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Klinische Psychologie und Psychotherapie des Kindes- und Jugendalters

Nichtsuizidale Selbstverletzung bei Jugendlichen unter Berücksichtigung von Persönlichkeitsmerkmalen und familiären Faktoren

Nonsuicidal self-injury in adolescents
considering personality traits and family factors

Vom Promotionsausschuss des Fachbereichs 8: Psychologie der Universität Koblenz-Landau zur Verleihung des akademischen Grades Doktor der Philosophie (Dr. phil.) genehmigte Dissertation

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I. Zusammenfassung

Das wissenschaftliche Interesse an nichtsuizidalen Selbstverletzungen (NSSV) von Jugendlichen hat in den letzten zwei Jahrzehnten deutlich zugenommen. Hohe Prävalenz- und Komorbiditätsraten sowie die geringe Lebensqualität und das erhöhte Suizidrisiko betroffener Jugendlicher betonen die Wichtigkeit dieses Forschungszweiges. Die vorliegende Dissertation widmet sich intra- und interpersonellen Faktoren, die sich als relevant für die Entstehung und Aufrechterhaltung von NSSV erwiesen haben.

Ziel der Studie 1 war die Untersuchung der Persönlichkeitsmerkmale von Jugendlichen mit NSSV ohne Borderline-Persönlichkeitsstörung (NSSV-BPS) in Abgrenzung zu Jugendlichen mit NSSV und einer BPS (NSSV+BPS), einer klinischen Kontrollgruppe (KKG) und einer gesunden Kontrollgruppe (GKG). Jugendliche mit NSSV erzielten im Vergleich zur KKG höhere Werte auf den Persönlichkeitsdimensionen Neugierverhalten und Schadensvermeidung und niedrigere Werte auf den Dimensionen Beharrungsvermögen, Selbstlenkungsfähigkeit und Kooperativität. Für Jugendliche mit NSSV+BPS zeigte sich ein ähnliches Persönlichkeitsmuster, welches jedoch deutlich ausgeprägter war.

NSSV von Jugendlichen beeinflussen das gesamte Familiensystem und gehen häufig mit Konflikten und einer veränderten Familiendynamik einher. Eltern von betroffenen Jugendlichen berichten von einer hohen Belastung, Unsicherheit und Hilflosigkeit. Jugendliche mit NSSV nehmen im Vergleich zu Jugendlichen ohne NSSV mehr Kritik und Kontrolle und weniger Unterstützung von Seiten der Eltern wahr. In Studie 2 wurde das Erziehungsverhalten in Familien von Jugendlichen mit NSSV untersucht und mit einer KKG und GKG verglichen. Im Vergleich zur GKG berichteten Jugendliche mit NSSV weniger mütterliche Wärme und Unterstützung. Mütter von Jugendlichen mit NSSV erzielten im Vergleich zu Müttern in der GKG höhere Psychopathologiewerte und berichteten weniger Elternzufriedenheit als Mütter der KKG und GKG.

Auch Geschwisterkinder leiden unter der veränderten Familiendynamik. Ziel der Studie 3 war die Untersuchung der Geschwisterbeziehung von Jugendlichen mit NSSV im Vergleich zu einer KKG und GKG. Geschwister von Jugendlichen mit NSSV berichteten von einer Vielzahl von negativen emotionalen und familiären Konsequenzen bedingt durch die NSSV der Schwester. Im Vergleich zu Geschwistern in der KKG und GKG berichteten sie häufiger von Nötigung/Zwang in der Geschwisterbeziehung. Jugendliche mit NSSV gaben im Vergleich zur GKG höhere Rivalitätswerte und weniger Empathie und Wärme in der Geschwisterbeziehung

an. Sowohl für Jugendliche mit NSSV als auch deren Geschwister zeigten sich Zusammenhänge zwischen der geschwisterlichen Beziehungsqualität und internalisierenden Symptomen.

Zur genaueren Untersuchung des familiären Klimas, wurde in Studie 4 das Ausmaß an Expressed Emotion (EE) von Jugendlichen mit NSSV, Jugendlichen einer KKG, einer GKG und deren Müttern erfasst und verglichen. Bisherige Studien zeigen einen Zusammenhang zwischen einem hohen Maß an EE (HEE) der Eltern und NSSV der Jugendlichen. Insbesondere elterliche Kritik scheint mit NSSV assoziiert zu sein. Der Fokus bisheriger Studien lag auf dem EE-Status der Eltern, was womöglich ein unvollständiges Bild darstellt. Aus diesem Grund wurden in dieser Studie auch die EE-Ausprägungen der Jugendlichen miteinbezogen. Jugendliche in der NSSV Gruppe und KKG erfüllten im Vergleich zur GKG häufiger die Kriterien für HEE. Jugendliche mit NSSV äußerten gegenüber ihren Müttern mehr verdeckte Kritik und kritischen Tonfall als Jugendliche der KKG und GKG. HEE der Jugendlichen ging mit Emotionsregulationsschwierigkeiten einher. Für die Gesamtstichprobe zeigte sich eine moderate Übereinstimmung zwischen den HEE-Ausprägungen der Jugendlichen und Mütter.

Die Ergebnisse dieser Arbeit beinhalten wichtige Implikationen für die Behandlung von Jugendlichen mit NSSV. Die Unterschiede in den Persönlichkeitsmerkmalen von Jugendlichen mit NSSV mit und ohne BPS betonen die Relevanz der dimensionalen Persönlichkeitsdiagnostik sowie gezielter Behandlungsprogramme für Jugendliche mit NSSV-BPS. Familiäre Konflikte sind häufige Trigger für NSSV, daher sollten Interventionen für Jugendliche mit NSSV sowohl die Verbesserung der Emotionsregulation als auch der familiären Kommunikation und Interaktion zum Ziel haben. Nebst der Reduktion negativer Beziehungsaspekte, sollte in der Psychotherapie auch an der Steigerung positiver Beziehungsqualitäten gearbeitet werden. Die emotionale Belastung von Familienangehörigen weist auf die Notwendigkeit von Unterstützungsangeboten für Eltern und Geschwister hin.

II. Abstract

The scientific interest in nonsuicidal self-injury (NSSI) has increased in the last two decades. High prevalence and comorbidity rates, low quality of life and increased risk of suicidality highlight the importance of this research field. The present thesis focuses on intra- and interpersonal factors associated with the development and maintenance of NSSI.

The aim of study 1 was the examination of personality traits of adolescents with NSSI without Borderline Personality Disorder (NSSI-BPD), adolescents with NSSI and BPD (NSSI+BPD), clinical controls (CC) and nonclinical controls (NC). Results showed that adolescents with NSSI disorder scored significantly higher on novelty seeking and harm avoidance and lower on persistence, self-directedness, and cooperativeness than CC. In adolescents with NSSI+BPD this personality pattern was even more pronounced than in adolescents with NSSI-BPD.

Adolescents´ NSSI leads to distress that affects the whole family system, often resulting in conflicts and disrupted family communication and functioning. Parents report feelings of distress, insecurity and helplessness. Adolescents with NSSI report more parental criticism and control and less support than adolescents without NSSI. Study 2 investigated the parenting behavior in families of adolescents with NSSI. Adolescents with NSSI reported less maternal warmth and support than NC adolescents. Mothers of adolescents with NSSI showed higher psychopathology scores than NC mothers and less parental satisfaction than CC and NC mothers.

Siblings are also reported to suffer from changes in family dynamics. The aim of study 3 was to examine the sibling relationship quality of adolescents with NSSI, CC and NC. Siblings reported a wide range of negative emotional and familial consequences as a result of their sister´s NSSI. Siblings of adolescents with NSSI experienced significantly more coercion in the relationship with their sister compared to CC and NC siblings. Adolescents with NSSI reported significantly less warmth and empathy in the sibling relationship and higher rivalry scores between their siblings and themselves than NC adolescents. For both, adolescents with NSSI and their siblings, associations were found between sibling relationship quality and internalizing problems.

Study 4 aimed to further explore the family emotional climate. Therefore, the level of expressed emotion (EE) was assessed in adolescents with NSSI, CC, NC and their mothers. Parental high EE (HEE) is linked to adolescent NSSI, especially parental criticism seems to be strongly associated with NSSI. Previous research into NSSI and EE has focused on parental

EE, however, the conceptualization of EE as a unidirectional construct from parent to child may present an incomplete picture. Therefore, the current study included both, adolescent and maternal EE. Adolescents in the NSSI and CC group more often met criteria for HEE than NC. Adolescents with NSSI exhibited significantly more covert criticism and critical tone toward their mothers than CC and NC. HEE of adolescents with NSSI was associated with a range of difficulties in emotion regulation. For the total sample, moderate concordance was found between adolescents and mothers EE-status.

The research presented in this thesis has important clinical implications. The differences in personality traits of adolescents with NSSI with and without BPD underline the need for a dimensional personality assessment as well as specific treatment programs for adolescents with NSSI-BPD. Problems within the family are frequent triggers for NSSI. Therefore, interventions for adolescents with NSSI should include both, the improvement of emotion regulation and family interaction and communication. Along with the reduction of negative relationship aspects, psychotherapy should also focus on the enhancement of positive relationship quality. The emotional burden of family members stresses the need for emotional and practical support for parents and siblings.

III. Manuskriptübersicht

Die vorliegende Dissertation basiert auf den folgenden Manuskripten:

1. **Tschan, T.**, Peter-Ruf, C., Schmid, M., & In-Albon, T. (2017). Temperament and character traits in female adolescents with nonsuicidal self-injury disorder with and without comorbid borderline personality disorder. *Child and Adolescent Psychiatry and Mental Health, 11*(1), 4.
2. **Tschan, T.**, Schmid, M., & In-Albon, T. (2015). Parenting behavior in families of female adolescents with nonsuicidal self-injury in comparison to a clinical and a nonclinical control group. *Child and Adolescent Psychiatry and Mental Health, 9*(1), 1-9.
3. **Tschan, T.**, Lüdtke, J., Schmid, M., & In-Albon, T. (2019). Sibling relationships of female adolescents with nonsuicidal self-injury disorder in comparison to a clinical and a nonclinical control group. *Child and Adolescent Psychiatry and Mental Health, 13*(1), 15.
4. **Tschan, T.** & In-Albon, T (2020). *Expressed Emotion among families of female adolescents with nonsuicidal self-injury* [Manuscript in preparation]. Department of Clinical Child and Adolescent Psychology, University of Koblenz-Landau.

1 Einleitung

Seit Aufnahme der Forschungsdiagnose Nichtsuizidale Selbstverletzungen (NSSV) in das DSM-5 (American Psychiatric Association, 2013) liegt erstmals eine einheitliche Definition für selbstverletzendes Verhalten vor. Die Definition enthält das repetitive Muster und die Funktionen des Verhaltens (z.B. Reduktion negativer Gefühle) sowie die Abgrenzung zur Suizidalität. Eine wachsende Anzahl an Studien trägt zur Validierung der NSSV-Diagnosekriterien bei (Ammerman et al., 2017; Brausch et al., 2016; Buelens et al., 2020; Muehlenkamp et al., 2017). Ein besonderes Forschungsinteresse gilt Jugendlichen, da der Beginn von NSSV meist in der Adoleszenz liegt (Muehlenkamp et al., 2019). NSSV gehen mit einer Reihe von psychischen Risiken (Groschwitz et al., 2015; Muehlenkamp et al., 2019) und interpersonellen Problemen einher (Victor et al., 2019; Waals et al., 2018). Für die Entwicklung maßgeschneiderter Interventionen hat die Untersuchung von intra- und interpersonellen Risikofaktoren eine hohe Relevanz.

Das integrierte theoretischen Modell nach Nock (2009, 2010) beschreibt unterschiedliche distale Risikofaktoren für NSSV (z.B. genetische Disposition für emotionale Reaktivität, familiäre Kritik) und deren Einfluss auf intra- und interpersonelle Vulnerabilitäten. Emotionale Dysregulation wird als intrapersonelle Folge von distalen Risikofaktoren verstanden, während schwache Kommunikations- und Problemlösefertigkeiten interpersonelle Folgen darstellen. Intra- und interpersonelle Schwierigkeiten führen zu einer erhöhten Stressantwort und erhöhen das Risiko für NSSV. Obwohl NSSV primär der Emotionsregulation und damit einer intrapersonellen Funktion dienen (P. J. Taylor et al., 2018), werden die vorausgehenden aversiven Gedanken und Gefühle häufig durch interpersonelle Erfahrungen und Interaktionen ausgelöst (Muehlenkamp et al., 2013; Prinstein et al., 2009). Interpersonelle Schwierigkeiten haben sich insbesondere für den Beginn von NSSV als relevant erwiesen (Muehlenkamp et al., 2013).

Die vorliegende Dissertation untersucht sowohl intrapersonelle Faktoren wie die Temperaments- und Charaktermerkmale von Jugendlichen mit NSSV (Tschan et al., 2017) als auch interpersonelle Faktoren wie das Erziehungsverhalten der Eltern (Tschan et al., 2015), die Qualität der Geschwisterbeziehung (Tschan et al., 2019), emotionale Invalidierung und das Ausmaß der Expressed Emotion in Familien von betroffenen Jugendlichen (Tschan & In-Albon, in Vorbereitung).

2 Nichtsuizidale Selbstverletzung bei Jugendlichen

2.1 Erscheinungsbild

2.1.1 Definition, Epidemiologie und Komorbidität

Im Diagnostischen und Statistischen Manual Psychischer Störungen DSM-5 (American Psychiatric Association, 2013) werden nichtsuizidale Selbstverletzungen als Schädigungen der Körperoberfläche (z.B. durch Schneiden, Brennen, Stechen, Hauen oder starkes Reiben) definiert, die ohne suizidale Absicht einhergehen und nicht sozial sanktioniert sind (wie z.B. Tattoos oder religiöse/kulturelle Rituale). Betroffene führen das Verhalten mit der Erwartung aus, eine Entlastung negativer Gefühle zu erleben, zwischenmenschliche Probleme zu lösen oder einen positiven Gefühlszustand herbeizuführen. Die absichtliche Selbstverletzung geht mit negativen Gefühlen oder Gedanken (wie Depression, Anspannung oder Selbstkritik) einher. Bevor das Verhalten ausgeführt wird, besteht eine gedankliche Beschäftigung mit dem beabsichtigten Verhalten, welche schwer kontrolliert werden kann. Es treten häufig Gedanken an NSSV auf, auch wenn diese nicht immer in der Handlung resultieren. Die Kriterien für repetitive NSSV sind erfüllt, wenn sich eine Person im letzten Jahr an fünf oder mehr Tagen selbstverletzt hat.

Der Anteil der Jugendlichen, die die Kriterien für NSSV nach DSM-5 erfüllen liegt bei 3.1-6.7% (Zetterqvist, 2015; Zetterqvist et al., 2013). Die internationale Lebenszeitprävalenz von einmaliger NSSV liegt für Jugendliche bei 17-18% (Muehlenkamp et al., 2012; Swannell et al., 2014). Im stationären Setting liegen die Prävalenzraten mit 60% für einmalige und 50% für repetitive NSSV deutlich höher (Kaess, Parzer, et al., 2013). Frauen berichten signifikant häufiger von NSSV als Männer, dieser Geschlechterunterschied zeigt sich insbesondere in klinischen Stichproben (Bresin & Schoenleber, 2015). Ein früher Beginn von NSSV geht mit schwerwiegenderen Verletzungen, suizidalem Verhalten und einem erhöhten Risiko für die Entwicklung einer BPS einher (Groschwitz et al., 2015; Muehlenkamp et al., 2019). Längsschnittstudien zeigen, dass NSSV in der mittleren Adoleszenz (mit 15-16 Jahren) ihren Höhepunkt erreichen und beim Übergang von der Adoleszenz zum jungen Erwachsenenalter abnehmen (Moran et al., 2012; Plener et al., 2015). Auch nach Beendigung des Verhaltens zeigen Betroffene ein erhöhtes Risiko für dysfunktionale Emotionsregulationsstrategien, wie z.B. erhöhten Substanzkonsum (Nakar et al., 2016). Des Weiteren gehen NSSV mit einem erhöhten

Risiko für Suizidgedanken, -pläne und -versuche einher (Castellví et al., 2017; Kiekens et al., 2018).

NSSV treten sowohl in Kombination mit unterschiedlichen komorbiden Störungen (affektive Störungen, Angststörungen, posttraumatische Belastungsstörung, BPS, externalisierende Störungen, Substanzmissbrauch und Essstörungen) als auch in Abwesenheit einer komorbiden Diagnose auf (Andover, 2014; In-Albon et al., 2013; Nitkowski & Petermann, 2011).

2.1.2 Funktionen von NSSV

Das Vier-Faktoren-Modell veranschaulicht die Funktionen von NSSV und bietet eine Erklärung für die Auslösung und Aufrechterhaltung des Verhaltens. Im Modell werden sowohl intra- (automatische) als auch interpersonelle (soziale) Prozesse beschrieben, welche als negative und positive Verstärker fungieren (Bentley et al., 2014; Nock & Prinstein, 2004). Im Sinne der automatischen negativen Verstärkung können NSSV dazu dienen, negative Gedanken und Gefühle zu reduzieren. Durch NSSV können auch positive Gedanken und Gefühle (z.B. sich lebendig fühlen) ausgelöst werden (automatische positive Verstärkung). Auf sozialer Ebene können NSSV zu vermehrter Aufmerksamkeit und Zuwendung führen (positive soziale Verstärkung) oder dazu dienen, unangenehmen sozialen Situationen und Interkationen zu entfliehen, z.B. im Schulunterricht zu fehlen (negative Verstärkung). Nebst der Affektregulation und der interpersonellen Beeinflussung werden als weitere Funktionen Anti-Dissoziation, Anti-Suizid, Selbstbestrafung und Sensation Seeking beschrieben (Klonsky, 2007). Häufig dienen NSSV mehreren dieser Funktionen gleichzeitig (In-Albon et al., 2013).

Die Emotionsregulationskomponente des Vier-Faktoren-Modells konnte durch Studien bestätigt werden, die zeigen, dass NSSV zu einer Reduktion negativer Gefühle (Bresin & Gordon, 2013; Klonsky, 2009) und Zunahme positiver Gefühle führen (Franklin et al., 2013; Selby et al., 2014). Eine intrapersonelle Funktion wird von 66-81% der Betroffenen berichtet, insbesondere die Emotionsregulation stellt mit 63-78% die häufigste Funktion dar (P. J. Taylor et al., 2018). Zur sozialen Komponente ist die Datenlage insgesamt geringer. Soziale Faktoren, wie interpersonelle Schwierigkeiten oder Probleme in der Eltern-Kind-Beziehung gehen mit einer Zunahme von NSSV einher (Adrian et al., 2011; Martin et al., 2016). Diese Studien legen nahe, dass es durch die interpersonellen Schwierigkeiten zu einer Zunahme aversiver Gefühle kommt und NSSV primär der Emotionsregulation und weniger der sozialen Beeinflussung (z.B. damit andere Leute sich anders verhalten oder sich ändern) dienen. Es gibt jedoch auch

Hinweise dafür, dass NSSV ausgeführt werden, um Aufmerksamkeit zu bekommen oder andere zu beeinflussen (Klonsky & Glenn, 2009; Nock & Prinstein, 2004). Interpersonelle Probleme werden häufig als Auslöser für erste NSSV-Episoden angegeben, der emotionale Nutzen hingegen als Motivation für die Aufrechterhaltung des Verhaltens (Muehlenkamp et al., 2013). Interpersonelle Funktionen von NSSV werden von 33-56% der Betroffenen berichtet (P. J. Taylor et al., 2018). Während das Vier-Faktoren-Modell die Funktionen von NSSV und damit die Motivation für NSSV veranschaulicht (Nock & Prinstein, 2004), beschreibt das Benefit und Barrieren Modell (Hooley & Franklin, 2018) Beweggründe, welche Menschen von NSSV abhalten. Zu den natürlichen und instinktiven Barrieren zählen laut Hooley und Franklin (2018) fehlendes Bewusstsein über NSSV, eine positive Selbstsicht, Schmerzvermeidung, die Abneigung gegenüber NSSV Stimuli (Blut, Wunden) und soziale Normen.

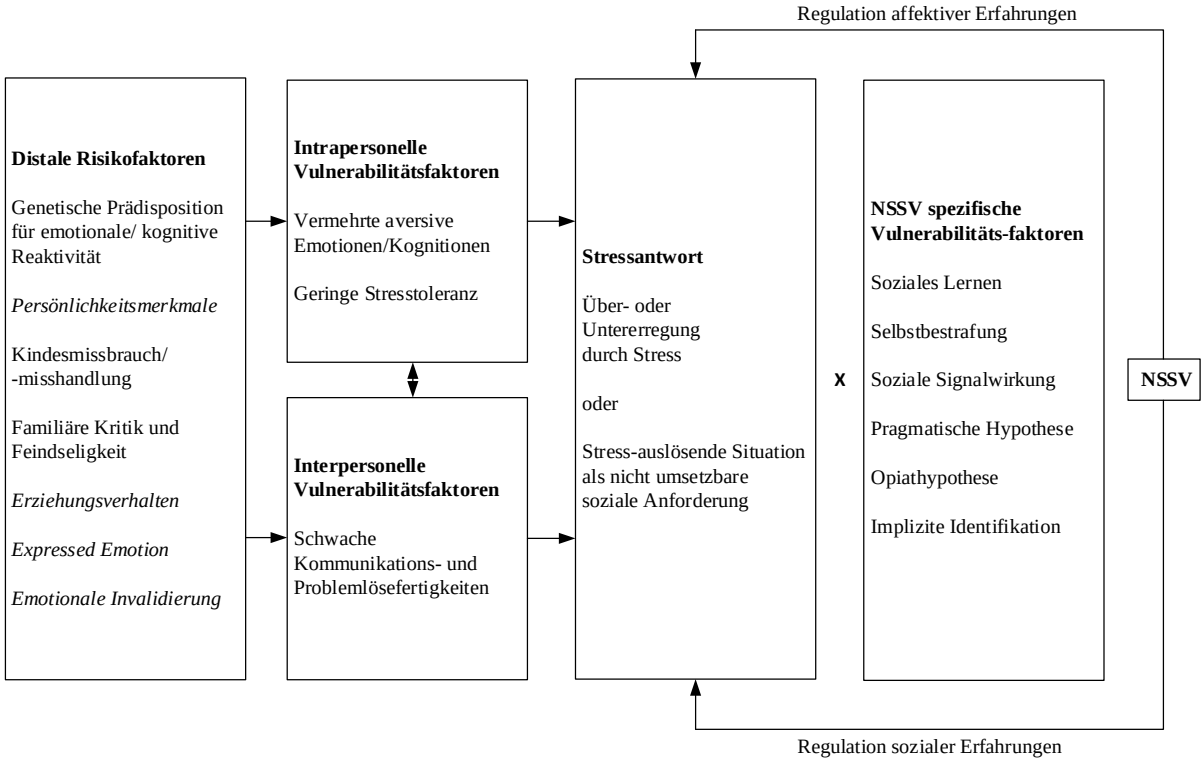
2.2 Ätiologie

Bei der Entstehung und Aufrechterhaltung von NSSV wird von einem multifaktoriellen Modell ausgegangen, welches einen Einfluss biologischer (genetische Vulnerabilität, veränderte biologische Reaktion auf Stress), psychischer (geringe Stresstoleranz, dysfunktionale Gedanken) und sozialer Faktoren (fehlende soziale Unterstützung, belastende Kindheitserlebnisse und ein ungünstiges familiäres Klima) annimmt (Nock, 2010). Zur Erklärung von NSSV liegen mehrere Modelle vor, welche sich auf unterschiedliche Teilaspekte des Verhaltens beziehen, dazu gehören u.a. die Emotionsregulation, Kognitionen sowie interpersonelle Faktoren als Trigger für NSSV (Hasking et al., 2017; Hooley & Franklin, 2018; Linehan, 1993; Selby et al., 2013).

Das integrierte theoretische Modell zur Entstehung und Aufrechterhaltung von NSSV (Nock, 2009, 2010) stellt einen Versuch dar, diese unterschiedlichen Teilaspekte in einem Modell zu veranschaulichen und die Komplexität des Verhaltens abzubilden, siehe Abbildung 1.

Abbildung 1

Integriertes theoretisches Modell zu NSSV nach Nock (2009, 2010)



Anmerkung. Kursiv: Ergänzte Einflussfaktoren, die in der vorliegenden Dissertation untersucht wurden.

Distale Risikofaktoren wie Umwelteinflüsse und Genetik erhöhen das Risiko für intra- (z.B. vermehrte aversive Kognitionen und Emotionen) und interpersonelle Vulnerabilitätsfaktoren (z.B. schwache Kommunikations- und Problemlösefertigkeiten). Diese führen zu einer defizitären Stressregulationskapazität und erhöhen das Risiko für eine Vielzahl psychischer Störungen. Die Wahrscheinlichkeit, NSSV zur Bewältigung von einer Stressreaktion einzusetzen ist dann weiter erhöht, wenn NSSV-spezifische Vulnerabilitätsfaktoren, wie z.B. soziales Lernen (NSSV von Gleichaltrigen, soziale Netzwerke, Internet) vorliegen. Weitere Hypothesen zu NSSV-spezifischen Faktoren beziehen sich auf die Selbstbestrafung in Zusammenhang mit stark ausgeprägter Selbstkritik, die soziale Signalwirkung (wenn NSSV dazu dienen, anderen die eigene Not zu signalisieren), Pragmatismus (NSSV als einfaches und leicht zugängliches Mittel der Emotionsregulation), Analgesie (erhöhte Schmerzschwelle durch NSSV) und die Identifikation mit dem Verhalten. Nichtsuizidale Selbstverletzungen werden aufrechterhal-

ten, weil sie bei aversiven emotionalen Erfahrungen eine effektive Emotionsregulationsstrategie darstellen (Nock, 2009) und mit einer Erleichterung von negativen Gedanken und Gefühlen einhergehen (Nock & Prinstein, 2004). Negative Kindheitserlebnisse wie Missbrauch oder emotionale Invalidierung führen zu Emotionsregulationsschwierigkeiten und erhöhen das Risiko für eine inadäquate Stressbewältigung, z.B. durch NSSV. Für die Entwicklung von NSSV wird eine Interaktion von psychosozialen Risikofaktoren und biologischen Temperamentsmerkmalen angenommen (Linehan, 1993; Nock, 2009, 2010).

Persönlichkeitsmerkmale, das Erziehungsverhalten der Eltern, ein hohes Maß an Expressed Emotion und emotionale Invalidierung können den distalen Risikofaktoren zugeordnet werden. Emotionsregulationsschwierigkeiten der Jugendlichen sind Teil der defizitären Stressregulationskapazität. Längsschnittdaten zeigen, dass Jugendliche die sowohl intrapersonelle (z.B. impulsives Verhalten, Depression) als auch interpersonelle (z.B. instabile Beziehungen, elterliche Kritik) Risikofaktoren berichten, einen ungünstigen Verlauf von NSSV zeigen (Wang et al., 2017).

2.3 Intrapersonelle Risikofaktoren und Korrelate

2.3.1 Persönlichkeitsmerkmale

Die Persönlichkeitsentwicklung und Identitätsbildung zählen zu den wichtigsten Entwicklungsaufgaben des Jugendalters (Erikson, 1993). Der Beginn von NSSV fällt in die Phase der Identitätskrise (Erikson, 1968). Eine erfolgreiche Bewältigung dieser Krise führt zu einer Identitätssynthese. Jugendliche entwickeln eigene Ideale, Werte und Ziele, was mit einer Erhöhung des Selbstwertgefühls einhergeht (Schwartz, 2001, 2007). Die Persistenz der Identitätskrise hingegen führt zu einer Identitätsdiffusion. Diese geht mit Stimmungsschwankungen, Rebellion und der Unfähigkeit zu intimen Beziehungen einher (Erikson, 1993). Es gibt Hinweise dafür, dass NSSV mit Störungen in der Identitätsentwicklung assoziiert sind. Claes und Kollegen (2014) konnten zeigen, dass NSSV häufig mit einer Identitätsdiffusion assoziiert sind. Gleichzeitig stellen NSSV eine Identifikationsmöglichkeit dar und können das Gefühl eines kohärenten und persistenten Selbstbildes vermitteln (Breen et al., 2013). Längsschnittdaten weisen auf einen bidirektionalen Zusammenhang zwischen NSSV und Störungen in der Identitätsentwicklung hin (Gandhi et al., 2017). Dysfunktionale Bindungsmuster zwischen Jugendlichen und Müttern bzw. Gleichaltrigen können die Identitätsentwicklung stören und die Identitätsdiffusion erhöhen, was mit einem erhöhten Risiko für NSSV einhergeht (Gandhi et al., 2019). Im Kapitel III des DSM-5 wird ein dimensionaler Ansatz zur Beschreibung von pathologischen Persönlichkeitsmerkmalen und Beeinträchtigungen in der Funktionsfähigkeit

der Persönlichkeit vorgeschlagen (American Psychiatric Association, 2013). Das Modell enthält Kriterien für die Beurteilung von pathologischen Persönlichkeitsmerkmalen und erleichtert die Unterscheidung zwischen Adoleszenzkrisen und Persönlichkeitsstörungen mit deutlichen Funktionsbeeinträchtigungen (Sevecke et al., 2014).

Bisherige Forschungsergebnisse zeigen eine Assoziation zwischen repetitiven NSSV und dem Vorliegen bestimmter Persönlichkeitsmerkmale (Hefti et al., 2013; Joyce et al., 2010; Lüdtke et al., 2017). Das biopsychosoziale Persönlichkeitsmodell von Cloninger (Cloninger, 1987; Cloninger et al., 1993) ermöglicht die dimensionale Beschreibung gesunder und pathologischer Persönlichkeitsentwicklung sowie die Unterscheidung zwischen Patienten mit und ohne Persönlichkeitsstörungen (Barnow et al., 2005; Cloninger, 1987; Schmeck et al., 2013). Das Modell unterscheidet zwischen vier Temperaments- und drei Charakterdimensionen, siehe Tabelle 1. Die Temperamentsmerkmale gelten als relativ stabil, währen sich die Charaktermerkmale im Laufe des Lebens durch Lernerfahrungen verändern können.

Tabelle 1

Temperaments- und Charakterdimensionen nach Cloninger (1993)

Dimension	Hohe Ausprägung	Niedrige Ausprägung
Temperament		
Neugierverhalten	Neugierig, impulsiv	Gleichgültig, schwerfällig, nachdenklich, bescheiden
Schadensvermeidung	Besorgt, pessimistisch, ängstlich, schüchtern	Entspannt, optimistisch, furchtlos, aufgeschlossen
Belohnungsabhängigkeit	Herzlich, feinfühlig, abhängig	Unsentimental, unnahbar, unabhängig
Beharrungsvermögen	Fleißig, ausdauernd, beharrlich	Leicht entmutigt, bequemlich, pragmatisch

Dimension	Hohe Ausprägung	Niedrige Ausprägung
Charakter		
Selbstlenkungsfähigkeit	Kompetent, selbstsicher, hohe Selbstakzeptanz	Ineffektiv, unsicher, niedrige Selbstakzeptanz
Kooperativität	Freundlich, sozial, empathisch, hilfsbereit	Sozial intolerant, kritisch
Selbsttranszendenz	Geduldig, kreativ, idealistisch	Praktisch, materialistisch

Für Patienten mit einer BPS konnten bisherige Studien hohe Ausprägungen auf den Temperamentsdimensionen Neugierverhalten und Schadensvermeidung nachweisen (Barnow et al., 2005; Cloninger, 2000; Joyce et al., 2003; Kaess, Resch, et al., 2013). Hohe Ausprägungen auf diesen zwei gegensätzlichen Dimensionen resultieren laut Cloninger und Kollegen (1994) in einem Annäherungs-Vermeidungs-Konflikt und können affektive Instabilität, das Kernsymptom der BPS, verursachen. Jugendliche mit NSSV zeigen im Vergleich zu Jugendlichen ohne NSSV ebenfalls höhere Ausprägungen für Neugierverhalten und Schadensvermeidung (Lüdtke et al., 2017). In einer Stichprobe von depressiven Jugendlichen erzielten diejenigen mit komorbiden NSSV höhere Werte für Schadensvermeidung (Joyce et al., 2010). Geringe Ausprägungen von Selbstlenkungsfähigkeit und Selbsttranszendenz scheinen ebenfalls mit NSSV assoziiert zu sein (Hefti et al., 2013; Joyce et al., 2010; Lüdtke et al., 2017). Jugendliche mit NSSV zeigen im Vergleich zu Jugendlichen ohne NSSV höhere Werte für Kooperativität (Ohmann et al., 2008). Für Erwachsene mit einer BPS hingegen wurden niedrige Werte für Kooperativität berichtet (Barnow et al., 2005). Bisherige Ergebnisse zur Belohnungsabhängigkeit zeigen, dass niedrige Werte mit internalisierenden Symptomen von Jugendlichen assoziiert sind (S. J. Kim et al., 2006). Studien, welche auf das Fünf-Faktoren-Modell (Costa & McCrae, 1990, 1992) zurückgehen, zeigen vergleichbare Ergebnisse. Für Jugendliche mit NSSV konnte ein Zusammenhang mit hohen Ausprägungen für Offenheit für Erfahrungen (vglb. mit Neugierverhalten) und Neurotizismus (vglb. mit Schadensvermeidung) und niedrigen Ausprägungen für Gewissenhaftigkeit (vglb. mit Selbstlenkungsfähigkeit und Beharrungsvermögen) und Verträglichkeit (vglb. mit Kooperativität) nachgewiesen werden (Kiekens et al., 2015; MacLaren & Best, 2010; Mullins-Sweatt et al., 2013).

Insbesondere eine Komponente von Neugierverhalten, die Impulsivität, scheint mit NSSV assoziiert zu sein. Impulsivität beinhaltet unterschiedliche Teilaspekte, dazu gehören eine risikoreiche Entscheidungsfindung, Belohnungsaufschub (Präferenz für kleine/unmittelbare statt grössere/spätere Belohnungen) und Verhaltenskontrolle (Kontrolle von inadäquaten Verhaltensimpulsen) (In-Albon, 2013). NSSV erfolgen meist als impulsive Handlung, vor der Ausführung kommt es nur zu einer kurzen gedanklichen Beschäftigung mit dem Verhalten (Nock & Prinstein, 2005). Zudem gehen NSSV häufig mit Schwierigkeiten in der Selbstregulation einher, Betroffene können impulsive Reaktionen nur schwer kontrollieren und hemmen, was zu voreiligen Entscheidungen und Handlungen führt (Glenn & Klonsky, 2010). Negative Dringlichkeit (die Tendenz, in negativer Stimmung unüberlegt zu handeln) stellt einen Risikofaktor für den Beginn von NSSV dar (Riley et al., 2015). Darüber hinaus scheint impulsives Verhalten zur Aufrechterhaltung von NSSV beizutragen (Wang et al., 2017).

2.3.2 Emotionsregulationsschwierigkeiten

Emotionsregulation kann als versuchte Beeinflussung von Emotionen definiert werden. Dabei kann beeinflusst werden, welche Emotionen zu welchem Zeitpunkt in welcher Intensität wahrgenommen und zum Ausdruck gebracht werden (Barlow et al., 2017; Gross, 2013). Das Prozessmodell der Emotionsregulation nach Gross (1998) besagt, dass die Regulation zu unterschiedlichen Zeitpunkten im Verlauf der Emotionsentstehung einsetzen kann. Es werden fünf Strategien beschrieben: Situationsauswahl, Modifikation der Situation, Aufmerksamkeitslenkung, kognitive Veränderung oder Neubewertung und Reaktionsveränderung. Eine adaptive Emotionsregulation umfasst das Bewusstsein für und die Akzeptanz von Emotionen sowie die Fähigkeit, emotionale Reaktionen zu modulieren und impulsive Verhaltensweisen zu kontrollieren, um langfristige Ziele zu verfolgen (Gratz & Roemer, 2004). Die Entwicklung der Emotionsregulation wird durch familiäre Prozesse wie Beobachtung/Modelllernen, Erziehungspraktiken (z.B. elterliche Reaktionen auf Emotionen) und das emotionale Klima in der Familie beeinflusst (Morris et al., 2007). Es zeigt sich ein Zusammenhang zwischen den elterlichen Reaktionen auf die emotionalen Erfahrungen ihrer Kindern und deren Emotionsregulationskompetenzen (Morris et al., 2007). Elterliche Unterstützung, Emotions-Coaching und der Gebrauch von gemeinsamen Strategien (z.B. kognitive Umdeutung) gehen mit einer effektiveren Emotionsregulation der Kinder einher, während elterliche psychologische Kontrolle, der Ausdruck von Wut und Kritik mit Emotionsregulationsschwierigkeiten der Kinder assoziiert sind (Morris et al., 2017). Elterliche emotionale Dysregulation scheint mit elterlicher Invalidierung

einherzugehen, was sich wiederum auf die emotionale Dysregulation Jugendlicher auswirkt (Buckholdt et al., 2014) und den wechselseitigen emotionalen Prozess zwischen Eltern und Kindern veranschaulicht. Das Jugendalter stellt eine vulnerable Phase dar und geht mit einer Abnahme von adaptiven und Zunahme von maladaptiven Emotionsregulationsstrategien einher (Cracco et al., 2017). Emotionsregulationsschwierigkeiten spielen eine wichtige Rolle bei der Entwicklung psychopathologischer Symptome im Kindes- und Jugendalter (McLaughlin et al., 2011; Zeman et al., 2006).

Emotionsregulation stellt die primäre Motivation für NSSV dar (Klonsky, 2007), da durch das Verhalten eine kurzfristige Erleichterung aversiver Emotionen erzielt werden kann (Nock & Prinstein, 2004). Im Umkehrschluss haben sich gute Emotionsregulationsstrategien als Schutzfaktor vor NSSV erwiesen (Tang et al., 2016). Jugendliche mit NSSV zeigen häufig Schwierigkeiten mit der Identifikation und Beschreibung von Gefühlen (Cerutti et al., 2018). Grössere Schwierigkeiten in der Emotionsregulation gehen mit einer erhöhten Häufigkeit von NSSV einher (Midkiff et al., 2018). Emotionsregulationsschwierigkeiten von Jugendlichen scheinen den Zusammenhang zwischen einem ungünstigen familiären Klima bzw. einer geringen Bindungsqualität zwischen Eltern und Kind und NSSV zu mediieren (Cerutti et al., 2018; Guérin-Marion et al., 2020; Sim et al., 2009).

2.4 Interpersonelle Risikofaktoren und Korrelate

2.4.1 Elterliches Erziehungsverhalten

Positives Erziehungsverhalten stellt einen Schutzfaktor für den Beginn von NSSV dar (Victor et al., 2019). Drei wichtige Aspekte des elterlichen Erziehungsverhaltens betreffen Wärme und Unterstützung, psychologische Kontrolle und Verhaltenskontrolle (Reitzle et al., 2001). Psychologische Kontrolle oder psychologischer Druck beschreibt einschränkende Erziehungsmassnahmen, welche die psychologische und emotionale Entwicklung von Kindern behindern (z.B. Drohen oder Hervorrufen von Schuldgefühlen). Verhaltenskontrolle hingegen bezieht sich auf Regeln und Strukturen und den Versuch, das Verhalten des Kindes zu steuern (Barber, 1996). Elterliche Unterstützung geht mit einem höheren Selbstwert, aktiven Bewältigungsstrategien und einer geringeren Belastung durch externalisierende und internalisierende Symptome einher, während psychologische Kontrolle mit einem geringeren Selbstwert, vermeidenden Bewältigungsstil und höherer Symptombelastung assoziiert ist (Reitzle et al., 2001). Eltern berichten in der Regel mehr positives Erziehungsverhalten als Jugendliche, die Eltern-Kind-Übereinstimmung bezüglich des Erziehungsverhaltens fiel in bisherigen Studien niedrig bis moderat aus (Korelitz & Garber, 2016).

Jugendliche mit NSSV berichten im Vergleich zu Jugendlichen ohne NSSV weniger elterliche emotionale Unterstützung und Fürsorge sowie mehr Kritik, psychologische Kontrolle und Verhaltenskontrolle (Ammerman & Brown, 2018; Baetens, Claes, Hasking, et al., 2015; Baetens, Claes, Martin, et al., 2014; Bureau et al., 2010; Du et al., 2017). Negative Emotionen mediieren den Zusammenhang zwischen elterlicher psychologischer Kontrolle und NSSV (Du et al., 2017). Längsschnittdaten zeigen, dass die Häufigkeit von NSSV die wahrgenommene elterliche Kontrolle vorhersagt (You et al., 2017). NSSV von Jugendlichen gehen mit mehr Autorität im Erziehungsverhalten sowie elterlichen Zweifeln an der eigenen Erziehungsfähigkeit einher (Baetens, Claes, Onghena, et al., 2015; Ferrey et al., 2016; Oldershaw et al., 2008). Fehlende Unterstützung und ein unzureichendes Wissen über NSSV stören die Verbindung zum Kind und verhindern eine effektive Kommunikation (Kelada et al., 2016; Whitlock et al., 2018).

Ein Modell, welches die Dynamik zwischen Jugendlichen mit NSSV und deren Eltern veranschaulicht, ist die „*NSSI Family Distress Cascade Theory*“ (Waals et al., 2018). Dieses beschreibt das Autonomiebestreben der Jugendlichen und das Kontrollbedürfnis der Eltern sowie den daraus resultierenden Konflikt. Die NSSV der Jugendlichen führen zu Sorgen, Fragen, Rückversicherung und mehr Kontrolle von Elternseite, was von den Jugendlichen wiederum als Eingriff in die Privatsphäre und somit als Autonomiebedrohung wahrgenommen wird (Baetens, Claes, Onghena, et al., 2014, 2015; Kelada et al., 2016). Dieser Teufelskreis ist schwierig zu durchbrechen und kann zu einer Zunahme der NSSV führen (Waals et al., 2018). Die beschriebene Stresskaskade wird durch Forschungsbefunde unterstützt, welche eine Assoziation zwischen NSSV und wahrgenommener elterlicher Kontrolle sowie mangelnder elterlicher Unterstützung nachweisen konnten (Ammerman & Brown, 2018; Baetens, Claes, Hasking, et al., 2015; Baetens, Claes, Martin, et al., 2014; Bureau et al., 2010). Jugendliche, die sich in ihrer Autonomieentwicklung durch die Eltern nicht unterstützt fühlen, zeigen mit einer höheren Wahrscheinlichkeit NSSV. Dieser Zusammenhang wird partiell durch Emotionsregulationsschwierigkeiten der Jugendlichen mediiert (Emery et al., 2017). Bisher haben nur wenige Studien den bidirektionalen Zusammenhang zwischen NSSV und familiären Prozessen untersucht (Waals et al., 2018). Dennoch legen die vorliegenden Studien nahe, dass es zu einer wechselseitigen Beeinflussung zwischen den NSSV der Jugendlichen und dem Erziehungsverhalten der Eltern kommt.

2.4.2 Geschwisterbeziehung

Obwohl Geschwisterbeziehungen einen wichtigen Kontext für die Entwicklung von Kindern darstellen, werden sie in der Forschung und Entwicklung präventiver Interventionen häufig vernachlässigt (Feinberg et al., 2012). In einer Studie zu den Geschwisterbeziehungen von Kindern mit psychischen Auffälligkeiten hat sich gezeigt, dass etwa ein Viertel der Geschwister eine emotional hochbedeutsame Rolle einnimmt und Geschwister im Vergleich zum leiblichen Vater emotional häufig wichtiger sind (Heinrichs & Wenglorz, 2020). Die Geschwisterdynamik beeinflusst Entwicklungsverläufe und -ergebnisse (Feinberg et al., 2012). Geschwisterbeziehungen umfassen sowohl positive (Wärme, Intimität) als auch negative Aspekte (Konflikt, Rivalität) und können das Wohlbefinden von Kindern und Jugendlichen beeinflussen (Dirks et al., 2015). Wärme in der Geschwisterbeziehung geht mit weniger internalisierendem und externalisierendem Problemverhalten von Kindern und Jugendlichen einher, während Konflikte zu einer Zunahme von Problemverhalten führen (Buist et al., 2013). Längsschnittdaten zeigen, dass eine Zunahme von Konflikten in der Geschwisterbeziehung mit einer Zunahme depressiver Symptome einhergeht (J.-Y. Kim et al., 2007). Eine geringe geschwisterliche Beziehungsqualität im Kindes- und Jugendalter erwies sich als Prädiktor für das Vorliegen einer Major Depression 30 Jahre später, der Einfluss der Geschwisterbeziehung auf internalisierende Symptome scheint somit nicht nur auf kurzfristige Effekte beschränkt zu sein (Waldinger et al., 2007). Eine positive Bindung zu einem Geschwister kann die Auswirkungen von stressigen Lebensereignissen abpuffern (Gass et al., 2007). Es liegen Hinweise vor, dass positive Geschwisterbeziehungen den Einfluss von negativen Erfahrungen mit Eltern auf die psychische Gesundheit der Jugendlichen moderieren (Milevsky & Levitt, 2005). Gute Geschwisterbeziehungen scheinen mit besseren Beziehungen zu Gleichaltrigen einherzugehen (Yeh & Lempers, 2004). Es wird davon ausgegangen, dass Jugendliche in einer liebevollen und warmen Geschwisterbeziehung lernen, intime Gedanken und Gefühle zu teilen, die Gefühle des anderen zu verstehen sowie Konflikte zu lösen (Howe et al., 2001). Die erlernten sozialen Fähigkeiten können dann auf andere Kontexte übertragen werden. Es gilt jedoch als ungeklärt, welche von den entscheidenden Faktoren für die Bildung positiver Peer-Beziehungen (z.B. Emotionsregulation, soziale Kompetenzen, faires Verhalten) durch eine positive Geschwisterdynamik gefördert werden. Die Geschwisterbeziehung und Familiendynamik beeinflussen sich gegenseitig (Feinberg et al., 2012). Im Vergleich zur Eltern-Kind-Beziehung liegt zur Geschwisterbeziehung von Jugendlichen mit NSSV nur wenig Wissen vor. Mobbing unter Geschwistern erhöht die Wahrscheinlichkeit für NSSV im jungen Erwachsenenalter. Dabei

zeigte sich eine Dosis-Wirkungs-Beziehung: Jugendliche, die sowohl in der Beziehung mit Geschwistern als auch mit Gleichaltrigen von Mobbingerfahrungen berichten, zeigen die höchste Wahrscheinlichkeit für NSSV (Dantchev et al., 2019).

2.4.3 Expressed Emotion

Expressed Emotion (EE) ist ein Konstrukt zur Erfassung des familiären Klimas, welches das Ausmaß an Kritik, Feindseligkeit und emotionaler Beteiligung von Familienangehörigen beschreibt (Brown et al., 1962; Hooley, 2007). Ein hohes Maß an EE (HEE) ist definiert durch kritische Bemerkungen, Abneigung und Missbilligung gegenüber den Verhaltensweisen einer Person bis hin zur Ablehnung der Person (Hooley, 2007). Der Vorhersagewert von HEE für Behandlungsabbrüche, Rückfälle und ungünstige Krankheitsverläufe ließ sich für unterschiedliche psychische Störungen bei Kindern, Jugendlichen und Erwachsenen bestätigen (Butzlaff & Hooley, 1998; Nelson et al., 2003; Peris & Miklowitz, 2015; Rea et al., 2020; Rienecke, 2020). Mütterliche Kritik scheint mit internalisierenden und externalisierenden Störungen von Jugendlichen assoziiert zu sein, während emotionale Überbeteiligung lediglich einen Zusammenhang mit internalisierenden Problemen aufweist (Rea et al., 2020). Es gibt Hinweise dafür, dass psychische Störungen sowohl zu erhöhten EE-Ausprägungen beitragen als auch durch EE aufrechterhalten werden (Miklowitz, 2007).

Auch für NSSV von Jugendlichen zeigt sich ein Zusammenhang mit EE (Ammerman & Brown, 2018; Baetens, Claes, Hasking, et al., 2015; James & Gibb, 2019; Wedig & Nock, 2007). Ein hohes Ausmaß an elterlicher Expressed Emotion ist mit NSSV und Suizidgedanken, -plänen und -versuchen von Jugendlichen assoziiert. Dies gilt insbesondere für elterliche Kritik (James & Gibb, 2019; Wedig & Nock, 2007), für emotionale Überbeteiligung konnte dieser Zusammenhang nicht nachgewiesen werden (Wedig & Nock, 2007). Der Zusammenhang zwischen elterlicher Kritik und NSSV ist dann besonders hoch, wenn die Jugendlichen selbst einen selbstkritischen kognitiven Stil aufweisen (Wedig & Nock, 2007). Für weibliche Jugendliche zeigt sich im Vergleich zu männlichen Jugendlichen ein stärkerer Zusammenhang zwischen mütterlicher Kritik und NSSV (James & Gibb, 2019).

Jugendliche mit NSSV nehmen im Vergleich zu Jugendlichen ohne NSSV weniger elterliche emotionale Unterstützung, mehr intrusives Verhalten und mehr Kritik wahr (Ammerman & Brown, 2018). Erwachsene mit aktuellen NSSV berichten im Vergleich zu Erwachsenen mit NSSV in der Vorgeschichte mehr Kritik und weniger intensive emotionale Beteiligung von Familienmitgliedern (Hack & Martin, 2018). Ein selbstkritischer kognitiver Stil

von Seiten der Jugendlichen scheint den Zusammenhang zwischen wahrgenommener elterlicher EE und NSSV zu mediieren (Ammerman & Brown, 2018; Baetens, Claes, Hasking, et al., 2015).

2.4.4 Emotionale Invalidierung

Linehan (1993) weist in der biosozialen Theorie zur BPS auf die Überlappung der Konstrukte EE und emotionale Invalidierung hin. Nach der Definition von Linehan (1993) ist ein emotional invalidierendes Umfeld durch die Intoleranz gegenüber dem emotionalen Erleben und Verhalten eines Menschen gekennzeichnet. Auf negative Gefühlsäusserungen wird mit Kritik und Missbilligung reagiert. Es zeigen sich Zusammenhänge zwischen einem sehr kritischen und einem invalidierenden familiären Umfeld (Fruzzetti et al., 2005) sowie zwischen mütterlicher Überbehütung und mütterlicher Invalidierung (Robertson et al., 2013), was die Überlappung der Konstrukte EE und Invalidierung bestätigt. Zusätzlich zu den Aspekten Kritik und Überbeteiligung, welche auch mit dem EE-Konstrukt abgebildet werden, beinhaltet die Definition eines invalidierenden Umfeldes die Nichtanerkennung der aktuellen Befindlichkeit und der aktuellen Bedürfnisse einer Person (Linehan, 1993). Bezugspersonen zeigen inkonsistente und unangemessene Reaktionen auf den Emotionsausdruck ihres Kindes. Gefühlsäußerungen werden bestraft, trivialisiert oder ignoriert. Kinder, die in einem invalidierenden Umfeld aufwachsen, zeigen ein erhöhtes Risiko für suizidales Verhalten, auch nach Kontrolle für elterliche Psychopathologie (Johnson et al., 2002).

Linehan (1993) unterscheidet drei Typen invalidierender Familien: *Typische Familien* legen Wert auf die Kontrolle von Gefühlen, sehen Leistung und Erfolg als wesentliche Erfolgskriterien und sind in westlichen Kulturen verbreitet. In *perfekten Familien* werden negative Gefühlsäußerungen nicht akzeptiert und es gilt die Einstellung, dass mit genügend Anstrengung alle Probleme gelöst werden können. Der perfekte Familientyp geht häufig mit Stress, Selbstbezogenheit der Eltern und der Unfähigkeit, negative Emotionen ertragen zu können einher. *Chaotische Familien* sind dadurch gekennzeichnet, dass Kinder wenig Zeit und Aufmerksamkeit erhalten. Es wird überwiegend mit Ärger auf kindliche Bedürfnisse nach emotionaler Unterstützung reagiert. Der chaotische Familientyp hat sich als Prädiktor für die Entwicklung von BPS-Symptomen erwiesen (Robertson et al., 2013). In einer Stichprobe von Patienten mit Essstörungen hat sich gezeigt, dass insbesondere der chaotische Familientyp mit negativen Grundüberzeugungen bezüglich des eigenen Selbstbildes (z.B. Selbstbestrafung) und anderer Menschen (z.B. Misstrauen) einherging (Ford et al., 2011).

Die biosoziale Theorie sieht das Zusammenspiel zwischen einem invalidierenden Umfeld und der emotionalen Reaktivität eines Kindes als Grundlage für emotionale Dysregulation. In einer Erweiterung der biosozialen Theorie (Crowell et al., 2009) werden drei Möglichkeiten beschrieben, wie Eltern Einfluss auf die psychische Anpassung ihrer Kinder nehmen können. Erstens durch Invalidierung und fehlende Modelle für einen adäquaten Emotionsausdruck, zweitens durch Interaktionsmuster, die das emotionale Arousal erhöhen und drittens durch eine niedrig ausgeprägte Passung zwischen Temperamentsmerkmalen des Kindes und elterlichem Erziehungsstil. In Übereinstimmung mit der Biosozialen Theorie haben sich emotionale Invalidierung und ein Mangel an familiärer Unterstützung in unterschiedlichen Studien als Risikofaktoren für NSSV erwiesen (Adrian et al., 2018; Baetens, Andrews, Claes, et al., 2015; Cassels et al., 2018; Tatnell et al., 2014; You & Leung, 2012).

Adrian und Kollegen (2018) konnten interessanterweise zeigen, dass eine Kombination aus hoher elterlicher Validierung bei gleichzeitiger hoher Invalidierung mit der höchsten Anzahl von NSSV einherging. Die Autoren schliessen daraus, dass diese Kombination für Jugendliche womöglich besonders belastend ist, da Eltern auf validierende Weise reagieren können, es jedoch nicht konsistent tun. Die Ergebnisse weisen ferner darauf hin, dass ein hohes Mass an Invalidierung nicht durch ein hohes Mass an Validierung kompensiert werden kann. In einer anderen kürzlich veröffentlichten Studie (McCallum & Goodman, 2019) zeigten sich zwischen Jugendlichen mit NSSV und deren Mütter und einer Kontrollgruppe keine signifikanten Unterschiede bezüglich Validierung und Invalidierung. Emotionsregulationsdefizite der Jugendlichen mediieren den Zusammenhang zwischen einem invalidierenden familiären Umfeld und NSSV (Guérin-Marion et al., 2020; Mahtani et al., 2019; Sim et al., 2009).

2.5 Forschungsziele

In der Vergangenheit wurden NSSV primär als ein Symptom der BPS verstanden. Es hat sich jedoch gezeigt, dass ein Großteil der von NSSV Betroffenen nicht die Kriterien für eine BPS erfüllt (Glenn & Klonsky, 2013; In-Albon et al., 2013). Einige Studien konnten Unterschiede in der Phänomenologie von NSSV aufzeigen, je nachdem ob eine komorbide BPS vorliegt oder nicht. Patienten mit NSSV und BPS zeigen eine größere Vielfalt an Verletzungsmethoden, häufigere und schwerere Selbstverletzungen und mehr komorbide Störungen, depressive Symptome, emotionale Dysregulation und Suizidgedanken (Glenn & Klonsky, 2013; Turner et al., 2015; Vega et al., 2017). Jugendliche mit NSSV und BPS berichten als Funktion von NSSV häufiger Selbstbestrafung, Anti-Dissoziation und Anti-Suizid als Jugendliche mit NSSV ohne BPS (Bracken-Minor & McDevitt-Murphy, 2013).

In Studie 1 (Tschan et al., 2017) wurde überprüft, ob sich Jugendliche mit NSSV mit und ohne BPS auch hinsichtlich der Ausprägung von Persönlichkeitsmerkmalen unterscheiden. Bisher konnte die Persönlichkeitsforschung zeigen, dass eine BPS häufig mit hohen Ausprägungen für Neugierverhalten und Schadensvermeidung und niedrigen Ausprägungen für Selbstlenkungsfähigkeit und Kooperativität einhergeht (Barnow et al., 2005; Cloninger, 2000; Cloninger et al., 1994; Kaess, Resch, et al., 2013). Jugendliche mit NSSV ohne BPS weisen ein ähnliches Persönlichkeitsprofil auf, bisherige Studien kontrollierten jedoch nicht für das komorbide Vorliegen einer BPS (Hefti et al., 2013; Joyce et al., 2010; Lüdtke et al., 2017). Impulsivität als Teilaspekt von Neugierverhalten trägt möglicherweise dazu bei, dem Drang, sich selbst zu verletzen, nicht widerstehen zu können (Glenn & Klonsky, 2010). Jugendliche mit NSSV unterscheiden sich bezüglich der selbstberichteten Impulsivität von einer klinischen und gesunden Kontrollgruppe, experimentell liess sich dieser Unterschied jedoch nicht bestätigen (Janis & Nock, 2009). Dieses Ergebnis konnte auch für Erwachsene mit NSSV repliziert werden (Allen & Hooley, 2019; Glenn & Klonsky, 2010; Mc Closkey et al., 2012). Die geringe Übereinstimmung zwischen der selbstberichteten und experimentell erfassten Impulsivität (Cyders & Coskunpinar, 2011) ist möglicherweise auf die Erfassung unterschiedlicher, miteinander korrelierender Teilaspekte von Impulsivität zurückzuführen (Mc Closkey et al., 2012). Während Selbstbeurteilungsinstrumente allgemeine Reaktionstendenzen (traits) erfragen, erfassen experimentelle Aufgaben spontane Reaktionen, die von aktuellen kognitiven Prozessen beeinflusst werden (Mc Closkey et al., 2012), was die Wichtigkeit der experimentellen Erforschung impulsiven Verhaltens verdeutlicht. Die Reaktionshemmung, ein Aspekt von Impulsivität kann über die Go/NoGo-Aufgabe erfasst werden. Erwachsene mit NSSV zeigten im Vergleich zu einer Kontrollgruppe keine Unterschiede bezüglich inhibitorischer Defizite in einer emotionalen Go/NoGo-Aufgabe (Allen & Hooley, 2019). In einer Glücksspiel-Aufgabe mit auditiven kritischen Kommentaren zeigten Erwachsene mit NSSV in der Vorgeschichte eine impulsivere Entscheidungsbildung. Personen mit NSSV scheinen demnach insbesondere in einem negativen emotionalen Kontext wie z.B. unter Einfluss von Kritik impulsiv zu reagieren (Allen et al., 2019). Vor dem Hintergrund bisheriger Forschungsergebnisse wurden in Studie 1 folgende Hypothesen überprüft:

1. Unterscheiden sich Jugendliche mit NSSV in ihrem Persönlichkeitsprofil von Jugendlichen einer KKG und GKG?
2. Zeigen Jugendliche mit NSSV höhere Ausprägungen auf den Dimensionen Neugierverhalten, Selbsttranszendenz und Schadensvermeidung und geringere Ausprägungen von Selbstlenkungsfähigkeit?

3. Unterscheiden sich Jugendliche mit NSSV und BPS in ihrem Persönlichkeitsprofil von Jugendlichen mit NSSV ohne BPS?
4. Erzielen Jugendliche mit NSSV ohne BPS im Selbstbericht höhere Impulsivitätswerte als Jugendliche einer KKG und GKG? Zeigt sich dieser Unterschied in einer emotionalen Go-/NoGo-Aufgabe?

Während eine mangelnde familiäre Unterstützung mit der Aufrechterhaltung von NSSV assoziiert ist, tragen positive familiäre Interaktionen und eine ausreichende familiäre Unterstützung zur Beendigung von NSSV bei (Cassels et al., 2018; Kelada, Hasking, & Melvin, 2018; Tatnell et al., 2014). Familien von Jugendlichen mit NSSV sind durch viel negativen und wenig positiven Affekt, wenig Zusammenhalt und einen Mangel an elterlichem Schutz gekennzeichnet (Bureau et al., 2010; Crowell et al., 2008). Die familiären Beziehungen von Jugendlichen mit NSSV sind Inhalt der Studien 2 und 3. In Studie 2 (Tschan et al., 2015) wurde das Erziehungsverhalten in Familien von Jugendlichen mit NSSV untersucht.

Jugendliche mit NSSV berichten im Vergleich zu Jugendlichen ohne NSSV mehr ungünstiges elterliches Erziehungsverhalten, insbesondere wenig Unterstützung und viel Kontrolle (Ammerman & Brown, 2018; Baetens, Claes, Hasking, et al., 2015; Baetens, Claes, Martin, et al., 2014; Bureau et al., 2010). Wenn Eltern von den NSSV ihres Kindes erfahren, sind sie meist fassungslos und schockiert. In der Folge reagieren sie mit Angst, Schuldgefühlen, Stress- und Angstsymptomen in der Entwicklung oder Verschlechterung depressiver Episoden (Arbuthnott & Lewis, 2015; Ferrey et al., 2016; McDonald et al., 2007; Whitlock et al., 2018). Im Vergleich zu Eltern von gesunden Jugendlichen berichten Eltern von Jugendlichen mit NSSV eine höhere Belastung, weniger Selbstfürsorge und weniger Achtsamkeit in der Erziehung (Whitlock et al., 2018). Aus der eigenen Angst und Verunsicherung heraus kommt es häufig zu einer Zunahme von Kontrolle (z.B. Regelvereinbarungen) im Erziehungsverhalten, was von den Jugendlichen als aufdringlich wahrgenommen wird und wiederum die familiäre Anspannung und das NSSV-Risiko erhöht (Waals et al., 2018). Eine Studie, die Jugendliche mit NSSV zu ihrer Genesung befragt hat, konnte zeigen, dass elterliche Unterstützung und Geduld als hilfreich empfunden wurden, während der elterliche Ausdruck von Ärger und Enttäuschung sowie das Ignorieren der NSSV von Elternseite nicht als zielführend empfunden wurden (Kelada, Hasking, Melvin, et al., 2018). Angemessene Reaktionen der Eltern sind demnach wichtig und können zur Genesung der Jugendlichen beitragen. Für Studie 2 lassen sich folgende Hypothesen ableiten:

1. Jugendliche mit NSSV berichten im Vergleich zu einer KKG und GKG weniger Wärme und Unterstützung, mehr psychologische Kontrolle und weniger offene Kontrolle (Regeln und Disziplin) in der Eltern-Kind-Beziehung
2. Wie hoch ist die Eltern-Kind-Übereinstimmung bezüglich des elterlichen Erziehungsverhaltens?
3. Eltern von Jugendlichen mit NSSV erzielen im Vergleich zu Eltern der KKG und GKG höhere Psychopathologiewerte und berichten mehr Stresssymptome

Die bisherige Forschung zur Geschwisterbeziehung und Psychopathologie geht größtenteils auf risikoarme Stichproben zurück, es fehlt an Studien zur Geschwisterbeziehung von Jugendlichen mit klinisch signifikanten psychischen Beeinträchtigungen, einschließlich NSSV (Buist et al., 2013; Dirks et al., 2015). Von Elternseite wird häufig die Sorge berichtet, dass es zu einem Ungleichgewicht zwischen Geschwisterkindern kommt, da das Kind mit NSSV mehr Zeit, Energie und Aufmerksamkeit beansprucht (Ferrey et al., 2016; McDonald et al., 2007; Rissanen et al., 2008). Nach Angaben der Eltern reagieren Geschwisterkinder mit Wut, Frustration, Stress und zugleich mit Empathie und Unterstützung auf die NSSV ihres Geschwisters. Einige machen sich Sorgen, ob sie durch ihr Verhalten die NSSV ihres Geschwisters triggern (Ferrey et al., 2016). Diese Ergebnisse beruhen auf Elternberichten, Studien zur direkten Befragung von Geschwistern liegen nicht vor. Für Studie 3 (Tschan et al., 2019) ergeben sich daher folgende Hypothesen:

1. Wie reagieren Geschwister auf die NSSV ihrer Schwester?
2. Unterscheiden sich Jugendliche mit NSSV von Jugendlichen ohne NSSV (KKG und GKG) in ihren Angaben zur Qualität der Geschwisterbeziehung?
3. Wie hoch ist die Übereinstimmung zwischen Jugendlichen und ihren Geschwistern bezüglich der Qualität der Geschwisterbeziehung?
4. Gibt es einen Zusammenhang zwischen der Qualität der Geschwisterbeziehung und der Psychopathologie der Jugendlichen in der NSSV-Gruppe und KKG?

Bisherige Studien zu EE und NSSV beziehen sich auf beobachtetes (James & Gibb, 2019; Wedig & Nock, 2007) und wahrgenommenes (Ammerman & Brown, 2018; Baetens, Claes, Hasking, et al., 2015; Hack & Martin, 2018) elterliches EE. Es liegt keine Studie zu NSSV vor, in der das FMSS mit den Jugendlichen durchgeführt wurde. Eine unidirektionale Konzeptualisierung des EE-Konstruktes, welche einen Einfluss von den Eltern auf das Kind

annimmt, stellt laut Hoste und Kollegen (2015) womöglich ein unvollständiges Bild dar. Aufgrund der gegenseitigen Beeinflussung von Jugendlichen mit NSSV und deren Eltern (Waals et al., 2018) und den konfliktbehafteten Mutter-Kind-Interaktionen (Crowell et al., 2013), ist die Untersuchung der EE-Ausprägung von Jugendlichen zusätzlich zur EE-Ausprägung der Eltern von hoher Relevanz. In der Diagnostik von NSSV gilt es als Standard, beide Perspektiven, die der Jugendlichen und Eltern miteinzubeziehen (In-Albon et al., 2017). Laut Crowell und Kollegen (2009) können reziproke Transaktionen zwischen biologischen Vulnerabilitätsfaktoren und Umweltfaktoren die emotionale Dysregulation potenzieren, was mit einer eingeschränkten Verhaltenskontrolle einhergeht.

Vor diesem Hintergrund wurde in Studie 4 wurden die EE-Ausprägungen von Jugendlichen mit NSSV und deren Mütter untersucht und mit Mutter-Kind-Dyaden einer KKG und GKG verglichen. Trotz der angenommenen Überlappung von EE und emotionaler Invalidierung beziehen sich die meisten Studien auf eines der beiden Konstrukte. Zur Überprüfung dieses Zusammenhangs und der konvergenten Validität des FMSS wurde die wahrgenommene emotionale Invalidierung erhoben. Bisherige Studien legen nahe, dass Emotionsregulationsschwierigkeiten den Zusammenhang zwischen dem familiären Klima und NSSV mediieren (Adrian et al., 2011; Guérin-Marion et al., 2020; Sim et al., 2009). Folglich wurde überprüft, ob HEE und wahrgenommene emotionale Invalidierung mit Emotionsregulationsschwierigkeiten der Jugendlichen einhergehen. Ferner wurde der Vorhersagewert eines invalidierenden familiären Umfeldes für HEE der Jugendlichen sowie der Zusammenhang zwischen den von Linehan (1993) postulierten Familientypen (typisch, perfekt, chaotisch) und Emotionsregulationsschwierigkeiten untersucht. Es wurden folgende Hypothesen überprüft:

1. Erfüllen Jugendliche in der NSSV Gruppe und deren Mütter häufiger die Kriterien für HEE als Jugendliche und Mütter in der KKG und GKG? Zeigen sich im FMSS Gruppenunterschiede bezüglich der Beziehungsqualität, der geäusserten Kritik und der berichteten emotionalen Überbeteiligung?
2. Stimmen die Mutter-Kind-Daten zum EE-Status (HEE/NEE) überein?
3. Korreliert ein HEE-Status der Jugendlichen/Mütter mit wahrgenommener elterlicher Invalidierung und Emotionsregulationsschwierigkeiten der Jugendlichen?
4. Berichten Jugendliche mit NSSV im Vergleich zur KKG und GKG mehr elterliche Invalidierung? Stellt ein invalidierender Familientyp einen Prädiktor für HEE der Jugendlichen dar?
5. Sind die drei invalidierenden Familientypen (typisch, perfekt, chaotisch) mit spezifischen Emotionsregulationsschwierigkeiten assoziiert?

3 Zusammenfassung der Studien

3.1 Studie 1: Persönlichkeitsmerkmale

In dieser Studie wurde untersucht, ob sich Jugendliche mit NSSV-BPS bezüglich der Ausprägung von Temperaments- und Charaktermerkmalen von Jugendlichen mit NSSV+BPS unterscheiden. Die Stichprobe bestand aus 167 weiblichen Jugendlichen im Alter von 12-19 Jahren (*M* = 15.94, *SD* = 1.47). Es nahmen 57 Jugendliche mit NSSV-BPS, 14 Jugendliche mit NSSV+BPS, 32 Jugendliche in der KKG und 64 Jugendliche in der GKG an der Untersuchung teil. Die diagnostische Einordnung in die Gruppen erfolgte anhand des Diagnostischen Interviews bei psychischen Störungen im Kindes- und Jugendalter, Kinder-DIPS (S. Schneider et al., 2009) sowie anhand des Strukturierten Klinischen Interviews für DSM-IV Achse-II-Störungen, SKID-II (Fydrich et al., 1997). Die Borderline Symptom Liste 95, BSL-95 (Bohus et al., 2001) diente der dimensionalen Erfassung der Borderline-Symptomatik. Die Psychopathologie der Jugendlichen wurde mit der deutschen Version des Youth Self-Report, YSR (Döpfner et al., 1994) und dem Beck-depressions-Inventar, BDI-II (Hautzinger et al., 2006) erhoben. Das biopsychosoziale Persönlichkeitsmodell von Cloninger diente als Grundlage für die Analyse. Die Temperaments- und Charaktermerkmale wurden anhand des Junior Temperament und Charakter Inventars (JTCI) (Goth & Schmeck, 2009) erfasst. Die Impulsivität der Jugendlichen wurde sowohl in Form von Selbstberichten mit der Barrat-Impulsivitässkala, BIS (Hartmann et al., 2011) als auch experimentell über eine emotionale Go/NoGo-Aufgabe erhoben. Jugendliche mit NSSV+BPS berichteten im Vergleich zu Jugendlichen mit NSSV-BPS mehr internalisierende und externalisierende Symptome und mehr Autoaggression und Feindseligkeit. Die Ergebnisse zeigten, dass Jugendliche mit NSSV-BPS im Vergleich zur KKG höhere Werte auf den Temperamentsdimensionen Neugierverhalten und Schadensvermeidung erzielten sowie niedrigere Werte auf der Temperamentsdimension Beharrungsvermögen und den Charakterdimensionen Selbstlenkungsfähigkeit und Kooperativität. Für Jugendliche mit NSSV-BPS lag der Wert für Schadensvermeidung über dem Cut-Off. Dies verdeutlicht, dass Jugendliche mit NSSV-BPS im Vergleich zur KKG und GKG ängstlicher, unsicherer und pessimistischer sind. Jugendliche mit NSSV+BPS zeigten noch höhere Werte auf den Dimensionen Neugierverhalten und Schadensvermeidung und noch niedrigere Werte auf den Dimensionen Beharrungsvermögen und Kooperativität als Jugendliche mit NSSV-BPS. Für Jugendliche mit NSSV+BPS lag der Wert für Schadensvermeidung über dem Cut-Off und für Beharrungsvermögen und Selbstlenkungsfähigkeit unter dem Cut-Off. Jugendliche mit NSSV (mit und ohne BPS) erzielten auf allen Subskalen der BIS höhere Impulsivitätswerte als Jugendliche

in der KKG, in der emotionalen Go/NoGo-Aufgabe zeigte sich dieser Unterschied jedoch nicht. Jugendliche mit NSSV+BPS erreichten im Selbstbericht noch höhere Impulsivitätswerte als Jugendliche mit NSSV-BPS, insbesondere für nicht-planende Impulsivität (Mangel an Zukunftsorientierung und Voraussicht).

3.2 Studie 2: Erziehungsverhalten

Ziel dieser Studie war die Untersuchung des Erziehungsverhaltes aus Sicht der Jugendlichen und Eltern. Die Stichprobe bestand aus 116 weiblichen Jugendlichen im Alter von 13-20 Jahren (*M* = 16.01, *SD* = 1.64), 92 Müttern im Alter von 36-57 Jahren (*M* = 45.67, *SD* = 4.91) und 24 Vätern im Alter von 44-58 Jahren (*M* = 48.74, *SD* = 3.13). Von den Jugendlichen wurden 45 der NSSV-Gruppe, 27 der KKG und 44 der GKG zugeordnet. Die Diagnostik erfolgte gleich wie in Studie 1. Das Erziehungsverhalten wurde anhand von Selbstberichten mit dem Zürcher Kurzfragebogen zum Erziehungsverhalten, ZKE (Reitzle et al., 2001) erfasst. Anhand der Parental Stress Scale, PSS (Berry & Jones, 1995) wurde die elterliche Zufriedenheit erhoben. Die Kurzversion der Depressions-Angst-Stress-Skalen, DASS-21 (Lovibond & Lovibond, 1995) diente der Erfassung von Belastung durch Merkmale von Depression, Angst und Stress. Die deskriptiven Ergebnisse zeigten, dass 80% der Jugendlichen mit NSSV familiäre Konflikte als Trigger für NSSV nannten. Die Jugendlichen der drei Gruppen unterschieden sich signifikant im Selbstbericht zum mütterlichen Erziehungsverhalten. Jugendliche mit NSSV berichteten im Vergleich zur GKG weniger mütterliche Wärme und Unterstützung (*d* = 0.64), in den Berichten der Mütter zeigte sich dieser Unterschied nicht. Insgesamt fiel die Eltern-Kind-Übereinstimmung bezüglich des Erziehungsverhaltens in allen drei Gruppen niedrig aus. Die Mütter berichteten im Vergleich zu den Jugendlichen mehr Wärme und Unterstützung (NSSV *d* = 0.64, KKG *d* = 0.26) und weniger psychologische Kontrolle (NSSV *d* = 0.52, KKG *d* = 1.30, GKG *d* = 0.54). Ein ähnliches Bild zeigte sich für die Väter, die ebenfalls mehr Wärme und Unterstützung berichteten als die Jugendlichen selbst (NSSV *d* = 0.50, KKG *d* = 0.23). Für väterliches Erziehungsverhalten zeigten sich keine signifikanten Gruppenunterschiede. Mütter in der NSSV-Gruppe zeigten im Vergleich zur GKG höhere Depressions- (*d* = 0.70), Angst- (*d* = 0.70) und Stresswerte (*d* = 0.86) und berichteten eine geringere Zufriedenheit in der Elternschaft als Mütter in der KKG (*d* = 0.61) und GKG (*d* = 0.80). Väter in der NSSV-Gruppe erzielten die höchsten Stresswerte, es zeigte sich jedoch kein signifikanter Gruppenunterschied in der PSS. Eltern von Jugendlichen mit NSSV berichteten, dass sie immer unruhiger wurden (Mütter: 50%, Väter: 88.9%) und Schwierigkeiten hatten, sich zu entspannen (Mütter 25%, Väter: 44.4%).

3.3 Studie 3: Qualität der Geschwisterbeziehung

Inhalt dieser Studie waren die Auswirkungen von NSSV auf Geschwisterkinder und die Geschwisterbeziehung. Dazu wurden 139 weibliche Jugendliche im Alter von 13-20 Jahren (*M* = 16.18, *SD* = 1.62) und 73 Geschwister im Alter von 10-28 Jahren (*M* = 16.88, *SD* = 4.02; 60.3% weiblich) befragt. Von den Jugendlichen erfüllten 56 die Kriterien für NSSV, 33 wurden in die KKG und 50 in die GKG eingeschlossen. Die Diagnostik erfolgte gleich wie in Studie 1. Internalisierende und externalisierende Symptome wurden mit der deutschen Version des Youth Self-Report, YSR (Achenbach, 1991; Döpfner et al., 1994) erhoben. Ein selbstkonzipierter Fragebogen für Geschwister von Jugendlichen mit NSSV (In-Albon & Schmid, 2011) diente der Erfassung geschwisterlicher Reaktionen. Die Items erfragten den Umgang mit NSSV, die vermuteten Gründe für / Funktionen von NSSV, die persönlichen Erfahrungen mit NSSV, die Gefühle und Reaktionen der Geschwister sowie den Einfluss von NSSV auf die Familiendynamik. Die Qualität der Geschwisterbeziehung wurde mit dem Adult Sibling Relationship Questionnaire, ASRQ (Heyeres, 2006) und dem Brother-Sister Questionaire, BSQ (Graham-Bermann & Cutler, 1994) erhoben. Der ASRQ umfasst die Kategorien Wärme, Konflikt und Rivalität und der BSQ die Dimensionen Empathie, Einhalten von Grenzen, Ähnlichkeit und Nötigung/Zwang. Geschwister von Jugendlichen mit NSSV berichteten eine Reihe von negativen emotionalen und familiären Konsequenzen. Ein Grossteil der Geschwister (71.4%) gab an, sich mit den Problemen der Schwester allein gelassen zu fühlen. Auf den Subskalen des ASRQ zeigten sich signifikante Gruppenunterschiede für die Subskalen Wärme und Rivalität. Jugendliche mit NSSV berichteten im Vergleich zu gesunden Jugendlichen weniger Wärme (*d* = 0.73) und mehr Rivalität (*d* = 1.05) in der Geschwisterbeziehung. Die höheren Rivalitätswerte weisen auf die elterliche Bevorzugung eines Kindes in Familien von Jugendlichen mit NSSV hin. Auf den Subskalen des BSQ zeigten sich signifikante Gruppenunterschiede für Empathie, Ähnlichkeit und das Einhalten von Grenzen. Jugendliche mit NSSV berichteten im Vergleich zu gesunden Jugendlichen weniger Empathie (*d* = 0.68) und Ähnlichkeit (*d* = 0.78) sowie weniger Probleme mit dem Einhalten von Grenzen (*d* = 0.43) in der Geschwisterbeziehung. In den Berichten der Geschwister zeigte sich nur ein signifikanter Gruppenunterschied für Nötigung/Zwang. Geschwister von Jugendlichen mit NSSV berichteten mehr Nötigung/Zwang als Geschwister in der KKG (*d* = 1.08) und GKG (*d* = 0.67). Insgesamt fiel die Übereinstimmung der Geschwisterpaare bezüglich der Qualität der Beziehung in der NSSV-Gruppe und GKG niedrig aus. Eine Analyse der Diskrepanzen zeigte jedoch nur kleine Unterschiede in den Berichten der Jugendlichen und Geschwister. In der KKG zeigten Geschwister-

paare eine gute Übereinstimmung bezüglich der berichteten Wärme und Ähnlichkeit. Internalisierende Symptome der Jugendlichen mit NSSV korrelierten mit Nötigung/Zwang in der Geschwisterbeziehung und externalisierende Symptome mit der berichteten Ähnlichkeit zum Geschwister (beide $r = 0.27$). Für die Geschwister von Jugendlichen mit NSSV zeigte sich eine positive Korrelation zwischen internalisierenden Symptomen und Wärme, Konflikt und Empathie (für alle $r = 0.48$). Die Geschwister der drei Gruppen unterschieden sich nicht signifikant bezüglich internalisierender und externalisierender Symptome.

3.4 Studie 4: Expressed Emotion

Aufbauend auf Studie 2 wurde in dieser Studie das familiäre Klima anhand der EE-Ausprägungen von Jugendlichen mit NSSV und deren Müttern untersucht. Die Stichprobe bestand aus 70 weiblichen Jugendlichen im Alter von 12-20 Jahren ($M = 15.28$, $SD = 1.81$). Von den Jugendlichen wurden 21 der NSSV-Gruppe, 17 der KKG und 32 der GKG zugeordnet. Insgesamt nahmen 24 Mütter im Alter von 38-56 Jahren ($M = 46.47$, $SD = 4.61$) teil; 10 in der NSSV-Gruppe, 7 in der KKG und 7 in der GKG. Die Diagnostik erfolgte anhand des Diagnostischen Interviews bei psychischen Störungen im Kindes- und Jugendalter, Kinder-DIPS (Silvia Schneider et al., 2017), NSSV wurden anhand der Zusatzmoduls erfragt. Die Fragen zur BPS wurden der DIPS-Version für Erwachsene entnommen (Margraf et al., 2017). Das Five-Minute Speech Sample, FMSS (Magaña et al., 1986) diente der Erfassung von EE. Während eines fünfminütigen Monologs wurden die Gefühle, Meinungen und Einstellungen erfasst, die eine Person über ihren Angehörigen ausdrückt. Die Instruktion für die Jugendlichen und Mütter lautete wie folgt: «Ich würde gerne deine/Ihre Gedanken und Gefühle über deine Mutter/Ihre Tochter hören; in deinen/Ihren eigenen Worten und ohne dass ich dich/Sie mit Fragen oder Kommentaren unterbreche. Wenn ich dich/Sie bitte zu beginnen, sprichst du/sprechen Sie bitte fünf Minuten und erzählst mir/erzählen mir, was für eine Person deine Mutter/Ihre Tochter ist und wie ihr/sie beide miteinander auskommt/auskommen. Nachdem du/Sie begonnen hast/haben, kann ich keine Fragen mehr beantworten. Gibt es noch Fragen, die du/Sie mir stellen möchtest/möchten, bevor wir beginnen?». Die Monologe wurden auf Video aufgezeichnet und anhand der Kodierungskategorien Qualität der Beziehung, Kritik, verdeckte Kritik und emotionale Überbeteiligung ausgewertet (Leeb et al., 1991, 1993). Die Qualität der Beziehung wurde entweder als positiv, neutral oder negativ eingestuft. Kritik umfasste negative Bemerkungen über das Verhalten oder die Persönlichkeit des Angehörigen und wurde aufgrund des Inhalts oder Tonfalls einer Aussage kodiert. Emotionale Überbeteiligung wurde mit den Un-

terkategorien «Aufopferung/Überbehütung» und «nonverbal gezeigte Überbeteiligung» erfasst. Emotionale Überbeteiligung wurde kodiert, wenn berichtet wurde, dass die Mütter in extremer und aussergewöhnlicher Weise Opfer gebracht oder die Töchter in extremer Weise überbehütet hatten. Nonverbal gezeigte Überbeteiligung galt als vorhanden, wenn die befragte Person währen des Interviews zusammenbrach (z.B. Weinen, erstickendes Stocken und Unfähigkeit, weiterzusprechen). Eine Person wurde als hoch EE (HEE) eingestuft, wenn emotionale Überbeteiligung (Aufopferung/Überbehütung od. während des Interviews nonverbal gezeigte Überbeteiligung), Kritik (eine negative Beziehung, eine kritische Äusserung oder zwei verdeckte kritische Äusserungen) oder beides vorlag. Die FMSS-Aufnahmen wurden von trainierten, unabhängigen Kodierern ausgewertet, die nichts über die Gruppenzugehörigkeit der Probandinnen wussten. Zur Überprüfung der konvergenten Validität des FMSS wurde die von den Jugendlichen wahrgenommene elterliche Invalidierung (als verwandtes Konstrukt von EE) erhoben. Dazu diente die für das Jugendalter adaptierte Version der Invalidating Childhood Environment Scale (ICES-J, Tschan & In-Albon, 2016). Diese erfasst nebst der elterlichen Invalidierung die drei Typen invalidierender Familien (chaotisch, perfekt und typisch) nach Linehan (1993). Die Emotionsregulation wurde anhand der deutschen Version der Difficulties in Emotion Regulation Scale, DERS (Gratz & Roemer, 2004) erhoben.

Im Vergleich zur GKG erfüllten Jugendliche mit NSSV und Jugendliche der KKG signifikant häufiger die Kriterien für HEE (NSSV: Cramer´s V = 0.60, KKG: V = 0.42). In allen Gruppen waren die HEE-Ausprägungen auf Kritik zurückzuführen, lediglich zwei Jugendliche in der NSSV-Gruppe berichteten emotionale Überbeteiligung. Jugendliche mit NSSV äusserten im Vergleich zu beiden Kontrollgruppen mehr verdeckte Kritik (KKG: d = 0.65, GKG: d = 1.30) und kritischen Tonfall (d = 1.10) gegenüber ihren Müttern. Positive Beziehungsaspekte wurden von Jugendlichen in der GKG signifikant häufiger berichtet als von Jugendlichen in der NSSV-Gruppe (d = 1.49) und KKG (d = 0.82). Die Hälfte der Mütter in der NSSV-Gruppe und 23.6% der Mütter in der KKG erfüllten die Kriterien für HEE. In der GKG zeigten alle Mütter einen NEE-Status. Eine Mutter in der NSSV-Gruppe berichtete von emotionaler Überbeteiligung und Kritik, die restlichen HEE-Ausprägungen waren auf Kritik zurückzuführen. Die Übereinstimmung der Mutter-Kind-Daten (n = 24) fiel moderat aus (kappa = 0.42).

Für die DERS zeigten sich auf fünf der sechs Subskalen signifikante Gruppenunterschiede. Im Vergleich zur GKG erzielten Jugendliche mit NSSV höhere Werte für den DERS-Gesamtscore (d = 2.06) sowie für die Subskalen Impulskontrollschwierigkeiten (d = 2.38), Mangel an emotionaler Bewusstheit (d = 1.29) Mangel an emotionaler Klarheit (d = 2.13) und eingeschränkter Zugang zu Emotionsregulationsstrategien (d = 1.96). Im Vergleich zur KKG

zeigten Jugendliche mit NSSV mehr Impulskontrollschwierigkeiten (d = 1.07) und weniger emotionale Klarheit (d = 2.13).

Die drei Gruppen (NSSV, KKG und GKG) unterschieden sich nicht bezüglich der wahrgenommenen mütterlichen Invalidierung. Jugendliche mit NSSV zeigten höhere Ausprägungen für den chaotischen Familientypen als Jugendliche der GKG (d = 2.30). Für die Gesamtstichprobe zeigte sich, dass der chaotische Familientyp einen signifikanten Prädiktor für HEE der Jugendlichen darstellt (β_1 = .05, p < .001). HEE der Jugendlichen korrelierte positiv mit HEE der Mütter (r = .46), Emotionsregulationsschwierigkeiten (r = .31-.36) und dem chaotischen Familientypen (r = .61). HEE der Mütter hingegen korrelierte nicht mit Emotionsregulationsschwierigkeiten der Jugendlichen. Wahrgenommene mütterliche Invalidierung war mit einem Mangel an emotionaler Bewusstheit der Jugendlichen assoziiert (r = .38). Der validierende Familientyp korrelierte negativ mit HEE der Jugendlichen (r = -.52) und Mütter (r = -.89).

4 Diskussion

Die Ergebnisse der einzelnen Studien werden im Folgenden in den aktuellen Forschungsstand eingebettet und diskutiert.

4.1 Diskussion der Ergebnisse zu den Persönlichkeitsmerkmalen

In Übereinstimmung mit bisherigen Studien (Hefti et al., 2013; Joyce et al., 2010; Lüdtke et al., 2017) zeigten Jugendliche mit NSSV hohe Werte auf den Temperamentsdimensionen Neugierverhalten und Schadensvermeidung und niedrige Werte auf der Charakterdimension Selbstlenkungsfähigkeit. Im Gegensatz zu Ohmann und Kollegen (2008) erzielten Jugendliche mit NSSV in dieser Studie niedrigere Werte für Kooperativität, was sich mit den Ergebnissen zu Erwachsenen mit BPS deckt (Barnow et al., 2005). Eine geringe Kooperativität ist mit sozial intolerantem, kritischem und destruktivem Konfliktverhalten assoziiert und kann interpersonelle Konflikte verursachen. In Übereinstimmung damit berichten Jugendliche mit NSSV häufig familiäre Probleme als Trigger für NSSV (Tschan et al., 2015). Das Beharrungsvermögen von Jugendlichen mit NSSV war im Normalbereich, aber dennoch geringer ausgeprägt als in der KKG. Im Einklang damit gibt es Hinweise dafür, dass Jugendliche mit NSSV bei der Verfolgung eigener Ziele schneller aufgeben, während Jugendliche ohne NSSV fleißiger und ausdauernder sind (Goth & Schmeck, 2009). Alle drei Gruppen zeigten ähnliche Ausprägungen von Selbsttranszendenz, höhere Werte für Jugendliche mit NSSV konnten entgegen früherer Studien zu NSSV (Hefti et al., 2013) und BPS (Barnow et al., 2005) nicht bestätigt werden. Diese Unterschiede sind womöglich auf die unterschiedliche Zusammensetzung der Stichproben zurückzuführen (Schulstichprobe vs. Klinische Stichprobe, weibliche vs. männliche Probanden, Jugendliche vs. Erwachsene und NSSV vs. BPS). Jugendliche mit NSSV+BPS und NSSV-BPS zeigten ein ähnliches Persönlichkeitsmuster, wobei dieses für Jugendliche mit NSSV+BPS stärker ausgeprägt war. Dies betont die Wichtigkeit der dimensionalen Erfassung von Persönlichkeitsmerkmalen in der Erforschung von NSSV-BPS. Das von Cloninger (2000) postulierte Persönlichkeitsmuster von Patienten mit einer BPS, bestehend aus einem hohen Ausmass an Neugierverhalten und Schadensvermeidung konnte in dieser Studie repliziert werden. Das Ergebnis unterstützt die Hypothese zum Annäherungs-Vermeidungs-Konflikt und der daraus resultierenden emotionalen Instabilität von Patienten mit einer BPS (Cloninger et al., 1994). Trotz der kleinen Stichprobe von Jugendlichen mit NSSV+BPS (N=14) zeigten sich signifikante Unterschiede in den Temperaments- und Charaktermerkmalen von Jugendlichen mit NSSV mit und ohne BPS. Jugendliche mit NSSV-BPS erzielten auf den Subskalen des JTCI die höchsten Standardabweichungen, was auf die Heterogenität dieser Gruppe hinweist.

Beträchtliche diagnostische Heterogenität wird auch in anderen Studien zu NSSV berichtet (Auerbach et al., 2014; Bentley et al., 2015). In Übereinstimmung mit früheren Studien zeigte sich eine Inkonsistenz zwischen der selbstberichteten und experimentell erfassten Impulsivität von Jugendlichen mit NSSV (Glenn & Klonsky, 2010; Janis & Nock, 2009). Diese ist womöglich auf die Erfassung unterschiedlicher, miteinander korrelierender Teilaspekte von Impulsivität zurückzuführen (Mc Closkey et al., 2012). Die hohen Ausprägungen für nicht-planende Impulsivität von Jugendlichen mit NSSV+BPS tragen womöglich dazu bei, dass langfristige Konsequenzen von NSSV im Vergleich zu den kurzfristigen Vorteilen (z.B. Erleichterung negativer Gefühlen) an Bedeutung verlieren und die Motivation für das Verhalten dadurch gesteigert wird (Cyders & Smith, 2008; Tice et al., 2001).

4.2 Diskussion der Ergebnisse zum Erziehungsverhalten

Jugendliche mit NSSV berichteten im Vergleich zur GKG ein geringeres Maß an mütterlicher Wärme und Unterstützung. Dies steht im Einklang mit anderen Studien, die zeigen, dass Jugendliche mit repetitiven NSSV weniger soziale Unterstützung durch Familienangehörige sowie ein hohes Maß an negativem Affekt in der Beziehung zu den Eltern wahrnehmen (Bureau et al., 2010; Crowell et al., 2008; Muehlenkamp et al., 2013). Entgegen der Ergebnisse anderer Studien (Baetens, Andrews, Claes, et al., 2015; Baetens, Claes, Martin, et al., 2014) zeigten sich in dieser Studie keine Gruppenunterschiede bezüglich der wahrgenommenen elterlichen Kontrolle, weder für psychologische Kontrolle noch für Verhaltenskontrolle und weder aus Sicht der Jugendlichen noch aus Sicht der Eltern. Ein möglicher Grund für diese Diskrepanz liegt in der Verwendung unterschiedlicher Instrumente und unterschiedlicher Definitionen von Kontrolle. In der Studie von Baetens und Kollegen (2014) wurde Verhaltenskontrolle z.B. durch strenge Strafen und Vernachlässigung definiert, während sich Verhaltenskontrolle in dieser Studie auf Forderungen, Regeln und Disziplin bezog. Eine weitere Erklärung ist die methodische Schwäche des verwendeten Instrumentes. Eine konfirmatorische Faktorenanalyse zum Zürcher Kurzfragebogen zum Erziehungsverhalten ergab schlechte Werte, insbesondere für die Subskalen, welche elterliche Kontrolle abbilden (De Groot, 2019). In Übereinstimmung mit einer Metaanalyse zur Eltern-Kind-Übereinstimmung (Korelitz & Garber, 2016) berichteten Mütter im Vergleich zu den Jugendlichen mehr positives Erziehungsverhalten und es zeigte sich insgesamt eine niedrige Eltern-Kind-Übereinstimmung. Mütter in der NSSV Gruppe erzielten im Vergleich zu Müttern in der GKG höhere Werte für elterlichen Stress. Dies deckt sich mit den Ergebnissen von Whitlock und Kollegen (2018), welche zeigen, dass

sich Eltern von Jugendlichen mit NSSV sowohl bezüglich der subjektiven Belastung (Schuldgefühle, Reue) als auch der objektiven Belastung (Zeit, finanzielle Ressourcen) von Eltern gesunder Kinder unterscheiden. Auch in qualitativen Studien zeigt sich, dass Eltern mit erhöhtem Stress auf die NSSV ihrer Kinder reagieren (Ferrey et al., 2016; Oldershaw et al., 2008).

4.3 Diskussion der Ergebnisse zur Qualität der Geschwisterbeziehung

Im Einklang mit elterlichen Berichten zu den Reaktionen von Geschwisterkindern auf NSSV (Byrne et al., 2008; Ferrey et al., 2016) zeigen die Ergebnisse dieser Studie, dass Geschwister die NSSV der Schwester als Quelle von Stress, Trauer, Verzweiflung, Hilflosigkeit und Wut wahrnehmen. Ein Großteil der Geschwister von Jugendlichen mit NSSV zeigte sich besorgt und äußerte sich erleichtert über die stationäre Behandlung der Schwester. Viele berichteten, ihre Schwester durch Gespräche zu unterstützen und sich dadurch belastet zu fühlen, sie wünschten sich Hilfe im Umgang mit NSSV. Diese Ergebnisse betonen die Wichtigkeit psychoedukativer Angebote für alle Familienangehörigen. Geschwister von Jugendlichen mit NSSV brauchen Unterstützung und einen Raum, in dem sie ihren Sorgen Ausdruck verleihen können. Es stellt sich die Frage, ob Geschwisterkinder aufgrund der berichteten emotionalen Belastung selbst ein erhöhtes Risiko für die Entwicklung psychopathologische Symptome tragen. Unterschiede zwischen den Geschwistern der drei Gruppen bezüglich internalisierender und externalisierender Symptome konnten in dieser Studie nicht bestätigt werden. Dennoch verdient die Belastung der Geschwister von Jugendlichen mit NSSV Aufmerksamkeit. Geschwister verbringen viel gemeinsame Zeit und können eine wichtige Stütze bei emotionalen und praktischen Problemen sein (McHale et al., 2012; Tucker et al., 2001). Sie können das Wohlbefinden und die Gesundung eines Geschwisters mit einer psychischen Erkrankung fördern, z.B. durch gemeinsame Aktivitäten oder die Integration des Geschwisters in den eigenen Freundeskreis (Griffiths & Sin, 2013). Im Vergleich zur GKG fühlten sich Jugendliche mit NSSV mit ihren Geschwistern weniger emotional verbunden und berichteten weniger Empathie, Fürsorge, Intimität, Ähnlichkeit und Kameradschaft. Es gibt Hinweise dafür, dass Kinder und Jugendliche mit Geschwistern und Gleichaltrigen ähnliche Beziehungserfahrungen machen und die Qualität der Geschwisterbeziehung mit der Qualität der Peerbeziehungen assoziiert ist (McCoy et al., 1994; Pike & Atzaba-Poria, 2003; Yeh & Lempers, 2004). Für NSSV hat sich gezeigt, dass familiäre Beziehungsprobleme das Risiko für negative Peer-Erfahrungen vorhersagen (Adrian et al., 2011). Jugendliche mit NSSV berichten weniger soziale Unterstützung durch Familie und Freunde als gesunde Jugendliche und scheinen Schwierigkeiten mit dem Knüpfen von Beziehungen und dem Erlernen interpersoneller Fähigkeiten zu haben

(Muehlenkamp et al., 2013). Die Selbstberichte der Jugendlichen bezüglich der wahrgenommenen Rivalität in der Geschwisterbeziehung legen nahe, dass Eltern in Familien von Jugendlichen mit NSSV ein Kind bevorzugen. Eine mögliche Erklärung dafür ist, dass Jugendliche mit NSSV durch das Verhalten ins Zentrum der familiären Aufmerksamkeit rücken und es dadurch zu einem Ungleichgewicht in der elterlichen Zuwendung zu den Kindern kommt (Ferrey et al., 2016; McDonald et al., 2007; Oldershaw et al., 2008; Rissanen et al., 2008). Im Einklang damit gab ein Viertel der Geschwister von Jugendlichen mit NSSV in dieser Studie an, weniger Aufmerksamkeit von den Eltern zu bekommen. Ein beträchtlicher Teil (42.9%) berichtete, dass die NSSV der Schwester das gesamte Familienleben bestimmen. Geschwister von Jugendlichen mit NSSV gaben im Vergleich zu beiden Kontrollgruppen (KKG und GKG) mehr Nötigung/Zwang in der Geschwisterbeziehung an. Daraus lässt sich schließen, dass Jugendliche mit NSSV ihren Geschwistern gegenüber dominant und kontrollierend auftreten. Dies erklärt womöglich auch, warum Jugendliche mit NSSV im Vergleich zu ihren Geschwistern weniger Schwierigkeiten mit dem Einfordern und Verteidigen eigener Grenzen berichteten. Die Ähnlichkeit mit dem Geschwister wurde von Jugendlichen mit NSSV geringer eingestuft als von den Geschwistern selbst. Vor dem Hintergrund, dass NSSV häufig mit einer Identitätsdiffusion einhergehen (Claes et al., 2014) und als Identifikationsmöglichkeit dienen (Breen et al., 2013), überrascht es nicht, dass sich Jugendliche mit NSSV als anders wahrnehmen und nicht mit ihrem Geschwister identifizieren. Die Ähnlichkeit mit dem Geschwister war für Jugendliche mit NSSV mit externalisierenden Symptomen assoziiert. Frühere Studien konnten zeigen, dass ein hohes Level an Intimität (repräsentativ für Ähnlichkeit) unter Geschwistern ähnlichen Alters die affektive Intensität der Konflikte erhöht (Buhrmester & Furman, 1990; Recchia et al., 2013), was womöglich mit einem höheren Aggressionslevel einhergeht und zur Erklärung der externalisierenden Symptomatik beiträgt. Nötigung in der Geschwisterbeziehung hingegen ging mit internalisierenden Symptomen von Jugendlichen mit NSSV einher. Dies deckt sich mit Studien, die einen Zusammenhang zwischen dem Vorliegen von Nötigung und Mobbing in der Geschwisterbeziehung und dem Risiko von Jugendlichen und jungen Erwachsenen für depressive Störungen und NSSV nachweisen konnten (Compton et al., 2003; Dantchev et al., 2019). Internalisierende Symptome der Geschwister von Jugendlichen mit NSSV waren mit Konflikt, Wärme und Empathie assoziiert. Konflikte in der Geschwisterbeziehung können zu erhöhten internalisierenden Symptomen führen (Buist et al., 2013), insbesondere dann, wenn der Altersunterschied zwischen den Geschwister gering ist (Furman & Buhrmester, 1985). In Geschwisterbeziehungen, die durch Wärme und Empathie gekennzeichnet sind, reagieren Geschwister womöglich mit mehr Sorgen auf die NSSV der

Schwester, was internalisierende Symptome hervorrufen kann. Gleichzeitig sind Geschwister mit eigenen internalisierenden Symptomen womöglich empfänglicher für die negativen Gefühle der Schwester und zeigen daher mehr Wärme und Empathie. Für Peerbeziehungen hat sich gezeigt, dass Co-Rumination und exzessive Gespräche über interpersonelle Probleme und negative Gefühle zwar mit einer hohen Beziehungsqualität aber auch mit mehr internalisierenden Symptomen einhergehen (Rose et al., 2007).

Interaktionen mit Geschwistern stellen sowohl Risiko- als auch Schutzfaktoren für die Entwicklung und Aufrechterhaltung von emotionalen Störungen und Verhaltensstörungen dar (Dirks et al., 2015). Die Ergebnisse der vorliegenden Studie liefern Hinweise für beide Richtungen. Einerseits stellen Geschwister von Jugendlichen mit NSSV eine wichtige Stütze (insb. durch unterstützende Gespräche) dar und andererseits sind schwierige Beziehungsaspekte sowohl mit internalisierenden und externalisierenden Symptomen der Jugendlichen mit NSSV als auch mit internalisierenden Symptomen der Geschwister assoziiert.

4.4 Diskussion der Ergebnisse zu Expressed Emotion

Die Kriterien für HEE waren für Jugendliche in den klinischen Gruppen (NSSV und KKG) signifikant häufiger erfüllt als für Jugendliche in der GKG. Dieses Ergebnis unterstützt die Annahme, dass psychische Erkrankungen zu hohen EE-Ausprägungen beitragen (Miklowitz, 2007). Jugendliche mit NSSV äusserten im Vergleich zu beiden Kontrollgruppen mehr verdeckte Kritik und kritischen Tonfall gegenüber ihren Müttern. Dies deckt sich mit Forschungsergebnissen, die zeigen, dass Mutter-Kind-Interaktionen von Jugendlichen mit NSSV durch viel Wut und Konflikt gekennzeichnet sind (Crowell et al., 2013). In Anlehnung an Crowell und Kollegen (2009) haben impulsive und emotional sensible Jugendliche in der Interaktion mit HEE Familienmitgliedern womöglich Schwierigkeiten mit der Hemmung emotionaler Reaktionen. In Übereinstimmung damit zeigten Jugendliche mit NSSV im Vergleich zu Jugendlichen der KKG mehr Impulskontrollschwierigkeiten, was womöglich das höhere Ausmaß an verdeckter Kritik und kritischem Tonfall erklärt. Des Weiteren berichteten Jugendliche mit NSSV weniger emotionale Klarheit als Jugendliche der KKG, was sich mit dem Ergebnis deckt, dass Jugendliche mit NSSV Schwierigkeiten mit der Identifikation eigener Gefühle haben (Cerutti et al., 2018).

Die signifikante Korrelation zwischen den HEE-Ausprägungen der Jugendlichen und Mütter lässt einen wechselseitigen Prozess vermuten. Die HEE-Ausprägungen der Jugendlichen gingen mit Emotionsregulationsschwierigkeiten der Jugendlichen einher, während sich dieser Zusammenhang für die HEE-Ausprägungen der Mütter nicht zeigte. Im Kontrast dazu

zeigen bisherige Studien zum Erziehungsverhalten einen Zusammenhang zwischen elterlicher Kritik und Emotionsregulationsschwierigkeiten von Kindern und Jugendlichen (Morris et al., 2017). Womöglich reagieren Jugendliche mit einer hohen emotionalen Reaktivität eher mit HEE und Emotionsregulationsschwierigkeiten auf familiäre Konflikte und mütterliches HEE (Crowell et al., 2009; Linehan, 1993).

In Übereinstimmung mit bisherigen Studien (Rea et al., 2020; Rienecke, 2020) waren die HEE-Ausprägungen der Jugendlichen und Mütter in erster Linie auf Kritik zurückzuführen, nur in Einzelfällen wurde emotionale Überbeteiligung der Mutter kodiert. In der Studie von Ammerman und Brown (2018) zeigte sich, dass Jugendliche mit NSSV im Vergleich zu einer Kontrollgruppe höhere elterliche Aufdringlichkeit berichten. Die Unterschiede zwischen den Ergebnissen der vorliegenden Studie und derer von Ammerman und Brown (2018) sind womöglich auf die Erfassung unterschiedlicher Teilaspekte von elterlicher Überbeteiligung zurückzuführen. Im FMSS wird emotionale Überbeteiligung durch Aufopferung und Überbehütung sowie nonverbale Überbeteiligung (z.B. weinen) während des Monologes definiert, während sich die Subskala «Aufdringlichkeit» in der *Levels of Expressed Emotion Scale* primär auf kontrollierendes Elternverhalten und Eingriffe in die Privatsphäre bezieht. Die wahrgenommene elterliche Überbeteiligung entspricht womöglich nicht der von Ratern kodierten Überbeteiligung, dies sollte zukünftig genauer untersucht werden. Es bleibt zu klären, ob elterliche Überbeteiligung einen Einfluss auf die Entstehung und Aufrechterhaltung von NSSV hat.

Bezüglich der wahrgenommenen mütterlichen Invalidierung zeigten sich keine signifikanten Gruppenunterschiede. Dies deckt sich mit dem Ergebnis von McCallum und Godman (2019), die keinen Zusammenhang zwischen Invalidierung und NSSV nachweisen konnten. Es zeigte sich jedoch, dass ein hohes Maß an wahrgenommener Invalidierung in Interaktion mit einem niedrigen Maß an Validierung mit mehr Symptomen der BPS einherging. Frühere Studien, in welchen emotionale Invalidierung mit der ICES erfasst wurde, zeigen ebenfalls einen Zusammenhang zwischen emotionaler Invalidierung und Symptomen der BPS (Keng & Soh, 2018; Keng & Wong, 2017; Robertson et al., 2013). Jugendliche mit NSSV tragen ein erhöhtes Risiko für die Entwicklung einer BPS (Groschwitz et al., 2015) und dieses nimmt mit steigender Anzahl an belastenden Kindheitserlebnissen zu (Hessels et al., 2018). Keine der Jugendlichen mit NSSV in Studie 4 erfüllte die Kriterien für eine BPS. Zukünftige Studien sollten daher Jugendliche mit NSSV mit und ohne BPS einschliessen, um zu untersuchen, ob sich die beiden Gruppen in ihren Angaben zur elterlichen Invalidierung unterscheiden.

Jugendliche mit NSSV erzielten höhere Werte für den chaotischen Familientypen als Jugendliche der GKG. Dies ist in Übereinstimmung mit früheren Studienergebnissen, die zeigen, dass das familiäre Umfeld von Jugendlichen mit NSSV häufig durch elterliche Zurückweisung/Ablehnung, inkonsistente Erziehung und mangelnde Unterstützung im Umgang mit Emotionen gekennzeichnet ist (Adrian et al., 2011, 2018; Burešová et al., 2015; Guérin-Marion et al., 2020). Ein chaotisches familiäres Umfeld scheint jedoch nicht spezifisch für Familien von Jugendlichen mit NSSV zu sein, da der Unterschied zur KKG nicht signifikant ausfiel. Für die Gesamtstichprobe zeigte sich ein Zusammenhang zwischen dem chaotischen Familientypen, HEE der Jugendlichen und Emotionsregulationsschwierigkeiten der Jugendlichen. Der chaotische Familientyp stellte sich als Prädiktor für HEE der Jugendlichen heraus. Dies ist im Einklang mit den Ergebnissen aus dem Bereich der Essstörungen, welche zeigen, dass insbesondere der chaotische Familientyp mit negativen Grundüberzeugungen und intra- und interpersonellen Schwierigkeiten einhergeht (Ford et al., 2011). Jugendlichen, die in einem chaotischen familiären Umfeld aufwachsen, gilt daher besondere Aufmerksamkeit, da sie Emotionsregulationsschwierigkeiten aufweisen und dadurch ein erhöhtes Risiko für eine Reihe von psychischen Störungen tragen (McLaughlin et al., 2011).

Wie erwartet, zeigten sich Zusammenhänge zwischen HEE und wahrgenommener Invalidierung. Der validierende Familientyp korrelierte negativ mit den HEE-Ausprägungen der Jugendlichen und Mütter. Der chaotische Familientyp hingegen korrelierte positiv mit den HEE-Ausprägungen der Jugendlichen. Mütterliche Invalidierung korrelierte ebenfalls positiv mit HEE der Jugendlichen und Mütter, diese Zusammenhänge fielen jedoch nicht signifikant aus. Dies ist womöglich auf die Unterschiede zwischen den Konstrukten EE und emotionale Invalidierung zurückzuführen. Nebst Kritik und Überbeteiligung beinhaltet emotionale Invalidierung die Nichtanerkennung der aktuellen Befindlichkeit und der aktuellen Bedürfnisse einer Person (Linehan, 1993) und fasst den Begriff der Invalidierung weiter. Die Ergebnisse dieser Studie weisen darauf hin, dass sich die Überlappung der Konstrukte EE und Invalidierung insbesondere auf die Merkmale eines chaotischen familiären Umfeldes bezieht, welches durch viel negativen Affekt, Konflikt und Vernachlässigung gekennzeichnet ist.

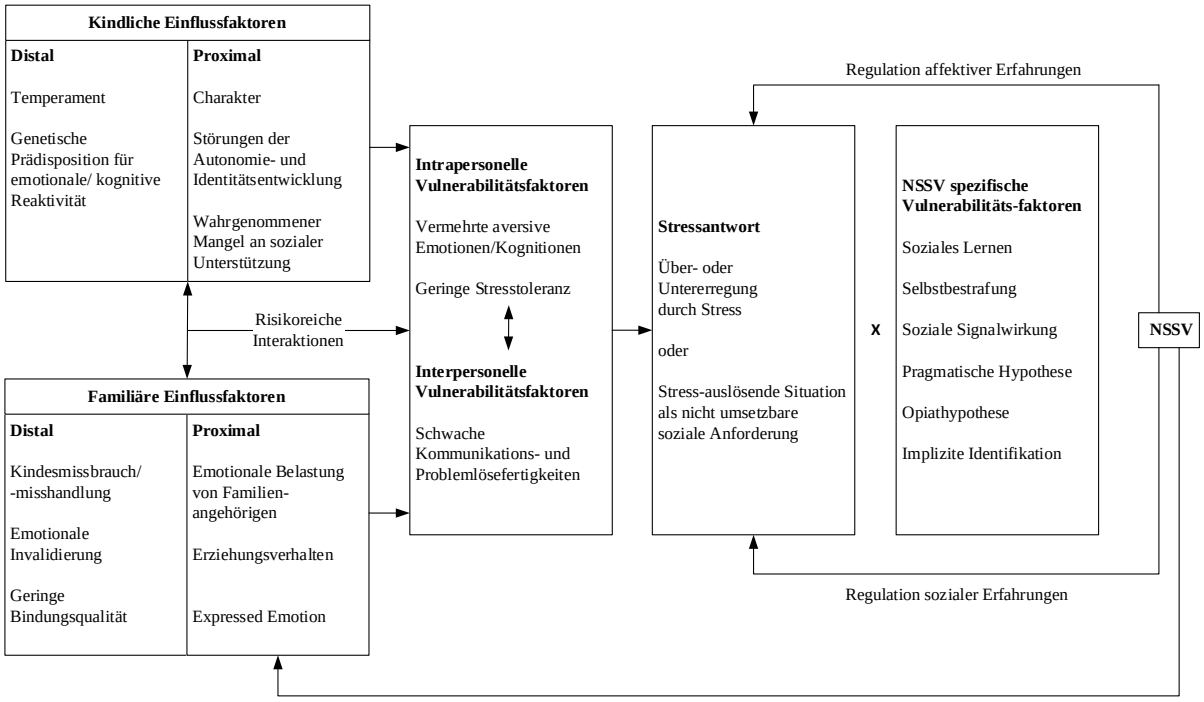
5 Schlussfolgerung

Im Einklang mit der Theorie von Nock (2009, 2010) zeigten sich in der vorliegenden Arbeit Zusammenhänge zwischen distalen (Persönlichkeitsmerkmale, familiäre Kritik), intra- (Emotionsregulationsschwierigkeiten) und interpersonellen Faktoren (Konfliktbehaftete familiäre Beziehungen) und NSSV. Die Ergebnisse unterstützen die Annahme, dass NSSV aufrechterhalten werden, weil sie im Umgang mit negativen emotionalen und interpersonellen Erfahrungen eine effektive Emotionsregulationsstrategie darstellen (Nock, 2009). Familiäre Konflikte sind häufige Trigger für NSSV und somit wichtig für die Aufrechterhaltung des Verhaltens. Elterliches Erziehungsverhalten und familiäre Kritik stellen nach Nock (2009, 2010) distale Risikofaktoren für NSSV dar. Forschungsbefunde weisen darauf hin, dass diese Faktoren durch die NSSV des Kindes beeinflusst werden können. Eltern scheinen mit mehr kontrollierendem Erziehungsverhalten auf die NSSV des Kindes zu reagieren (Baetens, Claes, Onghena, et al., 2015). Bezüglich EE hat sich gezeigt, dass die Psychopathologie des Kindes mütterliches HEE hervorrufen kann und die internalisierenden und externalisierenden Symptome von Jugendlichen das Ausmaß an EE vorhersagen (Hale et al., 2016). Die „*NSSI Family Distress Cascade Theory*“ (Waals et al., 2018) stellt einen Versuch dar, den wechselseitigen Prozess zwischen Jugendlichen mit NSSV und deren Eltern, insbesondere den Konflikt zwischen dem Autonomiebestreben der Jugendlichen und dem Kontrollbedürfnis der Eltern zu beschreiben. Entgegen der Theorie von Waals und Kollegen (2018) zeigten sich in Studie 2 zwischen Jugendlichen mit NSSV einer KKG und GKG keine Unterschiede bezüglich elterlicher Kontrolle, weder aus Sicht der Jugendlichen noch aus Sicht der Mütter. Studienergebnisse zu EE weisen jedoch darauf hin, dass HEE-Ausprägungen von Familienmitgliedern mit mehr kontrollierendem Verhalten gegenüber Patienten einhergehen (Hooley & Campbell, 2002).

Die Ergebnisse der vorliegenden Arbeit legen nahe, dass die Auswirkungen von NSSV auf Familienangehörige sowie risikoreiche Interaktionen zwischen Jugendlichen mit NSSV und deren Eltern (z.B. HEE) und Geschwister (z.B. viel Nötigung/Zwang) bei der Aufrechterhaltung von NSSV berücksichtigt werden sollten. Vor diesem Hintergrund wird eine Erweiterung des Modells von Nock (2009, 2010) vorgeschlagen, welche die wechselseitige Beeinflussung zwischen kindlichen und familiären Faktoren berücksichtigt und auch einen Einfluss von den NSSV des Kindes auf die familiären Faktoren annimmt, siehe Abbildung 2.

Abbildung 2

Erweiterung des Modells von Nock (2009, 2010) um die wechselseitige Beeinflussung von kindlichen und familiären Faktoren



Im erweiterten Modell werden die distalen Risikofaktoren in kindliche und familiäre Einflussfaktoren unterteilt. Innerhalb der kindlichen und familiären Faktoren wird weiter zwischen distalen und proximalen Faktoren unterschieden. Die distalen Faktoren gelten als weitestgehend stabil (z.B. Temperamentsmerkmale) oder unveränderbar, da sie auf der Zeitachse weiter zurückliegen (z.B. vergangener Kindesmissbrauch), während die proximalen Faktoren variabel sind und durch die NSSV beeinflusst werden können (z.B. die Identitätsentwicklung oder das Erziehungsverhalten). Es wird von einer wechselseitigen Beeinflussung zwischen kindlichen und familiären Faktoren ausgegangen. Sowohl kindliche und familiäre Faktoren als auch deren Interaktion haben einen Einfluss auf intra- und interpersonelle Vulnerabilitäten.

Distale kindliche Faktoren umfassen die in Studie 1 beschriebenen Temperamentsmerkmale bestehend aus hohen Ausprägungen auf den Dimensionen Neugierverhalten (inkl. Impulsivität) und Schadensvermeidung und niedrigen Ausprägungen auf der Dimension Beharrungsvermögen sowie die genetische Prädisposition für hohe emotionale und kognitive Reaktivität. Zu den proximalen Faktoren zählen die Charaktermerkmale aus Studie 1 bestehend

aus niedrigen Werten für Selbstlenkungsfähigkeit und Kooperativität sowie die wahrgenommene Autonomiebedrohung durch verändertes Erziehungsverhalten (Waals et al., 2018), Störungen in der Identitätsentwicklung (Gandhi et al., 2017) und ein wahrgenommener Mangel an familiärer Unterstützung, wie in den Studien 2 und 3 beschrieben. Proximale familiäre Faktoren umfassen die in Studie 2 beschriebene emotionale Belastung und die erhöhten Stresswerte der Eltern von Jugendlichen mit NSSV, Veränderungen im Erziehungsverhalten als Reaktion auf NSSV (Waals et al., 2018) sowie das in Studie 4 beschriebene hohe Ausmaß an EE. Mütter, die im Kontext der Erziehung selbst Emotionsregulationsschwierigkeiten aufweisen, scheinen mehr Schuldzuweisungen und feindselige Gefühle gegen ihre Kinder zu richten (Whitlock et al., 2018). In Anlehnung an Crowell und Kollegen (2009) stellt HEE ein risikoreiches Interaktionsmuster dar, welches das emotionale Arousal und das Risiko für emotionale Dysregulation erhöht. In Übereinstimmung damit waren HEE-Ausprägungen der Jugendlichen in Studie 4 mit Emotionsregulationsschwierigkeiten assoziiert. Wie sich in Studie 3 gezeigt hat, berichten auch Geschwisterkinder eine erhöhte Belastung durch die NSSV der Schwester, was sich auf die Qualität der Geschwisterbeziehung und die Interaktionen unter Geschwistern auswirken kann. Mobbing in der Geschwisterbeziehung (Dantchev et al., 2019) stellt ein weiteres Beispiel für risikoreiche Interaktionen innerhalb der Familie dar.

Die Wechselwirkung zwischen kindlichen und familiären Faktoren wird durch bisherige Forschungsbefunde bestätigt. Es hat sich gezeigt, dass Personen mit NSSV insbesondere in einem negativen emotionalen Kontext, geprägt durch Kritik von nahestehenden Personen, impulsiv reagieren (Allen et al., 2019). Persönlichkeitseigenschaften der Eltern, welche mit Schwierigkeiten der Selbstregulation einhergehen, stellen einen Risikofaktor für NSSV dar, wenn die Jugendlichen selbst niedrige Werte für Gewissenhaftigkeit (vglb. mit Selbstlenkungsfähigkeit und Beharrungsvermögen) und hohe Werte für Neurotizismus (vglb. mit Schadensvermeidung) aufweisen (Gromatsky et al., 2017). Dysfunktionale Bindungsmuster zwischen Jugendlichen und Müttern können die Identitätsentwicklung stören und das Risiko für NSSV erhöhen (Gandhi et al., 2019). Die Wahrscheinlichkeit für NSSV ist ferner erhöht, wenn sich Jugendliche in ihrer Autonomieentwicklung durch die Eltern nicht unterstützt fühlen (Emery et al., 2017). Des Weiteren scheinen negative Emotionen sowie Emotionsregulationsschwierigkeiten der Jugendlichen den Zusammenhang zwischen einem ungünstigen Erziehungsverhalten/familiären Klima, geringer Bindungsqualität und NSSV zu mediieren (Cerutti et al., 2018; Du et al., 2017; Guérin-Marion et al., 2020). Ein selbstkritischer kognitiver Stil der Jugendlichen stellt einen Mediator für den Zusammenhang zwischen wahrgenommener elterlicher EE und NSSV dar (Ammerman & Brown, 2018; Baetens, Claes, Hasking, et al., 2015).

Kindliche Faktoren können ebenfalls durch NSSV beeinflusst werden. Für NSSV und Störungen in der Identitätsentwicklung gibt es Hinweise für einen bidirektionalen Zusammenhang (Gandhi et al., 2017). Längsschnittstudien sind erforderlich, um den Einfluss von NSSV auf Persönlichkeitsmerkmale (insb. Charaktermerkmale) zu untersuchen. Der wahrgenommene Mangel an sozialer Unterstützung wird womöglich durch NSSV und einen damit assoziierten negativen Bias aufrechterhalten. Es hat sich gezeigt, dass Jugendliche mit NSSV bei der Interpretation von sozialem Feedback einen negativen Bias aufweisen und soziale Rückmeldungen negativer bewerten als Jugendliche einer Kontrollgruppe (Perini et al., 2019). Dieser Bias wirkt sich womöglich auch auf die Wahrnehmung sozialer Unterstützung aus.

5.1 Limitationen und Stärken

Die vorliegende Arbeit stützt sich auf Querschnittdaten, daher sind keine Aussagen über die Richtung der Zusammenhänge zwischen den unterschiedlichen Einflussfaktoren und NSSV möglich. Die Ergebnisse aller Studien beruhen auf Stichproben von weiblichen Jugendlichen mit NSSV und sind nicht auf männliche Jugendliche generalisierbar. Da sich in früheren Studien Geschlechterunterschiede bezüglich des Zusammenhangs zwischen mütterlicher Kritik/einem invalidierenden Umfeld und NSSV zeigten (James & Gibb, 2019; Sim et al., 2009), sollten zukünftige Studien alle Geschlechter berücksichtigen. Die Berichte der Jugendlichen, Eltern und Geschwister werden womöglich durch Faktoren beeinflusst, die in dieser Arbeit nicht berücksichtigt wurden, z.B. negative kognitive Verzerrungen oder soziale Erwünschtheit. In Studie 2 war die Gruppe der Väter klein und in Studie 4 wurden nur Mütter miteinbezogen, was daran lag, dass Mütter als Studienteilnehmerinnen leichter verfügbar waren als Väter. Dies deckt sich mit Studienergebnissen, die zeigen, dass Mütter auch in Doppelverdiener-Familien im Vergleich zu Vätern mehr Zeit mit kindbezogenen Aufgaben verbringen (Yavorsky et al., 2015). In den Studien 1 bis 3 war die Stichprobengröße in der KKG am geringsten. Dies ist darauf zurückzuführen, dass die Prävalenz von NSSV im stationären Setting sehr hoch ist (Kaess, Parzer, et al., 2013) und die Rekrutierung von Jugendlichen ohne NSSV in der Vorgeschichte dadurch erschwert war.

Stärken dieser Arbeit sind der Einbezug einer klinischen und gesunden Kontrollgruppe sowie der Multi-Informanten Ansatz (Jugendliche, Eltern, Geschwister). Zusätzlich zu Selbstberichten wurden auch Sprechstichproben (FMSS zur Erfassung von EE) sowie ein Verhaltensmaß (Go-/NoGo-Aufgabe zur Erfassung der Impulsivität) erhoben. In allen vier Studien erfolgte die Erfassung von NSSV anhand der vorgeschlagenen Diagnosekriterien nach DSM-

5 (American Psychiatric Association, 2013), was zur Wissenserweiterung über Jugendliche mit diesem Verhalten beiträgt.

5.2 Klinische Implikationen und Forschungsausblick

Die Ergebnisse der vorliegenden Arbeit liefern Implikationen für die Behandlung von NSSV im Jugendalter. Längsschnittstudien sind erforderlich, um den zeitlichen Verlauf der Zusammenhänge von NSSV mit den intra- und interpersonellen Faktoren zu untersuchen.

Studie 1 betont die Wichtigkeit der dimensionalen Erfassung der Persönlichkeit, wie sie im dimensional-kategorialen Hybridmodell des DSM-5 vorgeschlagen wird (American Psychiatric Association, 2013). Das Modell ermöglicht die Erkennung pathologischer Persönlichkeitsmerkmale und dadurch frühzeitige Interventionen zur Prävention von Persönlichkeitsstörungen. Präventive Maßnahmen sind wichtig, da NSSV mit einem erhöhten Risiko für die Entwicklung einer BPS einhergehen (Groschwitz et al., 2015; Nakar et al., 2016). Möglicherweise stellen die Persönlichkeitsunterschiede zwischen Jugendlichen mit NSSV mit und ohne BPS eine Hilfe bei der Wahl der Behandlung dar. Für Jugendliche mit NSSV ohne BPS ist eine spezifische Behandlung mit geringerer Intensität womöglich ausreichend, was die Relevanz der Entwicklung gezielter Behandlungsprogramme betont. In Anlehnung an die Ergebnisse von Goddard und Kollegen (2019) lassen sich für Studie 1 der vorliegenden Arbeit ähnliche Implikationen ableiten. Patienten mit NSSV mit hohen Ausprägungen für Neugierverhalten und Schadensvermeidung (affektive Instabilität) profitieren womöglich insbesondere von Interventionen zur Verbesserung der Emotionsregulation. Für Patienten mit NSSV, welche zusätzlich eine geringe Ausprägung für Kooperativität (geringere Empathie und soziale Kompetenz) aufweisen, sind zusätzlich Interventionen zur Verbesserung interpersoneller Fertigkeiten indiziert. Niedrige Ausprägungen auf den Dimensionen Selbstlenkungsfähigkeit und Beharrungsvermögen können sich auf die Behandlung (z.B. Umsetzung von Hausaufgaben) auswirken und erfordern womöglich eine engere Begleitung mit einer höheren Sitzungsfrequenz. Für Patienten mit einer BPS hat sich gezeigt, dass die Dialektisch-Behaviorale Therapie mit einer Erhöhung der Selbstlenkungsfähigkeit einhergeht (Bernheim et al., 2017). Zukünftige Forschung sollte sich pathologischen Persönlichkeitsmerkmalen widmen, die nicht das Vollbild einer Persönlichkeitsstörung erfüllen und zur Validierung des im DSM-5 vorgeschlagenen dimensional-kategorialen Hybridmodells beitragen. Die Effekte der Psychotherapie auf die Persönlichkeitsmerkmale (insb. Charaktermerkmale) von Jugendlichen mit NSSV sollten weiter

untersucht werden. Wenn Charaktermerkmale (z.B. die Selbstlenkungsfähigkeit) früh im Therapieprozess gefördert werden, sprechen Patienten womöglich besser auf die Behandlung an (Terock et al., 2015).

Studie 2 verdeutlicht, dass NSSV von Jugendlichen einen Einfluss auf das psychische Wohlbefinden der Eltern haben. Dieses wiederum beeinflusst, wie gut Eltern ihre Kinder unterstützen können (Whitlock et al., 2018). Aus Sicht der Jugendlichen mit NSSV tragen elterliche Unterstützung und Geduld zur Genesung bei, Jugendliche wünschen sich Liebe, Fürsorge und Gelassenheit von Seiten der Eltern (Kelada, Hasking, Melvin, et al., 2018). Adaptive elterliche Reaktionen, insbesondere die emotionale Responsivität, sollten gefördert werden. Durch die Vermittlung von Informationen zu NSSV, die Förderung von Erziehungskompetenzen und soziale Unterstützung können Eltern von Jugendlichen mit NSSV gestärkt werden (Arbuthnott & Lewis, 2015). Psychoedukative Elterngruppen verringern die psychische Belastung und erhöhen die elterliche Zufriedenheit (Power et al., 2009). Eltern von Jugendlichen mit NSSV sollten ermutigt werden, Unterstützungsangebote in Anspruch zu nehmen.

Geschwisterbeziehungen von Jugendlichen mit NSSV bergen viele Ressourcen in sich und können als Übungsfeld für soziale Interaktionen genutzt werden. Die Ergebnisse der Studie 3 legen nahe, dass die Förderung der geschwisterlichen Beziehungsqualität mit einer Zunahme der emotionalen Belastung von Geschwistern von Jugendlichen mit NSSV einhergehen kann. Durch Unterstützungsangebote für Geschwister von Jugendlichen mit NSSV (z.B. psychoedukative Gruppen) sollen negative emotionale Konsequenzen für Geschwisterkinder auf lange Sicht verhindert und reduziert werden. Interventionsstudien zeigen, dass die Qualität der Geschwisterbeziehung durch die Reduktion von Konflikten und Förderung von Wärme verbessert werden kann (Tucker & Finkelhor, 2017). Durch die Verbesserung der Geschwisterinteraktionen erlernen Kinder und Jugendliche sozial-kognitive Fähigkeiten, die für andere Beziehungen (z.B. Freundschaften mit Gleichaltrigen) von Vorteil sein können (Dirks et al., 2015). Letzteres scheint von Interesse, da Jugendliche mit NSSV sowohl interpersonelle Probleme mit Familienmitgliedern als auch mit Gleichaltrigen berichten. Die Geschwisterbeziehung von Jugendlichen mit NSSV sollte bei der Erforschung familiärer Prozesse nicht außer Acht gelassen werden. Es bleibt zu klären, ob der Einbezug von Geschwistern in die Behandlung von Jugendlichen mit NSSV von Vorteil sein kann und ob dadurch eine Verbesserung der Symptomatik und sozialer Fertigkeiten erzielt werden kann.

Studie 4 betont sowohl die Wichtigkeit von Interventionen zur Verbesserung der Emotionsregulation als auch der familiären Kommunikation und Interaktion. Die Hypothese zur sozialen Signalwirkung (Nock, 2009) besagt, dass NSSV als Kommunikationsform dienen,

wenn weniger intensive Strategien (wie sprechen oder schreien) erfolglos waren oder nicht zum erwünschten Effekt geführt haben (z.B. aufgrund eines invalidierenden Umfeldes). Vor diesem Hintergrund erscheint es wichtig, ein durch HEE gekennzeichnetes Interaktionsmuster von Jugendlichen mit NSSV und deren Müttern zu durchbrechen. Wirksame Therapieprogramme für Jugendliche mit NSSV, wie die Dialektisch-Behaviorale Therapie für Adoleszente, DBT-A (McCauley et al., 2018; Mehlum et al., 2014, 2016, 2019) oder die Emotionsregulations-Therapie für Jugendliche, ERITA (Bjureberg et al., 2017, 2018) haben sowohl die Verbesserung der Emotionsregulation als auch der interpersonellen Beziehungen zum Ziel und beziehen die Eltern in die Behandlung ein. Weisen Jugendliche mit NSSV und deren Mütter ein hohes Maß an EE auf, profitieren sie womöglich von der Vermittlung von Konfliktlösestrategien. HEE kann Jugendliche jedoch auch dazu veranlassen, die Eltern aus der Behandlung auszuschließen (Rienecke, 2020). Der Einbezug der Eltern in die Behandlung ist womöglich weiter erschwert, wenn Jugendliche in einem chaotischen familiären Umfeld leben, in dem Eltern häufig nicht verfügbar sind. In diesem Fall profitieren Jugendliche mit NSSV womöglich mehr von individuellen und autonomiestärkenden Interventionen, wie Umgang mit mütterlicher Kritik/HEE, Emotionsregulationsstrategien, Problemlösefertigkeiten und Entwicklung von eigenen Interessen. Das kognitiv-verhaltenstherapeutische Programm für Jugendliche mit NSSV „Cutting-Down“ (Fischer et al., 2013; L. M. W. Taylor et al., 2011) sieht keinen Einbezug der Eltern vor und hat sich für die Reduktion von NSSV als wirksam erwiesen (Kaess et al., 2019).

Insgesamt unterstützen die Ergebnisse der Studie 4 die konvergente Validität des FMSS in einer Stichprobe von Jugendlichen. FMSS-Studien mit Kindern zeigen gute psychometrische Eigenschaften für das Verfahren und die Kodierung (Sher-Censor, 2015). Dennoch sollte die Validität des FMSS und insbesondere die Operationalisierung elterlicher Überbeteiligung weiter untersucht und womöglich angepasst werden. Dem Zusammenhang zwischen HEE der Jugendlichen und Emotionsregulationsschwierigkeiten sollte genauer nachgegangen werden, um zu überprüfen, ob HEE der Jugendlichen einen Einfluss auf die Aufrechterhaltung von emotionaler Dysregulation und NSSV haben. Möglicherweise stellt HEE der Jugendlichen einen Mediator für den Zusammenhang zwischen HEE der Mütter und Emotionsregulationsschwierigkeiten der Jugendlichen dar. Die EE-Forschung zur Bulimia Nervosa liefert Hinweise dafür, dass die Passung zwischen den EE-Ausprägungen von Jugendlichen und Eltern das Behandlungsergebnis beeinflusst. Jugendliche mit einer HEE-Ausprägung in Kombination mit einem Elternteil mit einer NEE-Ausprägung erzielten die geringste Symptomreduktion (Hoste et al., 2015). Vor diesem Hintergrund sollten zukünftige Studien unterschiedliche Familienprofile (HEE Mutter/HEE Jugendliche, HEE Mutter/NEE Jugendliche, HEE Jugendliche/NEE

Mutter, NEE Mutter/NEE Jugendliche) und deren Auswirkung auf den Verlauf von NSSV und das Therapieergebnis untersuchen. Bedenkt man die drei Einflussmöglichkeiten von Eltern auf die psychische Anpassung der Kinder (Crowell et al., 2009), so stellt die Nichtübereinstimmung des EE-Status zwischen Jugendlichen und Eltern womöglich einen Hinweis für eine geringe Passung zwischen dem Temperament des Kindes und dem Erziehungsstil des Elternteils dar. Die Ergebnisse der Studie 4 liefern keine Antwort auf die Frage, ob die hohen EE-Ausprägungen familiäre Muster oder Interaktionsmuster abbilden. In einer Studie zu Zwangsstörungen, welche die EE von Müttern gegenüber erkrankten Kindern und Geschwisterkindern erfasst hat, hat sich gezeigt, dass mütterliche Kritik häufiger gegenüber dem erkrankten Kind geäußert wird. Dies weist darauf hin, dass es sich bei EE eher um ein interaktionelles Muster zwischen zwei Personen und weniger um ein familiäres Muster oder eine Eigenschaft der interviewten Person handelt (Przeworski et al., 2012). Um dieser Frage weiter nachgehen zu können, sollten zukünftige Studien zu NSSV und EE weitere Familienmitglieder (z.B. Geschwister) miteinbeziehen.

Da Jugendliche mit NSSV insbesondere einen Mangel an mütterlicher Wärme und Unterstützung, wenig positive Aspekte der Mutter-Kind-Beziehung sowie einen Mangel an Verbundenheit, Fürsorge und Empathie in der Geschwisterbeziehung berichteten, sollte in der Psychotherapie nicht nur an der Verminderung negativer, sondern auch Steigerung positiver Beziehungsqualitäten gearbeitet werden arbeiten.

6 Literaturverzeichnis

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Anhang

A Eidesstattliche Erklärung

hiermit versichere ich, dass ich die vorliegende kumulative Dissertation selbstständig verfasst habe und keine anderen als die aufgeführten Quellen oder Hilfsmittel verwendet habe. Alle wörtlich oder dem Inhalt nach aus fremden Arbeiten entnommene Stellen, bildlichen Darstellung und dergleichen habe ich als solche genau kenntlich gemacht. Weiterhin versichere ich, dass ich die Dissertation oder Teile hiervon noch nicht als Prüfungsarbeit für eine staatliche oder andere wissenschaftliche Prüfung eingereicht habe. Ich habe die gleiche oder eine andere Abhandlung nicht bei einer anderen Hochschule als Dissertation eingereicht und mich nicht anderwärtig um einen Doktorgrad beworben.

Steinen, den 22.06.2020

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B Lebenslauf

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RESEARCH ARTICLE Open Access

Temperament and character traits in female adolescents with nonsuicidal self-injury disorder with and without comorbid borderline personality disorder

Taru Tschan[1†], Claudia Peter-Ruf[1†], Marc Schmid[2] and Tina In-Albon[1*]

Abstract

Background: Temperament and character traits of adolescents with nonsuicidal self-injury disorder (NSSI) might differentiate those- with and without comorbid borderline personality disorder (BPD).

Methods: Participants were 57 female adolescents with NSSI disorder without BPD (NSSI − BPD), 14 adolescents with NSSI disorder and BPD (NSSI + BPD), 32 clinical controls (CC), and 64 nonclinical controls (NC). Temperament and character traits were assessed with the Junior Temperament and Character Inventory, and impulsivity with the Barratt Impulsiveness Scale and a Go/NoGo task.

Results: Adolescents with NSSI disorder scored significantly higher on novelty seeking and harm avoidance and lower on persistence, self-directedness, and cooperativeness than CC. The NSSI + BPD group scored even higher than the NSSI − BPD group on novelty seeking and harm avoidance and lower on persistence and cooperativeness ($d \geq 0.72$). Adolescents with NSSI reported higher levels of impulsivity than the CC and NC group. However, this difference was not found in a Go/NoGo task.

Conclusions: The results provide further evidence for a distinct diagnostic entity of NSSI disorder.

Keywords: Nonsuicidal self-injury, Borderline personality disorder, Temperament, Character, Impulsivity, Go/NoGo

Background

Due to the inclusion of nonsuicidal self-injury (NSSI) in the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5) [1] as a research diagnosis in section III, further studies are needed to enable a better understanding of this behavior. Independent of classification discussions, high prevalence and comorbidity rates [2–4], low quality of life [5], and increased risk of suicidality [6] highlight the importance of further research on NSSI. Special attention should be paid to adolescents, as NSSI often has its onset during this time [4, 7]. Previously, NSSI was generally assessed as one of the nine symptoms of Borderline Personality Disorder (BPD), however only a minority of adolescents with NSSI suffer from BPD [5, 8]. Several differences in the phenomenology and functions of NSSI can be found between patients with NSSI and BPD (NSSI + BPD) and patients with NSSI without BPD (NSSI − BPD). Patients with NSSI + BPD show more frequent and severe NSSI, greater diagnostic comorbidity, more severe depressive symptomatology, suicidal ideation, and emotion dysregulation than patients with NSSI − BPD [9, 10]. Regarding functions of NSSI, adolescents with NSSI + BPD endorsed higher self-punishment, anti-suicide, and anti-dissociation functions of NSSI than adolescents with NSSI − BPD [11].

Among different personality concepts, Cloninger´s [12, 13] biopsychosocial personality model seems to be able to describe healthy as well as pathological temperament and character traits, and to differentiate between

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patients with and without personality disorders [14, 15]. The extended model [13] includes four temperament dimensions (novelty seeking, harm avoidance, reward dependence, persistence) and three character dimensions (self-directedness, cooperativeness, self-transcendence), see Table 1. Low levels of self-directedness and cooperativeness are characteristics for personality disorders [16].

Patients with BPD often show a temperament profile consisting of both high harm avoidance and novelty seeking [14, 16–18]. According to Cloninger, Praybeck, Svrakic, and Wetzel [19], a personality pattern consisting of high novelty seeking and high harm avoidance represents an approach-avoidance conflict that may cause affective instability, a core feature of BPD. Studies of adolescents with NSSI — BPD are needed to investigate the link between NSSI and the described personality pattern, especially high novelty seeking and harm avoidance. Indeed, higher levels of novelty seeking were found in adolescents with NSSI compared to adolescents without NSSI [20]. Furthermore, adolescents with depressive disorder and self-harm behavior reported more harm avoidance than those without self-harm [21].

Low self-directedness is related to self-injurious behavior in adolescents [20, 21], BPD in adolescents [18] and BPD in adults [14]. Higher levels of cooperativeness were found in female adolescents with self-harm behavior (self-injuring behavior including suicidal behavior) compared to those without self-harm behavior [22], whereas adults with BPD showed lower levels of cooperativeness than adult controls [14]. Ohmann et al. [22] offer the explanation that higher cooperativeness levels in adolescents with self-harm behavior may be related to pronounced helplessness. High self-transcendence is linked to NSSI in adolescents [20] and to BPD in adults [14]. Low reward dependence is linked to internalizing symptoms like depression and anxiety [23], but no association has been found between reward dependence and NSSI [20], nor between reward dependence and self-harm behavior [21, 22]. Kaess et al. [18] found lower reward dependence in adolescents with BPD than in clinical and healthy controls. Further, persistence is linked neither to BPD [14, 18] nor to NSSI [20] or self-harm behavior.

In summary, for BPD, most studies support the personality pattern suggested by Cloninger et al. [16, 19], consisting of high novelty seeking and harm avoidance as well as low levels of self-directedness and cooperativeness [14, 18]. Adolescents with NSSI show a similar personality pattern to adolescents with BPD, however most studies have not controlled for comorbid BPD [e.g. 20, 21]. Studies using the big five model found similar personality traits related to self-injurious behavior, namely high neuroticism (comparable to harm avoidance), low agreeableness (comparable to cooperativeness), and low conscientiousness (comparable to self-directedness and persistence) [24, 25]. One part of novelty seeking, impulsivity, might explain the difficulties self-injurers have with resisting the urge to injure themselves [26]. NSSI itself is often an impulsive act, as most of the individuals with NSSI think about the act for less than five minutes before committing it [27]. Indeed, on self-report measures individuals with NSSI indicated higher impulsivity than individuals without NSSI [26, 28, 29], and patients with repetitive self-harm reported even higher impulsivity than patients with onetime self-harm behavior [30]. However, previous research has found low convergence between self-report and behavioral measures of impulsivity [for a meta-analysis see [31].

Response inhibition, one aspect of impulsivity, can be measured with a Go/NoGo task. Janis and Nock [29] compared self-reported impulsivity with experimentally assessed impulsivity in adolescents with NSSI. While participants with NSSI scored higher on self-reported impulsivity, they did not differ from the mixed clinical and nonclinical comparison groups without NSSI on behavioral measures. This result has been replicated in studies of adults with NSSI [26, 32]. The difference between

Table 1 ***Temperament and character*** **dimensions**

Dimension	High level	Low level
Temperament		
Novelty seeking	Curious, impulsive, sensation seeking	Indifferent, thoughtful, modest
Harm avoidance	Worried, pessimistic, frightened, shy	Relaxed, optimistic, fearless, confident, talkative
Reward dependence	Sensitive, warm, dependent	Cold, secluded, independent
Persistence	Hard-working, ambitious, perfectionist	Inactive, lethargic, pragmatic
Character		
Self-directedness	Mature, effective, responsible, determined, high self-acceptance	Immature, unreliable, indecisive, low self-acceptance
Cooperativeness	Social tolerant, empathic, helpful	Social intolerant, critical, cold, not helpful, destructive
Self-transcendence	Experienced, patient, creative, self-forgetting, connected to the universe, spiritual	Uncomprehending, proud, unimaginative, lack of humility

self-reported and experimentally assessed impulsivity may be explained by the measurement of different impulsivity constructs. While self-report questionnaires measure general response tendencies (traits), behavioral tasks may in fact measure spontaneous reactions that are influenced by current cognitive processes [32]. Therefore, it seems important not only to investigate impulsivity with self-report measures, but also with behavioral tasks.

In summary, previous research is consistent with the notion that certain temperament traits underlie features of BPD symptoms. However, it remains unclear, if the same pattern can be found in a sample of adolescents with NSSI disorder without BPD. None of the presented studies assessed self-injuring behavior according to the *DSM-5* criteria [e.g. 20–22]; whereas Hefti et al. [20] investigated a school sample, Joyce et al. [21] investigated depressed adolescents with and without self-harm behavior, and Ohmann et al. [22] investigated adolescents presenting at in- and outpatient clinics. Thus, the samples were heterogeneous. To our knowledge, no study has investigated Cloninger's temperament and character traits in adolescents with NSSI disorder with and without BPD. Cloninger's personality traits might be especially suitable for the distinction between adolescents with and without BPD because of its dimensional structure. Therefore, the aim of the present study was to investigate impulsivity (self-report and a behavioral measures), temperament and character traits in adolescents with NSSI disorder (according to DSM-5), and differences in personality dimensions according to Cloninger et al. [13] between adolescents with NSSI with and without comorbid BPD.

We hypothesized that there are dimensional differences in temperament and character traits between four groups of adolescents. Specifically, we addressed the following research questions.

1. Do adolescents with NSSI disorder show a different personality pattern in comparison to the clinical control (CC) and the nonclinical control (NC) groups? Taking the results of previous studies into account, we hypothesized that adolescents with NSSI disorder would show higher values on novelty seeking, self-transcendence, and harm avoidance as well as lower values on self-directedness compared to the NC and the CC groups.
2. Do adolescents with NSSI + BPD show a distinct personality pattern in comparison to adolescents with NSSI − BPD? To our knowledge, no other studies exist, and therefore this analysis was exploratory.
3. Do adolescents with NSSI − BPD report more impulsivity than the NC and the CC groups? Is this difference evident in an emotional Go/NoGo task? Because of the heterogeneous results of previous studies, this analysis was also exploratory.

Methods

Procedure

All participants and their parents were informed about the study and gave their written consent in accordance with the Declaration of Helsinki. The local ethics committee approved the study. First, the clinical interviews were conducted and questionnaires distributed, and then the Go/NoGo task was administered.

Measures

Diagnostic assessments

To examine the participants' current or past *DSM-IV-TR* diagnoses for Axis I disorders, we conducted two structured interviews with each adolescent. The *Diagnostic Interview for Mental Disorders in Children and Adolescents (Kinder-DIPS)* [33] assesses the most frequent mental disorders in childhood and adolescence. Questions for substance use disorders were asked from the adult DIPS [34]. The Kinder-DIPS has good validity and reliability for Axis I disorders (child version, *kappa* = 0.48–0.88) [35]. NSSI was assessed according to the *DSM-5* research criteria, with questions reformulated as criteria. Interrater reliability estimates for the diagnosis of NSSI were very good (*kappa* = 0.90). Before conducting the interviews, Master's students in clinical child psychology underwent systematic training.

Participants were administered the *Structured Clinical Interview for DSM-IV Axis II disorders (SCID-II)* [36], to assess for personality disorders. The SCID-II has been found to be suitable for use among adolescents [37]. Interrater reliability for BPD in our sample was very good (kappa = 1.00).

The *Borderline Symptom List 95 (BSL-95)* [38] was used as an additional instrument to measure the degree of borderline symptomatology. The items are based on the diagnostic criteria of the DSM-IV. The self-report questionnaire shows good psychometric properties [39].

The *Junior Temperament and Character Inventory (JTCI)* [40] is a self-report measure assessing the seven temperament and character traits based on Cloninger's [13] biopsychosocial model of personality. The scales have good levels of internal consistency, with Cronbach´s α ranging from 0.79 to 0.85 [40]. The internal consistencies within the present sample ranged from α = 0.76 to 0.82.

The *Barratt Impulsiveness Scale (BIS)* [41], German version [42] is a valid and reliable self-report questionnaire to assess impulsivity with three subscales: Attentional, motor, and non-planning impulsivity. The internal consistency within the present sample was α = 0.81.

The *Youth Self Report (YSR)* [43, 44] measures a broad range of psychopathology. The problem behavior section of the YSR consists of the following primary subscales: withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behavior, and aggressive behavior. Two second-order scales reflecting internalizing and externalizing problems and a total problems score can be calculated. Internal consistency within the present sample was $\alpha = 0.94$ for the total score, $\alpha = 0.94$ for the internalizing score, and $\alpha = 0.79$ for the externalizing score.

The *Beck Depression Inventory-II (BDI-II)* [45] consists of 21 items and assesses depressive symptoms. The internal consistency within the present sample was $\alpha = 0.95$.

Non-emotional and emotional Go/NoGo task

Participants were instructed to press a button as fast as possible if a Go stimulus appears on the screen and to suppress reactions to NoGo stimuli. Participants had a practice run with six trials, followed by the non-emotional Go/NoGo task. Afterwards participants completed an emotional Go/NoGo task with four combinations of angry, happy, and neutral facial expressions with 12 trials for each combination. For all runs, targets occurred on 50% of the trials. The order of the four emotional runs and the trials within each run were randomized across participants.

Facial stimuli consisted of colored angry, happy, and neutral expressions from 18 individuals (9 females) taken from the NimStimFace Stimulus set [46]. Non-emotional stimuli ("+" and "×") were presented for 200 ms and emotional stimuli for 500 ms, after a 500 ms fixation cross. The longer presentation time for emotional stimuli was due to the higher complexity of faces compared to crosses, similar to Hare et al. [47]. The inter-stimulus interval was 1.5 s, in which a reaction was still possible. Stimuli were presented with E-Prime (Psychology Software Tools, Inc., Pittsburgh, PA, USA), and omission (no reaction to Go) and commission (reaction to NoGo) errors as well as reaction times were recorded simultaneously. Omission errors indicate inattention [48], commission errors insufficient response inhibition [49], and reaction time to Go stimuli as a measure of response bias, with faster reactions indicating a response or attention bias toward the shown emotion [50].

Data analyses

Multivariate analyses of variance (MANOVAs) were used to compare the groups (NC, CC, NSSI − BPD, NSSI + BPD) on dependent variables such as impulsivity and psychopathology. One-way between groups analyses of variance (ANOVAs) were used and effect sizes (Cohen's *d*) calculated to further analyze significant group differences of MANOVAs. As we were interested in specific group differences, we set up orthogonal comparisons for psychopathology, personality, and self-reported impulsivity. The first comparison contrasted the NC group with the clinical groups (CC, NSSI, NSSI + BPD), the second contrasted the CC group with the two NSSI groups (NSSI − BPD and NSSI + BPD), and the third contrasted the two NSSI groups (NSSI − BPD and NSSI + BPD). Due to the small sample size, the analyses proceeded using bootstrapping with 2000 resamples. To correct for multiple testing, p values were adjusted according to the Bonferroni-Holm procedure. All analyses were performed using SPSS version 24.

For the Go/NoGo task, a similar analytic strategy was used. First, outliers (z-values > 3) were excluded, then the sensitivity index d' (z(Reaction rate to Go) − z(Reaction rate to NoGo) was calculated, as a measure of discrimination, with lower values representing an inability to distinguish between stimuli and lower performance levels [52]. To examine group differences, the non-emotional Go/NoGo task was evaluated with a one-way ANOVA, and the emotional Go/NoGo tasks were analyzed separately for emotional Go (neutral NoGo) and for neutral Go (emotional NoGo) with MANOVAs. These analyses were calculated for the sensitivity index d', errors of commission and omission, as well as for the reaction time on Go trials. If the Levene test indicated that the variance homogeneity of an outcome was violated, we transformed it for the analysis (log10 or sqrt) and if indicated, Greenhouse Geisser corrected values were used. Significance levels were set at $\alpha = 0.05$.

Results

Participants

Participants were 167 female adolescents, aged 12–19 years ($M = 15.94$, $SD = 1.47$), recruited from different inpatient child and adolescent psychiatric units in Switzerland and Germany. Participants included 57 adolescents fulfilling the *DSM-5* research criteria for NSSI disorder (NSSI) but not for BPD, 14 adolescents with NSSI and BPD (NSSI + BPD), 32 adolescents with a *DSM-IV* [51] diagnosis other than current or past NSSI (clinical controls, CC), and 64 nonclinical adolescents who had no current or past experience of mental disorders (nonclinical controls, NC). Participants were similar with respect to age, Welch's F (3, 47.19) = 0.41. Regarding nationalities, most of the participants were Swiss and German, except for two Italians, one Thai and one Pole. The three most frequent mental disorders in all groups were: major depression (37.50% in CC, 70.18% in NSSI, 78.6% in NSSI + BPD), social phobia (34.38% in CC, 36.84% in NSSI, 42.9% in NSSI + BPD), and specific phobia (28.13% in CC, 19.30% in NSSI, 35.70% in

NSSI + BPD). Posttraumatic stress disorder (PTSD) was a common comorbid disorder in NSSI (14.04%) and NSSI + BPD (50%), with an additional two participants from the CC group also presenting with PTSD (6.25%). Groups differed significantly regarding the diagnoses depression, χ^2 (2, $N = 103$) = 11.87, $p < 0.01$, and PTSD, $p < 0.01$, according to a two-sided Fisher's exact test. There were no significant differences regarding any other *DSM-IV* disorders assessed with clinical interviews. Further comorbid diagnoses of the clinical groups were dysthymia, oppositional defiant disorder, attention-deficit hyperactivity disorder, conduct disorder, bulimia nervosa, anorexia nervosa, obsessive–compulsive disorder, agoraphobia, panic disorder, and generalized anxiety disorder. Groups differed significantly regarding the number of diagnoses, F (2, 100) = 30.37, $p < 0.01$, with patients in the NSSI + BPD group meeting significantly more diagnoses than the other groups ($M = 5.43$, $SD = 1.83$), and the NSSI − BPD group meeting significantly more diagnoses ($M = 3.39$, $SD = 1.36$) than the CC group ($M = 2.03$, $SD = 1.00$). In addition to the number of diagnoses, significant group differences emerged for psychopathology, for both internalizing and externalizing problems (according to the Youth Self Report). NSSI + BPD scored highest, followed by NSSI, CC and NC, see Table 2. Regarding borderline symptomatology, adolescents with NSSI − BPD differed significantly from adolescents with NSSI + BPD on the subscales self-destruction and hostility. Furthermore, NSSI − BPD scored above the cut off on the subscale for social isolation.

Junior Temperament and Character Inventory

As reported in Table 2, significant group differences were shown on the temperament scales novelty seeking, $F(3, 130) = 4.32$, $p < 0.01$, $\eta^2 = 0.09$, harm avoidance, $F(3, 130) = 18.80$, $p < 0.01$, $\eta^2 = 0.30$, reward dependence, $F(3, 130) = 6.47$, $p < 0.01$, $\eta^2 = 0.13$, and persistence $F(3, 130) = 9.57$, $p < 0.01$, $\eta^2 = 0.18$, as well as on the character scales self-directedness, $F(3, 130) = 32.71$, $p < 0.01$, $\eta^2 = 0.43$, and cooperativeness, $F(3, 130) = 2.99$, $p = 0.03$, $\eta^2 = 0.06$. There was no significant group difference regarding self-transcendence, $F(3, 130) = 1.28$, $p = 0.28$, $\eta^2 = 0.03$. Compared to clinical controls, adolescents with NSSI scored higher on novelty seeking and harm avoidance and lower on persistence, self-directedness, and cooperativeness. The harm avoidance score was over the cut off while the other scores were within the normal range. Adolescents with NSSI + BPD showed even higher scores for novelty seeking and harm avoidance and lower scores for persistence and cooperativeness than adolescents with NSSI − BPD. Adolescents with NSSI + BPD scored above the cut off on harm avoidance and below the cut off on persistence and self-directedness.

Barratt Impulsiveness Scale

Regarding the MANOVA for the BIS subscales, the group main effect was significant, $F(3, 82) = 9.21$, $p < 0.01$, $\eta^2 = 0.25$. There was no significant Group x Impulsivity interaction, $F(6, 164) = 1.36$, $p = 0.23$, $\eta^2 = 0.05$, indicating that the group differences are the same for all three subscales of the BIS. As shown in Table 2, the subsequent one-way ANOVA yielded significant group differences regarding impulsivity for the total scale, $F(3, 130) = 9.21$, $p < 0.01$, $\eta^2 = 0.25$, as well as for the subscales attentional, F (3, 130) = 7.47, $p < 0.01$, $\eta^2 = 0.21$, and non-planning impulsivity, $F(3, 130) = 8.32$, $p < 0.01$, $\eta^2 = 0.23$, but not for the subscale motor impulsivity, $F(3, 130) = 2.13$, $p = 0.10$, $\eta^2 = 0.07$.

Go/NoGo-Task

Regarding the non-emotional task, there was no significant group effect for participants' sensitivity index, $F(3, 151) = 0.93$, $p = 0.43$, commission errors, $F(3, 151) = 0.43$, $p = 0.73$, omission errors, $F(3, 154) = 1.22$, $p = 0.31$, or reaction time, $F(3, 147) = 2.06$, $p = 0.11$. The ANOVAs for the emotional task, when emotional faces were Go trials, revealed no significant main effects or interactions except for commission errors. There was a significant main effect for facial emotion, $F(1, 148) = 29.83$, $p < 0.01$, indicating a higher commission error rate for angry faces than for happy faces. Regarding omission errors, the main effect for facial emotion reached significance, $F(1, 155) = 65.50$, $p < 0.01$, indicating a higher omission error rate for angry faces than for happy faces. For reaction time (Go), the main effect for facial emotion was significant, $F(1, 154) = 20.95$, $p < 0.01$, indicating a faster reaction to happy compared to angry faces. The ANOVAs conducted for the emotional task, when neutral faces were Go trials revealed no significant effects for the sensitivity index, commission and omission error rates. For reaction time as an outcome, only one significant main effect was found: facial emotion, $F(1, 146) = 11.94$, $p < 0.01$, indicating a faster reaction to neutral faces, when happy faces served as NoGo compared to angry faces. The means and standard deviations are displayed in Table 3.

Discussion

The aim of the present study was to investigate temperament and character traits on the basis of Cloninger's [12, 13] personality model, with a special focus on impulsivity in adolescents with NSSI disorder without BPD (NSSI − BPD), adolescents with NSSI disorder and BPD (NSSI + BPD), a clinical control group, and a nonclinical

Table 2 Mean (standard deviations) of characteristics of non-clinical adolescents (NC), clinical controls without NSSI (CC), adolescents with NSSI disorder (NSSI), and adolescents with NSSI and BPD (NSSI + BPD), as well as ANOVA with orthogonal contrasts and effect sizes (Cohen's d) between non-clinical and clinical groups (NC vs. rest), clinical controls and NSSI (CC vs. NSSI and NSSI + BPD), and NSSI disorder vs. Borderline personality disorder (NSSI vs. NSSI + BPD)

Characteristic	NC *M* (*SD*)	CC *M* (*SD*)	NSSI *M* (*SD*)	NSSI + BPD *M* (*SD*)	NC vs. rest	Cohen's *d*	CC vs. NSSI total	Cohen's *d*	NSSI vs. NSSI + BPD	Cohen's *d*
YSR	(*n* = 57)	(*n* = 28)	(*n* = 47)	(*n* = 11)	*t* (139)		*t* (139)		*t* (139)	
Total	57.60 (18.70)	81.80 (21.60)	105.38 (29.97)	134.28 (22.40)	12.56**	2.22	7.04**	1.55	4.03**	1.02
YSR ext[a]	9.79 (6.56)	12.38 (6.45)	17.47 (9.15)	30.76 (7.82)	6.77**	1.43	4.58**	1.51	3.50**	1.52
YSR int	9.83 (6.46)	23.68 (9.56)	32.49 (9.53)	41.18 (8.68)	14.66**	2.76	6.22**	1.44	3.10**	0.94
BDI[b]	7.02 (7.20)	21.89 (12.68)	33.40 (12.17)	43.20 (13.29)	13.17**	2.39	4.70**	1.31	1.82*	0.81
BSL-95	(*n* = 57)	(*n* = 25)	(*n* = 38)	(*n* = 9)	*t* (125)		*t* (125)		*t* (125)	
Total[a]	47.67 (28.69)	117.31 (68.98)	182.84 (68.26)	240.55 (70.52)	11.31**	2.42	4.01**	1.38	1.46*	0.86
Dysphoria[c]	20.56 (8.98)	26.40 (10.23)	30.53 (6.72)	33.04 (6.93)	−2.27	1.13	−.546	0.67	−.110	0.38
					t (94.85)		*t* (34.51)		*t* (16.74)	
Self-perception[a]	3.63 (4.37)	15.13 (14.98)	28.10 (17.06)	41.85 (20.82)	11.65**	1.85	4.30**	1.14	2.12	0.79
					t (96.16)		*t* (34.61)		*t* (26.40)	
Affect regulation[b]	6.04 (6.33)	19.48 (11.99)	28.66 (11.29)	36.67 (7.12)	13.42**	2.59	4.54**	1.31	2.95*	0.77
Self-destruction[b]	1.46 (2.38)	9.20 (7.91)	25.66 (11.55)	34.37 (7.88)	16.28**	3.12	8.17**	2.31	2.21**	0.81
Social isolation[b]	4.09 (4.97)	12.58 (9.65)	21.87 (12.66)	29.33 (10.46)	10.38**	1.96	4.31**	1.21	1.81*	0.62
Hostility[b]	2.34 (3.14)	4.64 (4.41)	8.82 (5.92)	14.89 (5.82)	8.36**	1.58	4.69**	1.35	2.74**	1.05
Intrusions[a]	1.34 (2.11)	6.32 (6.37)	12.13 (7.50)	20.33 (12.08)	10.51**	1.77	4.58**	1.15	1.65	0.99
JTCI	(*n* = 51)	(*n* = 26)	(*n* = 46)	(*n* = 11)	*t* (130)		*t* (130)		*t* (130)	
Novelty seeking (T)[a]	47.29 (8.20)	43.00 (8.62)	48.20 (11.61)	56.00 (8.31)	0.66	0.20	3.42**	0,96	2.39**	0.72
Harm avoidance (T)	49.33 (10.18)	59.38 (8.59)	61.35 (11.10)	69.64 (8.51)	7.32**	1.47	2.34**	0,66	2.44**	0.79
Reward dependence (T)	57.06 (8.37)	52.04 (9.20)	49.96 (10.77)	45.91 (12.03)	−4.18**	0.79	−1.64	0,39	−1.24	0.37
Persistence (T)	50.22 (10.21)	53.73 (9.93)	45.09 (11.74)	35.27 (9.70)	−2.71**	0.54	−4.92**	1.31	−2.74**	0.88
Self-directedness (C)	52.22 (10.41)	43.88 (10.45)	33.22 (11.70)	26.73 (9.81)	−8.51**	1.68	−4.97**	1.32	−1.78	0.58
Cooperativeness (C)	53.75 (8.89)	56.88 (9.21)	54.93 (11.77)	46.27 (9.70)	−0.54	0.11	−2.41*	0.62	−2.56**	0.78
Self-transcendence (C)	49.43 (9.58)	53.92 (10.68)	50.02 (9.12)	50.82 (11.81)	1.15	0.21	−1.38	0.34	0.24	0.08
BIS	(*n* = 28)	(*n* = 21)	(*n* = 29)	(*n* = 8)	*t* (82)		*t* (82)		*t* (82)	
Impulsivity (BIS)	20.76 (3.15)	20.06 (3.47)	22.97 (3.94)	26.85 (2.78)	2.99**	0.77	4.70**	1.45	2.78**	1.07
Attentional	15.61 (4.01)	14.90 (3.16)	18.25 (4.10)	20.88 (1.89)	2.67**	0.72	4.24**	1.55	1.77*	0.72
Non-planning	25.52 (4.33)	24.59 (5.13)	27.47 (5.76)	34.63 (5.07)	2.72**	0.68	4.27**	1.24	3.51**	1.31
Motor	21.16 (3.96)	20.70 (3.97)	23.21 (6.90)	25.04 (4.04)	1.46	0.39	2.24*	0.70	0.89	0.29

YSR Youth self report (ext = externalizing, int = internalizing); *BDI* Beck Depression Inventory-II; *JTCI* Junior Temperament and Character Inventory; *BIS* Barratt Impulsiveness Scale

Bootstrapped and Bonferroni-Holm corrected p values * $p < 0.05$, ** $p < 0.01$

[a] log transformation, [b] root transformation, [c] reciprocal transformation

Table 3 Sensitivity index d′, commission and omission errors of the Go/NoGo, as well as reaction times for go trials of non-clinical adolescents (NC), clinical controls without NSSI (CC), adolescents with NSSI disorder (NSSI), and adolescents with NSSI and borderline personality disorder (NSSI + BPD)

Condition	NC *M* (*SD*)	CC *M* (*SD*)	NSSI *M* (*SD*)	NSSI + BPD *M* (*SD*)
d′				
X	0.16 (1.16)	0.31 (1.07)	−0.01 (1.30)	−0.27 (1.29)
Angry Go (neutral NoGo)	0.12 (1.66)	−0.18 (1.59)	0.02 (1.38)	−0.72 (1.46)
Happy Go (neutral NoGo)	−0.04 (1.47)	0.42 (0.87)	0.08 (1.37)	−0.86 (1.50)
Neutral Go (angry NoGo)	0.05 (1.12)	0.19 (1.19)	−0.10 (1.33)	−0.40 (1.50)
Neutral Go (happy NoGo)	0.34 (1.44)	0.36 (0.82)	0.06 (1.46)	−0.62 (1.20)
Commission				
X	1.95 (4.55)	2.00 (5.19)	2.02 (4.57)	3.57 (7.45)
Angry Go (neutral NoGo)	15.42 (14.80)	15.42 (11.22)	18.63 (16.92)	21.15 (16.44)
Happy Go (neutral NoGo)	8.67 (11.43)	6.67 (10.24)	8.82 (11.80)	13.39 (11.46)
Neutral Go (angry NoGo)	5.83 (9.34)	4.03 (9.89)	6.37 (9.37)	4.46 (9.31)
Neutral Go (happy NoGo)	5.42 (10.88)	3.23 (6.43)	5.19 (9.31)	6.25 (9.49)
Omission				
X	14.34 (13.24)	12.26 (13.09)	17.21 (15.13)	18.57 (10.46)
Angry Go (neutral NoGo)	7.38 (12.37)	10.48 (12.95)	6.37 (6.76)	11.61 (10.36)
Happy Go (neutral NoGo)	0.82 (3.12)	0.00 (0.00)	0.47 (2.40)	1.79 (4.54)
Neutral Go (angry NoGo)	2.29 (6.71)	2.92 (5.38)	3.54 (9.61)	8.65 (9.39)
Neutral Go (happy NoGo)	4.30 (16.44)	6.05 (18.78)	6.60 (18.61)	12.50 (18.99)
RT Go				
X	373.62 (42.10)	378.22 (41.96)	361.03 (40.66)	353.66 (29.87)
Angry Go (neutral NoGo)	514.52 (86.87)	529.93 (109.17)	509.37 (83.11)	421.31 (119.90)
Happy Go (neutral NoGo)	483.46 (72.24)	492.22 (81.30)	478.21 (78.84)	487.61 (96.52)
Neutral Go (angry NoGo)	503.67 (86.93)	522.27 (89.08)	516.01 (82.00)	517.93 (100.72)
Neutral Go (happy NoGo)	533.06 (87.16)	546.78 (106.83)	527.60 (95.38)	551.99 (89.60)

d′ sensitivity index; *Commission* Commission error; *Omission* Omission error; *RT Go* reaction time for the go condition

There were no significant group effects

control group. As expected, the groups showed distinct personality profiles. The JTCI scales as well as most YSR scales indicate a staircase-like appearance ranging from nonclinical adolescents to adolescents with NSSI + BPD. Adolescents with NSSI disorder without BPD scored higher on novelty seeking and harm avoidance and lower on self-directedness, persistence and cooperativeness than clinical controls. In adolescents with NSSI + BPD this personality pattern was even more pronounced than in adolescents with NSSI − BPD. Thus, we were able to replicate the personality pattern consisting of high harm avoidance and novelty seeking in adolescents with NSSI + BPD, similar to Cloninger [16] and Kaess et al. [18]. The approach-avoidance conflict generated from this pattern might be a reason for the emotional instability patients with BPD experience [19]. In addition, we extended these findings to adolescents with NSSI disorder without BPD. In these patients, the personality pattern described above was less pronounced. Nevertheless, the harm avoidance score above cut off indicates that adolescents with NSSI − BPD are more careful, fearful, insecure, and negativistic than the adolescents from the CC and the NC groups. Adolescents with NSSI − BPD differed from adolescents with NSSI + BPD regarding psychopathology and partially in borderline symptomatology but nevertheless showed a similar personality pattern to adolescents with NSSI + BPD. This result underlines the need for a dimensional personality assessment to better understand adolescents with NSSI − BPD. Further research should focus on maladaptive personality traits that do not constitute a formal personality disorder and on the validation of the dimensional personality model suggested in section III of the *DSM-5*.

Results of the present study replicated a profile of lower levels of self-directedness in adolescents with NSSI (−BPD and +BPD) than adolescents without NSSI, similar to Hefti et al. [20] and Joyce et al. [21]. In contrast to Ohmann et al. [22], we found lower levels of

cooperativeness in adolescents with NSSI compared to adolescents without NSSI, however this result is similar to the low level of cooperativeness found in adolescents with BPD [53]. Lower cooperativeness may cause more interpersonal conflict and distress through socially intolerant, critical, and destructive conflict behavior. In fact, previous research indicates that adolescents with NSSI frequently report problems in social interactions [54] that can trigger NSSI [55]. Compared to the CC group, the level of persistence in adolescents with NSSI was low but still in the normal range. Previous studies have shown that adolescents with NSSI give up faster when pursuing goals, while adolescents without NSSI are more diligent and persevering [40]. All groups were similar regarding self-transcendence, therefore, we could not find supporting evidence for a higher self-transcendence as previously reported in adolescents with NSSI [20] and adults with BPD [14]. This may be explained by differences in the study populations (school sample vs. clinical sample, female vs. male adolescents, adolescents vs. adults and NSSI vs. BPD).

To summarize, there was a significant difference in temperament and character traits between adolescents with NSSI + BPD and adolescents with NSSI − BPD, despite the small NSSI + BPD sample size ($n = 14$). Compared to the other groups, the NSSI − BPD group displayed higher standard deviations on the subscales of the JTCI, indicating the heterogeneity of this group. Considerable diagnostic heterogeneity among adolescents with NSSI has been described in earlier studies [2].

Adolescents with NSSI disorder (−BPD and +BPD) showed more novelty seeking than the CC group as well as higher scores on all subscales of the Barratt Impulsiveness Scale (attentional, non-planning, and motor impulsivity). However, this difference was not evident in the Go/NoGo task with neither a group effect, nor an emotion effect emerging. Happy faces were associated with faster reactions and a lower error rate compared to angry faces, indicating that happy faces are easier to discern than angry faces. Our results are in line with several other studies that indicated more self-reported impulsivity in adolescents [26, 29] and adults with NSSI [32], but failed to show this difference on behavioral measures. This leaves the question open, as to whether adolescents with NSSI perceive themselves as more impulsive than they actually are. However, this discrepancy between self-report and behavioral measures is not only observed in adolescents with NSSI, but also represents a general difficulty in the measurement of impulsivity that may be explained by the measurement of different impulsivity constructs [32]. It remains to be investigated, if the difference between self-reported and experimentally assessed impulsivity can be explained by the measurement of different impulsivity constructs, or if adolescents with NSSI are able to suppress their impulsivity for an experimental task. Adolescents with NSSI + BPD reported even more impulsivity than adolescents with NSSI − BPD, especially more non-planning impulsivity (lack of future orientation and foresight). Highly impulsive individuals may be especially motivated to act rashly in the context of negative emotions because long-term benefits become less important compared to short-term gains of emotion regulation, e.g. The Theory of Urgency [56], also see [57]. Therefore, individuals with high levels of non-planning impulsivity may be highly motivated to obtain the immediate benefits of NSSI (e.g., relief of negative emotions) with less concern for the long-term consequences of NSSI. There was no significant difference between adolescents with NSSI + BPD and with NSSI − BPD in the Go/NoGo task.

The results of the present study should be interpreted in the context of some limitations. The design of the study was cross-sectional. Therefore, the current study cannot explain whether certain temperament and character traits might favor the development of NSSI. This should be investigated in future prospective longitudinal studies. Nevertheless, results indicate an association between temperament and character traits and NSSI disorder. Due to the small sample sizes of adolescents with BPD, comorbidity with other personality disorders could not be included in the analyses. The recommendation of the *DSM-5* is to apply a diagnosis of a personality disorder in children and adolescents when maladaptive personality traits appear to be pervasive, persistent, unlikely to be limited to a particular developmental stage or another mental disorder, and after one year of persistent symptoms. Given the mean age of the participants under 16 years of age, we were careful applying a diagnosis of a personality disorder. However, despite the small NSSI + BPD sample size, significant differences emerged between adolescents with NSSI + BPD and adolescents with NSSI − BPD. The high prevalence of NSSI in inpatient samples (50%) [9] represented a challenge for the recruitment of a clinical inpatient sample without NSSI. Our sample consisted of female adolescents admitted to a psychiatric unit and therefore generalizations to male outpatients must be made with caution. Regarding the Go/NoGo task, the low error rate indicates that the response pressure was too low. Therefore, future studies should use a higher ratio of Go stimuli to NoGo stimuli.

A strength of this study was the use of the *DSM-5* diagnostic criteria for NSSI disorder in a clinical sample. In addition, a clinical control group of adolescents with other mental disorders without NSSI was included. This allowed us to identify temperament and character traits specific to NSSI disorder with and without BPD. To our

knowledge, this is the first study comparing temperament and character traits in adolescents with NSSI + BPD and adolescents with NSSI − BPD in an inpatient setting. In addition to self-report measures, impulsivity was assessed using an experimental task.

Conclusions

Given the differences in temperament and character traits between adolescents with NSSI + BPD and adolescents with NSSI − BPD, a personality assessment using the JTCI [40] might be useful for the diagnostic distinction between adolescents with NSSI with and without BPD. A clear distinction of these two groups might be helpful when choosing a specific treatment for adolescents engaging in NSSI. As specific treatment programs for adolescents with NSSI are still in development, practitioners mostly use treatment programs for BPD [58]. The development of specific treatment programs for adolescents with NSSI may not only optimize treatment, but also allow an early intervention, preventing chronic conditions [59]. Future studies should investigate temperament and character traits of adolescents with NSSI in the long-term as well as the effects of psychotherapy on character and temperament development.

Abbreviations

NSSI: nonsuicidal self-injury; BPD: Borderline personality disorder; NSSI − BPD: adolescents with NSSI disorder without BPD; NSSI + BPD: adolescents with NSSI disorder and BPD; CC: clinical controls; NC: nonclinical controls; DSM-5: Diagnostic and Statistical Manual of Mental Disorders, 5th ed; PTSD: posttraumatic stress disorder; Kinder-DIPS: Diagnostic Interview for Mental Disorders in Children and Adolescents; SCID-II: Structured Clinical Interview for DSM-IV Axis II disorders; BSL-95: Borderline Symptom List 95; JTCI: Junior Temperament and Character Inventory; BIS: Barratt Impulsiveness Scale; YSR: Youth Self Report; BDI-II: Beck Depression Inventory-II; ANOVA: analyses of variance; MANOVA: multivariate analyses of variance.

Authors' contributions

TT and CR completed the data analyses and made substantial contributions to the interpretation of the data, the drafting, and the revision of the manuscript. TI and MS contributed to the ideas, the acquisition and interpretation of the data, the drafting and the revision of the manuscript. All authors read and approved the final manuscript.

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Competing interests

The authors declare that they have competing interests.

Availability of data and material

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

Consent for publication

All participants and parents gave their written consent.

Ethics approval and consent to participate

The local ethics committee (Ethikkommission Beider Basel, EKBB) approved the study.

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RESEARCH ARTICLE Open Access

Parenting behavior in families of female adolescents with nonsuicidal self-injury in comparison to a clinical and a nonclinical control group

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Abstract

Background: Nonsuicidal self-injury (NSSI) is often accompanied by dysfunctional familial relationships. Problems within the family are also frequent triggers for NSSI.

Methods: The current study investigated the parenting behavior in families of 45 female adolescents with NSSI disorder, 27 adolescents with other mental disorders (clinical controls, CCs), and 44 adolescents without mental disorders (nonclinical controls, NCs). The adolescents and their parents (92 mothers, 24 fathers) were surveyed using self-report measures. The parenting dimensions warmth and support, psychological control, and behavioral control (demands, rules, and discipline), as well as parental psychopathology and parental satisfaction were assessed.

Results: Adolescents with NSSI disorder reported significantly less maternal warmth and support than NCs ($d = .64$); this group difference was not evident in mothers' reports. No group differences emerged regarding adolescent-reported paternal parenting behavior. Mothers of adolescents with NSSI reported higher depression, anxiety, and stress scores than mothers in the NC group and less parental satisfaction than mothers in both control groups (CC and NC).

Conclusions: Given the association between NSSI, low levels of adolescent-reported maternal warmth and support and low levels of mother-reported parental satisfaction, clinical interventions for adolescents with NSSI should focus on improving family communication and interaction.

Keywords: Nonsuicidal self-injury (NSSI), Parenting behavior, Parent–child interaction, Warmth and support

Introduction

Nonsuicidal self-injury (NSSI) has been included in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* [1] as a condition requiring further study. NSSI disorder is defined as the direct and intentional injury of one's own body tissue without suicidal intent [1, 2]. The 6-month prevalence rate for single NSSI ranges between 7.6 and 14.6 % in Austria, Germany, and Switzerland [3]. The prevalence rate for repetitive NSSI using the criteria of the *DSM-5* [1] was 6.7 % in a recent community study [4].

Research has shown that NSSI principally serves an intrapersonal function. Adolescents engage in NSSI to cope with negative thoughts and feelings [5–7]. Nevertheless, intense negative emotions are often caused by negative interpersonal interactions and experiences. Therefore, interpersonal processes also play an important role, especially in the onset and maintenance of NSSI [8]. According to Vonderlin et al. [9], adolescents with NSSI often report relationship problems with relatives and peers. Problems concerning family and peer relationships, self-worth, alcohol and drug consumption, and experiences of loss and violence were more common among adolescents with NSSI than adolescents without NSSI in a school sample [9]. Whether these interpersonal difficulties are possible antecedents or consequences of NSSI has not yet been determined [10].

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Linehan [11] posited that an invalidating family environment might influence the onset of NSSI. The characteristics of an invalidating family environment are inadequate parenting and family functioning. The relationships with caregivers are distinguished by a high level of negativity and control and a lack of support. The communication of personal experiences is not validated; instead it is often disregarded, trivialized, or punished. An invalidating environment can lead to deficits in emotion regulation and thus increase the likelihood of adopting negative skills (e.g., NSSI). Consistent with Linehan's theory, research has shown associations between an invalidating family environment and the development and maintenance of NSSI e.g., [12, 13].

Adverse childhood experiences, especially maternal antipathy and neglect, are highly associated with NSSI [13]. Previous findings indicate higher levels of negative affect and lower levels of positive affect and cohesiveness in families of adolescents with self-injurious behavior [12]. The absence of a family confidant and poorer family communication were found to be associated with adolescent self-injury [14]. High parental expressed emotion, especially criticism, was associated with adolescents' NSSI. The relationship between parental expressed emotion and NSSI was strong in particular among adolescents with a self-critical cognitive style [15]. Fruzzetti, Santisteban, and Hoffman [16] described a complex interaction between a patient with severe problems in emotion regulation and the reaction of family members to the child's behavior. This interaction is understood as a combination of the high expressed emotion concept [17, 18] and Linehan's [11] psychosocial theory of emotion regulation. Obviously, family members need a high capacity to regulate their own emotions to communicate effectively with the affected family member. The relationship between parental psychopathology, parental stress, and insufficient or maladaptive parent–child interaction has been well established [19, 20]. It is important to consider the vicious circle of insufficient parent–child interactions, the symptoms of the child and the parent, and the parental sense of being considerably burdened by caring for an adolescent with NSSI. Compared to adolescents without NSSI, adolescents engaging in NSSI have described their relationships with their parents as being characterized by less trust, less communication, and more alienation [21]. This is in line with Bureau et al.'s [22] finding that the parent–child relationships of adolescents with NSSI are characterized by failed protection, much control, and feelings of alienation. Adolescents with NSSI perceive more psychological and behavioral control from their parents than adolescents without NSSI [23].

Baetens et al. [23] did not find any differences in parent-reported parenting stress. Morgan et al. [24] reported that the majority of parents of adolescents with NSSI showed low levels of well-being, parental satisfaction, and social support. Mother's mental distress and health problems were found to predict self-harm in adolescents [19].

Existing studies indicate that family experiences can influence the onset and maintenance of NSSI. However, to our knowledge, no study has investigated parenting behavior in adolescents with NSSI that fits *DSM-5* criteria [22, 23]. Instead, NSSI has been assessed using single-item measures [21, 23] and different questionnaires [12, 15, 22]. Different types of assessment contribute to there being different estimates of the prevalence of NSSI [8] and may also assess different adolescents. To determine the frequency and severity of self-injurious behavior, other studies have taken into account either the whole life span [10] or the past 6–12 months [15, 22]. Therefore, the studies are not comparable regarding the actual frequency of NSSI. Previous studies investigated both clinical [10] and nonclinical samples [22, 23] and thus differ regarding the adolescents' psychopathology and the severity of the examined NSSI. Students with a single episode of NSSI are possibly not representative of the whole group of adolescents with NSSI [25]. In the nonclinical studies [22, 23], no structured clinical interviews were conducted for the group assignments of adolescents with and without NSSI. Therefore, inaccurate group assignment and disregard for comorbid disorders cannot be excluded. Differentiating between diagnoses of NSSI and borderline personality disorder (BPD) is especially important, as only about one third of adolescents with NSSI also meet criteria for BPD [26].

So far, it can be stated that adolescents with NSSI perceive more unfavorable parenting behavior than adolescents without NSSI [21, 22]. Only one study [23] examined both adolescent- and parent-reports on parenting behaviors. Therefore, in the present study we investigated the parenting behavior in families of adolescents with NSSI, adolescents with other mental disorders (clinical controls), and adolescents without mental disorders (nonclinical controls). The three groups were compared regarding the parenting behaviors warmth and support, psychological control, and behavioral control. We used self-report measures to assess the parenting behavior from the parents' and adolescents' perspective. Taking the results of previous studies into account, we hypothesized that adolescents with NSSI disorder would report less warmth and support, more psychological control, and less behavioral control (demands, rules, discipline) in the relationship with their parents than both the CC and the NC group. Furthermore, we examined parent–adolescent agreement regarding parenting behaviors as well as parental psychopathology and parental stress. We hypothesized

that parents of adolescents with NSSI disorder would report more psychopathology and stress.

Method

Participants

Participants were 116 female adolescents (ages 13–20 years, $M = 16.01$; $SD = 1.64$). The sample included 45 adolescents with NSSI disorder, 27 adolescents with other mental disorders without NSSI (clinical controls, CCs), and 44 adolescents without current or past experience of mental disorders (nonclinical controls, NCs). Participants were similar with respect to age, $F(2, 112) = 2.93$, $p > .05$.

All adolescents were diagnosed using the *Diagnostic Interview for Mental Disorders in Children and Adolescents* (Kinder-DIPS) [27], a structured interview in German based on the *DSM-IV-TR* criteria [28].

Diagnostic characteristics

The mean number of diagnoses was 3.36 ($SD = 1.42$) for adolescents with NSSI and 2.07 ($SD = 0.92$) for CC adolescents, which is a significant difference, $t(70) = 7.27$, $p < .01$. The most frequent diagnosis among adolescents with NSSI and CC adolescents was major depression, followed by social phobia. Posttraumatic stress disorder was diagnosed more often in the NSSI group ($n = 10$, 22.2 %) than in the CC group ($n = 2$, 7.4 %), and borderline personality disorder ($n = 7$, 15.6 %) and alcohol abuse ($n = 2$, 4.4 %) emerged only in the NSSI group.

Family characteristics

A total of 116 parents including 92 mothers (ages 36–57 years, $M = 45.67$; $SD = 4.91$) and 24 fathers (ages 44–58 years, $M = 48.74$; $SD = 3.13$) participated. Participating fathers were significantly older than participating mothers, $F(1, 103) = 7.79$, $p < .01$. Parents' education was assessed with the following scale: 0 (did not finish school), 1 (obligatory school), 2 (vocational training), 3 (*Matur*; slightly higher than a high school diploma), 4 (professional training), and 5 (university degree). Mothers' mean education was 2.52 ($SD = 1.23$) in the NSSI group, 2.26 ($SD = .87$) in the CC group, and 3.12 ($SD = 1.27$) in the NC group, with a significant difference between the groups, $F(2, 82) = 3.83$, $p < .05$. Post hoc analyses indicated that this difference emerged between the CC and NC group. Fathers' mean education was 4.00 ($SD = .87$) in the NSSI group, 4.75 ($SD = .50$) in the CC group, and 3.40 ($SD = 1.51$) in the NC group, with no significant difference between the groups, $F(2,22) = 2.01$, $p > .05$. The families' average monthly income was assessed using a scale ranging from 1 (less than 2,000 Swiss francs per month) to 6 (more than 10,000 Swiss francs per month), with 2 = 2,000–4,000 and 3 = 4,001–6,000 Swiss francs per month. The mean income was 2.70 ($SD = 1.45$) in the NSSI group, 2.27 ($SD = 1.03$) in the CC group, and 2.23 ($SD = 1.22$) in the NC group, with no significant difference between the groups, $F(2,82) = 1.26$, $p = .29$.

Procedure

The recruitment took place in Switzerland and Germany. The two clinical groups were recruited from different inpatient child and adolescent psychiatric units and the NC group from different schools. The inpatient clinics were responsible for the recruitment of the clinical groups. Therefore, we have no access to the demographic and clinical characteristics of patients excluded by the clinics. Our predefined exclusion criteria were current or past psychosis, schizophrenic symptoms, and acute substance abuse. The inpatient clinics were instructed to inform the participants at admission; in most cases it was not the therapist who did so. Adolescents and parents gave their written consent. The institutional review board (Ethikkommission beider Basel, EKBB) approved the study. Questionnaires were administered to the participating adolescents (Zurich Short Questionnaire on Parental Behavior, ZKE) and their parents (Depression Anxiety Stress Scale-21, DASS-21; Parental Stress Scale, PSS; Zurich Short Questionnaire on Parental Behavior, ZKE). The adolescents were paid 40 Swiss francs for participation.

Measures

Assessment of Axis I and Axis II diagnoses

To examine current and past *DSM-IV-TR* diagnoses a structured interview for mental disorders in children and adolescents [27] was conducted with each adolescent. The Kinder-DIPS assesses the most frequent mental disorders in childhood and adolescence, including anxiety disorders, depression, attention-deficit/hyperactivity disorder, conduct disorder, sleep disorders, and eating disorders. The interview has good validity and reliability [29, 30]. NSSI disorder was assessed with an interview using the *DSM-5* criteria. The estimates of interrater reliability for the diagnosis of NSSI are very good ($\kappa = 0.90$) [26]. Questions about triggers for NSSI were part of the sociodemographic questionnaire. Substance use disorder and borderline personality disorder were examined with the adult DIPS [31]. Axis II personality disorders were obtained with the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SKID-II) [32].

Depression Anxiety Stress Scale-21 (DASS-21)

This 21-item questionnaire assesses depression, anxiety, and stress symptoms [33]. Participants rate the frequency and severity of the symptoms over the last week on a 4-point Likert scale. The DASS-21 has a good internal consistency and convergent and discriminant

validity [34]. The internal consistency in the present sample was α = 0.92 for the depression scale, α = 0.86 for the anxiety scale, α = 0.86 for the stress scale, and α = 0.95 for the total scale.

Parental Stress Scale (PSS)

This instrument assesses parent satisfaction [35]. It contains items representing positive themes of parenthood such as emotional benefits or self-enrichment and negative components such as demands on resources and restrictions. The questionnaire consists of the four subscales parental rewards, parental stressors, lack of control, and parental satisfaction. The PSS has satisfactory levels of internal consistency and convergent and discriminant validity [35]. The internal consistency in the present sample was α = 0.76 for parental rewards, α = 0.51 for parental stressors, α = 0.68 for lack of control, and α = 0.59 for parental satisfaction.

Parenting Behavior

The Zurich Short Questionnaire on Parental Behavior (ZKE) [36] assesses three aspects of parenting behavior from the parents' and children's perspective. Adolescents complete the questionnaire once for their mother and once for their father. The ZKE measures warmth and support, psychological pressure, and behavioral control (demands, rules, and discipline). The questionnaire demonstrated good psychometric properties. The internal consistency in the present sample was α = 0.93 for the subscale warmth and support, α = 0.88 for the subscale psychological pressure, and α = 0.72 for the subscale behavioral control.

Data analysis

Data were checked to insure that they met the assumptions for the analyses; no violations of assumptions were detected. We used multivariate analysis of variance (MANOVA) to investigate group differences in parenting behavior, parental psychopathology, and parental stress between the groups. Post hoc tests were conducted to analyze pairwise comparisons (NSSI vs. CC, NSSI vs. NC, and CC vs. NC). The Bonferroni–Holm correction was used to control for multiple comparisons. Effect sizes (Cohen's *d*) are used to report differences between the groups. An effect size of 0.20 equates to a small effect, 0.50 to a medium effect, and 0.80 to a large effect. Parent–child agreement regarding parenting behavior was evaluated by calculating Pearson product–moment correlation coefficients. To compare correlations the coefficients were converted to *z* scores. Analyses were performed using SPSS version 21. Significance levels were set at α = 0.05.

Results

Parenting behavior

Frequent triggers for NSSI were conflicts within the family (80 %) and with friends (48.9 %). The means and standard deviations of the ZKE on parenting behavior are reported in Table 1. Results of the MANOVA revealed a marginally significant difference between the groups in adolescent-reported maternal parenting behavior, Wilks's $\lambda = .897$, $F(6, 216) = 2.01$, $p = .07$. Post hoc analysis showed that adolescents with NSSI reported significantly less maternal warmth and support than NC adolescents ($p < .01$, $d = 0.64$). No significant difference was found for maternal warmth between the NSSI and CC group ($p > .05$) or between the CC and NC group ($p > .05$). The adolescents did not differ in their reports regarding maternal psychological control or maternal behavioral control (demands, rules, and discipline). A significant difference emerged in adolescent-reported paternal parenting behavior, Wilks's $\lambda = .874$, $F(6, 194) = 2.26$, $p < .05$. NC adolescents reported the most paternal warmth and support, followed by NSSI and CC adolescents. Post hoc comparisons between the NSSI and NC group ($p = .07$) and between the CC and NC group ($p = .06$) were nonsignificant. CC adolescents reported the most paternal psychological control, followed by the NSSI and NC group. But the post hoc analysis showed no significant differences between the NSSI and NC group ($p = .11$) or between the CC and NC group ($p = .07$). The adolescents did not differ in their reports regarding paternal behavioral control.

Parent–adolescent agreement

The results of the mother–adolescent and father–adolescent agreement over all groups are reported in Table 2. All three groups showed low mother–adolescent agreement regarding maternal warmth and support ($r = .24$ to .31). In the NSSI and CC group, mothers rated the warmth and support they give their children as higher than the adolescents rated them themselves (NSSI group Cohen's $d = 0.64$, CC group $d = 0.26$). No significant differences in the MANOVA were revealed in mothers' reports of their own parenting behavior, Wilks's $\lambda = .891$, $F(6, 174) = 1.72$, $p = .12$. Mothers' reports on psychological control were lower than adolescents' reports (NSSI group Cohen's $d = 0.52$, CC group $d = 1.30$, NC group $d = 0.54$). The mother–adolescent agreement on maternal psychological control was low in the NSSI group ($r = .25$) and better in the CC ($r = .58$) and NC ($r = .52$) group, but these differences were not significant. Mothers did not differ in their reports on behavioral control ($p > .05$). The mother–adolescent agreement on maternal behavioral control was highest in the CC group ($r = .46$), followed by the NC ($r = .29$) and the NSSI ($r = .19$) group.

Father–adolescent agreement regarding paternal warmth and support ranged from $r = .39$ to .70. Similar

Table 1 Means (and standard deviations) of the Zurich Short Questionnaire on Parental Behavior and effect sizes (Cohen's d) for group comparisons

Group	Warmth/support *M* (*SD*)		Psychological control *M* (*SD*)		Behavioral control *M* (*SD*)	
	Maternal	Paternal	Maternal	Paternal	Maternal	Paternal
Adolescents						
NSSI (*n* = 45)	28.30 (10.26)	29.27 (9.16)	11.95 (6.73)	10.61 (5.30)	15.71 (3.91)	14.73 (4.71)
CC (*n* = 27)	32.83 (7.43)	28.47 (9.03)	11.08 (5.22)	11.33 (6.41)	15.11 (4.26)	12.83 (4.71)
NC (*n* = 44)	34.10 (7.80)	33.48 (5.98)	9.42 (6.28)	7.99 (4.87)	15.54 (3.62)	13.11 (4.44)
Mothers						
NSSI (*n* = 36)	33.93 (6.89)		8.86 (4.88)		16.31 (5.98)	
CC (*n* = 22)	34.44 (4.27)		5.59 (2.81)		15.05 (3.62)	
NC (*n* = 34)	33.87 (5.01)		6.47 (4.24)		14.94 (3.41)	
Fathers						
NSSI (*n* = 9)		33.48 (3.15)		8.25 (4.77)		12.75 (3.73)
CC (*n* = 5)		30.40 (6.80)		6.40 (6.19)		12.80 (3.70)
NC (*n* = 10)		33.66 (5.87)		8.50 (3.75)		13.00 (2.00)
Cohen's *d (adolescent self-report)*						
NSSI vs. CC	0.49	0.09	0.14	0.13	0.15	0.41
NSSI vs. NC	0.64	0.55	0.39	0.52	0.05	0.36
CC vs. NC	0.17	0.70	0.29	0.62	0.11	0.06

NSSI Adolescents with nonsuicidal self-injury; *CC* clinical controls (adolescents with other mental disorders); *NC* nonclinical controls (adolescents without mental disorders)

to the mothers, fathers in the NSSI and CC group rated the warmth and support in their own parenting behavior as higher than adolescents rated them themselves (NSSI group Cohen's $d = 0.50$, CC group $d = 0.23$). The father–adolescent agreement on paternal psychological control was quite low in all groups ($r = .28$ to $.39$). A high level of father–adolescent agreement was found for paternal behavioral control in the NC group. Fathers of the three groups did not differ in their reports on their own parenting behavior, Wilks's $\lambda = .839$, $F(6, 36) = .55$, $p = .77$.

Family situation

The majority (88.9 %) of adolescents with NSSI lived together with both parents before the inpatient stay. One adolescent lived in sheltered accommodation, another one had been previously treated in a child and adolescent psychiatry unit, and a third one lived in a foster family. In the CC group, 74.1 % of the parents were married, thus more than in the NSSI group (64.4 %) and the NC group (52.3 %). Eight adolescents in the NSSI group, four adolescents in the CC group, and two adolescents in the NC group reported parental mental illness.

Table 2 Mother–adolescent and father–adolescent agreement on dimensions of parenting behavior (Pearson's correlation) over all groups

Dimension	NSSI	CC	NC	*z* scores		
				NSSI vs. CC	NSSI vs. NC	CC vs. NC
Mother–child agreement	*n* = 36	*n* = 22	*n* = 34			
Maternal warmth/support	0.24	0.25	0.31	−0.04	−0.30	−0.22
Maternal psychological control	0.25	0.58**	0.52**	−1.41	−1.28	0.30
Maternal behavioral control	0.19	0.46*	0.29	−1.06	−0.43	0.68
Father–child agreement	*n* = 9	*n* = 5	*n* = 10			
Paternal warmth/support	0.48	0.70	0.39	−0.42	0.20	0.57
Paternal psychological control	0.28	0.34	0.39	−0.08	−0.22	−0.07
Paternal behavioral control	0.16	0.44	0.84**	−0.38	−1.91	−0.93

NSSI Adolescents with nonsuicidal self-injury; *CC* clinical controls (adolescents with other mental disorders); *NC* nonclinical controls (adolescents without mental disorders)
*$p < .05$, **$p < .01$

Maternal psychopathology and parental satisfaction

The maternal DASS-21 scores were all in the normal range (see Table 3). However, the three groups differed significantly regarding maternal psychopathology, Wilks's $\lambda = .814$, $F(6, 150) = 2.72$, $p < .05$. Post hoc analysis showed that mothers in the NSSI group reported significantly more depressive symptoms ($p < .05$, $d = 0.7$), anxiety symptoms ($p < .05$, $d = 0.7$), and stress symptoms ($p < .01$, $d = 0.86$) than mothers in the NC group. These differences did not emerge between mothers of the NSSI and CC group ($p > .05$). In the NSSI group, 50 % of the mothers felt that they had a lot of nervous energy and found it hard to "wind down" (33.3 %) and relax (25 %).

A significant difference emerged in the overall score of the PSS between mothers of the three groups, Wilks's $\lambda = .648$, $F(10, 170) = 4.12$, $p < .01$. Post hoc analyses indicated that mothers in the NSSI group reported less parental satisfaction than mothers in the CC group ($p < .05$, $d = 0.61$) and mothers in the NC group ($p < .01$, $d = 0.8$). As reported in Table 4, mothers of adolescents with NSSI scored highest on the four subscales of the PSS compared to mothers of the control groups (CC and NC). Their adolescent's behavior was rated as predominantly embarrassing and stressful by 36.1 % of mothers in the NSSI group, 13.6 % of mothers in the CC group, and 8.8 % in the NC group. The percentage of mothers who worried if they were doing enough for their children was 69.4 % in the NSSI group, 45.5 % in the CC group, and 35.3 % in the NC group.

Paternal psychopathology and parental satisfaction

As reported in Table 3, fathers of adolescents with NSSI showed mild stress symptoms in the DASS-21. The three groups did not differ regarding paternal psychopathology, Wilks's $\lambda = .674$, $F(6, 36) = 1.31$, $p = .28$. However, post hoc analyses indicated that parents in the NSSI group reported more stress symptoms than parents in the NC group ($p < .05$, $d = 0.9$). The paternal depression and anxiety scores in the NSSI group were in the normal range. The paternal DASS-21 scores in the control groups (CC and NC) were all in the normal range. In the NSSI group, most fathers felt that they had a lot of nervous energy (88.9 %) and they found it hard to "wind down" (44.4 %) and relax (44.4 %).

Table 4 also presents the paternal scores of the PSS. No significant group difference was found for father-reports on the PSS, Wilks's $\lambda = .469$, $F(10, 32) = 1.47$, $p = .20$). Nevertheless, fathers of adolescents with NSSI showed the highest stress scores. It should be noted that the sample size of participating fathers was very small.

Discussion

The aim of the present study was to examine the parenting behavior in families of adolescents with NSSI disorder, adolescents with other mental disorders, and adolescents without mental disorders. Results indicated only a marginally significant group difference in adolescent-reported maternal parenting behavior. Post hoc tests showed that this was due to lower levels of maternal warmth and support reported by adolescents with

Table 3 Parents' mean scores (and standard deviations) on the DASS-21 and effect sizes (Cohen's d) for group comparisons

Group	Overall score		Depression	Anxiety	Stress
	M (*SD*)	Cohen's *d*	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Mothers					
NSSI ($n = 36$)	26.26 (19.60)		7.38 (8.80)	7.16 (10.8)	13.06 (7.18)
CC ($n = 22$)	17.80 (16.06)		5.00 (5.78)	2.62 (5.22)	11.09 (7.22)
NC ($n = 34$)	11.71 (11.73)		2.59 (4.02)	2.08 (2.78)	7.52 (5.85)
NSSI vs. CC		0.47			
NSSI vs. NC		0.91			
CC vs. NC		0.46			
Fathers					
NSSI ($n = 9$)	28.44 (16.66)		6.66 (5.92)	5.33 (6.40)	16.44 (5.90)
CC ($n = 5$)	14.00 (15.17)		3.20 (3.63)	1.60 (2.19)	9.20 (9.86)
NC ($n = 10$)	11.11 (14.04)		2.60 (5.74)	1.40 (2.12)	6.80 (6.61)
NSSI vs. CC		0.96			
NSSI vs. NC		1.20			
CC vs. NC		0.22			

DASS-21 Depression Anxiety Stress Scale-21; *NSSI* Adolescents with nonsuicidal self-injury; *CC* clinical controls (adolescents with other mental disorders); *NC* nonclinical controls (adolescents without mental disorders)

Table 4 Parents' mean scores (and standard deviations) on the PSS and effect sizes (Cohen's d) for group comparisons

Group	Overall score		Parental rewards	Parental stressors	Lack of control	Parental satisfaction
	M (*SD*)	Cohen's *d*	M(*SD*)	M(*SD*)	M(*SD*)	M(*SD*)
Mothers						
NSSI (*n* = 36)	41.95 (9.13)		10.33 (3.06)	17.92 (6.37)	4.94 (1.84)	6.67 (1.80)
CC (*n* = 22)	36.73 (7.98)		9.36 (3.06)	16.18 (4.24)	4.32 (1.49)	5.41 (1.40)
NC (*n* = 34)	34.93 (8.54)		8.88 (2.97)	15.37 (4.59)	4.44 (1.78)	4.38 (1.84)
NSSI vs. CC		0.61				
NSSI vs. NC		0.80				
CC vs. NC		0.22				
Fathers						
NSSI (*n* = 9)	42.50 (8.73)		11.00 (1.69)	17.50 (5.04)	5.75 (2.43)	6.00 (1.60)
CC (*n* = 5)	37.60 (5.98)		8.80 (5.17)	16.40 (3.78)	4.80 (0.84)	5.80 (0.84)
NC (*n* = 10)	35.90 (6.71)		10.70 (2.31)	14.70 (3.02)	4.60 (1.65)	4.40 (1.43)
NSSI vs. CC		0.67				
NSSI vs. NC		0.90				
CC vs. NC		0.28				

PSS Parental Stress Scale; *NSSI* Adolescents with nonsuicidal self-injury; *CC* clinical controls (adolescents with other mental disorders); *NC* nonclinical controls (adolescents without mental disorders)

NSSI compared to NC adolescents. This is in line with previous research showing that adolescents with NSSI compared to NC adolescents experience the relationship with their parents as being characterized by failed protection, high levels of negative affect, and low levels of positive affect and cohesiveness [12, 22]. However, given the omnibus test was only marginally significant, this result should be interpreted with caution. The NSSI and NC group differed in adolescent-reported maternal warmth and support but not in adolescent-reported paternal warmth and support. Nevertheless, adolescents in the NC group reported more paternal warmth and support than adolescents in the NSSI group. The sample size of participating fathers was small (24 fathers, vs. 92 mothers); therefore, the power was limited. Both mothers and fathers rated the warmth and support they give to their children as higher than the adolescents rated them themselves. Adolescents in the present study showed a low level of parent–adolescent agreement on parenting behaviors. This is in line with previous studies indicating poor agreement between parents and their children when reporting on parenting behavior and family relationships [37, 38].

In contrast to Baetens et al.'s [23] findings, our results did not show a significant group difference in adolescent-reported parental psychological control or parental behavioral control. The inconsistent results regarding parental behavioral control might be explained by the different measures used to assess behavioral control and hence the different definitions of behavioral control. In the Parental Behavior Scale used by Baetens et al. [23], behavioral control is defined as harsh punishment and neglect, whereas behavioral control in the ZKE, which we used, refers to demands, rules, and discipline. Similar to Baetens et al. [23] we found no significant differences in parent-reports of parental behaviors. A further difference between the Baetens et al. [23] study and the present study is that mothers of adolescents with NSSI in this study differed significantly from mothers of the NC group in their reports on parental stress. This may be due to the differences in the examined samples. Our sample consisted of inpatient adolescents with repetitive NSSI, whereas Baetens et al. [23] investigated a nonclinical sample of adolescents. Similar to the results of Morgan et al. [24], parents of adolescents with NSSI in the present study reported more parental stress and less parental satisfaction than parents of both control groups (CC and NC). In addition, there was a significant difference in the number of diagnoses between adolescents with NSSI and CC adolescents. Parents of adolescents with NSSI may be more stressed about their child than parents of CC adolescents because of the number of comorbid disorders. The percentage of mothers who worried if they were doing enough for their children was highest in the NSSI group. Furthermore, mothers of adolescents with NSSI reported more depressive, anxiety, and stress symptoms than mothers in the NC group, and fathers of adolescents with NSSI showed elevated stress symptoms in the DASS-21. The psychopathology of parents of adolescents with NSSI has to be further investigated. Especially, since genetic predisposition for high emotional reactivity and familial hostility and criticism are distal risk factors for NSSI, as proposed by Nock's [39] integrated theoretical model of

the development and maintenance of NSSI. Our results indicate that the development and maintenance of NSSI may not only be influenced by familial hostility and criticism but also by a lack of warmth and support. As distal risk factors also influence interpersonal vulnerability factors, future studies should address the question, if poor verbal and social skills influence the parent-adolescent agreement on parenting behavior.

The results of the present study should be interpreted in the context of some limitations. The current study cannot explain the direction of effects between NSSI and parenting behaviors; this should be investigated in future prospective longitudinal studies. Only with prospective longitudinal designs it is possible to detect causalities in these very different complex parent–child interactions. Given that post hoc analyses were interpreted following a marginally significant omnibus tests, replication is needed. The sample consisted of female adolescents admitted to an inpatient child and adolescent psychiatric unit and thus may not generalize to other samples. Male adolescents with NSSI should be included in further studies. It is uncertain if the reported group differences in the mother–daughter relationship would emerge in male adolescents, as well. Bureau et al. [22] did not find any association between parent–child relationship dimensions and NSSI in male adolescents. In addition, factors that influence parent–child agreement (e.g., negative cognitive bias) as well as response biases (e.g., social desirability) should be included in further studies.

Strengths of the study were the use of the *DSM-5* diagnostic research criteria for NSSI and the use of a multi-informant approach, assessing adolescents and their parents, and the inclusion of a clinical control group of adolescents with mental disorders without NSSI.

Considering the high proportion of adolescents (80 %) who report conflicts within the family as triggers for NSSI, therapy programs for adolescents with NSSI should focus on improving family communication and interaction. Parents and therapists should be aware of parenting difficulties that are associated with NSSI. Information and skills needed for adequate parenting can be addressed in parent programs to reduce parental stress. So far, only a few treatment studies of dialectical behavior therapy [40, 41] and mentalization-based treatment [42] for adolescents with self-injurious behavior or borderline symptoms have included parents in therapy. A tendency toward amelioration was found for family and peer contacts [40]. The inclusion of parents in interventions for adolescents with NSSI (e.g., dialectical behavior therapy) might improve family functioning. Adding aspects from the work group of Fruzzetti [43, 44], the explicit training of emotion-validating communication and social problem solving might improve outcome for patients and strengthen family cohesion. Given the high psychosocial burden and the variety of professionals involved in treatment, aspects of multisystemic therapy (MST) might also be helpful. Huey et al. [45] showed that MST can reduce suicide attempts and improve family relationships. Considering the long-term course of NSSI and its high risk of suicide attempts and suicide and the extremely good and long-lasting effects of MST [46], it might be very useful for improving concrete family interaction. It might be helpful to combine skills training and cognitive behavioral therapy interventions (e.g., mindfulness, communication, problem solving, stress tolerance, emotion regulation) with classic family therapeutic interventions [45, 47, 48]. It will be important to develop guidelines for deciding between different treatments with multiple variations and levels of family-centered interventions. Taking into account the high burden on the family there is an imminent need for the development and implementation of evidence-based family therapeutic interventions to improve and save the mental health of all family members.

Competing interests
The authors declare that they have no competing interests.

Authors' contributions
TT and TI made substantial contributions to the ideas of the paper, the interpretation of the data, and the drafting and revision of the manuscript. TT completed the analyses. MS contributed to the ideas, the acquisition of the data, and the drafting and revision of the manuscript. All authors read and approved the final manuscript.

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RESEARCH ARTICLE Open Access

Sibling relationships of female adolescents with nonsuicidal self-injury disorder in comparison to a clinical and a nonclinical control group

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Abstract

Background: Adolescents' nonsuicidal self-injury (NSSI) leads to distress that affects the whole family system, and siblings are reported to suffer from disrupted family communication and functioning. So far, no studies have examined the quality of relationships between adolescents with NSSI and their siblings. The aim of the present study was to examine the sibling relationship quality of adolescents with NSSI, adolescents with other mental disorders without NSSI (clinical controls, CC), and adolescents without current or past experience of mental disorders (nonclinical controls, NC).

Methods: 139 female adolescents aged 13–20 years (mean age = 16.18 years, $SD = 1.62$, NSSI: $n = 56$, CC: $n = 33$, NC: $n = 50$) and 73 siblings aged 10–28 years (mean age = 16.88 years, $SD = 4.02$, 60.3% female) participated. Self-report measures were used to assess psychopathology and sibling relationship quality.

Results: Siblings reported a wide range of negative emotional and familial consequences, such as feeling left alone with their sister's issues or a distressing family situation, as a result of their sister's NSSI. Siblings of adolescents with NSSI experienced significantly more coercion in the relationship with their sister compared to CC ($d = 1.08$) and NC ($d = 0.67$) siblings, indicating an imbalance of dominance and control in their relationship. Further, adolescents with NSSI reported significantly less warmth and empathy in the sibling relationship and higher rivalry scores between their siblings and themselves than NC adolescents, suggesting higher levels of parental favoritism among parents of adolescents with NSSI compared to NC parents ($d = 0.93$). Among siblings of adolescents with NSSI, high levels of warmth, conflict, and empathy were significantly associated with internalizing problems. For adolescents with NSSI a significant association was found between internalizing problems and coercion and externalizing problems and similarity.

Conclusions: Given the negative impact of NSSI on siblings' emotional well-being and family life, efforts should be made to offer siblings psychoeducation and support to help them cope with the emotional and familial consequences of their sister's NSSI. Given adequate support, siblings can in turn be a source of emotional support for their sister.

Keywords: Nonsuicidal self-injury, Sibling relationship, Sibling agreement, Family

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Introduction

Nonsuicidal self-injury (NSSI) is a highly prevalent behavior among adolescents and associated with various mental health problems and suicidality [1–3]. NSSI is defined as the repetitive, deliberate, direct, and socially unaccepted destruction or alteration of one's own body tissue without the intent to die [4]. Pooled international lifetime prevalence rates among adolescents (including single acts of NSSI) are around 17% [5], with 6.7% [6] reporting repetitive NSSI according to *DSM-5* criteria [4]. Females are more likely to report a history of NSSI than men, particularly in clinical samples [7].

Previous research has emphasized the role of maladaptive family functioning, such as emotional invalidation and lack of family support, as crucial proximal risk factors for the development of NSSI [8–13]. Contrary, family support and positive family functioning were found to predict the cessation of NSSI [10, 11, 14]. Similarly, a review on psychosocial treatment for self-injurious thoughts and behaviors concluded that a crucial part of efficacious interventions is improving familial relationships [15]. However, research on familial relationships in the context of adolescent NSSI has so far focused primarily on parent–child relationships, while remarkably little is known about sibling relationship quality. The sibling relationship is life's longest lasting and one of the most important relationships, as children spend more time with their siblings than with their parents [16]. Sibling relationships encompass positive (e.g., warmth, intimacy, empathy) and negative (e.g., conflict, rivalry) features and can have a major impact on sibling's lives and wellbeing (see [17] for a review). Social or observational learning are mechanisms to describe generalization of negative behaviors among siblings, such as hostile behavior [18].

A meta-analysis found that sibling warmth was significantly associated with less internalizing and externalizing problem behavior in children and adolescents [16]. Within positive sibling relationships, children and adolescents may learn favorable strategies to manage and regulate their emotions, leading to a lower risk of developing symptoms of depression, anxiety and aggression. On the contrary, sibling conflict was significantly related to more internalizing and externalizing problems [16]. Frequent fighting among siblings or observing a siblings hostile behavior might lead to generalization of negative behaviors to other contexts via social learning mechanisms [18]. Noteworthy, the association between internalizing and externalizing problems was stronger for sibling conflict than sibling warmth.

Furthermore, there is some evidence that children and adolescents with mental disorders have poorer sibling relationships compared to nonclinical individuals. Sibling relationships of children with attention deficit hyperactivity disorder (ADHD) are characterized by higher conflict but equal levels of warmth compared to children without ADHD [19]. Noteworthy, the authors suggest that comorbid internalizing and externalizing symptoms might be more powerful predictors of sibling warmth and conflict than ADHD per se. Moreover, poor sibling relationships in childhood and adolescence were found to predict the occurrence of major depression 30 years later [20]. Surprisingly, most research on sibling relationship quality and psychopathology include low-risk community samples [16], while there is a lack of research on sibling relationships of children and adolescents with clinically significant mental health issues including NSSI [17].

Adolescent NSSI behavior appears to impact the whole family system, leading to difficulties in parent–child relationships and disrupting family communication, family dynamics, and family functioning [21, 22]. Interview studies of parents' reactions to their children's NSSI behavior suggest that parents commonly have feelings of distress, insecurity, anxiety, guilt, and helplessness [21, 22]. Because parental time, energy, and attention is focused on the child with self-injuring behavior, parents express worries about an imbalance in parental involvement between siblings, particularly neglecting their other children [22–25]. Adolescents' NSSI behavior and the distress it causes in the family likely affect siblings, especially if they are of a similar age, as these siblings, too, are trying to navigate through adolescence or young adulthood [22]. According to parents, siblings' reactions to the NSSI behavior include a wide range of feelings such as anger, resentment, frustration, stress, simultaneous empathy and irritation, responsibility, worries about stigma at school, and often help and support [22]. Furthermore, some siblings have indicated feeling anxious about triggering an episode of self-injury with their own behavior [22]. To date, studies reporting data on siblings of adolescents with NSSI rely on parental reports, while no studies exist that assess sibling self-report with respect to their reactions to NSSI or sibling relationship quality.

It has been well documented that interpersonal conflicts often serve as triggers for engaging in NSSI [12, 26]. Adolescents with NSSI frequently report negative peer experiences such as peer victimization, which can significantly increase the risk of future NSSI [27]. Notably, the source of victimization may also be in the family; a longitudinal study [28] suggested that sibling bullying in early adolescence is significantly associated with NSSI behavior at age 18. Identifying risk factors for NSSI within the family might help researchers and clinicians better understand the familial mechanisms that are involved in NSSI and enable them to develop treatment modalities

that include the improvement of familial relationships to save and improve the mental health of all family members.

The aim of the current study was threefold. First, we aimed to shed light on how siblings of female adolescents with NSSI feel about and evaluate their sister's NSSI. Second, we wanted to investigate sibling relationship quality rated separately by adolescents with NSSI and a sibling. Previous research has indicated discrepant perspectives on family functioning and parenting behavior between adolescents with NSSI and their parents, with adolescents reporting poorer outcomes than parents [12, 29, 30]. Thus, we further aimed to examine the concordance between adolescent and sibling self-reported sibling relationship quality. Third, we wanted to explore the association between sibling relationship quality and psychopathology for adolescents with NSSI and their siblings, respectively. Specifically, we aimed to answer the following questions:

1. How do siblings react to their sister's NSSI?
2. Do adolescents with NSSI differ from adolescents without NSSI (clinical and nonclinical controls) and from their siblings with respect to sibling relationship quality?
3. To what extent do adolescents and their siblings agree in their reports of relationship quality?
4. Is the sibling relationship quality associated with psychopathology in the NSSI/CC group?

Methods

Participants

Adolescents

The study included 139 female adolescents, aged 13–20 years ($M = 16.18$ years, $SD = 1.62$) that were consecutively recruited from different inpatient child and adolescent psychiatric units and schools in Switzerland and Germany. The sample comprised of 56 adolescents with NSSI disorder, 33 adolescents with other mental disorders without NSSI (clinical controls, CC), and 50 adolescents without current or past experience of mental disorders (nonclinical controls, NC). Participants were similar with respect to age, Welch's F (2, 74.24) = 0.52. The most frequent mental disorders according to *DSM-IV-TR* of the NSSI group were depressive disorders (76%), anxiety disorders (48.2%), disruptive behavior disorders (22.2%), borderline personality disorder (18.5%), and eating disorders (18.5%). The CC group most frequently reported anxiety disorders (51.5%) and depressive disorders (45.4%), followed by eating disorders (24.2%) and disruptive behavior disorders (12.1%).

Siblings

Seventy-three siblings aged 10–28 years ($M = 16.88$ years, $SD = 4.02$; 60.3% female) participated in the study. We included only one sibling per adolescent, mainly the one closest in age. Overall, 27 brothers participated (NSSI = 12, CC = 1, NC = 14). Groups of siblings (NSSI = 21, CC = 11, and NC = 41) were similar with respect to age, Welch's $F(2, 20.79) = 0.72$. A minority of siblings in the NSSI group (14.3%; 2 sisters, 1 brother) had had their own experiences with NSSI.

Measures

To examine the adolescents' current or past *DSM-IV-TR* diagnoses for Axis I disorders, we conducted a clinical structured interview. The Diagnostic Interview for Mental Disorders in Children and Adolescents (Kinder-DIPS) [31] assesses the most frequent mental disorders in childhood and adolescence. Questions for substance use disorders were included from the adult DIPS [32]. The Kinder-DIPS has good validity and reliability for Axis I disorders (child version, $\kappa = 0.48–0.88$) [33]. NSSI disorder was assessed according to the *DSM-5* research criteria, with questions reformulated as criteria. Interrater reliability estimates for the diagnosis of NSSI were very good ($\kappa = 0.90$). Before conducting the interviews all interviewers received an intensive standardized training.

Adolescents were administered the Structured Clinical Interview for *DSM-IV* Axis II disorders (SCID-II) [34], to assess for personality disorders. The SCID-II has been found to be suitable for use among adolescents [35]. Interrater reliability for borderline personality disorder in our sample was very good ($\kappa = 1.00$).

The Youth Self-Report (YSR) [36, 37] was used to assess a broad range of psychopathology. Two second-order scales reflecting internalizing and externalizing problems and a total problem score can be calculated. Internal consistency in the present sample was $\alpha = 0.96$ for the total score, $\alpha = 0.85$ for the internalizing score, and $\alpha = 0.80$ for the externalizing score.

The Sibling Questionnaire is a self-developed questionnaire, designed for siblings of adolescents with NSSI and consisting of 166 items [38]. Questions with good face validity were gathered and reviewed by experts. The first part contains demographic questions and asks when siblings first noticed their sister's NSSI, and if they were told about it, who told them. Further questions refer to the siblings' suspicions about the reasons for their sister's self-injury ($\alpha = 0.84$), questions about the functions of NSSI were formulated on the basis of the Functional Assessment of Self-Mutilation [39] and the Modified Ottawa/Ulm Self-Injury inventory [40]. The second part assesses the siblings' own experiences

with NSSI. In the third part, siblings are asked about their feelings (α = 0.76) and reactions (α = 0.63) when their sister engages in NSSI. The fourth part assesses the impact of NSSI on family dynamics (α = 0.82). Reasons for NSSI, siblings reactions and the impact of NSSI on family dynamics were assessed on a scale ranging from 1 (*fully applies*) to 5 (*does not apply at all*). For siblings feelings, response choices ranged from 1 (*never*) to 5 (*almost always*). Internal consistencies refer to the present sample. So far, the questionnaire has not been further validated.

The Adult Sibling Relationship Questionnaire (ASRQ) [41] measures qualitative features of the sibling relationship in young adulthood and consists of 81 items spread over 14 subscales. The three higher order factors are warmth/closeness, conflict, and rivalry. The warmth subscale consists of items measuring affection, companionship, intimacy, and admiration and the conflict subscale includes quarreling and antagonism between siblings. The rivalry subscale determines whether the parents favor a child, but not which child is favored. All items except rivalry are assessed on a 5-point Likert scale ranging from 1 (*hardly at all*) to 5 (*extremely much*). For the rivalry subscale, response choices are 0 (*neither of us is favored*), 1 (*I am/my sibling is sometimes favored*), and 2 (*I am/my sibling is usually favored*). The questionnaire showed good internal consistency [41]. In the present sample, internal consistency was α = 0.93 for warmth, α = 0.83 for conflict, and α = 0.83 for rivalry.

The Brother–Sister Questionnaire (BSQ) [42] consists of 35 items and is used to distinguish dysfunctional from well-functioning sibling relationships. The BSQ measures the four dimensions empathy (emotional connectedness, caring), boundary maintenance (respect for siblings' physical and psychological space), similarity (common interests and experiences), and coercion (power and control of one sibling over another). The questionnaire demonstrated good psychometric properties [42]. Internal consistency in the present sample was α = 0.95 for empathy, α = 0.83 for boundary maintenance, α = 0.68 for similarity, and α = 0.52 for coercion.

Procedure

Participants from the NSSI and CC sample were recruited from nine collaborating child and adolescent psychiatric inpatient clinics. The inpatient clinics were instructed to inform the participants at admission about the study and asked for their consent to participate. Participants from the HC sample were recruited in different high schools. Prior to our visit in the schools, teachers were given detailed information about the study and handed out written informed consent forms, to be signed by the parents of the students participating. After obtaining written informed consent from the adolescents and caregivers, clinical interviews and self-report questionnaires were performed in the inpatient clinics for the NSSI and CC sample and in a classroom after school for the HC group. After data collection for the participants was completed, they were given consent forms and questionnaires for their siblings in case they were willing to participate in the study. Consent form and questionnaires from the siblings were then returned via mail. All participants, adolescents, their siblings and parents, were informed about the study and gave their written consent in accordance with the Declaration of Helsinki. The local ethics committee approved the study.

Data analyses

We used multivariate analysis of variance (MANOVA) to investigate group differences in sibling relationship. Post hoc tests were conducted to analyze pairwise comparisons. The Bonferroni correction was used to control for multiple comparisons. Effect sizes (Cohen's *d*) were calculated to further analyze significant group differences. Pearson product-moment correlation coefficients were calculated to evaluate sibling agreement and associations between sibling relationship quality and psychopathology. To compare correlations of sibling agreement, the coefficients were converted to *z* scores. In order to examine adolescent-sibling discrepancies, raw and standardized difference scores were calculated. The standardized difference scores were calculated by subtracting the sibling's standardized score from the youth's standardized score [43]. The magnitude of discrepancy between standardized scores was examined by calculating the mean of the absolute value of the difference between standardized scores. All analyses were performed using SPSS version 25. Significance levels were set at α = 0.05.

Results

Siblings' reactions to their sister's NSSI

Siblings suspected the following reasons for their sister's self-injury: to change the emotional pain into something physical (60.0%), to relieve tension (57.1%), to deal with frustration (45.0%), and to cope with uncomfortable memories (42.9%). About half of the siblings (57.1%) noticed their sister's NSSI and the majority (90.5%) were concerned about the behavior. A large proportion (85.7%) believed that their sister might attempt suicide and reported being relieved that their sister was hospitalized. The most common emotional reactions to NSSI were feeling sad (76.2%), depressed (66.7%), desperate (57.1%), helpless (57.1%), angry (33.4%), scared (19.1%), and guilty (14.3%). Several siblings endorsed that they sympathized with their sister (61.9%) and felt distressed due to NSSI (42.9%).

From the perspective of many siblings, the sister's issues determined the whole family life (42.9%) and they perceived the family situation as very distressing (42.9%). Around a quarter thought that their parents had found a good way to handle their sister's NSSI (28.6%). Another quarter (23.8%) reported that they did not get their parents' attention as often as their sisters did and shared the opinion that their parents did not dare to put limits on their sister (23.8%). A third (33.3%) reported supporting their sister by talking with them about NSSI. However, they perceived the conversations as helpful for their sisters (28.6%), but stressful for themselves and indicated that they would like to get help to better cope with their sisters NSSI (28.6%). Many siblings endorsed that they would never understand why their sister is engaging in NSSI (38.1%) and a sizeable proportion felt left alone with the sister's issues (71.4%). Less than half of the siblings (38.1%) reported being reasonably involved in their sister's therapy. Those siblings without their own NSSI experience (85.7%) provided several reasons why they did not engage in NSSI (see Table 1). Siblings reported having fewer friends who engage in NSSI (14.3%) than their sister reported for herself (47.6%). Siblings of adolescents with NSSI who also engaged in NSSI (14.3%) were all older siblings who indicated that they had started self-injuring earlier than their sister.

Sibling relationship quality

Group comparisons based on reports of adolescents with NSSI

Results of the MANOVA showed a significant group difference for the ASRQ subscales warmth, $F(2, 134) = 7.42$, $p < 0.01$, and rivalry, $F(2, 134) = 14.27$, $p < 0.01$. Bonferroni-corrected post hoc analysis revealed that adolescents with NSSI reported significantly less warmth ($p < 0.01$, $d = 0.73$) and more rivalry ($p < 0.01$, $d = 1.05$) in the sibling relationship than NC adolescents. The higher rivalry score indicates parental favoritism for one child by parents of adolescents with NSSI. No difference between groups (NSSI, CC, NC) was found for the ASRQ subscale conflict (see Table 2). Regarding the BSQ subscales the three groups differed significantly on the subscales empathy, similarity, and boundary maintenance. Post hoc analysis showed that adolescents with NSSI reported significantly less empathy ($p < 0.01$, $d = 0.68$) and similarity ($p < 0.01$, $d = 0.78$) than NC adolescents. Adolescents with NSSI reached higher scores in boundary maintenance than NC adolescents ($p < 0.05$, $d = 0.43$), higher scores reflect less concern with boundary maintenance. As shown in Table 2, no group difference emerged for the subscale coercion.

Table 1 Siblings of adolescents with NSSI and their reasons for why they not engage in self-injurious behavior (n = 18)

Reason	Number of siblings	%
I have better strategies to deal with stress	9	42.9
I have learned to be thick skinned	9	42.9
I feel less burdened by the family situation	8	38.1
I can express and vent my anger	8	38.1
I have better peer relationships	7	33.4
My sister has experienced more bad things	6	28.6
My sister is too sensitive	5	23.8
I am better at solving problems with our parents	5	23.8
My sister feels more burdened by conflicts with our parents	5	23.8

Group comparisons based on siblings' reports

The only significant difference emerged on the BSQ subscale coercion, $F(2, 65) = 4.43$, $p = 0.016$, $\eta^2 = 0.12$, with post hoc analysis showing that siblings of adolescents with NSSI reported significantly more coercion than CC siblings ($p < 0.05$, $d = 1.08$) and NC siblings ($p < 0.05$, $d = 0.67$); see Table 2. No significant differences were found for the remaining BSQ subscales or any ASRQ subscale.

Comparisons between adolescents and siblings in the NSSI group

Significant differences in reports on relationship quality of adolescents with NSSI and their siblings emerged for similarity, $F(1, 68) = 6.3$, $p < 0.05$, $\eta^2 = 0.09$, and boundary maintenance, $F(1, 68) = 81.07$, $p < 0.01$, $\eta^2 = 0.54$, with adolescents with NSSI reporting lower scores on the similarity scale and higher scores on the boundary maintenance scale, indicating less concern with boundary maintenance than their siblings.

Sibling agreement

The results of sibling agreement are displayed in Table 3. The level of sibling agreement in the NSSI and NC group was low, $r = 0.05$ to 0.35. Siblings of the CC group showed a significant agreement regarding warmth ($r = 0.74$) and similarity ($r = 0.82$). The agreement for both subscales was significantly higher among siblings of the CC group than among NSSI and NC siblings; see Table 3.

In addition to sibling agreement, Table 4 reflects sibling discrepancies showing raw and standardized difference scores as well as absolute value standardized differences. There was considerable variability among the difference scores, as indicated by large standard deviations of the raw discrepancy. The mean of the absolute value of the difference between standard scores indicates that the

Table 2 Means (and standard deviations) derived from the ASRQ and BSQ on sibling relationship quality and the YSR on psychopathological symptoms

Measure	Adolescents					Siblings				
	NSSI ($n=56$) *M (SD)*	CC ($n=33$) *M (SD)*	NC ($n=50$) *M (SD)*	$F(2, 134)$	η^2	NSSI ($n=21$) *M (SD)*	CC ($n=11$) *M (SD)*	NC ($n=41$) *M (SD)*	$F(2, 65)$ *M (SD)*	η^2
ASRQ										
Warmth	141.27 (38.12)	152.75 (26.82)	164.97 (25.69)	7.42**	0.10	155.62 (21.72)	159.15 (31.88)	154.00 (28.50)	0.14	0.00
Conflict	57.81 (14.49)	57.88 (14.46)	56.64 (13.20)	0.12	0.00	56.11 (13.36)	51.78 (9.51)	55.28 (14.20)	0.33	0.01
Rivalry	0.53 (0.47)	0.38 (0.41)	0.14 (0.23)	14.27**	0.18	0.26 (0.47)	0.10 (0.20)	0.31 (0.44)	0.91	0.03
BSQ										
Empathy	3.12 (0.99)	3.39 (0.88)	3.70 (0.70)	5.39**	0.08	3.36 (0.56)	3.44 (0.70)	3.36 (0.67)	0.06	0.00
Boundaries	4.23 (0.71)	4.20 (0.67)	3.89 (0.88)	3.47*	0.05	2.25 (0.86)	1.89 (0.68)	2.06 (0.59)	0.96	0.03
Similarity	2.41 (0.67)	2.55 (0.46)	2.87 (0.50)	9.29**	0.12	2.78 (0.42)	2.57 (0.39)	2.61 (0.57)	0.83	0.03
Coercion	1.95 (0.68)	1.75 (0.68)	1.71 (0.63)	1.11	0.02	2.11 (0.59)	1.57 (0.19)	1.75 (0.52)	4.43*	0.12
YSR										
INT	35.33 (10.14)	21.70 (9.29)	8.95 (5.87)	120.76**	0.64	10.13 (7.49)	9.04 (6.84)	10.53 (7.92)	0.14	0.00
EXT	19.94 (10.54)	11.61 (6.43)	9.33 (5.39)	23.42**	0.26	9.18 (5.03)	7.60 (5.14)	9.18 (5.03)	0.73	0.02

NSSI adolescents with nonsuicidal self-injury, *CC* clinical control group, *NC* nonclinical control group, *ASRQ* Adult Sibling Relationship Questionnaire, *BSQ* Brother Sister Questionnaire, *YSR* Youth Self Report, *INT* Internalizing symptoms, *EXT* externalizing symptoms

* $p<0.05$

** $p<0.01$

Table 3 Sibling agreement on dimensions of relationship quality (Pearson correlations)

Measure	NSSI ($n=42$)	CC n = 22 ($n=22$)	NC n = 82 ($n=82$)	*z* scores		
				NSSI vs. CC	NSSI vs. NC	CC vs. NC
ASRQ						
Warmth	0.07	0.74*	0.19	−2.07*	−0.43	1.95*
Conflict	0.13	0.52	0.31	−1.05	−0.66	0.66
Rivalry	0.11	−0.03	0.08	0.33	0.11	−0.28
BSQ						
Empathy	0.12	0.42	0.31	−0.77	−0.70	0.33
Boundaries	0.20	0.58	0.06	−1.08	0.50	1.55
Similarity	0.35	0.82*	0.25	−1.86*	0.39	2.32*
Coercion	0.05	0.29	−0.24	−0.56	1.03	1.40

NSSI adolescents with nonsuicidal self-injury, *CC* clinical control group, *NC* nonclinical control group, *ASRQ* Adult Sibling Relationship Questionnaire, *BSQ* Brother–Sister Questionnaire

* $p<0.05$

** $p<0.01$

difference between adolescent and sibling reports in the CC and NC group was small for most aspects of relationship quality with less than one standard deviation (< 1). The NSSI group showed the largest discrepancies (> 1 for most subscales).

Association between sibling relationship quality and psychopathology in the NSSI and CC group

Correlations between sibling relationship quality and psychopathology are presented separately for adolescents with NSSI and their siblings in Tables 5 and 6. Among adolescents with NSSI a significant association was found between internalizing problems and coercion as well as externalizing problems and similarity (both $r=0.27$). For adolescents in the CC group significant associations emerged between internalizing problems and conflict ($r=0.35$) and boundary maintenance ($r=-0.47$) as well as externalizing problems and conflict ($r=0.47$), similarity ($r=0.37$) and coercion ($r=0.35$). In the NSSI group siblings' reports showed that internalizing problems were significantly associated with warmth, conflict, and empathy (all $r=0.48$) in the sibling relationship. No associations between sibling relationship quality and psychopathology were found in reports of siblings in the CC group. Siblings

Table 4 Raw, standardized and absolute value standardized differences scores for adolescent and sibling reports of sibling relationship quality

Measure	Difference scores								
	Raw *M* (*SD*)			Standardized *M* (*SD*)			Absolute Value Standardized *M* (*SD*)		
	NSSI (*n* = 42)	CC (*n* = 22)	NC (*n* = 82)	NSSI (*n* = 42)	CC (*n* = 22)	NC (*n* = 82)	NSSI (*n* = 42)	CC (*n* = 22)	NC (*n* = 82)
ASRQ									
Warmth	3.11 (37.52)	− 6.08 (23.15)	9.50 (34.40)	− 0.08 (1.36)	− 0.41 (0.84)	0.16 (1.24)	1.09 (0.76)	0.74 (0.54)	0.86 (0.90)
Conflict	− 1.79 (19.90)	5.20 (11.68)	1.88 (15.68)	− 0.28 (1.52)	0.25 (0.89)	− 0.00 (1.20)	1.11 (1.04)	0.74 (0.48)	0.92 (0.76)
Rivalry	0.27 (0.48)	0.20 (0.42)	− 0.16 (0.49)	0.76 (1.36)	0.51 (1.15)	− 0.40 (1.17)	1.15 (0.99)	0.75 (0.97)	0.87 (0.90)
BSQ									
Empathy	0.36 (0.96)	0.12 (0.86)	0.30 (0.81)	0.11 (1.37)	− 0.22 (1.25)	0.04 (1.18)	1.11 (0.76)	0.89 (0.85)	0.76 (0.90)
Boundaries	1.88 (1.23)	2.24 (0.73)	1.84 (0.95)	− 0.16 (1.70)	0.40 (0.99)	− 0.15 (1.28)	1.32 (1.03)	0.81 (0.63)	0.98 (0.83)
Similarity	− 0.08 (0.64)	0.07 (0.32)	0.21 (0.64)	− 0.27 (1.18)	− 0.02 (0.60)	0.26 (1.17)	0.93 (0.76)	0.50 (0.28)	0.91 (0.76)
Coercion	− 0.25 (1.05)	0.07 (0.32)	− 0.05 (0.83)	− 0.38 (1.82)	0.32 (0.54)	0.08 (1.48)	1.37 (1.23)	0.49 (0.36)	1.11 (0.95)

NSSI adolescents with nonsuicidal self-injury, *CC* clinical control group, *NC* nonclinical control group, *ASRQ* Adult Sibling Relationship Questionnaire, *BSQ* Brother–Sister Questionnaire

Table 5 Pearson correlations of sibling relationship quality (ASRQ, BSQ) and psychopathological symptoms (YSR) reported by adolescents with nonsuicidal self-injury disorder

Measure	1	2	3	4	5	6	7	8
ASRQ								
1. Warmth	–							
2. Conflict	− 0.54**	–						
3. Rivalry	− 0.33*	0.15	–					
BSQ								
4. Empathy	0.88**	− 0.61**	− 0.30*	–				
5. Boundaries	0.03	− 0.36**	− 0.09	0.20	–			
6. Similarity	0.62**	− 0.31*	− 0.35*	0.63**	0.16	–		
7. Coercion	− 0.42**	0.50**	0.23	− 0.50**	− 0.22	− 0.17	–	
YSR								
8. Internalizing problems	− 0.03	0.11	0.13	− 0.01	0.11	− 0.04	0.27*	–
9. Externalizing problems	0.11	0.02	0.22	0.19	0.15	0.27*	0.18	0.38**

ASRQ Adult Sibling Relationship Questionnaire, *BSQ* Brother–Sister Questionnaire, *YSR* Youth Self-Report

* $p < 0.05$

** $p < 0.01$

of the three groups did not differ significantly regarding internalizing, $F(2, 65) = 0.14$, $p > 0.05$, or externalizing, $F(2, 65) = 0.73$, $p > 0.05$, problems.

Discussion

This study is the first to address siblings' reactions to a sister's NSSI as well as aspects of sibling relationship quality, such as warmth, rivalry, coercion, and conflict, group differences (adolescents with NSSI, CC, NC) with respect to sibling relationship quality, agreement between adolescents with NSSI, CC, and NC and their siblings, and the association between sibling relationship quality and psychopathology separately for adolescents with NSSI and their siblings.

Consistent with previous research on parental reports of siblings' emotional reactions to NSSI [21, 22], siblings involved in this study described their sister's NSSI as being a source of distress, sadness, desperation, helplessness, and anger. The majority of siblings was concerned about their sister's NSSI as well as potential future suicidal behavior and felt relieved about their sister receiving inpatient psychiatric treatment. A third of siblings supported their sister by talking to her about NSSI and although they considered these conversations helpful for their sister, they perceived them as distressing for themselves and wished for help to cope better with NSSI. In fact, 71.4% of siblings felt left alone with the sister's issues and 38.1% will never understood why their sister was

Table 6 Pearson correlations of sibling relationship quality (ASRQ, BSQ) and psychopathological symptoms (YSR) reported by siblings of adolescents with nonsuicidal self-injury disorder

Measure	1	2	3	4	5	6	7	8
ASRQ								
1. Warmth	–							
2. Conflict	0.02	–						
3. Rivalry	−0.33	0.06	–					
BSQ								
4. Empathy	0.72**	0.08	−0.11	–				
5. Boundaries	−0.20	0.54*	0.20	0.19	–			
6. Similarity	0.12	0.07	−0.04	0.15	0.19	–		
7. Coercion	−0.20	0.60**	0.11	0.12	0.76**	0.01	–	
YSR								
8. Internalizing problems	0.48*	0.48*	−0.01	0.48*	0.35	−0.13	0.18	–
9. Externalizing problems	0.32	0.13	−0.29	0.28	0.02	0.33	0.02	0.37

ASRQ Adult Sibling Relationship Questionnaire, *BSQ* Brother–Sister Questionnaire, *YSR* Youth Self-Report

* $p < 0.05$

** $p < 0.01$

engaging in NSSI. These findings highlight the need to provide sufficient psychoeducation for family members to increase their understanding of the behavior and enhance the family's communication and coping skills [44]. Relatives of individuals with a mental disorder have been shown to benefit from psychoeducational support groups [45, 46]. Based on the siblings' reports in our study, NSSI has a negative impact on emotional well-being and family life, which raises the question of whether these siblings might be at risk of developing their own mental health issues. Research on siblings of individuals with mental disorders has reported high levels of emotional distress, especially if the sibling is still living with the family [47]. However, we found no group differences between siblings in the three groups with respect to internalizing or externalizing symptoms. Nonetheless, given the reported emotional impact of NSSI, the feeling of being left alone with their sister's issues, and the wish for support, it is crucial to create opportunities for siblings to address their worries about NSSI and to receive support. Due to their extensive contact during childhood and adolescence, siblings are often key family members and can be a great source of emotional and practical support [48, 49]. Siblings can help promote the well-being and recovery of a sibling with a mental disorder, through engaging jointly in appropriate activities, for example, exercise or sports, or integrating the sibling in their social circle [50].

Adolescents with NSSI reported significantly less warmth, empathy, and similarity and more rivalry in the sibling relationship than NC adolescents. Furthermore, they indicated significantly less concern with boundary maintenance compared to NC adolescents. Adolescents with NSSI felt less emotionally connected with their sibling and reported lower empathy, caring, intimacy, similarity, and companionship in their sibling relationship compared to NC adolescents. There is some research indicating that children and adolescents might have similar experiences with siblings and peers in terms of relationship quality [51–53]. A study by Pike and Atzabe-Poria [51] found that sibling affection predicted greater positivity in their best friendships, while greater sibling hostility was related to lower positivity and greater conflict with friends. Similarly, among children, sibling warmth was positively associated with best friendship quality, whereas sibling conflict was negatively associated with friendship quality [53]. A poorer relationship quality with their siblings might be associated with the peer problems of adolescents with NSSI [26, 54]. Adolescents with NSSI report significantly less perceived social support from friends and family as well as having fewer people to seek advice from than healthy controls, which supports the notion that they experience difficulties with forming relationships and developing adaptive interpersonal skills [26]. In order to deal with these negative emotional states emerging from stressful peer experiences, NSSI may be used as a coping mechanism [55].

Adolescents with NSSI reported significantly higher rivalry scores than NC adolescents, suggesting that parents of adolescents with NSSI favor one child over another more than NC parents do. The rivalry subscale comprises items assessing maternal and paternal favoritism. This finding can be interpreted in light of research emphasizing that the self-injuring child becomes the center of familial attention, leading to an imbalance in

parental involvement between siblings [22–25]. Similarly, almost a quarter of siblings of adolescents with NSSI represented in this study experienced less parental attention compared to their sister and believed that their parents were having difficulties setting boundaries. Furthermore, a considerable proportion of siblings endorsed the suggestion that the sister's issues determined family life for the whole family (42.9%). However, no group differences on the rivalry subscale between siblings emerged, indicating no group differences with respect to parental favoritism from the sibling's point of view. Differential parental treatment can have a negative impact on family dynamics and sibling relationships and is associated with greater sibling conflict, antagonism, and controlling behaviors [56–58]. The parental favoritism reported in families of adolescents with NSSI might contribute to the maladaptive family functioning, which has been found to contribute to maintaining NSSI [11, 13]. Adolescents with NSSI have significantly greater success in having their boundaries respected by their siblings compared to NC siblings, which might be linked to our finding that the siblings of adolescents with NSSI reported significantly more coercion than both CC and NC adolescents. As adolescents with NSSI showed more dominance and control over their siblings, it might be easier for them to maintain their boundaries.

Siblings of adolescents with NSSI scored significantly higher on the coercion subscale compared to CC and NC siblings, emphasizing the dominance and control of adolescents with NSSI in their sibling relationship. Studies have shown that high levels of psychological control from a sibling is associated with ill-being, adjustment problems, and anxiety and depressive symptoms in the victimized sibling [59–61]. However, coercion was not associated with internalizing and externalizing problems in siblings of adolescents with NSSI. As no clinical cut-off score for the coercion scale exists, it is difficult to determine whether coercion levels in the sibling relationship of adolescents with NSSI are abnormal or not. However, as siblings in the NSSI group scored higher than both CC and NC siblings, this issue requires further elaboration in future studies.

Our results showed that siblings of adolescents with NSSI involved in this study scored significantly lower on the boundary maintenance scale of the BSQ than their sisters, reflecting difficulties in establishing and respecting firm and reasonable interpersonal boundaries between siblings [42]. Lower scores indicate that the siblings fail to have their boundaries respected by their sisters with NSSI. Furthermore, adolescents with NSSI scored significantly lower on the similarity subscale than their siblings, indicating that they see themselves as more de-identified and different from their siblings and having less in common compared to their siblings rating. Previous research has shown that NSSI is associated with identity confusion [62] and may provide a source of self-identification [63]. Considering this, it is not surprising that adolescents with NSSI don't identify themselves with their siblings but see themselves as different.

Overall, sibling agreement in the NSSI group was low, indicating somewhat diverging perceptions of all relationship quality dimensions used in this study. This result differs from an earlier study that found a substantial sibling agreement for the ASRQ subscales warmth, conflict, and rivalry [64]. However, the average age of participants (20.60 years) and siblings (23.00 years) was higher than the average age of participants (16.18 years) and siblings (16.88) in this study. Although adolescent and sibling reports in this study differed for most aspects of sibling relationship quality, the magnitude of these discrepancies was quite small, as measured by standardized scores. Adolescents in the CC group showed the best sibling agreement, especially on the subscales warmth and similarity. This result might be explained by differences in the group sizes and should be further examined with larger CC samples.

Dimensions of sibling relationship quality were only moderately associated with psychopathological symptoms among both adolescents with NSSI and their siblings. Among adolescents with NSSI externalizing problems were significantly associated with similarity in the sibling relationship, whereas internalizing problems were significantly associated with coercion.

The first mentioned association can be interpreted in line with previous research showing that high levels of intimacy (as a proxy for similarity) among siblings close in age might increase the affective intensity of their conflicts [65, 66], thereby leading to higher levels of aggression. Coercion in sibling relationships can be seen as important learning experience, since siblings influence each other's aversive and aggressive behavior, e.g., through reinforcement [67]. However, behavioral changes resulting from hostile sibling interactions can cause internalizing symptoms [68].

Among siblings of adolescents with NSSI internalizing problems were significantly associated with conflict, warmth, and empathy. The association between conflict and internalizing problems is consistent with previous research showing that greater sibling conflict during childhood and adolescence leads to higher internalizing symptoms [16], especially when siblings are close in age [57]. The association between high levels of warmth and empathy and internalizing problems may indicate that in close sibling relationships, the sisters mental health issues and NSSI might lead to worries and a negative emotional impact on their sibling, resulting in elevated levels of

internalizing symptoms. For adolescent friendships, co-rumination, excessive discussion of interpersonal problems, and negative feelings were found to be associated with high-quality friendships but also with greater internalizing symptoms [69]. This may also count for close siblings of adolescents with NSSI, who spend much time discussing their sister's problems.

In light of our finding that the relationship between adolescents with NSSI and their siblings is characterized by less warmth, empathy, and similarity and more coercion than in the NC group, and the well established link between poor sibling relationship quality and emotional and behavioral problems, indicates that sibling interventions (in terms of increasing warmth and reducing conflict) might be beneficial in reducing psychopathological symptoms, for a review see Dirks et al. [17]. However, promoting more engaged and positive sibling relationships may in turn yield the danger of increasing the emotional distress of the sibling, as outlined above. A review on susceptibility to environmental influences highlights that some characteristics such as genetic or temperament factors may leave an individual more resistant or prone to both negative and positive environmental influences [70]. Thus, some children and adolescents might perceive negative sibling experiences as more distressing than others, or might be more likely to benefit from promoting positive sibling interactions [17]. Future research is necessary to determine the circumstances in which incorporating treatment components targeting sibling relationships or family dynamics may be beneficial for improving psychological symptoms [17].

Despite the fact that sibling conflicts and aggression can have severe negative consequences for children's and adolescent's well-being, we only have a very limited understanding of evidence-based programs promoting positive sibling relationships. Preliminary evidence for the improvement of sibling relationship quality among school-aged children has been found for interventions targeting children's social skills (for a review see [71]). These interventions either directly improve social skills in sibling interactions via trained professionals or indirectly by focusing on training parents on mediation skills. However, more research is needed with respect to interventions preventing or intervening with sibling conflict and aggression.

The results of the present study should be interpreted in the context of the following limitations. The sample consisted of female adolescents admitted to an inpatient child and adolescent psychiatric unit and thus may not generalize to other samples or to male adolescents. The design of the study was cross-sectional. Therefore, the current study cannot explain the direction of effects between an adolescent's NSSI and sibling relationship quality and family dynamics. This should be investigated in future prospective longitudinal studies and on the basis of a larger sample size, including male and female adolescents. Boys who self-injure are a quite understudied population. The literature indicates that boys and girls differ with respect to basic NSSI characteristics such as methods, location, and functions, supporting the idea that interventions should be gender-specific. Given that male-preferred methods of NSSI include hitting and burning, the nature of the behavior might be perceived as aggressive rather than self-injurious, thereby masking the true intention [72]. In light of these differences, it is possible that NSSI performed by boys might elicit a different response from parents and siblings compared to a self-injuring girl, however future studies on this matter are needed. To date, there is not sufficient data to answer the question whether brothers might have a different coping of their sisters NSSI than a female sibling. Studies in children and adolescents suggest that gender composition and age difference of sibling pairs have a moderating effect on sibling relationship quality, which in turn might influence how siblings cope with maladjustment [16]. Thus, it is possible that a brother copes differently with his sisters NSSI than with a brothers NSSI and vice versa. Further, adolescents with NSSI may perceive their sibling relationship as less warm and supportive due to a negative cognitive bias, this should be addressed in future studies. More research into rivalry is needed in order to understand, which child is favored by parents of adolescents with NSSI and to investigate sibling rivalry, since this study only considered parental rivalry. Another, unavoidable limitation was the use of a non-validated questionnaire for the assessment of sibling relationship quality. Nevertheless, we addressed a neglected research question. Strengths of the study were the use of the *DSM-5* diagnostic research criteria for NSSI and the use of a multi-informant approach, including adolescent and sibling reports as well as the inclusion of a clinical and a nonclinical control group.

Conclusions

Adolescents with NSSI differed significantly with respect to many dimensions of sibling relationship quality compared to the non-clinical controls (NC), but not compared to the clinical controls (CC). We found that the CC group did not differ from adolescents with NSSI nor to the NC group, indicating that differences between the NSSI and the NC group may be attributed to a characteristic of the NSSI group. However, more research is required to explore this relationship in further detail. We found significant differences between all three groups regarding the BSQ subscale coercion, emphasizing the dominance, and control of adolescents with NSSI in

their sibling relationship compared to both the CC and NC group. Similarly, our results indicate that siblings fail to have their boundaries respected by their sisters with NSSI. Despite the fact that we found differences only between adolescents with NSSI and NC, significant differences between all three groups were found among siblings, indicating a NSSI-specific association. Since this manuscript aims to highlight the impact of NSSI on siblings and the siblings' view on sibling relationship quality, we believe that this manuscript adds important findings to the literature.

According to the siblings represented in our study, NSSI is associated with poor emotional well-being and family life, as the family attention frequently centers on concerns related to the sister's mental health issues. These results underline the importance of a sibling support component for siblings of adolescents with NSSI to help them cope with the emotional and familial consequences of their sister's NSSI and to prevent and reduce any negative emotional impact in the long term.

Abbreviations
NSSI: nonsuicidal self-injury; CC: clinical controls; NC: nonclinical controls; ASRQ: Adult Sibling Relationship Questionnaire; BSQ: Brother–Sister Questionnaire; DSM: Diagnostic and Statistical Manual of Mental Disorders; Kinder-DIPS: Diagnostic Interview for Mental Disorders in Children and Adolescents; SCID-II: Structured Clinical Interview for *DSM-IV* Axis II disorders; YSR: Youth Self-Report; MANOVA: multivariate analysis of variance.

Authors' contributions
TT and JL completed the data analyses and made substantial contributions to the interpretation of the data and the drafting and revision of the manuscript. TI and MS contributed to the ideas, the acquisition and interpretation of the data, and the drafting and revision of the manuscript. All authors read and approved the final manuscript.

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Competing interests
The authors declare that they have no competing interests.

Availability of data and materials
The data sets analyzed during the current study are available from the corresponding author on reasonable request.

Consent for publication
All participants and parents gave their written consent.

Ethics approval and consent to participate
The local ethics committee (Ethikkommission Beider Basel, EKBB) approved the study.

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F Publikation 4

Expressed Emotion among families of female adolescents with nonsuicidal self-injury

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Abstract

Background: Expressed Emotion (EE) refers to the extent to which close relatives express critical/hostile and/or emotionally overinvolved attitudes and feelings when speaking about a family member. Parental HEE is associated with nonsuicidal self-injury (NSSI) in adolescents. So far, no study examined EE measured from adolescents with NSSI toward their mothers. The aim of the present study was to examine EE-levels of mother-daughter-dyads among adolescents with NSSI, clinical controls (CC), and nonclinical controls (NC).

Methods: The sample consisted of 70 female adolescents aged 12-20 years (mean age = 15.28 years, SD = 1.81, NSSI: n = 21, CC: n = 17, NC: n = 32) and 24 mothers aged 38-56 years (mean age = 46.47, SD = 4.61). The Five-Minute Speech Sample (FMSS) was conducted with adolescents and mothers. Adolescents´ emotion regulation and parental invalidation were assessed by self-report.

Results: Compared to NC significantly more adolescents in the clinical groups met criteria for HEE. Adolescents with NSSI exhibited significantly more covert criticism and critical tone toward their mothers than CC (d = 0.65 and 1.10) and NC (d = 1.30 and 1.10). Adolescents HEE-status was significantly associated with a range of difficulties in emotion regulation. Moderate concordance was found between adolescents and mothers EE-status (*kappa* = 0.42).

Conclusions: The findings highlight the importance of assessing adolescent EE in addition to parental EE and support the validity of the FMSS. Further research is needed to gain a better understanding of the assumed reciprocal influences of EE in families of adolescents with NSSI.

Keywords: Nonsuicidal self-injury, Expressed Emotion, Five-Minute Speech Sample, Emotional invalidation, family

Introduction

Nonsuicidal self-injury (NSSI), the destruction of one´s own body tissue without intent to die, is highly prevalent among adolescents, and associated with a range of psychological (Groschwitz et al., 2015; Muehlenkamp et al., 2019) as well as social problems with family and peers (Ammerman & Brown, 2018; James & Gibb, 2019; Victor et al., 2019; Waals et al., 2018). Frequently, NSSI serves multiple functions simultaneously (In-Albon et al., 2013). A random effects meta-analysis of the prevalence of different functions found that intrapersonal functions, with 66–81%, and especially emotion regulation with 63–78%, were the most frequent functions, while the prevalence of interpersonal functions was 33–56% (Taylor et al., 2018). Nevertheless, interpersonal factors have been shown to be relevant in first initiating NSSI (Muehlenkamp et al., 2013) and in maintaining the behavior as interpersonal difficulties are often reported as triggers (Tschan et al., 2015).

Nock´s (2009, 2010) comprehensive model of NSSI points to a range of distal risk factors (e.g. familial criticism/hostility, invalidation) and their impact on intra- and interpersonal vulnerabilities. Emotional dysregulation is seen as an intrapersonal consequence of distal risk factors (e.g. invalidating family environment), while poor communication and problem-solving skills represent interpersonal consequences. These intra- and interpersonal difficulties lead to an increased stress response and thus to a heightened risk for NSSI. Two pathways by which family environment influences NSSI is first through the occurrence of high expressed emotion in the family, and second through invalidation within the family. Expressed emotion (EE) is a measure of the family environment, which describes the level of criticism, hostility, and emotional involvement that a relative expresses toward a family member (Brown et al., 1962; Hooley, 2007). The EE construct reflects disturbances in the organization, emotional climate, and transactional patterns of the family system (Hooley, 2007). Relatives are classified as high-EE (HEE) or low-EE (LEE). HEE is characterized by critical remarks,

dislike and disapproval of the patient´s behavior as well as rejection of the patient. Emotional overinvolvement (EOI) is defined as dramatic, exaggerated, or overprotective attitude toward the patient (Hooley, 2007). Across various mental disorders in children, adolescents, and adults, HEE represents a predictor of treatment drop out, outcome, and relapse (Butzlaff & Hooley, 1998; Rea et al., 2020; Rienecke, 2020). Maternal criticism is related to youth internalizing and externalizing problems, while EOI is only related to youth internalizing problems (Rea et al., 2020). Further, it has been shown that mental disorders contribute to HEE (through relatives´ negative emotions elicited by unresolved symptoms) and are maintained by HEE (Miklowitz, 2007).

Previous research examining the link between EE and NSSI has focused on observed (coding of speech samples) and perceived (various self-report measures) levels of parental EE. HEE exhibited by parents was related to the presence and frequency of suicidal ideation, plans, suicide attempts, and nonsuicidal self-injury (NSSI) in youths (Wedig & Nock, 2007). Especially, parental criticism was associated with NSSI (James & Gibb, 2019; Wedig & Nock, 2007), whereas EOI was not (Wedig & Nock, 2007). The association between parental criticism and NSSI was particularly strong among adolescents with a self-critical cognitive style (Wedig & Nock, 2007). Further, maternal criticism was more strongly related to NSSI in girls than in boys (James & Gibb, 2019).

Results relying on adolescents perceived levels of parental EE indicate that adolescents and young adults with a history of NSSI perceived their parents as less emotional supporting, more intrusive, inducing more irritation, and expressing more criticism than youths without NSSI (Ammerman & Brown, 2018). Adults with current NSSI reported higher levels of perceived criticism and less intense emotional involvement from family members than adults with past self-injury (Hack & Martin, 2018). In addition, adolescent's self-criticism played a mediating role in the relationship between perceived parental EE and NSSI (Ammerman &

Brown, 2018; Baetens, Claes, et al., 2015). Taken together, the family environment of adolescents with NSSI seems to be characterized by high levels of criticism. Parental criticism may increase self-criticism in adolescents and thus the risk for NSSI (Ammerman & Brown, 2018). However, the temporal and perhaps bi-directional relation between HEE (especially criticism) and NSSI needs to be elucidated by future research.

Linehan (1993) proposed in the biosocial theory for Borderline Personality Disorder (BPD) a construct overlap between EE and invalidating environments, when describing family emotional climate. According to Linehan´s definition, emotionally invalidating environments are characterized by intolerance toward the expression of emotional experiences. Display of negative affect leads to disapproval and criticism. In addition to the EE construct, the definition of an emotionally invalidating environment stresses a nonrecognition of the actual state of the individual, therefore, behaviors of others are not only invalidating of the individual´s experiences but also nonresponsive to the needs of the individual. Parents show inappropriate, nonaccepting, and extreme reactions to the child´s emotion expression, e.g. punishing or trivializing (Linehan, 1993). Johnson and colleagues (2002) found that children raised in invalidating environments are at increased risk for engaging in suicidal behaviors and attempting suicide, even after controlling for parental psychopathology.

Extremely critical family environments are likely to be highly invalidating (Fruzzetti et al., 2005) and maternal overprotection is positively associated with maternal invalidation (Robertson et al., 2013), emphasizing the overlap of EE and invalidation. Linehan (1993) posited three types of invalidating family environment, defined as ´typical´, ´perfect´, and ´chaotic´. Typical families attach great importance to controlling one´s emotions, achievement, and success. In perfect families everything appears perfect on the surface, feelings are hidden and parents dislike it if the child shows negative affect (like upset, fear or anger). In chaotic families, parents are often unavailable – physically, emotionally or both. A chaotic family type

significantly predicted BPD symptoms in female college students (Robertson et al., 2013). In a sample of patients with eating disorders especially the experience of a chaotic family environment showed to be associated with negative core beliefs reflecting emotional functioning (e.g., emotional deprivation and inhibition) and maladaptive inter- and intrapersonal styles (e.g., mistrust, social isolation, self-punishment, pessimism/worry) (Ford et al., 2011). According to the biosocial theory (Linehan, 1993), emotional dysregulation, the core function of NSSI, is thought to develop through the interplay of an invalidating interpersonal environment and the emotional reactivity of the child. The biosocial developmental Model of Borderline Personality (Crowell et al., 2009), an extension of Linehan´s theory, describes characteristics of the child, the caregiver, the environmental context, and dynamic transactions among these factors as contributors to the development of BPD. The model states three ways in which caregivers can affect child adjustment. First through invalidation and inability to model appropriate expressions of emotion, second through an interaction style that negatively reinforces emotional arousal, and third through a poor fit between the child´s temperament and parenting style. Interestingly a study by Adrian and colleagues (2018) showed that high parental validation in combination with high invalidation predicted the highest frequency of NSSI, suggesting that a high level of validation does not compensate for a high level of invalidation. This interplay between validation and invalidation may be particularly distressing for adolescents, because the parent is capable of responding in validating ways, but does not consistently do so (Adrian et al., 2018). Another recent study found no difference regarding validation and invalidation between NSSI mother-child dyads and control dyads (McCallum & Goodman, 2019). Nevertheless, several studies support the biosocial theory indicating an association between family environments characterized by lack of support for managing emotions and greater risk for emotion dysregulation and NSSI (Adrian et al., 2011, 2018; Guérin-Marion et al., 2020; Mahtani et al., 2019; You & Leung, 2012). In

addition, studies indicated the mediating role of adolescents emotional regulation difficulties and poor coping strategies in the relationship between invalidating caregiving environments and NSSI (Guérin-Marion et al., 2020; Mahtani et al., 2019; Sim et al., 2009).

So far, no study used the Five Minute Speech Sample (FMSS) (Magaña et al., 1986) to examine EE-levels from adolescents with NSSI. Previous studies have focused on just one person´s perspective, either that of the parent (James & Gibb, 2019; Wedig & Nock, 2007) or that of the adolescent (Ammerman & Brown, 2018; Baetens, Claes, et al., 2015; Hack & Martin, 2018). Studies examining the associations between EE levels of adolescents with NSSI and their parents are lacking. The conceptualization of EE as unidirectional construct from parent to child may present an incomplete picture (Hoste et al., 2015). Given that most adolescents live at home when they first engage in NSSI and considering the reciprocal influence between the adolescent´s and parents' behavior (Waals et al., 2018) as well as the conflict-ridden interaction patterns of adolescents with NSSI and their mothers (Crowell et al., 2013), it appears highly important to examine both, parents and adolescents levels of EE. A multi-informant approach is considered a standard in the diagnostic process for NSSI (In-Albon et al., 2017). As stated by Crowell and colleagues (2009) reciprocal transactions between biological vulnerability and environmental risk can potentiate emotion dysregulation and lead to more behavioral dyscontrol.

Therefore, the primary goal of this study was to examine EE-levels from adolescents with NSSI toward their mothers in addition to parental EE using the FMSS. We expected that children of mothers with high levels of EE would exhibit HEE as well. Despite the supposed overlap between EE and emotional invalidation (Linehan, 1993), most studies relied so far on just one of these constructs. To examine this association, we conducted exploratory analyses with the aim of gaining further information about the convergent validity of the FMSS. We expected that adolescents perceived invalidation would be associated with high levels of EE.

Several studies suggest that adolescent emotion regulation mediates the link between family climate and NSSI (Adrian et al., 2011; Guérin-Marion et al., 2020; Sim et al., 2009). Consequently, we tested whether HEE and perceived invalidation are associated with adolescents' difficulties in emotion regulation. Finally, we were interested to determine if an invalidating family style predicts adolescents HEE and if the three invalidating family types (chaotic, perfect, typical) proposed by Linehan (1993) are associated with distinct emotion regulation deficits. We aimed to test the following hypotheses:

1. Do adolescents with NSSI and their mothers exhibit higher levels of EE than mother-child dyads in the clinical and the nonclinical control group when administering the FMSS? Are there significant group differences regarding relationship quality, criticism, and emotional overinvolvement?
2. Is there a significant concordance between adolescents´ and mothers´ EE-levels?
3. Does adolescent/maternal high EE correlate with adolescent reported parental invalidation and difficulties in emotion regulation?
4. Do adolescents with NSSI report more parental invalidation (experienced invalidating family style) than adolescents in the clinical and the nonclinical control group using the Invalidating Childhood Environment Scale for adolescents (ICES-A)? Does an invalidating family style predict adolescent HEE?
5. Are the three invalidating family styles (typical perfect, chaotic) associated with adolescents reported difficulties in emotion regulation?

Methods

Participants

Adolescents. The study included 70 female adolescents, aged 12-20 years (*M* = 15.28 years, *SD* =1.81). The sample consisted of 21 adolescents with NSSI disorder, 17 adolescents

with other mental disorders without NSSI (clinical controls, CC), and 32 adolescents without current or past experience of mental disorders (nonclinical controls, NC). Using a clinical interview, the most frequent mental disorders according to DSM-5 among adolescents with NSSI were depressive disorders (56.8%), anxiety disorders (17.7%), and posttraumatic stress disorder (11.8%). The CC group most frequently met criteria for anxiety disorders (70.6%). CC adolescents (mean age 16.12 years) and NC adolescents (mean age 14.75 years) differed with respect to age ($p < .05$).

Mothers. In the study, 24 mothers aged 38-56 years (M = 46.47 years, SD = 4.61) participated, 10 in the NSSI group, 7 in the CC, and 7 in the NC group.

Measures

Kinder-DIPS. To examine the adolescents' current or past DSM-5 diagnoses, we conducted a clinical structured interview. The Diagnostic Interview for Mental Disorders in Children and Adolescents (Kinder-DIPS; (Schneider et al., 2017), assesses the most frequent mental disorders in childhood and adolescence. The Kinder-DIPS has good validity and reliability for Axis I disorders (child version, κ = 0.48–0.88) (Margraf et al., 2017; Neuschwander et al., 2013). NSSI disorder was assessed with the additional NSSI section of the Kinder-DIPS (Schneider et al., 2017). Interrater reliability estimates for the diagnosis of NSSI were very good (κ = 1.00). Questions for BPD were asked from the adult DIPS (Margraf et al., 2017).

The *Five-Minute Speech Sample (FMSS)* (Magaña et al., 1986) was used to assess EE levels. Adolescents and mothers were asked to speak for five uninterrupted minutes about their mother/daughter and how they get along together. Participants got the following instruction: "I´d like to hear your thoughts about (your mother/daughter) in your own words and without my interrupting you with any questions or comments. When you begin, I´d like you to speak

for 5 minutes, telling me what kind of person (your mother/daughter) is, and how the two of you get along together. Once you have started, I will not be able to answer any questions. Is there anything you would like to ask before you begin?". The monologues were videotaped and coded for relationship quality, criticism, covert criticism, and emotional overinvolvement (Leeb et al., 1991, 1993). Relationship quality was rated as positive, neutral, or negative. Criticism (CRIT) referred to statements showing unambiguous dislike, disapproval, or resentment of the relative´s behavior or personality and was coded on the basis of content and/or tone. Emotional overinvolvement (EOI) referred to self-sacrificing and overprotective attitudes of mothers. Participants were rated as high EE (HEE) if any of the following criteria were met: Emotional overinvolvement HEE-EOI (Self-Sacrifice/Overprotection or nonverbal signs of overinvolvement, e.g. crying), criticism HEE-CRIT (overall negative relationship or one critical statement/ two covert critical statements) or both criticism and emotional overinvolvement HEE-EOI+CRIT (Leeb et al., 1991, 1993; Magaña et al., 1986). All tapes were coded by trained independent raters, who were blind to group allocation. Interrater reliability was calculated with 70 samples, the kappa coefficient for EE level (high vs. low) was very good ($\kappa = 0.93$, $p < .01$). Disagreements between raters were solved through discussion until consensus was reached.

The *Invalidating Childhood Environment Scale ICES* (Mountford et al., 2007) was adapted for an adolescent population and thus for current invalidation (ICES-A, Tschan & In-Albon, 2016). The items were reformulated on the basis of the original version and the German translation by Reich (2016). The first part of the questionnaire consists of 14 items separately assessing maternal and paternal invalidation on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). The second part refers to the family environment and the three types of invalidating families proposed by Linehan (1993): the chaotic, perfect, and typical family as well as one validating environment. The family types were assessed with 16 items on a 5-point

Likert scale ranging from 1(*not like my family*) to 5 (*like my family all of the time*). Higher mean scores indicate greater levels of invalidating family environment, except for the validating family type. Within the present sample internal consistency was good in the clinical groups (NSSI and CC) with α = .77 and modest in the NC group with α = .59. This is in accordance with Mountford et al., (2007), who reported a modest level of internal consistency for non-clinical women.

The *Difficulties in Emotion Regulation Scale (DERS)* (Gratz & Roemer, 2004) was used to asses emotion regulation in adolescents. The questionnaire consists of 36 items and comprises the following six subscales: lack of emotional awareness, lack of emotional clarity, difficulty regulating behavior when distressed, difficulty engaging in goal-directed cognition and behavior when distressed, unwillingness to accept certain emotional responses and lack of access to strategies for feeling better when distressed. All items are assessed on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). Higher scores indicate more difficulty in emotion regulation. The German version of the questionnaire shows good reliability and the factor analysis provides support for the original six-factor model (Gutzweiler & In-Albon, 2019).

Procedure

Participants were recruited from collaborating child and adolescent in- and outpatient psychiatric and psychotherapy clinics and schools in Germany. The inpatient clinics were instructed to inform the participants at admission about the study and asked for their consent to participate. Healthy control adolescents were recruited in different high schools. Prior to our visit in the schools, teachers were given detailed information about the study and handed out informed consent forms, to be signed by the parents if the students participating. After

obtaining written informed consent from the adolescents and caregivers, clinical interviews were performed in the in- and outpatient clinics for the NSSI and CC sample and in school for the HC group. Self-report questionnaires were completed on site or at home and returned by post. All participants, adolescents and mothers, were informed about the study and gave their written informed consent in accordance with the Declaration of Helsinki. The local ethics committee approved the study.

Data analyses

We carried out chi-square analyses to assess whether there were differences across the three samples (NSSI, CC, and NC) regarding high/low EE. To investigate group differences in the number of comments regarding FMSS dimensions of EE, difficulties in emotion regulation, and perceived invalidation, we used multivariate analysis of variance (MANOVA). Post hoc tests were conducted to analyze pairwise comparisons. The Bonferroni correction was used to control for multiple comparisons. Effect sizes (Cohen's *d*) were calculated to further analyze significant group differences. A simple linear regression was carried out to test if an invalidating family style predicted adolescent HEE. Pearson product-moment correlation coefficients were calculated to explore associations between adolescents and mothers HEE-status, emotion regulation difficulties, and perceived invalidation. All analyses were performed using SPSS version 25. Significance levels were set at $\alpha = 0.05$.

Results

Adolescent EE toward mothers

Compared to the NC group significantly more participants in the NSSI (61.9 vs. 6.3%, $p < .01$, Cramer´s V = 0.60) and CC group (41.2 vs. 6.3%, $p < .01$, Cramer´s V = 0.42) met criteria for HEE. The observed differences remained significant with Bonferroni corrections

(α/4=.0125). Adolescents with NSSI and CC adolescents did not differ regarding EE status (61.9 vs. 41.2%, $p = .203$). Across all groups, adolescents HEE was predominately related to criticism expressed towards mothers. Only two adolescents in the NSSI group reported EOI. Multivariate analysis comparing the number of comments for EE dimensions revealed significant main effects of group for covert criticism, critical tone, and positive relationship, see Table 1. Post hoc analyses showed that adolescents with NSSI exhibited significantly more covert criticism than CC ($p < .05$, $d = 0.65$) and NC ($p < .01$, $d = 1.30$), while CC and NC adolescents did not significantly differ. The same pattern emerged for critical tone, with adolescents in the NSSI group reaching higher scores than CC ($p < .01$, $d = 1.10$) and NC ($p < .01$, $d = 1.10$) adolescents. Comments describing a positive mother-daughter relationship were more common among NC adolescents than adolescents in the NSSI ($p < .01$, $d = 1.49$) and CC ($p < .05$, $d = 0.82$) groups.

Maternal EE

In the NSSI group, 50% of mothers fulfilled criteria for HEE, followed by 28.6% in the CC group. None of the mothers in the NC group was rated as HEE. Across all mothers, EOI was rated only once and in combination with criticism in the NSSI group.

Concordance between adolescent and maternal HEE-status

Moderate concordance was found between adolescents´ and mothers´ EE-status, with Cohen´s kappa = 0.42, $p < .05$, in n = 24 mother-child dyads.

Adolescent reported emotion regulation difficulties and perceived parental invalidation

Group differences emerged on 5 of six DERS subscales, see Table 2. Results from post hoc analyses showed that adolescents with NSSI significantly differed from NC adolescents

regarding the DERS total score ($p < .01$, $d = 2.06$), difficulty regulating behavior when distressed ($p < .01$, $d = 2.38$), lack of emotional awareness ($p < .05$, $d = 1.29$), emotional clarity ($p < .01$, $d = 1.69$), and access to strategies for feeling better when distressed ($p < .01$, $d = 1.96$). Compared to CC adolescents, adolescents with NSSI showed more difficulty regulating behavior when distressed ($p < .05$, $d = 1.07$) and less emotional clarity ($p < .01$, $d = 2.13$). Comparisons between CC and NC adolescents were not significant.

Adolescents did not differ regarding reported maternal invalidation, however, significant main effects were found for the validating and chaotic family type, see Table 2. Post hoc analyses showed that CC adolescents scored lower than NC adolescents on the validating family type ($p < .01$, $d = 1.06$), and adolescents with NSSI scored higher than NC adolescents on the chaotic type ($p < .01$, $d = 2.30$). For the total sample, results of the linear regression indicated that the chaotic family type accounted for 37.7% of the variance in adolescents´ HEE F (1, 40) = 24.18, $p < .01$, and significantly predicted HEE among adolescents, $\beta_1 = .05$, $p < .001$.

Correlations between HEE-status, emotion regulation difficulties, and perceived invalidation

Adolescents HEE was positively associated with maternal HEE ($r = .46$), emotion regulation difficulties ($r = .31$-$.36$), and the chaotic family type ($r = .61$), see Table 3. No significant associations were found between maternal HEE and emotion regulation difficulties in adolescents. Perceived maternal invalidation showed significant positive correlation with lack of emotional awareness ($r = .38$). The validating family type was negatively associated with both, adolescent HEE ($r = -.52$) and maternal HEE ($r = -.89$). The chaotic family type was significantly associated with the DERS total score and 5 of 6 subscales ($r = .35$ - $.47$). The perfect and typical family types were not significantly associated with emotion regulation difficulties.

Discussion

The present study investigated EE, perceived parental invalidation, and emotion regulation difficulties among adolescents with NSSI, CC, and NC. To date, this is the first study including both, maternal EE toward adolescents with NSSI, CC, and NC as well as adolescents EE toward their mothers.

We found that adolescent HEE was more common in the NSSI and CC groups than in the NC group, supporting the findings that mental disorders contribute to HEE (Miklowitz, 2007). Adolescents with NSSI expressed significantly more covert criticism and critical tone toward their mothers than CC and NC adolescents. This is in line with previous studies showing that mother-child interactions of adolescents with NSSI are characterized by anger and conflict (Crowell et al., 2013). Referring to Crowell et al., (2009) impulsive and emotionally sensitive adolescents may experience difficulty inhibiting extreme emotions when faced with HEE by family members. The greater difficulties with impulse control of adolescents with NSSI compared to CC (Tschan et al., 2017) may explain the higher level of covert criticism and critical tone toward mothers among adolescents with NSSI. Further, adolescents with NSSI reported less emotional clarity than CC, underlining the positive relationship between difficulty in identifying feelings and NSSI (Cerutti et al., 2018).

As expected, the concordance between adolescents´ and mothers´ EE-status in the present study was moderate. Previous research reports also a low to moderate congruence between parents' and children´s perceptions for adolescent and family behavior (De Los Reyes et al., 2013, 2015). Nevertheless, the significant correlation between adolescent and maternal HEE suggests a reciprocal relationship between maternal and adolescent EE. EE research on Bulimia Nervosa indicated that the match in parent and adolescent EE-status may impact treatment outcome. The smallest symptom reduction was reported for the group in which patients showed HEE and parents low EE (LEE) (Hoste et al., 2015). Therefore, future studies

should analyze different family profiles (HEE mother/HEE adolescent, HEE mother/LEE adolescent, HEE adolescent/LEE mother and LEE mother/LEE adolescent) and their impact on the course of NSSI and treatment outcome.

For the total sample, adolescent HEE was significantly associated with emotion regulation difficulties in adolescents, whereas maternal HEE was not. In contrast to this result, previous research examining the impact of parenting on emotion regulation during childhood and adolescence showed an association between parents criticism and emotion regulation difficulties in children (Morris et al., 2017). However, adolescents high in emotional reactivity may be more likely to react with own HEE and difficulties in emotion regulation to family conflict and maternal HEE (Crowell et al., 2009; Linehan, 1993). Consequently, the association between maternal HEE and emotion regulation difficulties in adolescents might be mediated by adolescent HEE. However, further research is necessary to confirm this hypothesis. Given the association between adolescents´ HEE-status and emotion regulation difficulties, longitudinal research in NSSI and EE is needed to determine, if HEE exhibited by adolescents is maintaining emotion regulation difficulties and NSSI. According to the comprehensive model of NSSI (Nock, 2009, 2010), maternal HEE reflects a distal risk factor for NSSI, while HEE exhibited by adolescents can be understood as a result of adolescents´ emotion regulation difficulties, poor communication, and problem-solving skills. However, child´s psychopathological symptoms may also elicit EE from the mother. Results from a longitudinal study examining perceived EE showed that both adolescents internalizing and externalizing symptoms predicted adolescent's perception of maternal EE, as well as mother´s own rated criticism over time (Hale et al., 2016).

In accordance with previous research (Rea et al., 2020; Rienecke, 2020), adolescents and mothers HEE-status in the present study primarily referred to criticism and only to a small extent to EOI. Self-report data showed that adolescents with NSSI indicate higher parental

intrusiveness than adolescents without NSSI (Ammerman & Brown, 2018). As suggested by Rienecke (2020) current measures of EOI may assess different components of EOI. The definition of EOI in the FMSS, also used in the present study, varies from the definition in the Levels of Expressed Emotion Scale used by Ammerman and Brown (2018). EOI in the FMSS is defined by self-sacrificing and overprotective attitudes of mothers as well as nonverbal signs of overinvolvement during the monologue (e.g. crying), while the intrusiveness subscale of the Levels of Expressed Emotion Scale primarily refers to controlling parenting behaviors and intrusions of privacy. Furthermore, perceived parental EOI may not correspond with interviewer-rated EOI, this should be addressed in further studies. Therefore, it remains to be clarified, if EOI is influential in the engagement and maintenance of NSSI.

Adolescents with NSSI did not differ from CC and NC on reported maternal invalidation. This is in line with a recent study showing no association between maternal invalidation and NSSI (McCallum & Goodman, 2019). However, McCallum and Goodman (2019) found that adolescent perceptions of high levels of invalidation in interaction with low levels of validation were related to higher levels of self-reported borderline pathology. A positive association between invalidation and BPD symptomatology has also been reported by earlier studies using the ICES (Keng & Soh, 2018; Keng & Wong, 2017; Robertson et al., 2013). Adolescents with NSSI show a heightened risk for the development of BPD (Groschwitz et al., 2015) and more adverse childhood experiences among adolescents with NSSI are associated with more BPD symptoms and an increased risk for meeting full criteria for BPD (Hessels et al., 2018). Adolescents in the present study did not meet criteria for BPD. Therefore, future studies should include adolescents with NSSI with and without BPD to examine if they differ in their reports on parental invalidation.

Adolescents with NSSI reached higher scores on the chaotic family type than NC. This result is in accordance with previous research showing that the parenting style in families of

adolescents with NSSI is characterized by rejection, an ambivalent approach to control and guidance, and a lack of support for managing emotions (Adrian et al., 2011, 2018; Burešová et al., 2015; Guérin-Marion et al., 2020). However, adolescents with NSSI did not differ from CC in their reports on the chaotic family environment, suggesting that this family type is more common in families of adolescents with mental disorders, but not specific for NSSI. For the total adolescent sample, one specific type of invalidation, namely the chaotic family type, was associated with adolescent HEE and adolescent emotion regulation difficulties. Higher scores on the chaotic family style also predicted adolescent HEE. This result is in line with a previous study showing an association between the experience of a chaotic family environment and maladaptive emotional functioning and inter- and intrapersonal styles among women with eating disorders (Ford et al., 2011). Significant associations between HEE and perceived invalidation were found, insofar as the validating family type was negatively associated with both, adolescent and maternal HEE, and the chaotic family type was positively associated with adolescent HEE. As expected, perceived maternal invalidation was positively correlated with adolescent and maternal HEE, but these associations were not significant. This may be due to differences between the constructs HEE and emotional invalidation. As stated by Linehan (1993), emotional invalidation captures more aspects of maladaptive parental behavior and extends the EE construct by the nonrecognition of the actual state of an individual/patient. The results of the present study suggest that the conceptual overlap between EE and emotional invalidation primarily refers to a chaotic family climate characterized by anger, conflict, and neglect. Future research should focus on the prospective examination of both constructs in adolescents with NSSI to gain a better understanding of their overlap, potential interplay, and impact on adolescents' symptomatology. Therefore, special attention should be payed to adolescents living in chaotic families, as they show increased emotion regulation difficulties, placing them at risk for various mental disorders (McLaughlin et al., 2011).

The present results provide further support for the convergent validity of the FMSS, when administered to an adolescent sample. A review examining child FMSS studies showed good psychometric characteristics of the procedure and coding (Sher-Censor, 2015). Also, the interrater reliability in the present sample was very good ($\kappa = 0.93$). However, further research is needed to examine the validity of the FMSS and especially the operationalization of EOI in adolescent EE samples.

Given the small sample size and the uneven distribution of groups, especially in the mother-sample, the results of the present study must be interpreted with caution. The results are further limited by only assessing female adolescents and mothers and not assessing EE data from male adolescents and fathers. Future studies should include all sexes since previous research has found gender differences in the association between maternal criticism/an invalidating family environment and NSSI (James & Gibb, 2019; Sim et al., 2009). The use of a cross-sectional design limits the conclusions about the direction of the effects between adolescent symptomatology and adolescent/maternal HEE.

The strengths of this study include the use of the FMSS as a reliable and valid measure for EE, the bidirectional approach, including adolescent and maternal EE-levels, the inclusion of a clinical and a nonclinical control group, and the assessment of emotional invalidation. The results of the present study provide implications for potential extensions of the comprehensive model of NSSI (Nock, 2009, 2010). Reciprocal processes between adolescents and parents (e.g. HEE) as well as parental (e.g. heightened stress) and child (e.g. impulsivity) contributors leading to insufficient parent-child interactions should be considered in the maintenance of NSSI. The burden of caring for an adolescent with NSSI (Tschan et al., 2015; Whitlock et al., 2018) and changes in parenting behavior as reactions to NSSI, e.g. more controlling behavior and rule setting (Baetens, Andrews, et al., 2015; Waals et al., 2018) may affect parent-child interactions. Adolescent contributors may include a lack of impulse control and perceived lack

of support (Tschan et al., 2015). NSSI can be conceptualized as a high-cost communication behavior when other behaviors have failed to elicit a response from the family environment (Nock, 2009). Considering the three ways in which caregivers can affect child adjustment (Crowell et al., 2009), high levels of EE represent an interaction style that negatively reinforces emotional arousal. Therefore, the findings suggest that it is important to examine adolescent EE in addition to parental EE, to gain a better understanding of the reciprocal parent-child interactions in families of adolescents with NSSI. It will be important to examine group differences in mothers´ EE-status with a larger sample. Longitudinal studies are needed to understand the direction of the association between maternal and adolescent HEE and NSSI.

The results of the present study underline the importance of breaking the cycle of negative interactions in mother-child-dyads. Improvements in perceived family support are associated with NSSI cessation, while poorer family support is related to NSSI onset over time (Tatnell et al., 2014). In addition, adaptive emotion regulation and better family functioning are related to NSSI recovery (Kelada et al., 2018), emphasizing the importance of both adaptive emotion regulation and family based interventions. Effective treatments for NSSI, such as the Dialectical Behavior Therapy for Adolescents (DBT-A, McCauley et al., 2018; Mehlum et al., 2014, 2016) or the Emotion Regulation Individual Therapy for Adolescents (ERITA, Bjureberg et al., 2017, 2018) target emotion regulation and interpersonal functioning, especially within the family and include the family or parents in the adolescents treatment. Treatment components comprise psychoeducation, the improvement of familial and interpersonal relationships, parenting skills, and individual coping skills. Mother-child-dyads with high levels of EE may benefit from conflict resolution strategies to lessen HEE. However, HEE may lead adolescents to exclude parents from their treatment rather than relying on their support (Rienecke, 2020). Furthermore, parents of adolescents with NSSI may not always be available and willing to participate in treatment. Particularly in chaotic family environments, where

children are often left to their own resources, adolescents may benefit more from autonomy-supportive interventions, e.g. dealing with maternal criticism/HEE and difficulties in life, problem solving and coping skills as well as the development of own interests, regardless of parents. The cognitive-behavioral treatment program for adolescents with NSSI "Cutting-Down" (Fischer et al., 2013; Taylor et al., 2011) showed significant reductions in NSSI (Kaess et al., 2019), without parental involvement.

Overall, the results of the present study provide further insights into EE in families of adolescents with NSSI by adding FMSS-data from adolescents. Breaking the vicious cycle between adolescents and parents, characterized by frustration and criticism and re-establishing more functional family patterns can reduce HEE (Wijana et al., 2018). Given that adolescents with NSSI reported fewer positive aspects in the mother-child relationship than NC, interventions should not merely focus on the reduction of negative relationship aspects, but also on the enhancement of positive relationship quality.

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Table 1

Adolescents and mothers EE-levels of the three groups (NSSI, CC, NC) using the Five-Minute Speech Sample (FMSS)

	Adolescents								Mothers					
	NSSI (n = 21)		CC (n = 17)		NC (n = 32)		Test		NSSI (n=10)		CC (n=7)		NC (n=7)	
FMSS	*n*	%	*n*	%	*n*	%		Cramers V	*n*	%	*n*	%	*n*	%
EE status							$\chi^2(2) = 18.03$**	0.52						
High EE	13	61.9	7	41.2	2	6.3			5	50	2	28.6	0	0
Low EE	8	38.1	10	58.8	28	87.5			5	50	5	71.4	7	100
HEE Subtype							$\chi^2(4) = 1.52$	0.19						
Criticism	11	84.6	7	100	2	100			4	80	2	100	0	0
EOI	1	7.7	0	0	0	0			0	0	0	0	0	0
Criticism & EOI	1	7.7	0	0	0	0			1	20	0	0	0	0
Number of comments	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F* (2, 65)	η2	*M*	*SD*	*M*	*SD*	*M*	*SD*
Covert criticism	2.00	2.15	0.88	1.11	0.23	0.43	10.72**	0.25	1.10	0.99	0.86	0.90	0.29	0.49
Critical tone	1.24	1.55	0	0	0.13	0.43	11.89**	0.27	1.30	1.25	0.71	1.50	0.86	1.46
Positive relationship	1.76	2.07	3.65	2.34	6.20	3.53	15.20**	0.32	0.50	0.85	2.43	2.07	1.29	1.38

Note. CC = Clinical Controls; *EE* = Expressed Emotion; *EOI* = Emotional Overinvolvement; *FMSS* = Five Minute Speech Sample; *NC* = Nonclinical Controls; *NSSI* = Nonsuicidal Self-Injury.
*$p < .05$; **$p < .01$

Table 2

Emotion regulation difficulties and perceived maternal invalidation of adolescents with NSSI, CC, and NC

	NSSI (n = 6)		CC (n = 12)		NC (n = 26)		Test	
DERS	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F* (2, 40)	η2
Total	115.33	16.75	86.53	26.75	72.50	22.30	8.64**	0.30
Awareness	21.33	3.27	16.15	5.25	15.88	4.56	3.49*	0.15
Clarity	18.50	2.51	10.42	4.56	10.72	5.10	7.27**	0.27
Goals	16.50	3.15	14.67	4.91	11.29	4.98	3.60*	0.17
Impulse	17.50	4.59	11.92	5.88	9.40	3.25	8.79**	0.31
Non-acceptance	17.17	5.31	14.00	3.88	11.48	7.79	1.97	0.09
Strategies	24.33	5.28	19.36	10.36	13.73	5.63	6.30**	0.24
ICES-A							*F* (2, 32)	
Maternal invalidation	37.67	6.12	31.90	2.85	33.88	4.20	1.44	0.08
Family types								
validating	15.20	4.66	15.36	4.06	18.11	1.73	4.56*	0.22
chaotic	16.33	6.02	12.67	5.53	8.50	2.76	6.13**	0.27
perfect	5.40	2.88	6.92	2.31	5.77	1.66	1.13	0.07
typical	9.80	4.27	10.50	3.69	8.19	2.71	2.13	0.12

Note. CC = Clinical Controls; *DERS* = Difficulties in Emotion Regulation Scale; *ICES-A* = Invalidating Childhood Environment Scale for Adolescents; *NC* = Nonclinical Controls; *NSSI* = Nonsuicidal Self-Injury.
*$p < .05$; **$p < .01$

Table 3

Pearson correlations of adolescents and mothers HEE, emotion regulation difficulties (DERS), and perceived invalidation (ICES-A)

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13
FMSS													
1. Adolescent HEE	-												
2. Maternal HEE	.46*	-											
DERS													
3. Total score	.36*	.16	-										
4. Awareness	.29	.58	.68**	-									
5. Clarity	.29	.34	.73**	.63**	-								
6. Goals	.36*	.33	.73**	.34*	.32*	-							
7. Impulse	.18	-.17	.75**	.31*	.44**	.60**	-						
8. Non-acceptance	.31*	-.08	.72**	.38*	.27	.46**	.44**	-					
9. Strategies	.31*	.02	.91**	.51**	.67**	.61**	.67**	.58*	-				
ICES-A													
10. Mat. invalidation	.29	.40	.28	.38*	.25	.07	.19	.19	.21	-			
11. Validating	-.52**	-.89**	-.31*	-.35*	-.31	-.20	-.04	-.28	-.22	-.08	-		
12. Chaotic	.61**	.44	.47**	.35*	.35*	.36*	.24	.43**	.37*	.28	-.72**	-	
13. Perfect	-.02	-.60	.08	-.13	.01	.12	.10	.11	.12	-.27	-.08	-.10	-
14. Typical	.04	-.35	-.00	-.17	-.05	.06	.10	-.03	.05	.18	-.26	.31	.38*

Note. DERS = Difficulties in Emotion Regulation Scale; *FMSS* = Five Minute Speech Sample; *HEE* = High Expressed Emotion; *ICES-A* = Invalidating Childhood Environment Scale for Adolescents.

*$p < .05$; **$p < .01$