makuch and Neumann [28], a community sample was recruited in a dental practice in Düsseldorf. A total of 110 persons took part, 69 women (62.7%) and 41 men (37.3%). The mean age was 38.61 years (*SD* = 14.75). Thirteen participants (11.8%) were singles, 44 (40.0%) had a dating partner, 40 (36.4%) were married, and 13 (11.8%) were divorced or widowed. In terms of educational attainment, 33 (30%) had a secondary

school diploma, 30 (27.3%) had a university entrance qualification, and 44 (40.0%) had a university degree.

The sample of the study of Neumann [21] consists of in- and outpatients of the Department of Psychosomatic Medicine and Psychotherapy of the LVR University Hospital Düsseldorf. A total of 110 patients (65 women (59.1%) and 45 men (40.09%)) with a mean age of 40.85 years (*SD* = 12.99) took part in the study. Thirty-five (31.8%) were singles, 23 (20.9%) had a dating partner, 38 (34.5%) were married, and 14 (12.7%) were divorced or widowed. Regarding the level of education, 35 (31.8%) had a secondary school diploma, 28 (25.5%) had a university entrance qualification, and 46 (41.8%) had a university degree. A depressive disorder was the most frequent main diagnosis (80, 72.7%).

In the study of Neumann [29], two samples were compared, 80 patients diagnosed with a depressive disorder from the LVR University Hospital Düsseldorf and the 110 patients of the dental practice described above. Together, data from 190 participants were analyzed, 120 women (63.2%) and 70 men (36.8%) with a mean age of 39.36 years (*SD* = 13.94).

3.1.2. Measures

Experiences in Close Relationships Scale, German version (ECR-G-36). In all four studies, the ECR-G-36 was used for the measurement of adult attachment.

Relationship Assessment Scale (RAS). The RAS is a one-dimensional scale for the measurement of satisfaction with romantic relationships [30] (German version [31]). The seven items of this instrument are answered on a 7-point Likert scale from 1 (*not at all satisfied*) to 7 (*very satisfied*).

Marburg Attitude Scales towards Love Styles (MEIL). The six love styles (erotic, game-playing, friendship, pragmatic, possessive, and altruistic love) proposed by Lee [32] stand for different attitudes towards the romantic partner. The MEIL, a questionnaire that is available in a 60-item version and a 30-item short version, allows these styles to be measured with a response format ranging from 1 (*not at all true*) to 9 (*very true*) [33].

Symptom Checklist (SCL). The 90 items of the SCL describe mental and somatic symptoms [34] (German version [35]). The level of stress caused by these symptoms is rated on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). The total score Global Severity Index (GSI) indicates the general level of stress in psychological, social, and physical terms.

Hospital Anxiety and Depression Scale (HADS). This instrument was developed for patients with somatic or mental disorders and serves as the measurement of anxiety and depression [36] (German version [37]). In order to distinguish mental from physical complaints, the items relate specifically to psychological symptoms of depression and anxiety and do not ask for somatic symptoms. The 14 items of this instrument have an answer format from 0 to 3. The answers are worded differently and refer to the frequency or the severity of the respective symptom or to the extent of change in the symptom.

Patient Health Questionnaire Somatic Symptom Severity Scale (PHQ-15). The PHQ-15, a module from the Patient Health Questionnaire, allows the rating of the severity of somatic symptoms [38] (German version [39]). The 15 items describe somatic symptoms and are rated on a 3-point Likert scale from 0 (*not bothering at all*) to 2 (*bothering a lot*).

NEO-Five-Factor Inventory (NEO-FFI-30). The NEO-FFI serves as the measurement of the Big Five of personality—neuroticism, extraversion, openness, agreeableness, and conscientiousness [40] (German 30-item short version [41]). Each of the five personality dimensions is measured with six items that are answered on a 5-point Likert scale from 1 (*disagree strongly*) to 5 (*agree strongly*).

Assessment of DSM-IV Personality Disorders (ADP-IV). The ADP-IV allows dimensional ratings of the ten personality disorders of the DSM-IV, which are also listed in the DSM-5 [42] (German version [43]). Each diagnostic criterion of the personality disorders is described in an item. The instrument includes a total of 94 items that are responded to on a 7-point Likert scale from 1 (*totally disagree*) to 7 (*fully agree*).

Childhood Trauma Questionnaire (CTQ). The CTQ serves as the retrospective assessment of traumatic interpersonal experiences in childhood [44] (German version [45]). The 25 items are rated on a 5-point Likert scale from 1 (*never true*) to 5 (*very often true*). The CTQ results in scores for five subscales (emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect).

3.2. Results

The correlations of the original long scales and the new short scales of the German ECR with the external variables are shown in Table 2. The results were very similar for the long and short form. In almost all cases, the correlations with external criteria had the same direction; i.e., they were both positive or both negative. With only a few exceptions, there was also concordance regarding the significance or non-significance of the correlations.

Table 2. Correlations of the ECR-G long and short form with external criteria.

Data Source	*n*	Scale	Avoidance		Anxiety	
			ECR-G-36	ECR-G-10	ECR-G-36	ECR-G-10
Rohmann et al. [27]	92	Relationship satisfaction	−0.54 ***	−0.41 ***	−0.10	0.00
		Erotic love	−0.43 ***	−0.34 **	−0.05	0.06
		Game-playing love	0.10	0.02	0.07	0.07
		Friendship love	−0.11	−0.19	0.05	0.07
		Pragmatic love	−0.03	−0.05	0.07	0.07
		Possessive love	−0.25 ***	−0.25 *	0.56 ***	0.52 ***
		Altruistic love	−0.19	−0.13	0.22 *	0.23 *
Makuch and Neumann [28]	110	Global Severity Index	0.21 *	0.14	0.52 ***	0.42 ***
		Anxiety	0.26 ***	0.13	0.57 ***	0.47 ***
		Depression	0.38 ***	0.30 **	0.45 ***	0.37 ***
		Somatization	0.15	0.05	0.39 ***	0.33 ***
		Neuroticism	0.31 **	0.14	0.54 ***	0.43 ***
		Extraversion	−0.35 ***	−0.30 **	−0.29 **	−0.30 **
		Openness	−0.05	−0.13	−0.02	−0.04
		Agreeableness	−0.30 **	−0.13	−0.15	−0.15
		Conscientiousness	−0.34 ***	−0.30 **	−0.11	−0.07
Neumann [21]	110	Paranoid PD	0.27 *	0.18	0.55 ***	0.50 ***
		Schizoid PD	0.35 ***	0.38 ***	−0.02	−0.02
		Schizotypal PD	0.36 ***	0.33 **	0.32 **	0.29 **
		Antisocial PD	0.23 *	0.25 **	0.28 **	0.27 **
		Borderline PD	0.36 ***	0.33 ***	0.49 ***	0.45 ***
		Histrionic PD	0.21 *	0.18	0.48 ***	0.45 ***
		Narcissistic PD	0.19	0.19 *	0.43 ***	0.44 ***
		Avoidant PD	0.44 ***	0.35 ***	0.38 ***	0.37 ***
		Dependent PD	0.15	0.11	0.48 ***	0.43 ***
		Compulsive PD	0.15	0.09	0.36 ***	0.39 ***
Neumann [29]	190	Emotional abuse	0.33 ***	0.25 **	0.35 ***	0.27 ***
		Physical abuse	0.18 *	0.19 *	0.15 *	0.09
		Sexual abuse	0.14	0.18 *	0.07	0.04
		Emotional neglect	0.46 ***	0.40 ***	0.26 ***	0.17 *
		Physical neglect	0.36 ***	0.32 ***	0.13	0.04

Note, PD = Personality disorder, *n* = number of participants, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The correlation coefficients of the short scales were lower than those of the long scales, but the difference was small in most cases and did not have an impact on the main result, i.e., whether the correlation was positive or negative and significant or not significant.

The two short scales correlated differently with the external variables in many cases. Avoidance showed the highest significant correlations with relationship satisfaction, erotic love, and conscientiousness (negative) and with schizoid personality disorder and emotional abuse and neglect (positive). The effect sizes were moderate. Anxiety showed the highest significant correlations with possessive love, stress, general anxiety, somatization, neuroticism, and paranoid, histrionic, narcissistic, dependent, and compulsive personality disorder (all positive). The effect sizes were moderate to strong. The anxiety short scale therefore showed higher and more statistically significant correlations than the avoidance short scale, a pattern of results that was also found in the long scales.

In some cases, both ECR short scales were correlated with an external variable. This applied to depression, extraversion, schizotypal, antisocial, borderline, and avoidant personality disorder, and emotional abuse. These correlations were all positive except the correlation with extraversion.

4. Study 3

The aim of study 3 was to investigate whether the ECR-G-10 proves reliable and valid when its ten items are presented alone. For this purpose, new data were gathered in a university setting. Participants completed the ECR-G-10 and other self-report questionnaires measuring satisfaction with the romantic relationship, sexuality, and life, as well as self-esteem. Exploratory and confirmatory factor analyses were conducted for the short version. The other scales used in this study served as external criteria for the validity of the ECR-G-10.

4.1. Methods

4.1.1. Participants and Settings

Participants were recruited via postings on social media platforms, by mail, and via bulletin boards at the Faculty of Psychology of the Ruhr University Bochum. They should be 18–35 years old and have been in a romantic relationship for at least three months. Psychology students received course credit for their participation. The questionnaires were filled out online via Qualtrics.

A total of 277 participants took part in the study, 176 women (63.5%) and 101 men (36.5%) with a mean age of 23.71 years (*SD* = 3.99). About two-thirds of the sample were students, 171 (61.7%), of whom 113 studied psychology and 58 other subjects. Of the non-student participants, 75 (27.1%) were employed, 17 (6.1%) were in training, and 14 (5.1%) reported another occupation or did not provide information on this item. Regarding sexual orientation, 231 (83.4%) indicated a heterosexual, 7 (2.5%) a homosexual, and 38 (14.1%) a bisexual orientation. The participants' romantic relationships had a mean duration of 34.32 (SD 29.59) months.

4.1.2. Measures

Experiences in Close Relationships Scale, German 10-item version (ECR-G-10). The ECR-G-10 was used for the measurement of attachment avoidance and anxiety (Table 3). The order of the items in the new short form followed these considerations: As in the long form, the items for avoidance and anxiety were presented alternately. The measure should start and end with items with a positive meaning. However, this could only be carried out for the first item, belonging to the avoidance scale, because all items of the anxiety scale are negatively worded. Therefore, the item of the anxiety scale that was rated the least negative in study 1 was presented as the last item.

Table 3. Descriptive data, reliability, and factor loadings of the ECR-G-10 items.

No.		*M*	*SD*	r_{it}	a_1	a_2
1	Ich rede mit meinem Partner/meiner Partnerin über fast alles. (r)	1.78	1.01	0.66	**0.81**	0.00
2	Manchmal merke ich, dass ich meinen Partner/meine Partnerin dränge, mehr Gefühl und Verbindlichkeit zu zeigen.	3.55	1.91	0.51	0.04	**0.73**
3	Ich wende mich oft an meinen Partner/meine Partnerin, zum Beispiel, wenn ich Trost und Bestätigung brauche. (r)	2.11	1.28	0.58	**0.75**	−0.16
4	Ich mache mir sehr oft Gedanken darüber, dass ich meinen Partner/meine Partnerin verlieren könnte.	3.14	1.77	0.46	0.08	**0.67**
5	Ich fühle mich unwohl, wenn mein Partner/meine Partnerin mir sehr nahe sein will.	1.67	1.26	0.35	**0.51**	0.01
6	Wenn ich es nicht schaffe, das Interesse meines Partners/meiner Partnerin auf mich zu ziehen, rege ich mich auf oder werde ärgerlich.	2.90	1.60	0.53	0.07	**0.72**
7	Ich bespreche meine Sorgen und Probleme meistens mit meinem Partner/meiner Partnerin. (r)	2.04	1.25	0.62	**0.79**	0.04
8	Es frustriert mich, wenn mein Partner/meine Partnerin nicht so oft bei mir ist, wie ich es will.	4.25	1.77	0.48	−0.05	**0.67**
9	Ich fühle mich wohl dabei, wenn ich meine innersten Gedanken und Gefühle mit meinem Partner/meiner Partnerin teilen kann. (r)	1.96	1.30	0.60	**0.78**	0.07
10	Ich brauche die Bestätigung, dass mein Partner/meine Partnerin mich liebt.	5.32	1.58	0.49	−0.21	**0.69**

Note, (r) = recoded, *M* = mean, *SD* = standard deviation, r_{it} = item-total correlation, a_1 = loading on factor 1, a_2 = loading on factor 2.

Congruent with the long form, the items of the ECR-G-10 are answered on 7-point Likert scales ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). Items 1, 3, 7, and 9 are to be recoded. The score for avoidance is the mean of the items with odd numbers and the score for anxiety is the mean of the items with even numbers. At least four item answers per scale are required for the scoring. In studies that include participants who do not currently have a romantic partner, it is recommended that the instruction be accompanied by a note that these participants should refer to their most recent romantic relationship when responding.

Relationship Assessment Scale (RAS). The RAS already described in the methods section of study 2 was used to measure satisfaction with the romantic relationship [30] (German version [31]).

Satisfaction with Sexuality (SWS). Satisfaction with sexuality in the romantic relationship was assessed with the following item formulated by Rohmann and Bierhoff [46]: "How satisfied are you with your sexual relationship with your partner?" The response format is the same as for the RAS.

Satisfaction with Life Scale (SWLS). General life satisfaction was measured with the SWLS [47] (German version [48]). The five items are answered on a 7-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

Rosenberg Self-Esteem Scale (RSES). The RSES serves as the measurement of self-esteem [49] (German version [50]). The ten items with statements about the self are rated on a 4-point Likert scale from 1 (*strongly disagree*) to 4 (*strongly agree*).

4.1.3. Statistical Analyses

Means and total-item correlations were calculated for the ten items of the new ECR short form. An exploratory factor analysis was conducted to test whether the two-factor structure of the long form could be replicated for the short form. Confirmatory factor analysis was performed to check model fit. The model fit indices were the root mean square error of approximation (RMSEA) and the comparative fit index (CFI). McDonald's omega

and Cronbach's alpha again served as reliability indices. To test whether the two subscales of the ECR-G-10 were independent of each other, their intercorrelation was determined. Finally, the two subscales were correlated with the other scales used in this study. Pearson correlation coefficients were determined.

4.2. Results

Table 3 shows the results obtained for the ECR-G-10 items. As can be seen from the mean values, agreement was higher for the anxiety items than for the avoidance items. Item–scale correlations indicated very good discrimination ($r_{it} > 0.40$) for nine items and good discrimination ($r_{it} > 0.30$) for one item.

The exploratory factor analysis yielded the following eigenvalues:

2.79, 2.43, 0.90, 0.74, 0.70, 0.68, 0.53, 0.50, 0.40, 0.34

The eigenvalues decreased significantly after the second factor, confirming the expected two-factor structure. The explained variance of the first two factors was 52.2%.

The ten items loaded as expected on the two factors, with the items with odd numbers loading on the factor representing avoidance and the items with even numbers loading on the factor representing anxiety (Table 3). These loadings were very high, falling within a range of 0.51–0.81. The loadings on the factor to which the items do not belong were always low and mostly close to 0.

The results obtained for the two ECR-G-10 subscales are shown in the bottom rows of Table 1. The confirmatory factor analysis yielded values for RMSEA and CFI that showed a relatively good model-data fit. McDonald's omega and Cronbach's alpha indicate that the reliability of both scales was acceptable.

The correlation between the avoidance and the anxiety scale was $r = -0.03$, $p = 0.68$, indicating that the two scales were independent.

Table 4 shows the correlations of the ECR short scales with the scales for the measurement of satisfaction and self-esteem. Avoidance was negatively correlated with self-esteem and all three measures of satisfaction. Anxiety showed negative correlations with relationship satisfaction and self-esteem. The correlations of the two short scales varied in magnitude. Attachment avoidance was more strongly correlated with the satisfaction scales, while attachment anxiety showed a stronger correlation with self-esteem.

Table 4. Correlations of the ECR-G-10 with external criteria.

	Avoidance	Anxiety
Relationship satisfaction	−0.48 ***	−0.18 **
Sexual satisfaction	−0.47 ***	−0.02
Satisfaction with life	−0.26 ***	−0.12
Self-esteem	−0.19 **	−0.30 ***

Note, ** $p < 0.01$, *** $p < 0.001$.

5. Discussion

The aim of the present work was to develop a short version of the German Experiences in Close Relationships Scale. For this purpose, three studies were conducted to select items from the long version and to demonstrate the reliability and validity of the resulting item selection. The studies used data from previous studies as well as newly gathered data.

In the first study, an ant colony optimization was conducted for the selection of items from the long version, consecutively in three different samples with a total of 1470 participants. A 10-item solution resulted, which measures attachment avoidance and anxiety with five items each. This solution, called the ECR-G-10, showed a good model fit not only in the initial sample but also in both replication samples. The finding was confirmed in study 3, in which the ten selected items were used alone in a sample of 277 participants. A good model fit was also shown here. The ten items loaded as expected on the two factors representing attachment avoidance and anxiety, again in all three samples of study 1 and in study 3.

The reliability of the new short scales proved to be acceptable. Cronbach's alpha ranged from 0.7 to 0.8 in the samples of studies 1 and 3. These alpha values are lower than those of the long scales of the ECR-G-36, which are usually above 0.9. However, these very high values for Cronbach's alpha may indicate some redundancy. The ACO excludes items that are highly correlated with another item due to similar wording, thus reducing redundancy. This probably led to a slight decrease in the internal reliability of the two short scales compared to the long scales. In addition, a decrease was also to be expected simply because the ECR-G-10 has a significantly smaller number of items than the ECR-G-36.

As intended, the two short scales showed a low inter-correlation. The coefficients of the correlation between avoidance and anxiety did not reach the threshold for a small effect size and were even close to zero in studies 1 and 3. The new short scales were thus found to be independent of each other.

Finally, the correlations of the two short scales with scales measuring romantic relationships, personality, psychopathology, and childhood trauma demonstrated their convergent and discriminant validity. In studies 2 and 3, avoidance and anxiety correlated similarly with the external criteria in some cases and differently in others. The correlations with depression, some personality disorders, and emotional abuse in childhood were almost the same. Differences were found in that avoidance correlated more strongly with scales assessing romantic relationships and childhood neglect, and anxiety correlated more strongly with scales assessing personality and psychopathology. These findings suggest that avoidance is more likely to reflect interpersonal experiences and behaviors in close relationships, whereas anxiety is more related to intrapersonal processes related to mental health. In summary, the correlational analysis supported theoretical assumptions about the nature of the two attachment dimensions and indicated the validity of the ECR-G-10 subscales.

Overall, consistent results emerged across the three studies in terms of model fit, factor structure, and validity of the ECR-G-10. The studies all showed a high test quality of the new short form. This agreement indicates the reliability of the results. Moreover, the fact that the results were similar in samples with very different participants (students, professionals, or psychotherapy patients) shows that the ECR-G-10 is applicable in a wide range of populations.

In addition to the statistical features outlined above, the ECR-G-10 has some strengths in terms of content. A weakness of the long version, the vague reference to the partner in items with the wording "partners" and "a partner", was remedied by not including these items in the short version. This ensured that the partner is consistently referred to as "my partner" in all items of the ECR-G-10 in which the partner is explicitly mentioned.

Furthermore, although the ECR-G-10 is quite short, the content of the items reflects the essential characteristics of attachment. One item of the avoidance scale relates to avoidance of intimacy (5), and the other items represent using the partner as a secure base (1, 3, 7, 9). One item of the anxiety scale reflects the fear of being abandoned (4), and the other items describe a desire for the partner to show more love and care (2, 6, 8, 10). Thus, despite its brevity, the ECR-G-10 covers the core features of attachment.

Limitations

Some aspects of our work limit the strengths of these analyses. The applied methods for the item selection were probabilistic. Potentially, estimating all possible combinations could yield even better solutions. In addition, it could be discussed whether modified or different optimization criteria should be applied for certain scenarios.

Women were overrepresented among the participants, making up two-thirds of the samples in this study (except sample 2 of study 1). It is therefore possible that the male perspective on romantic attachment and related constructs has not been sufficiently reflected here.

Another limiting factor was that all data came from self-report measures. It would therefore be interesting to investigate whether the ECR-G-10 also proves to be valid when comparing this instrument with measures based on other methodologies, such as scales

for expert ratings or biological parameters. Furthermore, the scales for the assessment of romantic relationships and sexuality may have been difficult to answer for participants who were in an open relationship and felt connected to more than one partner.

6. Conclusions

The short form of the German Experiences in Close Relationship Scale (ECR-G-10) presented in this work allows for an economic measurement of adult attachment. The two dimensions, avoidance and anxiety, are assessed with only five items each. To develop and validate the short form, three studies were conducted that included samples from student, community, and patient populations. The ECR-G-10 showed a good model fit and acceptable reliability. The factorial structure of the ECR long form could be replicated for the short form. The two scales of the ECR-G-10 correlated as expected with scales for the measurement of romantic relationships, personality, psychopathology, and childhood trauma, indicating convergent and discriminant validity. The ECR-G-10 can be used in research studies as well as in clinical practice.

Author Contributions: Conceptualization, E.N. and E.R.; methodology, E.N., E.R. and H.S.; software, H.S.; validation, E.N., E.R. and H.S.; formal analysis, H.S.; investigation, E.N. and E.R.; data curation, H.S.; writing—original draft preparation, E.N.; writing—review and editing, E.R. and H.S.; project administration, E.N. and E.R. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of the Faculty of Psychology, Ruhr University Bochum (Ethics Application No. 595, 24 January 2020).

Informed Consent Statement: Informed consent was obtained from all participants included in this study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to patient data protection regulations. The authors will also provide the ACO code written for this study upon request.

Acknowledgments: The authors would like to thank Matthias Volz for providing his version of the ACO code for R, which is based on the script by Schroeders et al. (2016) [22] and has been further developed.

Conflicts of Interest: On behalf of all authors, the corresponding author states that there are no conflicts of interest.

References

1. Hazan, C.; Shaver, P.R. Romantic love conceptualized as an attachment process. *J. Pers. Soc. Psychol.* **1987**, *52*, 511. [CrossRef] [PubMed]
2. Ainsworth, M.; Blehar, M.; Waters, E.; Wall, S. *Patterns of Attachment: A Psychological Study of the Strange Situation*; Lawrence Erlbaum: Hillsdale, NJ, USA, 1978.
3. Mikulincer, M.; Shaver, P.R. *Attachment in Adulthood: Structure, Dynamics, and Change*; Guilford Press: New York, NY, USA, 2016.
4. Brennan, K.A.; Clark, C.L.; Shaver, P.R. Self-report measurement of adult attachment. An integrative overview. In *Attachment Theory and Close Relationships*; Simpson, J., Rholes, W., Eds.; Guilford Press: New York, NY, USA, 1998; pp. 46–76.
5. Mikulincer, M.; Shaver, P.R. The role of attachment security in adolescent and adult close relationships. In *The Oxford Handbook of Close Relationships*; Simpson, J., Campbell, L., Eds.; Oxford University Press: New York, NY, USA, 2013; pp. 66–89. [CrossRef]
6. Noftle, E.E.; Shaver, P.R. Attachment dimensions and the big five personality traits: Associations and comparative ability to predict relationship quality. *J. Res. Pers.* **2006**, *40*, 179–208. [CrossRef]
7. Radetzki, P.; Wrath, A.J.; McWilliams, L.; Olson, T.; Adams, S.; De Souza, D.; Lau, B.; Adams, G.C. Exploring the relationship between attachment and pathological personality trait domains in an outpatient psychiatric sample. *J. Nerv. Ment. Dis.* **2022**, *211*, 46–53. [CrossRef]
8. Smith, M.; South, S. Romantic attachment style and borderline personality pathology: A meta-analysis. *Clin. Psychol. Rev.* **2020**, *75*, 101781. [CrossRef]

9. Fraley, R.C.; Waller, N.G.; Brennan, K.A. An item response theory analysis of self-report measures of adult attachment. *J. Pers. Soc. Psychol.* **2000**, *78*, 350. [CrossRef] [PubMed]
10. Cameron, J.J.; Finnegan, H.; Morry, M.M. Orthogonal dreams in an oblique world: A meta-analysis of the association between attachment anxiety and avoidance. *J. Res. Pers.* **2012**, *46*, 472–476. [CrossRef]
11. Ehrenthal, J.C.; Dinger, U.; Lamla, A.; Funken, B.; Schauenburg, H. Evaluation der deutschsprachigen Version des Bindungsfragebogens "Experiences in Close Relationships—Revised" (ECR-RD) [Evaluation of the German version of the attachment questionnaire" Experiences in Close Relationships--Revised" (ECR-RD)]. *Psychother. Psychosom. Med. Psychol.* **2008**, *59*, 215–223. [CrossRef] [PubMed]
12. Brenk-Franz, K.; Ehrenthal, J.; Freund, T.; Schneider, N.; Strauß, B.; Tiesler, F.; Schauenburg, H.; Gensichen, J. Evaluation of the short form of "Experience in Close Relationships" (Revised, German Version "ECR-RD12")—A tool to measure adult attachment in primary care. *PLoS ONE* **2018**, *13*, e0191254. [CrossRef] [PubMed]
13. Ehrenthal, J.C.; Zimmermann, J.; Brenk-Franz, K.; Dinger, U.; Schauenburg, H.; Brähler, E.; Strauß, B. Evaluation of a short version of the Experiences in Close Relationships-Revised questionnaire (ECR-RD8): Results from a representative German sample. *BMC Psychol.* **2021**, *9*, 140. [CrossRef]
14. Müller, S.; Spitzer, C.; Flemming, E.; Ehrenthal, J.C.; Mestel, R.; Strauß, B.; Lübke, L. Measuring change in attachment insecurity using short forms of the ECR-R: Longitudinal measurement invariance and sensitivity to treatment. *J. Pers. Assess.* **2023**, 1–12. [CrossRef]
15. Neumann, E.; Rohmann, E.; Bierhoff, H.W. Entwicklung und Validierung von Skalen zur Erfassung von Vermeidung und Angst in Partnerschaften—Der Bochumer Bindungsfragebogen (BoBi) [Development and validation of scales for measuring avoidance and anxiety in romantic relationships—The Bochum Adult Attachment Questionnaire]. *Diagnostica* **2007**, *53*, 33–47. [CrossRef]
16. Wei, M.; Russell, D.W.; Mallinckrodt, B.; Vogel, D.L. The Experiences in Close Relationship Scale (ECR)-short form: Reliability, validity, and factor structure. *J. Pers. Assess.* **2007**, *88*, 187–204. [CrossRef]
17. Lafontaine, M.F.; Brassard, A.; Lussier, Y.; Valois, P.; Shaver, P.R.; Johnson, S.M. Selecting the best items for a short-form of the Experiences in Close Relationships questionnaire. *Eur. J. Psychol. Assess.* **2016**, *32*, 140–145. [CrossRef]
18. Petrowski, K.; Brähler, E.; Suslow, T.; Zenger, M. Revised short screening version of the attachment questionnaire for couples from the German general population. *PLoS ONE* **2020**, *15*, e0230864. [CrossRef]
19. Rohmann, E. Zufriedenheit mit der Partnerschaft und Lebenszufriedenheit [Relationship satisfaction and life satisfaction]. In *Sozialpsychologische Beiträge zur Positiven Psychologie*; Rohmann, E., Herner, M.J., Fetchenhauer, D., Eds.; Pabst: Lengerich, Germany, 2008; pp. 93–117.
20. Neumann, E.; Sattel, H.; Gündel, H.; Henningsen, P.; Kruse, J. Attachment in romantic relationships and somatization. *J. Nerv. Ment. Dis.* **2015**, *203*, 101–106. [CrossRef] [PubMed]
21. Neumann, E. Emotional abuse in childhood and attachment anxiety in adult romantic relationships as predictors of personality disorders. *J. Aggress Maltreatment Trauma* **2017**, *26*, 430–443. [CrossRef]
22. Schroeders, U.; Wilhelm, O.; Olaru, G. Meta-heuristics in short scale construction: Ant colony optimization and genetic algorithm. *PLoS ONE* **2016**, *11*, e0167110. [CrossRef]
23. Volz, M.; Zimmermann, J.; Schauenburg, H.; Dinger, U.; Nikendei, C.; Friederich, H.C.; Ehrenthal, J.C. Erstellung und Validie rung einer Kurzversion des Fragebogens zur Erfassung aversiver und protektiver Kindheitserfahrung (APK-18) [Development and validation of the short-form of the questionnaire for the assessment of adverse and protective childhood experiences (APC)]. *Diagnostica* **2021**, *67*, 200–214. [CrossRef]
24. Feynman's Ants. Available online: https://www.mathpages.com/home/kmath320/kmath320.htm (accessed on 5 February 2023).
25. Hu, L.T.; Bentler, P.M. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Struct. Equ. Model* **1999**, *6*, 1–55. [CrossRef]
26. Cohen, J. *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed.; Lawrence Erlbaum Associates: Hillsdale, NJ, USA, 1988.
27. Rohmann, E.; Neumann, E.; Herner, M.J.; Bierhoff, H.W. Grandiose and vulnerable narcissism. Self-construal, attachment, and love in romantic relationships. *Eur. Psychol.* **2012**, *17*, 279–290. [CrossRef]
28. Makuch, M.K.; Neumann, E. *Zusammenhänge von Zahnbehandlungsangst mit Persönlichkeitsmerkmalen und Psychischer Gesundheit [Associations of Dental Anxiety with Personality Traits and Mental Health]*; Symposium of the Medical Research School, Heinrich-Heine-Universität: Düsseldorf, Germany, 2016.
29. Neumann, E. Recollections of emotional abuse and neglect in childhood as risk factors for depressive disorders and the need for psychotherapy in adult life. *J. Nerv. Ment. Dis.* **2017**, *205*, 873–878. [CrossRef] [PubMed]
30. Hendrick, S.S. A generic measure of relationship satisfaction. *J. Marriage Fam.* **1988**, *50*, 93–98. [CrossRef]
31. Hassebrauck, M. ZIP—Ein Instrumentarium zur Erfassung der Zufriedenheit in Paarbeziehungen [ZIP—A scale for assessment of satisfaction in close relationships]. *Z. Sozialpsychol.* **1991**, *22*, 256–259.
32. Lee, J. *Colors of Love*; New Press: Toronto, ON, Canada, 1973.
33. Bierhoff, H.W.; Grau, I.; Ludwig, A. *Marburger Einstellungs-Inventar für Liebesstile (MEIL) [Marburg Attitude Scales towards Love Styles (MEIL)]*; Hogrefe: Göttingen, Germany, 1993.
34. Derogatis, L.R.; Unger, R. Symptom Checklist-90-revised. In *The Corsini Encyclopedia of Psychology*, 4th ed.; John Wiley: Hoboken, NJ, USA, 2010; pp. 1–2. [CrossRef]

35. Franke, G.H. *SCL-90®-S. Symptom-Checklist-90®-Standard*; Hogrefe: Göttingen, Germany, 2014.
36. Snaith, R.P. The Hospital Anxiety and Depression Scale. *Health Qual. Life Outcomes* **2003**, *1*, 29. [CrossRef] [PubMed]
37. Hermann-Lingen, C.; Buss, U.; Snaith, R.P. *HADS-D Hospital Anxiety and Depression Scale—Deutsche Version [Hospital Anxiety and Depression Scale—German Version]*; Hogrefe: Göttingen, Germany, 2018.
38. Kroenke, K.; Spitzer, R.L.; Williams, J.B. The PHQ-15: Validity of a new measure for evaluating the severity of somatic symptoms. *Psychosom. Med.* **2002**, *64*, 258–266. [CrossRef] [PubMed]
39. Löwe, B.; Spitzer, R.L.; Zipfel, S.; Herzog, W. *PHQ-D. Gesundheitsfragebogen für Patienten [PRIME MD Patient Health Questionnaire (PHQ)—German Version]*, 2nd ed.; Pfizer: Karlsruhe, Germany, 2002.
40. Costa, P.T.; McCrae, R.R. *NEO Five-Factor Inventory (NEO-FFI)*; Psychological Assessment Resources: Odessa, FL, USA, 1989; p. 3.
41. Körner, A.; Geyer, M.; Roth, M.; Drapeau, M.; Schmutzer, G.; Albani, C.; Schumann, S.; Brähler, E. Persönlichkeitsdiagnostik mit dem NEO-Fünf-Faktoren-Inventar: Die 30-Item-Kurzversion (NEO-FFI-30) [Personality assessment with the NEO-Five-Factor Inventory: The 30-item-short-version (NEO-FFI-30)]. *Psychother. Psychosom. Med. Psychol.* **2008**, *58*, 238–245. [CrossRef] [PubMed]
42. Schotte, C.; de Doncker, D.; Dmitruk, D.; van Mulders, I.; D'Haenen, H.; Cosyns, P. The ADP-IV questionnaire: Differential validity and concordance with the semi-structured interview. *J. Pers. Disord.* **2004**, *18*, 405–419. [CrossRef]
43. Doering, S.; Renn, D.; Höfer, S.; Smrekar, U.; Janecke, N.; Schatz, D.S.; Schotte, C.; de Doncker, D.; Schüßler, G. Validierung der deutschen Version des Fragebogens zur Erfassung von DSM-IV Persönlichkeitsstörungen (ADP-IV) [Validation of the German version of the Assessment of DSM-IV Personality Disorders (ADP-IV) Questionnaire]. *Z. Psychosom. Med. Psychother.* **2007**, *53*, 111–128. [CrossRef]
44. Bernstein, D.P.; Stein, J.A.; Newcomb, M.D.; Walker, E.; Pogge, D.; Ahluvalia, T.; Stokes, J.; Handelsman, L.; Medrano, M.; Desmond, D.; et al. Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse Negl.* **2003**, *27*, 169–190. [CrossRef]
45. Wingenfeld, K.; Spitzer, C.; Mensebach, C.; Grabe, H.J.; Hill, A.; Gast, U.; Schlosser, N.; Höpp, H.; Beblo, T.; Driessen, M. Die deutsche Version des Childhood Trauma Questionnaire (CTQ): Erste Befunde zu den psychometrischen Kennwerten [The German version of the Childhood Trauma Questionnaire (CTQ): Preliminary psychometric properties]. *Psychother. Psychosom. Med. Psychol.* **2010**, *60*, 442–450. [CrossRef]
46. Rohmann, E.; Bierhoff, H.W. Skalen zur Erfassung der Equity in Partnerschaften (SEEP) [Scales measuring equity in romantic relationships]. *Z. Sozialpsychol.* **2007**, *38*, 217–231. [CrossRef]
47. Diener, E.; Emmons, R.A.; Larsen, R.J.; Griffin, S. The Satisfaction with Life Scale. *J. Pers. Assess.* **1985**, *49*, 71–75. [CrossRef] [PubMed]
48. Glaesmer, H.; Grande, G.; Braehler, E.; Roth, M. The German version of the satisfaction with life scale (SWLS). *Eur. J. Psychol. Assess.* **2011**, *27*, 127–132. [CrossRef]
49. Rosenberg, M. *Society and the Adolescent Self-Image*; Princeton University Press: Princeton, NJ, USA, 1965.
50. von Collani, G.; Herzberg, P.Y. Eine revidierte Fassung der deutschsprachigen Skala zum Selbstwertgefühl von Rosenberg [A revised German version of the Rosenberg Self-Esteem Scale]. *Z. Diff. Diagn. Psychol.* **2003**, *24*, 3–7. [CrossRef]

Current Psychology
https://doi.org/10.1007/s12144-023-04621-1

Attachment-based retrospective classifications of parental caregiving in childhood related to psychological well-being and mental health in young adults

Eva Neumann[1] · Elke Rohmann[2]

Accepted: 27 March 2023

Abstract

Adverse interpersonal experiences in childhood have been shown to be associated with low psychological well-being and poor mental health in adulthood. In this study, the Parental Caregiving Style Questionnaire (PCS-Q) was used for the retrospective classification of parental caregiving, a measure distinguishing between warm/responsive, ambivalent/inconsistent and cold/rejecting parenting, analogous to the three-category model of attachment. Furthermore, self-esteem, satisfaction with the romantic relationship and life, depression and anxiety were measured with self-report scales. 197 students took part in this study, of whom 74 answered the PCS-Q a second time two months later. Most participants classified the parental caregiving style as warm/responsive, especially with regard to the mother. The PCS-Q showed a high test-retest reliability. Warm/responsive parenting was associated with higher self-esteem and life satisfaction and with lower depression and anxiety than the other two parenting styles. Satisfaction with the romantic relationship, however, did not differ substantially between the three groups. The findings largely support the assumption that early attachment experiences have an impact on later well-being and mental health. The German version of the PCS-Q presented here can be used in research and clinical practice as an economic measure with direct reference to the model of attachment styles.

Keywords Parental caregiving · Self-esteem · Relationship satisfaction · Life satisfaction · Depression · Anxiety

The role of early attachment experiences in psychological well-being and mental health in later life has been an important subject of attachment theory since its beginnings. Bowlby (1969/82) postulated that children develop internal working models of attachment depending on the nature of their experiences with primary caregivers. Sensitive and responsive parenting leads to positive representations of the self and important others, while these representations are likely to be negative when insensitive or even rejecting parenting is experienced. The association between parental behavior and representations of the self is based on identification, a process that leads people to treat themselves the way attachment figures treated them (Mikulincer & Shaver, 2004). In this way, early attachment experiences are closely associated with adult self-esteem. Furthermore, the relationship with parents in childhood is supposed to be a model for close relationships in later life, a theoretical approach called "prototype perspective" by Fraley (2002). Following this perspective, it is likely that insensitive parenting in childhood is associated with experiencing adult close relationships as unsatisfying and unhappy.

The consequences of adverse attachment experiences in childhood can go beyond stress through negative perceptions of the self and of close relationships. According to Bowlby (1973, 1980), experiences such as the failure to form a secure bond with attachment figures or the loss of a parent through death increase the vulnerability for mental diseases in adulthood. He outlined these associations for depression and anxiety, in particular. The experience that attachment figures are unresponsive or unavailable can create a

✉ Eva Neumann
eva.neumann@uni-duesseldorf.de

[1] LVR Hospital Düsseldorf, Department of Psychosomatic Medicine and Psychotherapy, Heinrich Heine University Düsseldorf, Bergische Landstraße 2, 40629 Düsseldorf, Germany

[2] Faculty of Psychology, Department of Social Psychology, Ruhr University Bochum, Universitätsstraße 150, 44801 Bochum, Germany

Published online: 27 April 2023

sense of abandonment, which in turn leads to feelings of helplessness in situations where support from an attachment figure is needed (Bowlby, 1980). These negative schemas make a person vulnerable for a depressive response when confronted with stressful events in later life, a proposition that corresponds with cognitive models of depression (Beck et al., 1987; Seligman, 2007). Furthermore, not receiving support from attachment figures in threatening situations evokes feelings of fear (Bowlby, 1973). As a result, the world is experienced as a dangerous place, accompanied by the belief of not being able to cope alone with threats and dangers and not receiving help from others. These emotions and cognitions increase the risk for developing an anxiety disorder in later life.

Empirical evidence for associations of early attachment with later mental state

There are many studies on the associations of attachment with psychological well-being and mental health in adulthood, most of which found empirical support for the thesis that insecure attachment is associated with negative emotionality and psychopathology (Mikulincer & Shaver, 2016). The majority of these studies, however, refers to attachment representations of relationships in adulthood, notably romantic relationships. Studies linking attachment experiences in childhood to adult mental states are rarer. An obvious reason that there are fewer studies on this subject is the long time period between childhood and adulthood, which makes longitudinal testing difficult. This research question is therefore primarily pursued in cross-sectional studies in which parental caregiving is assessed retrospectively.

Studies using this methodological approach found that early parenting is associated with various indicators of psychological well-being in later life. For example, recollections of parental caregiving proved to be correlated with self-esteem (Cheng & Furnham, 2004; Koutra et al., 2022; Shen et al., 2021; Yamawaki et al., 2011). Further correlations were shown with regard to relationship satisfaction (Finzi-Dottan & Schiff, 2022), life satisfaction (Petrowski et al., 2009; Yamawaki et al., 2011) and happiness (Cheng & Furnham, 2004). There is also evidence for unspecific associations with various mental disorders (Enns et al., 2002) as well as associations specifically with depression and anxiety (Klein et al., 2020; Koutra et al., 2022). Since mothers are the primary caregivers in many families, it could be assumed that maternal caregiving has a stronger effect than paternal caregiving, but such a difference was found only occasionally (Enns et al., 2002, Finzi-Dottan & Schiff, 2022).

Measures for the retrospective assessment of parental caregiving

The most established measures for the retrospective assessment of parental caregiving are the Parental Bonding Instrument (PBI, Parker et al., 1979, German version Benz et al., 2022) and the Egna Minnen Beträffende Uppfostran (EMBU, Perris et al., 1980, German version Schumacher et al., 2000). The PBI measures the two dimensions "care" and "overprotection", the EMBU the three dimensions "emotional warmth", "rejection/punishment" and "control/overprotection", separately for maternal and paternal caregiving. These subscales relate to the quality of parental caregiving and thus to a central aspect of the attachment bond between parent and child. However, PBI and EMBU are not based on measurement models of attachment, i.e., they do not measure parental caregiving analogous to attachment styles or dimensions.

An attachment-based retrospective measure of parental caregiving

A measure with direct reference to the three-category model of attachment is the Parental Caregiving Style Questionnaire (PCS-Q, Hazan & Shaver, 1986). This model differentiates between secure, anxious and avoidant attachment (Ainsworth et al., 1978; Hazan & Shaver, 1987). The secure style is characterized by a balance between closeness and distance in relationships with significant others. Such a balance is not found in the other two styles, as the anxious style shows more proximity-seeking and the avoidant style more distancing behavior. Analogous to these three attachment styles, the PCS-Q describes three patterns of parental behavior towards the child: warm/responsive, ambivalent/inconsistent and cold/rejecting.

Studies using this instrument found evidence for associations between parental caregiving styles and indicators of adult well-being. Collins and Read (1990) showed that retrospective assessments of parental caregiving with this measure are associated with self-esteem. Warm/responsive maternal caregiving proved to come along with better self-esteem than the other two styles. Furthermore, both parents' caregiving style was associated with adult romantic attachment in this study, with respondents reporting warm/responsive parental caregiving showing more attachment security in romantic relationships. Similarly, Dale (2013) found that warm/responsive parenting is associated with secure and ambivalent/inconsistent or cold/rejecting parenting with insecure adult attachment. The effect sizes of these associations were moderate.

In two studies the German version of the PCS-Q (PCS-Q-G) was used (Neumann, 2002; Neumann & Tress, 2007). The first study was conducted in a university setting and has a student sample, while the second study was carried out in a psychosomatic hospital with a clinical sample of patients diagnosed with a mental disorder of moderate severity. The distribution of parental caregiving styles in these two different samples is shown on the left in Table 1. The students from the first study often classified their parents' caregiving style as warm/responsive, which is especially true of the mother's style. The other two styles, especially the cold/rejecting style, were rarely chosen in this sample. In contrast, the patients who participated in the second study classified parental caregiving in less than half the cases as warm/responsive and more often as ambivalent/inconsistent or cold/rejecting. This pattern of results suggests that recollections of parental caregiving are rather positive in non-clinical samples, while psychotherapy patients often remember unsensitive and inadequate parenting.

Neumann (2002) related the PCS-Q-G classifications to the two dimensions of adult attachment, avoidance and anxiety. Contrary to expectations, attachment dimensions showed no significant differences depending on recollected parental caregiving style.

Purpose of the present study

The aim of the present study was to investigate further whether recollections of early attachment experiences are associated with psychological well-being and mental health in adulthood. Since the measurement of these experiences should be based directly on measurement models of attachment theory, parental caregiving was assessed using the PCS-Q. Psychological well-being and mental health were defined in terms of self-esteem, relationship satisfaction, life satisfaction, depression and anxiety.

Method

Participants and procedure

The participants of this study were recruited via campus-wide flyers at the Ruhr University Bochum, postings by email and invitations via social platforms (e.g., Facebook). The data were collected online using QuestBack Unipark's EFS survey (https://www.unipark.de). There were two times of measurement with an interval of two months. At Time 1, all scales used in this study were administered, at Time 2 the PCS-Q-G was administered a second time to test the stability of the assessment.

At the first time of measurement, 197 subjects took part in the study, 156 women (79.2%) and 41 men (20.8%) with a mean age of 23.22 years ($SD = 6.42$). Most of the participants were students ($n = 175$, 88.8%), of whom 140 (71.1%) were undergraduate psychology students, 27 (13.7%) studied another subject, and 8 (4.1%) did not indicate their field of study. Of the 22 (11.2%) non-student participants, 11 (5.6%) were employed, 5 (2.5%) were in training, and 6 (3.1%) indicated another status, including unemployment, retirement and raising children. Concerning relationship status, 46 (23.4%) were singles, 138 (70.1%) had a romantic partner without being married, and 13 (6.6%) were married.

From the whole sample of 197 participants, 74 (37.6%) could be re-recruited for the second measurement two months later.

Measures

All measures used in this study are self-report scales, with the PCS-Q serving for a retrospective assessment and the other scales serving for the assessment of the current mental status.

Parental Caregiving Style Questionnaire (PCS-Q). The PCS-Q serves for the retrospective assessment of parental

Table 1 Distribution of parental caregiving styles in two previous studies and the present study

		Neumann (2002) *Student sample*		Neumann & Tress (2007) *Clinical sample*		Present study *Student sample* *Time 1*		*Time 2*	
		n	%	*n*	%	*n*	%	*n*	%
Mother									
	warm/responsive	74	71.2%	38	45.2%	151	77.0%	60	82.2%
	ambivalent/inconsistent	25	24.0%	36	42.9%	41	20.9%	12	16.4%
	cold/rejecting	5	4.8%	10	11.9%	4	2.0%	1	1.4%
	total	104		84		196		73	
Father									
	warm/responsive	48	47.1%	32	38.1%	90	46.6%	39	52.7%
	ambivalent/inconsistent	41	40.2%	33	39.3%	81	42.0%	26	35.1%
	cold/rejecting	13	12.7%	19	22.6%	22	11.4%	9	12.2%
	total	102		84		193		74	

caregiving (Hazan & Shaver, 1986, published in Collins & Read, 1990). Analogous to the attachment styles secure, anxious and avoidant, Hazan and Shaver (1986) formulated three short paragraphs each describing a specific pattern of parental behavior towards the child:

- "Warm/responsive" is analogous to the secure style and characterizes loving, responsive and supportive parenting.
- "Ambivalent/inconsistent" is analogous to the anxious style and characterizes inconsistent, unpredictable and often inattentive parenting.
- "Cold/rejecting" is analogous to the avoidant style and characterizes cold, distant and dismissive parenting.

Respondents are asked to select the paragraph which best describes their parents' behavior towards them when they were a child, once with regard to the mother and another time with regard to the father.

The German version of the PCS-Q (PCS-Q-G) is attached in the appendix. The instruction of this version includes the note that respondents can omit the rating of a parent's caregiving if they hardly knew her or him. This approach was chosen because the measurement should relate to the perceived quality of parental caregiving and not to childhood adversities due to loss of a parent through death or lack of contact following parental divorce.

Rosenberg Self-Esteem Scale (RSES). The RSES serves for the measurement of self-esteem (Rosenberg, 1965, German version Collani & Herzberg, 2003). The ten items with statements about the self (e.g. "On the whole, I am satisfied with myself") are rated on a 4-point Likert scale from 1 (strongly disagree) to 4 (strongly agree).

Relationship Assessment Scale (RAS). The RAS serves for the measurement of satisfaction with the romantic relationship (Hendrick et al., 1988, German version Hassebrauck, 1991). Several aspects of the relationship are assessed with seven items (e.g. "How good is your relationship compared to most?") ranging from 1 (low satisfaction) to 7 (high satisfaction). To enable singles to fill out this questionnaire, in this study the instruction included the note that participants who currently have no romantic partner should recall their most recent relationship.

Satisfaction with Life Scale (SWLS). General life satisfaction was measured with the SWLS (Diener et al., 1985, German version Glaesmer et al., 2011). The five items (e.g. "In most ways my life is close to my ideal") are answered on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree).

Patient Health Questionnaire Depressive Symptom Severity Scale (PHQ-9). The PHQ-9 is a module from the Patient Health Questionnaire (Kroenke et al., 2001, German version Löwe et al., 2002). The nine items (e.g. "Feeling down, depressed, or hopeless") describe the diagnostic criteria of a major depressive disorder. Respondents are asked to rate the frequency of these symptoms on a 4-point Likert scale from 0 (not at all) to 3 (nearly every day).

Generalized Anxiety Disorder 7-Item Scale (GAD-7). The GAD-7 is another module derived from the Patient Health Questionnaire (Spitzer et al., 2006, German version Löwe et al., 2002). The seven items (e.g. "Feeling nervous, anxious or on edge") describe the criteria of a generalized anxiety disorder and have the same answer format as the PHQ-9.

Data analysis

The analyses comprised three steps. First, the reliability of all scales used in this study was controlled. For the five continuous scales, RSES, RAS, SWLS, PHQ-9 and GAD-7, the internal consistency was assessed by calculating Cronbach's alpha. The test-retest reliability of the PCS-Q-G was assessed by calculating the percent match and the kappa coefficient for the classifications at Time 1 and Time 2, once with regard to maternal caregiving style and another time with regard to paternal caregiving style.

Second, the distributions of maternal and paternal caregiving styles were reported. Differences in the frequencies of the three styles between the two parents were tested with a chi-square test.

Third, the main hypotheses related to associations of parental caregiving with variables of psychological well-being and mental health were tested. Univariate analyses of variance were performed to test whether these variables differ depending on the chosen style of parental caregiving, separately for maternal and paternal caregiving. The partial eta squared was calculated as an indicator of effect size.

Results

Scale reliability

The continuous scales used in this study all showed a high internal consistency. Cronbach's alpha for the five measures were as follows: RSES: $\alpha = 0.91$, RAS: $\alpha = 0.91$, SWLS: $\alpha = 0.90$, PHQ-9: $\alpha = 0.85$, GAD-7: $\alpha = 0.87$.

The agreement between the classifications of parental caregiving at the two measurement times was high. Regarding maternal caregiving, 73 participants classified the style at both times of measurement, of whom 66 (90.4%) selected the same category at Time 1 and Time 2. The kappa coefficient ($\kappa = 0.66$, $p < .001$) indicated a substantial agreement (Koch et al., 1977).

A similar result was obtained for paternal caregiving. Here, 72 participants classified the style at both times of measurement, of whom 62 (86.1%) selected the same category at Time 1 and Time 2. The kappa-coefficient ($\kappa = 0.76$, $p < .001$) again indicated a substantial agreement.

Distribution of caregiving styles

The distributions of PCS-Q-G classifications obtained in this study are shown on the right in Table 1. At both times of measurement, maternal caregiving was most frequently classified as warm/responsive, while classifications as cold/rejecting were rare. Paternal caregiving was classified as warm/responsive in about half of the cases, and for the other half of the classifications, ambivalent/inconsistent was selected more frequently than cold/rejecting.

The frequencies of the three styles thus differed in maternal and paternal caregiving, with the mother's caregiving being classified more often as warm/responsive and less often as cold/rejecting. A chi-square test showed that that these differences are significant at Time 1 (X^2 (4, 192) = 13.82, $p = .008$). For Time 2, a chi-square test was not conducted, because two cells had a value of 0 in the contingency table.

Differences in adult mental state depending on parental caregiving style

Tables 2 and 3 show differences in the variables of psychological well-being and mental health in the three groups of parental caregiving. The results were similar for maternal and paternal caregiving.

Self-esteem, life satisfaction, depression and anxiety differed significantly in the three groups. The effect sizes were medium, as indicated by partial eta squared (η^2). Recollections of warm/responsive parental caregiving came along with the highest scores for self-esteem and life satisfaction and the lowest scores for depression and anxiety. Recollections of cold/rejecting caregiving showed the reversed pattern of results, i.e., the lowest scores for self-esteem and life satisfaction and the highest scores for depression and anxiety. The group who remembered ambivalent/inconsistent caregiving was always in the middle.

Relationship satisfaction, however, differed only slightly in the three groups. Although the difference between the three groups of paternal caregiving style became significant, the effects of both maternal and paternal caregiving style on relationship satisfaction were only small, as indicated by partial eta squared.

Discussion

The aim of the present study was to relate recollections of parental caregiving in childhood to adult psychological well-being and mental health. The measure used for the assessment of parental caregiving, the PCS-Q, allows classifying parental caregiving as warm/responsive, ambivalent/inconsistent and cold/rejecting, analogous to the three-category model of attachment.

Table 2 Self-esteem, satisfaction and mental health depending on maternal caregiving style

	Maternal caregiving style	*n*	*M*	*SD*	*F* (2,193)	*p*	η^2
Self-esteem					5.29	.006	.05
	warm/responsive	151	3.34	.60			
	ambivalent/inconsistent	41	3.02	.70			
	cold/rejecting	4	2.75	1.22			
Relationship satisfaction					1.68	.189	.02
	warm/responsive	151	5.70	1.03			
	ambivalent/inconsistent	41	5.57	1.12			
	cold/rejecting	4	4.75	2.12			
Life satisfaction					5.20	.006	.05
	warm/responsive	151	27.73	5.89			
	ambivalent/inconsistent	41	24.59	7.05			
	cold/rejecting	4	22.75	4.57			
Depression					6.62	.002	.06
	warm/responsive	151	6.07	4.63			
	ambivalent/inconsistent	41	8.88	5.14			
	cold/rejecting	4	10.75	11.09			
Anxiety					8.06	< .001	.08
	warm/responsive	151	5.30	4.21			
	ambivalent/inconsistent	41	7.98	4.84			
	cold/rejecting	4	10.50	7.77			

Table 3 Self-esteem, satisfaction and mental health depending on paternal caregiving style

	Paternal caregiving style	*n*	*M*	*SD*	*F* (2,190)	*p*	η^2
Self-esteem					7.33	.001	.07
	warm/responsive	90	3.42	.52			
	ambivalent/inconsistent	81	3.16	.69			
	cold/rejecting	22	2.90	.84			
Relationship satisfaction					3.46	.033	.04
	warm/responsive	90	5.82	.92			
	ambivalent/inconsistent	81	5.60	1.15			
	cold/rejecting	22	5.17	1.33			
Life satisfaction					7.76	.001	.08
	warm/responsive	90	28.64	5.15			
	ambivalent/inconsistent	81	26.01	6.42			
	cold/rejecting	22	23.68	7.75			
Depression					9.32	< .001	.09
	warm/responsive	90	5.41	4.16			
	ambivalent/inconsistent	81	7.36	5.43			
	cold/rejecting	22	10.14	5.48			
Anxiety					7.46	.001	.07
	warm/responsive	90	4.92	4.13			
	ambivalent/inconsistent	81	6.38	4.53			
	cold/rejecting	22	8.86	5.43			

The German version of the PCS-Q proved to have a good retest-reliability in this study. A repeated measurement with an interval of two months showed that most respondents chose the same category for the description of parental caregiving at the two times, a finding that both applied to maternal and paternal caregiving.

The distributions of caregiving styles in the student sample of this study revealed differences between recollections of maternal and paternal caregiving. Assessments of the mother's caregiving were mostly positive, indicated by the high number of classifications as warm/responsive and the low number of classifications as cold/rejecting. In contrast, assessments of the father's caregiving were less often positive. Classifications as ambivalent/inconsistent and cold/rejecting were chosen more frequently here, showing that a substantial number of participants remembered insensitive and inadequate paternal caregiving.

The frequencies of caregiving styles observed in this study are similar to the frequencies in the study by Neumann (2002), which also has a student sample. The accordance with this previous study confirms that participants from non-clinical samples predominantly remember positive experiences with their parents in childhood, especially with regard to the mother. In contrast, most of the patients who participated in the clinical trial by Neumann and Tress (2007) recollected negative experiences with both parents. The PCS-Q-G thus proves to be an instrument that can detect differences between clinical and non-clinical samples in recollections of parental caregiving.

The main hypotheses of this study were largely confirmed. The scales for the measurement of adult psychological well-being and mental health differed significantly depending on the parental caregiving style, with only one exception. Given that the three styles, ranging from warm/responsive to cold/rejecting, indicate a decreasing quality of parental caregiving, the results show that the lower the quality, the lower the scores for self-esteem and life satisfaction and the higher the scores for depression and anxiety. This pattern of results was found for maternal and paternal caregiving, suggesting that both parents have an impact on a child's later emotional development.

The only exception occurred with regard to relationship satisfaction. This variable differed only slightly in the three groups of both maternal and paternal caregiving, with small effect sizes. A similar result was found in the study by Neumann (2002), in which parental caregiving turned out not to be associated with the two dimensions of adult romantic attachment. The concordance in the two studies suggests that the impact of early parenting on attitudes towards romantic relationships in later life is rather weak.

Overall, the findings largely support assumptions of attachment theory. Provided that recollections of parental caregiving reflect real experiences, this study found evidence for an impact of early parenting on adult psychological well-being and mental health. However, with regard to romantic relationships there was no clear evidence of such an impact, a result that does not correspond to assumptions of attachment theory.

Limitations

This study was conducted at a German university with a sample consisting mainly of students. The two comparison samples listed in Table 1 also come from studies conducted in Germany. The cultural context of these studies is therefore very similar. The question of how far the findings also apply to other cultural contexts, especially non-Western societies, is therefore still open.

All data of this study come from self-report measures. Further studies are needed to clarify whether the findings can be confirmed when using another methodological approach, for example measurement of biological parameters.

Furthermore, parental caregiving was measured retrospectively. The validity of retrospective measures is an issue of concern and has been widely discussed. Hardt and Rutter (2004) reviewed studies on this topic and concluded that recollections of childhood, of course, do not fully correspond to actual experiences. Such reports, however, proved to be sufficiently valid to justify their use in empirical research.

A factor that could limit the scope of the PCS-Q-G is that this measure led to unequal group sizes, especially with regard to maternal caregiving styles. The number of classifications as cold/rejecting, in particular, was very small here. Therefore, it is possible that in studies with small samples sizes the group of classifications as cold/rejecting becomes even smaller, making statistical testing difficult. The use of the PCS-Q-G in empirical studies is therefore only recommended in larger samples from the normal population or in clinical samples where classifications of maternal caregiving as cold/rejecting are more common.

Conclusions

The present study showed that recollections of early parenting are associated with psychological well-being and mental health in adult life. Solely satisfaction with the romantic relationship turned out to be rather independent of these recollections. Since there is evidence that retrospective measures reflect actual experiences reasonably well, the findings of this study largely support assumptions of attachment theory, according to which the quality of early parenting has an impact on psychological well-being in later life.

With the PCS-Q-G, an instrument for the retrospective assessment of parental caregiving is presented that is economic, proved to be reliable and has face validity. Since there are already established instruments for the assessment of parental caregiving, the question arises as to whether the PCS-Q-G is useful as another instrument for this purpose. Indeed, the PCS-Q-G may offer utility in trials and clinical contexts. This measure is preferable if parental caregiving should be assessed in analogy to attachment styles, thus allowing, inter alia, direct comparisons between caregiving and attachment styles. Moreover, the PCS-Q is a very short instrument and can therefore be useful when the measurement should not be long and a quick result is needed. One area of application can be screenings for psychotherapy treatments. Using the PCS-Q-G offers therapists the opportunity to quickly get a first impression of the quality of attachment bonds with parents in childhood. Classifications as ambivalent/inconsistent and cold/rejecting point to problem areas that should be explored more closely and treated in the therapy. Since psychodynamic psychotherapy focuses on close relationships in childhood and adulthood, the PCS-Q-G can be particularly useful in therapies based on this approach.

Appendix: Parental Caregiving Style Questionnaire – Deutsche Version (PCS-Q-G)

Instruktion: Im Folgenden finden Sie eine Reihe von Aussagen, die das Verhalten von Eltern gegenüber ihren Kindern beschreiben. Bitte wählen Sie für Ihre Mutter und Ihren Vater jeweils die Aussage aus, die das Verhalten des Elternteils Ihnen gegenüber in Ihrer Kindheit am besten beschreibt. Markieren Sie bitte nur eine Aussage pro Elternteil. Wenn Sie ein Elternteil gar nicht oder kaum kannten, können Sie den Abschnitt, der sich darauf bezieht, freilassen.

Meine Mutter

- Sie war im Allgemeinen liebevoll und aufmerksam; sie wusste ziemlich genau, wann ich Hilfe brauchte und wann sie mich selbständig etwas machen lassen konnte; unsere Beziehung war meistens gut, und im Großen und Ganzen kann ich mich nicht darüber beschweren.
- Sie war ziemlich unbeständig in ihren Reaktionen auf mich, manchmal liebevoll und manchmal nicht; sie war mit eigenen Dingen beschäftigt, so dass sie meine Bedürfnisse manchmal nicht wahrnahm oder nicht darauf einging; sie hat mich bestimmt geliebt, aber sie zeigte es nicht immer in angemessener Weise.
- Sie war ziemlich kalt und distanziert oder abweisend oder nicht sehr aufmerksam; ich war nicht das Wichtigste in ihrem Leben; sie war mit ihren Gedanken häufig woanders; es ist möglich, dass sie mich lieber nicht gehabt hätte.

Mein Vater

- Er war im Allgemeinen liebevoll und aufmerksam; er wusste ziemlich genau, wann ich Hilfe brauchte und wann er mich selbständig etwas machen lassen konnte; unsere Beziehung war meistens gut, und im Großen und Ganzen kann ich mich nicht darüber beschweren.
- Er war ziemlich unbeständig in seinen Reaktionen auf mich, manchmal liebevoll und manchmal nicht; er war mit eigenen Dingen beschäftigt, so dass er meine Bedürfnisse manchmal nicht wahrnahm oder nicht darauf einging; er hat mich bestimmt geliebt, aber er zeigte es nicht immer in angemessener Weise.
- Er war ziemlich kalt und distanziert oder abweisend oder nicht sehr aufmerksam; ich war nicht das Wichtigste in seinem Leben; er war mit seinen Gedanken häufig woanders; es ist möglich, dass er mich lieber nicht gehabt hätte.

Author Contribution Both authors contributed to the study conception and design. Material preparation and data collection were performed by E.R. Data analyses were conducted by E.N. The first draft of the manuscript was written by E.N. E.R. reviewed and revised the paper. Both authors read and approved the final manuscript.

Funding Open Access funding enabled and organized by Projekt DEAL. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Data Availability The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

Ethics approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual respondents included in this study.

References

Ainsworth, M., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment. A psychological study of the strange Situation*. Lawrence Erlbaum.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1987). *Cognitive therapy of depression*. Guilford Publications.

Benz, A. B., Kloker, L. V., Kuhlmann, T., Meier, M., Unternaehrer, E., Bentele, U. U., & Pruessner, J. C. (2022). Psychometrische Kennwerte einer deutschen Übersetzung des parental bonding instrument [Psychometric properties of a German translation of the parental bonding instrument]. *PPmP-Psychotherapie·Psychosomatik Medizinische Psychologie*, *72*(01), 34–44. https://doi.org/10.1055/a-1503-5328

Bowlby, J. (1969/82). *Attachment and loss: Vol. 1. Attachment*. Basic Books.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. Basic Books.

Bowlby, J. (1980). *Attachment and loss: Vol. 3. Loss, sadness and depression*. Basic Books.

Cheng, H., & Furnham, A. (2004). Perceived parental rearing style, self-esteem and self-criticism as predictors of happiness. *Journal of Happiness Studies*, *5*(1), 1–21. https://doi.org/10.1023/B:JOHS.0000021704.35267.05

Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology*, *58*, 644–663. https://doi.org/10.1037/0022-3514.58.4.644

Dale, L. (2013). How an early caregiving style affects adult romantic love.Reinvention: An International Journal of Undergraduate Research, *6*(1).

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with Life Scale. *Journal of Personality Assessment*, *49*, 71–75. https://doi.org/10.1207/s15327752jpa4901_13

Enns, M., Cox, B. J., & Clara, I. (2002). Parental bonding and adult psychopathology: results from the US National Comorbidity Survey. *Psychological Medicine*, *32*(6), 997–1008. https://doi.org/10.1017/S0033291702005937

Finzi-Dottan, R., & Schiff, M. (2022). Couple relationship satisfaction: The role of recollection of parental acceptance, self-differentiation, and spousal caregiving. *Journal of Social and Personal Relationships*, *39*(2), 179–197. https://doi.org/10.1177/02654075211033029

Fraley, R. C. (2002). Attachment stability from infancy to adulthood: Meta-analysis and dynamic modeling of developmental mechanisms. *Personality and Social Psychology Review*, *6*(2), 123–151. https://doi.org/10.1207/S15327957PSPR0602_03

Glaesmer, H., Grande, G., Braehler, E., & Roth, M. (2011). The German version of the satisfaction with Life Scale (SWLS): Psychometric properties, validity, and population-based norms. *European Journal of Psychological Assessment*, *27*(2), 127–132. https://doi.org/10.1027/1015-5759/a000058

Hardt, J., & Rutter, M. (2004). Validity of adult retrospective reports of adverse childhood experiences: Review of the evidence. *Journal of Child Psychology and Psychiatry*, *45*(2), 260–273. https://doi.org/10.1111/j.1469-7610.2004.00218.x

Hassebrauck, M. (1991). ZIP – ein Instrumentarium zur Erfassung der Zufriedenheit in Paarbeziehungen [ZIP: A scale for assessment of satisfaction in close relationships]. *Zeitschrift für Sozialpsychologie*, *22*, 256–259.

Hazan, C., & Shaver, P. R. (1986). *Parental Caregiving Style Questionnaire* Unpublished questionnaire.

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, *52*, 511–524. https://doi.org/10.1037/0022-3514.52.3.511

Hendrick, S. S., Dick, A., & Hendrick, C. (1988). Relationship Assessment Scale (RAS). *Journal of Marriage and Family*, *50*(1), 93–98.

Klein, E. M., Brähler, E., Petrowski, K., Tibubos, A. N., Burghardt, J., Wiltink, J., & Beutel, M. E. (2020). Recalled parental rearing behavior in adult women and men with depressive and anxiety symptoms: Findings from a community study. *Zeitschrift für Psychosomatische Medizin und Psychotherapie*, *66*(3), 243–258. https://doi.org/10.13109/zptm.2020.66.3.243

Koch, G. G., Landis, J. R., Freeman, J. L., Freeman, D. H. Jr., & Lehnen, R. G. (1977). A general methodology for the analysis of experiments with repeated measurement of categorical data. *Biometrics*, 133–158. https://doi.org/10.2307/2529309

Koutra, K., Paschalidou, A., Roumeliotaki, T., & Triliva, S. (2022). Main and interactive retrospective associations between parental rearing behavior and psychological adjustment in young adulthood. *Current Psychology*, 1–16. https://doi.org/10.1007/s12144-022-03011-3

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*, 606–613. https://doi.org/10.1046/j.1525-1497.2001.016009606.x

Löwe, B., Spitzer, R. L., Zipfel, S., & Herzog, W. (2002). *Gesundheitsfragebogen für Patienten (PHQ-D) [Patient Health Questionnaire (PHQ) - German version]*. Pfizer.

Mikulincer, M., & Shaver, P. R. (2004). Security-based self-representations in adulthood: Contents and processes. In W. S. Rholes, & J. A. Simpson (Eds.), *Adult attachment: Theory, research, and clinical implications* (pp. 159–195). Guilford Press.

Mikulincer, M., & Shaver, P. R. (2016). *Attachment in adulthood. Structure, dynamics, and change*. Guilford Press.

Neumann, E. (2002). Die Paarbeziehung Erwachsener und Erinnerungen an die Eltern-Kind-Beziehung - Eine Untersuchung zur Kontinuität von Bindung [Adult partnerships and memories of the parent-child-relationship – an empirical study of the continuity of attachment]. *Zeitschrift für Familienforschung*, *14*(3), 234–256. https://nbn-resolving.org/urn:nbn:de:0168-ssoar-282823

Neumann, E., & Tress, W. (2007). Enge Beziehungen in Kindheit und Erwachsenenalter aus der Sicht der Strukturalen Analyse Sozialen Verhaltens (SASB) und der Bindungstheorie [Close relationships in childhood and adutlhood from the viewpoint of structural analysis of Social Behavior (SASB) and attachment theory]. *Psychotherapie Psychosomatik Medizinische Psychologie*, *57*(3–4), 145–153. https://doi.org/10.1055/s-2006-951923

Parker, G., Tupling, H., & Brown, L. B. (1979). A parental bonding instrument. *British Journal of Medical Psychology*, *52*, 1–10. https://doi.org/10.1111/j.2044-8341.1979.tb02487.x

Perris, C., Jacobsson, L., Lindström, H., et al. (1980). Development of a new inventory for assessing memories of parental rearing behaviour. *Acta Psychiatrica Scandinavica*, *61*, 265–274. https://doi.org/10.1111/j.1600-0447.1980.tb00581.x

Petrowski, K., Berth, H., Schmidt, S., Schumacher, J., Hinz, A., & Brähler, E. (2009). The assessment of recalled parental rearing behavior and its relationship to life satisfaction and interpersonal problems: A general population study. *BMC Medical Research Methodology*, *9*(1), 1–9. https://doi.org/10.1186/1471-2288-9-17

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.

Schumacher, J., Eisemann, M., & Brähler, E. (2000). *Fragebogen zum erinnerten elterlichen Erziehungsverhalten [Questionnaire on recalled parental rearing behavior]*. Huber.

Seligman, M. E. (2007). *The optimistic child*. Houghton Mifflin.

Shen, F., Liu, Y., & Brat, M. (2021). Attachment, self-esteem, and psychological distress: A multiple-mediator model. *Professional Counselor*, *11*(2), 129–142. https://doi.org/10.15241/fs.11.2.129

Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, *166*, 1092–1097. https://doi.org/10.1001/archinte.166.10.1092

von Collani, G., & Herzberg, P. Y. (2003). Eine revidierte Fassung der deutschsprachigen Skala zum Selbstwertgefühl von Rosenberg [A revised German version of the Rosenberg Self-Esteem Scale]. *Zeitschrift für Differentielle und Diagnostische Psychologie*, *24*, 3–7. https://doi.org/10.1024/0170-1789.24.1.3

Yamawaki, N., Nelson, J. A. P., & Omori, M. (2011). Self-esteem and life satisfaction as mediators between parental bonding and psychological well-being in japanese young adults. *International Journal of Psychology and Counseling*, *3*(1), 1–8.

Danksagung

Bei der Verwirklichung dieses Habilitationsvorhabens habe ich von mehreren Seiten Unterstützung erfahren.

Mein besonderer Dank geht an Frau Prof. Dr. Ulrike Dinger-Ehrenthal, die diese Habilitation mit viel Engagement ermöglicht und gefördert hat.

Herrn Prof. Dr. Alfons Schnitzler danke ich für seine Unterstützung darin, dass ich im Fach Medizinische Psychologie habilitieren konnte.

Schließlich möchte ich Herrn Prof. Dr. Dr. Wolfgang Tress († 2023) für die von Vertrauen und Freiraum gekennzeichnete Zusammenarbeit danken, in der ich mich entfalten und die Grundlage für diese Habilitation legen konnte.