Expressed Emotion among families of female adolescents with nonsuicidal self- injury using a bidirectional approach

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Abstract

Background: Expressed Emotion refers to the extent to which close relatives express critical/hostile and/or emotionally overinvolved attitudes and feelings when speaking about a family member. High Expressed Emotion is a valuable predictor of clinical outcomes and is related to the presence of various mental disorders, including non-suicidal self-injury NSSI.

Interpersonal factors have been shown to be relevant in initiating and in maintaining with non-suicidal self-injury (NSSI), as interpersonal difficulties are often reported as triggers for emotional dysregulation. The parental role in the treatment of NSSI still needs to be further investigated by focusing on their bidirectional relationship. This study uses a bidirectional approach for the assessment of Expressed Emotion in adolescents with non-suicidal self-injury (NSSI) and their mothers.

Method: We examined Expressed Emotion levels of mother–daughter dyads among adolescents with NSSI, clinical controls (CCs), and nonclinical controls (NCs). The sample consisted of 70 female adolescents aged 12–20 years (M = 15.28 years, SD = 1.81; NSSI: n = 21, CC: n = 17, NC: n = 32) and 24 mothers aged 38–56 years (M = 46.47 years, SD = 4.61) using The Five-Minute Speech Sample (FMSS).

Results: Adolescents with NSSI exhibited significantly more covert criticism and critical tone toward their mothers than CCs (d = 0.65, d = 1.10) and NCs (d = 1.30, d = 1.10).

Conclusion: The findings highlight the importance of family-based interventions for the treatment of NSSI in order to enhance a positive relationship quality between parents and adolescents.

Introduction

Nonsuicidal self-injury (NSSI), the destruction of one's own body tissue without intent to die,

is highly prevalent among adolescents with lifetime prevalence rates between 18–39% (1–2). In a meta-analysis examining functions of NSSI, Taylor and colleagues (3) identified intrapersonal functions (66–81%), especially emotion regulation (63–78%), being the most frequent function, followed by interpersonal functions (33–56%). Interpersonal factors have been shown to be relevant in initiating [1,2] and in maintaining NSSI, as interpersonal difficulties are often reported as triggers for emotional dysregulation. In this context, NSSI can be understood as a dysfunctional emotion regulation strategy in order to deal with interpersonal stressors.

Nock's (5, 6) 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. Within this model, distal risk factors – such as an invalidating family environment – may lead to emotional dysregulation (intrapersonal consequence) as well as poor communication and problem-solving skills (interpersonal consequences) in individuals engaging in NSSI.

The development of emotion dysregulation – as intrapersonal consequence of NSSI – through the interplay between an invalidating family environment and the child's emotional reactivity has been described by the biosocial theory (7), family interactions are reciprocally influenced by adolescent's and parents' behavior (8) and were found to be heavily shaped by conflict-ridden interaction patterns of adolescents with NSSI and their mothers (9). Yet, intrapersonal and interpersonal consequences influence each other: Studies have indicated the mediating role of adolescent emotional regulation difficulties and poor coping strategies in the relationship between invalidating caregiving environments and NSSI (10–12), thus supporting Nock's (5, 6) model of NSSI. As such, it seems to be of importance to examine the parent-child relationship in families with adolescents engaging in NSSI.

Expressed emotion is a measure of the family environment that describes the level of criticism, hostility, and emotional involvement that a relative expresses toward a family member (13, 14). High expressed emotion exhibited by parents is related to the presence and frequency of suicidal ideation and plans, suicide attempts, and NSSI in youth (15). In particular, parental criticism was associated with NSSI (15, 16), whereas emotional overinvolvement was not (15). The association between parental criticism and NSSI was particularly strong among adolescents with a self-critical cognitive style (15). Further, maternal

criticism was more strongly related to NSSI in girls than in boys (16). Results relying on adolescents' perceived levels of parental expressed emotion indicated that adolescents and young adults with a history of NSSI perceived their parents as less emotionally supportive, more intrusive, more irritating, and more critical than those without NSSI (17). Similar results were found in adults engaging in NSSI (18). In addition, adolescents' self-criticism played a mediating role in the relationship between perceived parental expressed emotion and NSSI (17, 19). Taken together, results indicate that 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 (17). However, the temporal and perhaps bidirectional relation between high expressed emotion (especially criticism) and NSSI in families of adolescents engaging in NSSI needs to be elucidated by future research. Previous research examining the link between expressed emotion and NSSI has focused on observed (coding of speech samples) and perceived (various self-report measures) levels of parental expressed emotion, neglecting the dyadic aspects of relationships. However, the conceptualization of expressed emotion as a unidirectional construct from parent to child may present an incomplete picture (20). Further, a recent review on expressed emotion within families discusses its possible role in the transgenerational transmission of mental disorders (21).

One method to analyze expressed emotion in bidirectional relationships is the Five Minute Speech Sample (FMSS)(22). During the administration of the FMSS, participants are asked to speak for five uninterrupted minutes about their relationship with a specific member of their family and how they get along with each other. The monologues then are coded for relationship quality, the amount of criticism, covert criticism, and emotional overinvolvement (23, 24). Emotional overinvolvement is defined as a dramatic, exaggerated, or overprotective attitude toward the patient (14). Maternal criticism has been shown to be related to youth internalizing and externalizing problems, while emotional overinvolvement has been shown to be related only to youth internalizing problems (25). Participants stating critical remarks, dislike, and disapproval of the patient's behavior as well as rejection of the patient are classified as high expressed emotion. Participants stating none of the above are rated as low expressed emotion.

Aims of the Study

So far, there is a lack of studies investigating expressed emotion in parent-adolescent dyads with the adolescent having a diagnosis of NSSI using a bidirectional measure like the FMSS. Further research in understanding interpersonal difficulties as initiating and maintaining factors of NSSI is necessary in order to further develop interventions to reduce NSSI. The parental role in the treatment of NSSI still needs to be further investigated by focusing on their bidirectional relationship. Expressed emotion is a highly relevant construct in families of adolescents with NSSI, however, studies examining the associations between expressed emotion levels of adolescents with NSSI and their parents are rare. Further, previous studies have focused on just one person's perspective, either that of the parent (15, 16) or that of the adolescent (17–19). The present study examines expressed emotion levels in adolescents with NSSI and their mothers, therefore, using a bidirectional approach (FMSS) (22) The primary aim of this exploratory study was to examine levels of expressed emotion in adolescents with NSSI toward their mothers as well as level of expressed emotion in mothers toward their child with NSSI compared to mother-child dyads in clinical and nonclinical control-groups. We expected concordant results, in terms that adolescents of mothers with high expressed emotion would exhibit high expressed emotion as well. Furthermore, we were interested if the mother-child dyads exhibited higher levels of expressed emotion than mother–child dyads in a clinical and a nonclinical control group when administered the FMSS.

Method

Participants

Adolescents

The study included 70 female adolescents aged 12–20 years (M = 15.28 years, SD = 1.81). In terms of education, 72% attended a secondary school (58% attended a school for higher education), 14% attended a vocational school and 14% finished school with a high-school degree ("Abitur").

The sample consisted of 21 adolescents with NSSI disorder, 17 with other mental disorders without NSSI (clinical controls, CCs), and 32 without current or past experiences of mental disorders (nonclinical controls, NCs). Using a clinical interview, the most frequent comorbid mental disorders 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 (M_{age} = 16.12 years) and NC adolescents (M_{age} = 14.75 years) differed with respect to age ($p < .05$).

Mothers

Twenty-four mothers aged 38–56 years (M = 46.47 years, SD = 4.61) participated, 10 in the NSSI group, 7 in the CC group, and 7 in the NC group.

Measures

Diagnostic Interview for Mental Disorders in Children and Adolescents

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) (26) assesses the most frequent mental disorders in childhood and adolescence. The Kinder-DIPS has good validity and reliability (child version, κ = .48–.88; (27). NSSI disorder was assessed with the additional NSSI section of the Kinder-DIPS (26). Interrater reliability estimates for the diagnosis of NSSI were very good (κ = 1.00). Questions assessing BPD were taken from the adult DIPS (28).

FMSS

The FMSS (22) was used to assess expressed emotion levels. Adolescents and mothers were asked to speak for five uninterrupted minutes about their mother/daughter and how they get along with each other. Participants got the following instructions:

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 (23, 24) by two trained independent raters who were blind to group allocation. Relationship quality was rated as positive, neutral, or negative. Criticism refers 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. Covert criticism includes indirect criticism, for example statements about the family member´s characteristic, behavior or opinion that could be perceived as disturbing. Emotional overinvolvement refers to self-sacrificing and overprotective attitudes of mothers. Participants were rated as high expressed emotion if any of the following criteria were met even only once: Emotional overinvolvement (self-sacrifice/overprotection or nonverbal signs of overinvolvement, e.g., crying), criticism (overall negative relationship or one critical statement/two covert critical statements), or both criticism and emotional overinvolvement (22–24). Participants were rated as low expressed emotion if there neither was an occurrence of criticism nor of emotional overinvolvement. Thus, participants can differ in why they are rated as high expressed emotion: Whereas Person A only shows criticism once, and Person B meets no criteria of criticism but continuously shows all criteria of overinvolvement such as constantly showing emotional display and making more than five positive remarks, both Person A and B are rated as high expressed emotion. (for a more detailed description see Magaña et al) (22). In previous studies and samples, the FMSS proved to have proper predictive validity (29) and Sher-Censor (30) concluded from their review on child FMSS studies good psychometric characteristics of the procedure and coding (30).

Interrater reliability was calculated with 70 samples; the kappa coefficient for expressed emotion level (high vs. low) was very good (κ = .93, $p < .01$). Disagreements between raters were solved through discussion until consensus was reached.

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 ask for their consent to participate. Nonclinical control adolescents were recruited in different high schools. Prior to our visit to the schools, teachers were given detailed information about the study and informed consent forms, to be signed by the parents if the students participated. 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 samples and in schools for the NC group. Self-report questionnaires were completed on-site or at home and returned by mail. All participants, that is, 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 expressed emotion. To investigate group differences (NSSI vs CC vs NC) in the number of comments regarding FMSS dimensions of expressed emotion, we used a multivariate analysis of variance (MANOVA). Post hoc tests were conducted to analyze pairwise comparisons. The conservative Bonferroni correction was used to control for multiple comparisons, aiming to compensate possible limitations due to the small sample size. Effect sizes (Cohen's *d*) were calculated to further analyze significant group differences. Pearson product-moment correlation coefficients were calculated to explore associations between adolescent and maternal high expressed emotion status. All analyses were performed using SPSS version 25. Significance levels were set at $\alpha = 0.05$.

Results

Adolescent Expressed Emotion 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 (41.2% vs. 6.3%, $p < .01$, Cramer's V = 0.42) groups met criteria for high expressed emotion (Table 1). The observed differences remained significant with Bonferroni corrections ($\alpha/4 = .0125$). Adolescents with NSSI and CC adolescents did not differ regarding expressed emotion status (61.9% vs. 41.2%, $p = .20$). Across all groups, adolescent high expressed emotion was predominately related to criticism expressed toward mothers. Only two adolescents in the NSSI group reported emotional overinvolvement. A multivariate analysis comparing the number of comments for expressed emotion dimensions revealed significant main effects of group for covert criticism, critical tone, and positive relationship (see Table 2). Post hoc analyses showed that adolescents with NSSI exhibited significantly more covert criticism than CC ($p < .05$, $d = 0.65$) and NC ($p < .01$, $d = 1.30$) adolescents, 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 Expressed Emotion

In the NSSI group, 50% of mothers fulfilled criteria for high expressed emotion, followed by 28.6% in the CC group. None of the mothers in the NC group was rated as high expressed emotion. Across all mothers, emotional over involvement was rated only once and in combination with criticism in the NSSI group.

Concordance Between Adolescent and Maternal Expressed Emotion Status

Moderate concordance was found between adolescent and maternal expressed emotion status, with Cohen's $\kappa = .42$, $p < .05$, in $n = 24$ mother–child dyads. Due to the small subsample sizes we did not assess concordance within the subsamples.

Discussion

The present study investigated expressed emotion among adolescents with NSSI, CC, and NC adolescents. To date, this is the first study including both maternal expressed emotion toward adolescents with NSSI, CC, and NC as well as adolescent expressed emotion toward their mothers.

We found that adolescent high expressed emotion was more common in the NSSI and CC groups than in the NC group, cautiously supporting the findings that high expressed emotion is associated with psychopathology (21, 31). 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 (9). Referring to Crowell et al. (9)impulsive and emotionally sensitive adolescents may experience difficulty inhibiting extreme emotions when faced with high expressed emotion by family members. The greater difficulties with impulse control of adolescents with NSSI compared to CC adolescents (32) 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 adolescents, underlining the positive relationship between difficulty in identifying emotions and NSSI (33).

As expected, the concordance between adolescent and maternal expressed emotion status in the present study was moderate. This is in line with several studies indicating that informants reports correlate at low-to-moderate magnitudes (34, 35). Nevertheless, the significant correlation between adolescent and maternal high expressed emotion in the present study suggests a reciprocal relationship between maternal and adolescent expressed emotion in NSSI. Expressed emotion research on bulimia nervosa indicated that the match in parent and adolescent expressed emotion status may impact treatment outcome. The smallest symptom reduction was reported for the group in which patients showed high expressed emotion and parents low expressed emotion (20). Therefore, future studies should analyze different family profiles (high expressed emotion mother/high expressed emotion adolescent, high expressed emotion mother/low expressed emotion adolescent, high expressed emotion adolescent/low expressed emotion mother, and low expressed emotion mother/low expressed emotion adolescent) and their impact on the course of NSSI and treatment outcome. Longitudinal studies are needed to understand the direction of the association between maternal and adolescent high expressed emotion and NSSI.

According to the comprehensive model of NSSI (5, 36), maternal high expressed emotion reflects a distal risk factor for NSSI, while high expressed emotion exhibited by adolescents can be understood as a result of adolescent emotion regulation difficulties and poor communication and problem-solving skills. However, a child's psychopathological symptoms may also elicit expressed emotion from their parents. Results from a longitudinal study examining perceived expressed emotion showed that both internalizing and externalizing symptoms in adolescents predicted adolescents' perception of maternal expressed emotion, as well as mothers' self-rated criticism over time (37). In accordance with previous research (25, 38), adolescent and maternal high expressed emotion status in the present study referred primarily to criticism and only to a small extent to emotional overinvolvement. Self-report data showed that adolescents with NSSI indicated higher parental intrusiveness than adolescents without NSSI (17). As suggested by Rienecke (38), current measures of emotional overinvolvement may assess different components of emotional overinvolvement.

Limitations and Strengths

Given the small sample size and the uneven distribution of groups, especially in the sample of mothers, the results of the present study must be interpreted with caution. The results are further limited that expressed emotion was only assessed in female adolescents and mothers and not in male adolescents and fathers. Future studies should include all genders since previous research has found gender differences in the association between maternal criticism and NSSI (12, 16). The use of a cross-sectional design further limits the conclusions about the direction of the effects between adolescent symptomatology and adolescent/maternal high expressed emotion.

The strengths of this study include the use of the FMSS as a reliable and valid measure for expressed emotion, the bidirectional approach, including adolescent and maternal expressed emotion levels and the inclusion of a clinical and a nonclinical control group.

The definition of emotional overinvolvement in the FMSS, also used in the present study, differs from the definition in the Levels of Expressed Emotion Scale used by Ammerman and Brown (2018). Emotional overinvolvement 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 emotional overinvolvement may not correspond with interviewer-rated emotional overinvolvement; this should be addressed in further studies. Therefore, it remains to be clarified if emotional overinvolvement is influential in the engagement and maintenance of NSSI. Further research is needed to examine the validity of the FMSS and especially the operationalization of emotional overinvolvement in samples of adolescents with expressed emotion.

Practical Implications

Reciprocal processes between adolescents and parents (e.g., high expressed emotion) 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 (39, 40) and changes in parenting behavior as reactions to NSSI, for example, more controlling behavior and rule setting (8, 41) may affect parent–child interactions.

NSSI can be conceptualized as a high-cost communication behavior when other behaviors have failed to elicit a response from the family environment (36). Considering the three ways in which caregivers can affect child adjustment (42), high levels of expressed emotion represent an interaction style that negatively reinforces emotional arousal. Therefore, the findings suggest that it is important to examine adolescent expressed emotion in addition to parental expressed emotion, to gain a better understanding of the reciprocal parent–child interactions in families of adolescents with NSSI.

Effective treatments for NSSI, such as the dialectical behavior therapy for adolescents (DBT-A) [43–45] or the emotion regulation individual therapy for adolescents (ERITA) (43, 44), target emotion regulation and interpersonal functioning, especially within the family, and offer the possibility of including the family or parents in the adolescent's treatment. Breaking a vicious cycle between adolescents and parents characterized by frustration and criticism and reestablishing more functional family patterns can reduce high expressed emotion (45). Given that adolescents with NSSI reported fewer positive aspects in the mother–child relationship than NC adolescents, interventions should not focus merely on the reduction of negative relationship aspects but also on the enhancement of positive relationship quality.

Summary

High expressed emotion exhibited by parents is related to the presence and frequency of suicidal ideation and plans, suicide attempts, and NSSI in youth. The parental role in the treatment of NSSI needs to be further investigated by focusing on their bidirectional relationship with their children in order to understand interpersonal difficulties as initiating and maintaining factors of NSSI in adolescents. The aim of this exploratory study was to examine levels of expressed emotion in adolescents with NSSI toward their mothers as well as level of expressed emotion in mothers toward their child with NSSI, compared to mother-child dyads in clinical and nonclinical control-groups. To assess expressed emotion the Five-Minute Speech Sample (FMSS) was used. The sample consisted of 70 female adolescents aged 12–20 years (M = 15.28 years, SD = 1.81; NSSI: n = 21, CC: n = 17, NC: n = 32) and 24 mothers aged 38–56 years (M = 46.47 years, SD = 4.61) who completed the FMSS. In the FMSS, adolescents and mothers were asked to speak for five uninterrupted minutes about their mother/daughter and how they get along with each other. Adolescents with NSSI exhibited significantly more covert criticism and critical tone toward their mothers than CCs (d = 0.65, d = 1.10) and NCs (d = 1.30, d = 1.10). The findings highlight the importance of family-based interventions in the treatment of NSSI in order to enhance a positive relationship between parents and adolescents.

Declarations

Ethics approval and consent to participate

The local ethics committee (Lokale Ethikkommission (LEK) des FB8, Landau) approved the study. All procedures performed in the study involving human participants were in accordance with the ethical standard of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments. Informed consent was obtained from all individual participants included in the study.

Consent for publication

All participants and parents gave their written consent.

Availability of data and materials

The datasets used and/or analyses during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have nonfinancial competing interests.

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Author contribution

T.T. and T.I. conceived of the presented idea. T.T. planned and carried out the experiment and performed the calculations. T.T., S.P and R.G. wrote the manuscript. T.I. supervised the project. All authors provided critical feedback and helped shape the research, analysis and manuscript.

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Tables

Table 1

Adolescent and Maternal Expressed Emotion Levels in the Three Participant Groups (NSSI, CC, NC) Assessed with the Five-Minute Speech Sample (FMSS)

Variable	Adolescents						χ^2	*df*	Cramer's V	Mothers					
	NSSI (*n* = 21)		CC (*n* = 17)		NC (*n* = 32)					NSSI (*n* = 10)		CC (*n* = 7)		NC (*n* = 7)	
	n	%	*n*	%	*n*	%				*n*	%	*n*	%	*n*	%
EE status							18.03**	2	0.52						
Low EE	8	38.1	10	58.8	28	87.5				5	50	5	71.4	7	100
High EE	13	61.9	7	41.2	2	6.3				5	50	2	28.6	0	0
HEE subtype							1.52	4	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

Note. CC = clinical control; EE = expressed emotion; HEE = high expressed emotion; EOI = emotional overinvolvement; NC = nonclinical control; NSSI = nonsuicidal self-injury.

** $p < .01$.

Table 2

Mean Number of Adolescents' and Mothers' Comments in the Three Participant Groups (NSSI, CC, NC) in the Five-Minute Speech Sample (FMSS)

	NSSI (*n* = 21)		CC (*n* = 17)		NC (*n* = 32)				NSSI (*n* = 10)		CC (*n* = 7)		NC (*n* = 7)	
	M	*SD*	*M*	*SD*	*M*	*SD*			*M*	*SD*	*M*	*SD*	*M*	*SD*
Comment	Adolescents						*F*(2, 65)	η^2	Mothers					
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 control; EE = expressed emotion; EOI = emotional overinvolvement; NC = nonclinical control; NSSI = non-suicidal self-injury.

** $p < .01$.