Parental Expressed Emotion and Adolescent Self-Injury

MICHELLE M. WEDIG, B.S., AND MATTHEW K. NOCK, PH.D.

ABSTRACT

Objective: This study examined the relationship between parental expressed emotion (EE) and adolescent self-injurious thoughts and behaviors (SITB), as well as potential mediators and moderators of this relationship. **Method:** Thirty-six adolescents ages 12 to 17 years recruited from the community (2004–2005) provided data. Parents of the adolescents completed the Five-Minute Speech Sample, a performance-based measure of EE, and adolescents completed interviews and rating scales assessing SITB, mental disorders, and related constructs. **Results:** Analyses revealed that high parental EE was associated with each type of SITB assessed: suicide ideation, suicide plans, suicide attempts, and nonsuicidal self-injury. Analyses also revealed that one specific component of EE (i.e., parental criticism) was strongly associated with SITB, whereas the other (i.e., emotional overinvolvement) was not and that the relationship between EE and SITB was not explained by the presence of mental disorders. Finally, a moderation model was supported in which the relationship between parental criticism and SITB was especially strong among adolescents with a self-critical cognitive style. **Conclusions:** This study indicates that parental criticism is significantly associated with SITB and suggests one specific pathway through which the family may influence adolescent SITB. Future research is needed to replicate these findings and examine the direction of these relationships. *J. Am. Acad. Child Adolesc. Psychiatry,* 2007;46(9):1171–1178.
Key Words: expressed emotion, Five-Minute Speech Sample, self-injury, suicide, self-harm, suicidal ideation.

Self-injurious thoughts and behaviors (SITB) are a significant public health problem around the world. Although recent epidemiological studies reveal that approximately 13.5% of adults report lifetime suicide ideation and between 2.7% and 4.6% report a lifetime suicide attempt (Kessler et al., 1999; Nock and Kessler, 2006), this is a similarly staggering problem in youths. The Youth Risk Behavior Survey suggests that rates of SITB may be especially high among adolescents, with 19% of high school students reporting lifetime suicide ideation and 8.8% reporting having made a suicide attempt (Grunbaum et al., 2002). Similarly, nonsuicidal self-injury (NSSI), which refers to the direct deliberate destruction of body tissue in the absence of suicidal intent, also is prevalent among adolescents, with rates of 13.9% to 21.4% among high school and college students (Ross and Heath, 2002; Whitlock et al., 2006; Zoroglu et al., 2003). Given the grave potential consequences of such behaviors and the reluctance with which many individuals often seek treatment, it is imperative to investigate what may contribute to the emergence of these behaviors, with an eye toward treatment and prevention.

As the social unit with which a child has perhaps the most contact, the family often has been the focus of research and clinical efforts as an important influence on the occurrence and prevention of child and adolescent behavior problems. In the past, some have suggested that parents can "cause" behavior problems in their children through poor or neglectful parenting, "double-bind messages," or "schizophrenogenic" mothering. More modern theories, however, more appropriately recognize the dynamic impact parents

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Ms. Wedig and Dr. Nock are with the Department of Psychology, Harvard University, Cambridge, MA.

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Correspondence to Matthew K. Nock, Ph.D., Department of Psychology, Harvard University, 33 Kirkland Street, Cambridge, MA 02138; e-mail: nock@wjh.harvard.edu.

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and children and other integral family members have on one another. It is likely that there are transactional or reciprocal relationships between the child's behavior and that of their family members.

Extensive prior research has proposed that family factors such as poor family communication, loss of caregiver to separation or death, and psychopathology in first-degree relatives are risk factors for adolescent suicide and related outcomes (see Gould et al., 2003 and Wagner, 1997 for reviews). In addition, adolescents often report their self-injurious behaviors to be precipitated by conflicts related to family interactions and relationships (Lowenstein, 2005). In fact, one study found poor parental relationships to be more powerfully associated with suicidal ideation than peer relationships in a nationally representative sample of boys and girls ages 12 to 13 years (Fotti et al., 2006).

One pathway by which family functioning may play a role in childhood and adolescent psychopathology is through the occurrence of high expressed emotion (EE) in the family. EE refers to the extent to which family members express critical/hostile and emotionally overinvolved attitudes and remarks toward a specific person (Hooley, 1985, 2007) and has been shown to be a predictor of patient relapse in those suffering from a range of mental disorders including schizophrenia (Butzlaff and Hooley, 1998; Ivanovic et al., 1994; Linszen et al., 1997; Lopez et al., 2004; Marom et al., 2005; Parker and Hadzi-Pavlovic, 1990), depression (Hooley and Teasdale, 1989; Hooley et al., 1986), recent-onset mania (Miklowitz et al., 1988), and alcoholism (O'Farrell et al., 1998).

Although most research on EE has been conducted with adults, EE also has been found to be related to child and adolescent depression (Asarnow et al., 1993, 2001; McCleary and Sanford, 2002), externalizing problems (McCarty and Weisz, 2002; Peris and Baker, 2000), and behavioral inhibition (Hirshfeld et al., 1997). Because the family has such a large influence on children and adolescents and they are typically living at home with the family at the time they first exhibit such thoughts and behaviors, EE may be expected to be a particularly potent predictor of psychological and behavioral problems among adolescents (Asarnow et al., 1993).

Traditionally, EE has been assessed via the Camberwell Family Interview (Vaughn and Leff, 1976). More recently, however, studies have employed the Five-Minute Speech Sample (FMSS; Magaña et al., 1986) as a more efficient method of obtaining the same information. This newer measure requires family members to speak for 5 minutes, without interruption, about their relationship with and attitude toward the target person. The underlying notion is that what the family member says and how he or she speaks about the target person will reveal the amount of EE typically present in the household. The manifold benefits of the FMSS include its brief duration, the ease of data collection, and the relatively minimal training requirements for the interviewer (Hooley and Parker, 2006). In addition, studies have demonstrated a high level of correspondence between the FMSS measure and the longer Camberwell Family Interview (Calam and Peters, 2006; Leeb et al., 1991; Magaña et al., 1986) as well its valid use in youths (Asarnow et al., 1993, 2001; Brennan et al., 2002; Hirshfeld et al., 1997; McCarty and Weisz, 2002; McCleary and Sanford, 2002; Nelson et al., 2003; Peris and Baker, 2000).

Surprisingly, despite longstanding suggestions in the literature that family factors may influence the occurrence of SITB, no studies have examined the relationship between EE and SITB among youths. The purpose of the present study was to address this gap by examining the association between EE, as assessed by the FMSS, and SITB in adolescents. If parental EE is in fact associated with SITB, then it also would be instructive both scientifically and clinically to understand potential mediators and moderators of this relationship. One construct of particular interest is adolescent self-criticism. It is possible that self-criticism mediates the relationship between parental EE and adolescent SITB. For instance, in cases in which parents are high on EE, and especially if high on criticism in particular, adolescents may be more likely to develop a self-critical cognitive style that may then increase the likelihood of engaging in SITB as a possible form of self-punishment. Recent work suggests that self-reported level of self-criticism is related to the presence of SITB in general (Dunkley and Grilo, 2007; Glassman et al., 2007; Grilo et al., 1999), and to self-injury motivated by self-punishment in particular (Glassman et al., 2007), providing preliminary support for such a model. Alternatively, adolescent self-criticism may moderate the relationship between EE and SITB. For instance, it may be that of those youths living in high EE environments, only those with a high internal

sense of self-criticism will evidence SITB, whereas those with a less self-critical style will be less affected by criticism. In this study we tested both of these models in examining the relationship between parental EE and adolescent SITB.

METHOD

Participants

This study was conducted as part of a larger laboratory-based, case-control study of SITB. Adolescents and young adults ages 12 to 19 years old were recruited from the community and local outpatient mental health clinics from 2004 to 2005 using advertisements requesting participants for a laboratory-based study of SITB that asked for both self-injurers and non–self-injurers (to serve as a comparison group). After a brief telephone screen, participants were invited to the laboratory, received a description of the study aims and procedures, and provided written informed consent to participate in the research, with parental consent required for those younger than 18 years. All of the procedures were approved by the Harvard University Human Subjects Committee, and all of the participants received $100 for their participation. In the present study, given our interest in parental EE toward adolescents living in the home, we included only those subjects in the present analyses who were 12 to 17 years old (N = 39). Three adolescents were excluded from the analyses (two whose parent provided consent but were unable to attend the laboratory session, and one whose FMSS data were lost due to a technical problem during taping), leaving a final sample of 36 adolescent-parent dyads. This sample size (N = 36) provides adequate statistical power to detect most large effects (power 0.96) and most medium effects (power 0.58) in analyses examining the bivariate relationships that are the main focus of this study using two-tailed tests with α set at .05. Demographic and diagnostic characteristics of participants are reported in Table 1.

Measures

Expanded Emotion. Parental EE was assessed using FMSS (Magaña et al., 1986). This task was administered to the parent who accompanied the adolescent to the laboratory. Only the examiner and the parent were present in the room and the session was audiotaped for later coding. Each parent was given the standard FMSS instructions: "I'd like to hear your thoughts and feelings about (child's name), in your own words and without my interrupting with any questions or comments. When I ask you to begin I'd like you to speak for 5 minutes, telling me what kind of person (child's name) is and how the two of you get along together. After you begin to speak, I prefer not to answer any questions until after the 5 minutes are over. Do you have any questions before we begin?" If the parent stopped speaking before the 5 minutes had elapsed, then he or she was prompted once with "Please tell me anything about (child's name) for a few more minutes."

Consistent with standard scoring procedures, "criticism" was scored as being low, borderline, or high, on the basis of the valence of parents' initial statement, the tenor of the parent–child relationship as revealed during the FMSS, and the number of critical comments made during the speech sample. Emotional overinvolvement (EOI) also was rated as low, borderline, or high, on the basis of showing any self-sacrificing or overprotective behavior, showing any displays of emotion during the interview (i.e., crying, being unable to speak), relating excessive detail about the past, producing one or more statements of attitude (e.g.,

TABLE 1
Participant Characteristics

Variable	Mean (SD)	No.	% of Sample
Adolescent age, y	15.26 (1.48)	36	
Adolescent sex			
Male		9	25
Female		27	75
Adolescent ethnicity			
European American		27	75
Biracial		5	13.9
African American		2	5.6
Hispanic		1	2.8
Asian American		1	2.8
Diagnoses represented in adolescent sample			
Any mood disorder		8	22.2
Any anxiety disorder		10	27.8
Any eating disorder		3	8.3
Any substance use disorder		2	5.6
Any disruptive behavior disorder		6	16.7
No. of diagnoses per adolescent	1.11 (1.56)		
Relationship of parent/guardian			
Biological mother		28	77.8
Biological father		4	11.1
Other biological relative		2	5.6
Adoptive/foster mother		2	5.6
Parent age, y	45.31 (7.79)	35	
Parent highest level of education			
<12th grade		2	5.6
High school graduate		4	11.1
<4 y of college		8	22.2
College graduate		8	22.2
Completed graduate degree		14	39.9
Approximate household income			
$0–20,000		5	13.9
$21,000–$40,000		6	16.7
$41,000–$60,000		4	11.1
$61,000–$80,000		5	13.9
$81,000–$100,000		6	16.7
>$100,000		9	25
Not reported		1	2.8

Note: Any mood disorder = major depression, bipolar disorder; Any anxiety disorder = panic disorder, separation anxiety disorder, phobias, generalized anxiety disorder, obsessive-compulsive disorder; Any eating disorder = bulimia nervosa, anorexia nervosa; Any substance use disorder = alcohol use/abuse, drug use/abuse; Any disruptive behavior disorder = oppositional defiant disorder, conduct disorder, attention-deficit/hyperactivity disorder.

expressing love or the willingness to do anything for the child), or showing excessive praise. Overall rating of EE was assigned based on a combination of the ratings of criticism and EOI (see Magaña Amato, 1990 for more detailed coding instructions).

All of the tapes were coded by two raters who received extensive training in coding FMSS data and were trained to reliability by a FMSS expert. Coders were blind to the participants' self-injury history and history of mental disorders, and examination of coded scores from a random sample of 25% of the tapes revealed excellent interrater reliability (criticism: $\kappa = 1.00$; EOI: $\kappa = 1.00$; overall EE: $\kappa = 1.00$).

Mental Disorders. We assessed the presence and number of mental disorders among the adolescents using the Schedule for Affective Disorders and Schizophrenia for School Age Children-Present and Lifetime Version (K-SADS-PL; Kaufman et al., 1997). The K-SADS-PL is a semistructured diagnostic interview designed to assess current and past episodes of 33 different mental disorders according to the *DSM-IV* (American Psychiatric Association, 2000). The K-SADS-PL was administered by the second author and four research assistants who received training in the administration and scoring of the K-SADS (i.e., viewing K-SADS-PL training tapes, individual instruction in administration, mock interviewing) as well as ongoing supervision (i.e., via direct observation and review of videotaped interviews) from the second author. Independent rating of the K-SADS-PL was completed for a random sample of 25% of the interviews and demonstrated good interrater reliability (average $\kappa = .83$ across all of the diagnoses). Both the parent and the adolescent were interviewed by the same individual, and their combined report was used for diagnoses. The rate of different diagnoses in the present sample is presented in Table 1. We used a count of the number of disorders present as a measure of the presence and comorbidity of mental disorders.

Self-Injurious Thoughts and Behaviours. SITB were assessed using the Self-Injurious Thought and Behaviors Interview (Nock et al., in press; also available at *http://www.wjh.harvard.edu/~nock/nocklab/publications.html*), a structured clinical interview that assesses the presence, frequency, severity, age at onset, and other characteristics of a broad range of self-injurious thoughts and behaviors including NSSI, suicide ideation, suicide plans, and suicide attempts. Because prior work has shown different forms of SITB differ in their prevalence, correlates, and responses to treatment (Kessler et al., 1999; Linehan et al., 1991; Nock and Kazdin, 2002; Nock and Kessler, 2006), in the present study, items were used that inquired about the frequency of four different self-injurious constructs in the past 12 months: NSSI ("How many separate times in the past year have you done something to purposely hurt yourself without intending to die?"), suicide ideation ("How many separate times in the past year have you had thoughts of killing yourself?"), suicide plan ("How many separate times in the past year have you made a plan to kill yourself?"), and suicide attempt ("How many separate times in the past year have you made an actual attempt to kill yourself in which you had at least some intent to die?"). The Self-Injurious Thought and Behaviors Interview has strong interrater reliability (average $\kappa = .99$), test-retest reliability over a 6-month period (average $\kappa = .70$) and construct validity as demonstrated by strong relationships with other measures of suicidal ideation (average $\kappa = .54$) and suicide attempts ($\kappa = .65$; Nock et al., in press).

Adolescent Self-Criticism. Adolescent self-criticism was measured using an item from the Self-Rating Scale (SRS; Hooley et al., 2002). The SRS is an eight-item scale consisting of items assessing self-criticism and level of self-esteem. Participants are asked to rate each item of a 7-point Likert scale, where 1 = strongly disagree and 7 = strongly agree. Because the items in this scale measure both self-criticism and self-esteem more generally, we used only the item that most closely assesses adolescent self-criticism: "If others criticize me, they must be right."

Design and Procedures

All of the data were collected during one visit to a behavioral laboratory at Harvard University. Adolescents were administered the K-SADS and Self-Injurious Thought and Behaviors Interview and subsequently completed the SRS. Parents completed the FMSS followed by the K-SADS, both of which were administered by the same interviewer who assessed the adolescent.

Data Analysis

Relationships among the two components of EE (criticism and EOI) and overall EE were assessed with Pearson's correlations, as were the relationships between EE and the four different SITB outcomes that we assessed. A series of hierarchical regressions was used to examine whether the relationships observed between EE and SITB may be better accounted for by the presence and comorbidity of mental disorders. In these analyses the number of disorders present was entered in step 1 and the relevant FMSS outcome variable was entered in step 2, with each of the four forms of SITB serving as the dependent variables. Analysis of the mediation and moderation models was conducted following the regression-based procedures outlined previously (Baron and Kenny, 1986; Holmbeck, 1997, 2002). For these analyses we calculated standardized scores for each self-injurious outcome and averaged the standardized scores to create one latent variable representing the frequency of self-injurious thoughts and behaviors to minimize the number of tests required (thus reducing the likelihood of a type I error) as well as for ease of presentation and reporting. Values 1 SD above and below the mean self-criticism score were used to solve for the regression equations for the purposes of graphical depiction.

RESULTS

Preliminary Analyses

Descriptive statistics for the rate of SITB in our sample are reported in Table 2. Overall, 25% of parents were rated as high on EE and 75% as low on EE. For criticism, 16.7% of parents were rated as high, 11.1% as borderline, and 72.2% as low, whereas for EOI, 8.3% of parents were rated as high, 44.4% as borderline, and 47.2% as low. This distribution of high and low EE, criticism, and EOI is similar to others found using the FMSS in both community and clinical samples (Asarnow et al., 2001; Hirshfeld et al., 1997; McCleary and Sanford, 2002; Peris and Baker, 2000). Overall EE had a large and statistically significant correlation with criticism ($r = 0.76$; $p < .001$) but a small-to-medium and nonsignificant correlation with EOI ($r = 0.25$; $p = .14$). EOI and criticism had a small and nonsignificant correlation ($r = -0.10$; $p = .55$). These relationships are consistent with previous work

TABLE 2
Descriptive Statistics of Rate of SITB

	% Sample Reporting SITB	Mean (SD)	Range of Behaviors	
			Minimum	Maximum
Suicide ideation	41.3	41.91 (156.41)	0	1,000
Suicide plans	21.7	5.93 (30.19)	0	200
Suicide attempts	17.4	0.63 (2.09)	0	10
NSSI	39.1	151.93 (884.74)	0	6,000

Note: SITB = self-injurious thoughts and behaviors; NSSI = nonsuicidal self-injury.

showing similar relationships between these variables (Bolton et al., 2003; Hirshfeld et al., 1997; Tarrier et al., 1999).

Association Between Parental EE and SITB

Our first goal was to examine the relationship between EE and the frequency of several specific types of SITB during the past year. Analyses revealed that EE was positively associated with the engagement during the past year of each type of SITB assessed (Table 3). Analyses also revealed that high levels of parental criticism, but not EOI, were associated with all self-injurious outcomes during the past year (Table 3).

It is possible that underlying mental disorders account at least in part for the significant relationship found between parental EE and SITB. We examined this possibility in two ways. First, we examined whether scores on EE, criticism, and EOI differed based on the presence versus absence of each *DSM-IV* disorder assessed by the K-SADS using a series of χ^2 tests, which revealed no significant differences (all p values >.08; detailed results available upon request). Second, we conducted a series of hierarchical regression analyses examining whether EE and criticism continued to be associated with SITB after accounting for the presence and comorbidity of mental disorders. Results revealed that after statistically controlling for number of disorders present, EE continued to predict suicide ideation ($\Delta F_{1,33} = 4.97$; $p = .03$), suicide plans ($\Delta F_{1,33} = 6.49$; $p = .02$), suicide attempts ($\Delta F_{1,33} = 10.03$; $p = .003$), and NSSI ($\Delta F_{1,33} = 4.13$; $p = .05$). Similarly, the level of criticism continued to predict suicide ideation ($\Delta F_{1,33} = 6.47$; $p = .02$), suicide plans ($\Delta F_{1,43} = 8.02$; $p = .008$), suicide attempts ($\Delta F_{1,33} = 14.37$; $p < .001$), and NSSI ($\Delta F_{1,43} = 4.99$; $p = .03$) above and beyond the influence of mental disorders.

Mediation Analyses

Next, we tested whether adolescent self-criticism mediates the relationship between parental EE and adolescent SITB. Consistent with such a model, adolescents' feeling as though others must be right to criticize them on the SRS was significantly associated with the averaged latent variable of the general frequency of SITB ($F_{1,34} = 11.81$; $p = .02$). When this procedure was followed separately for each form of SITB assessed, adolescent self-criticism significantly predicted suicide ideation, suicide plans, and NSSI, but not suicide attempts (results available upon request). However, the mediation model was not supported because parental criticism was not significantly related to adolescent self-criticism ($F_{1,34} = 1.65$, $p = .21$). Nevertheless, a standard multiple regression analysis demonstrated that parental criticism and adolescent self-criticism significantly predicted engagement in SITB ($F_{2,33} = 14.11$; $p < .001$) and that parental criticism ($\beta = .46$; $p = .001$) and adolescent self-criticism ($\beta = .41$; $p = .004$) both contributed significantly and uniquely to the statistical prediction of SITB.

Moderation Analyses

Given the significant relationship between both adolescent self-criticism and parental criticism with SITB and the nonsupport of the mediation model, we tested whether adolescent self-criticism moderated the relationship between parental criticism and SITB. A hierarchical regression analysis revealed that the

TABLE 3
Correlations Between SITB and Parental EE as Assessed by the FMSS

	EE	Criticalness	EOI
Suicide ideation	0.34*	0.41*	−0.22
Suicide plans	0.38*	0.45**	−0.20
Suicide attempts	0.47**	0.56**	−0.13
NSSI	0.32*	0.37*	−0.16

Note: SITB = self-injurious thoughts and behaviors; EE = expressed emotion; FMSS = Five-Minute Speech Sample; EOI = emotional overinvolvement; NSSI = nonsuicidal self-injury.

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

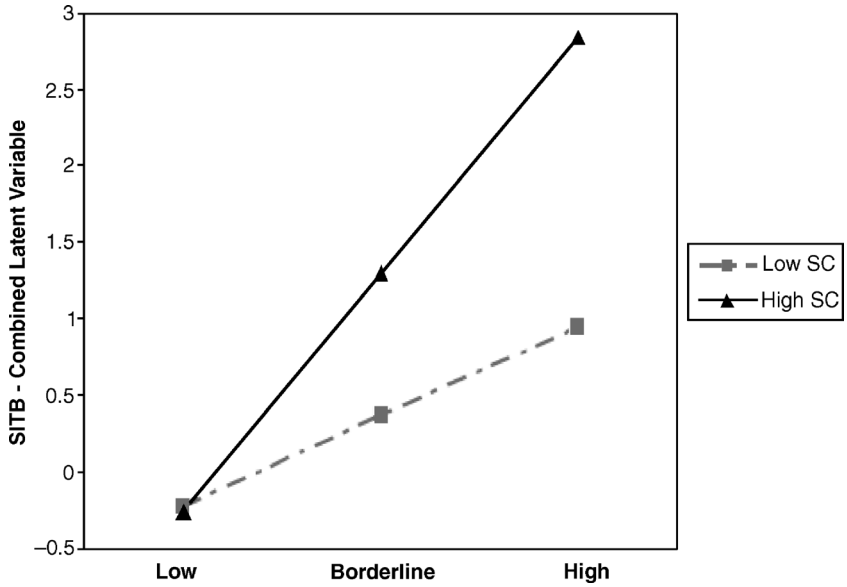

Fig. 1 Graphical depiction of interaction. Values 1 SD above and below the mean for adolescent self-criticism (SC) were used to solve for each regression equation for the purposes of display. SITB = self-injurious thoughts and behaviors.

interaction term created by the multiplication of the centered variables of adolescent self-criticism and parental criticism was significantly related to the general self-injurious outcome variable, after accounting for the two main effects ($\Delta F_{1,32}$ = 21.20; p < .001). As presented in Figure 1, adolescent self-criticism was not related to SITB at low levels of parental criticism (β = −.01; p = .86). However, adolescent self-criticism was associated with SITB in the context of borderline (β = .26; p < 0.001) and high levels of parental criticism (β = .52; p < 0.001). When this procedure was followed separately for each form of SITB assessed, the pattern of results was similar (results available upon request).

DISCUSSION

This study examined whether high levels of parental EE, including criticism and EOI, toward their adolescent are associated with the presence and frequency of SITB. We found that parental EE is significantly related to multiple forms of adolescent SITB, including suicide ideation, plans, and attempts, as well as NSSI. More specific analyses revealed that high parental criticism is associated with increases in these thoughts and behaviors, whereas high EOI is not. Although not all past studies have examined criticism and EOI independently, our findings extend prior research showing that criticism, but not EOI, is related to mental disorders (i.e., Asarnow et al., 2001; Hirshfeld et al., 1997; Marom et al., 2005; McCarty and Weisz, 2002; Peris and Baker, 2000). Some have suggested that the different effects observed for these two distinct components of EE are due to critical relatives being more likely to hold people with a mental disorder responsible for their difficulties and behaviors and to them consistently attributing more control to people for their symptoms and problems than relatives who are low in criticism (see Barrowclough and Hooley, 2003). This may be especially relevant in the case of adolescents, whom parents may view as rebellious and acting intentionally, and in relationship to the behavioral manifestation of SITB versus the more mental presentation of some other psychiatric symptoms (e.g., psychoses, anxiety disorders). It also is notable that the association between criticism and overall EE and engaging in SITB was not accounted for by the presence or comorbidity of mental disorders in the present study. These data provide evidence of a direct and specific relationship between EE and SITB.

Our findings revealed that adolescent self-criticism does not mediate the relationship between parental criticism and SITB, but that both adolescent self-criticism and parental criticism are associated with engagement in SITB. Although the mediation model was not supported, we found that the level of adolescent criticism moderates the relationship between parental

criticism and SITB, such that high levels of parental criticism in concert with high self-criticism results in increased SITB. High self-criticism does not seem to play a role when parental criticism is low; however, adolescent self-criticism is related to SITB when parental criticism is borderline or high. These results support a model of reciprocal influence between adolescent and parent/family and emphasize the importance of adolescent factors in the model addressing the influence of EE on adolescent psychological development and behavior. Although high parental criticism may play a role in increasing SITB (although our cross-sectional findings cannot support such directionality), our findings suggest that such behavior from parents has a significantly stronger relationship with SITB when the adolescent at whom the criticism is directed agrees that when others criticize him or her they must be right. Importantly, when adolescents were not critical of themselves, parental criticism did not have as large an impact.

Limitations

Although these results are informative, a number of limitations of this study should be noted. First, several variables tested in this study were based on the adolescents' response to only one question. This limits the reliability of our measurement of some constructs and may limit the interpretive value and validity of the response, but may also be the most direct way to obtain the factual data we were seeking (i.e., "How many times in the past year have you engaged in X behavior?"). We attempted to protect against the probability of a type I error by creating an average of the standardized scores for the frequency of the four different forms of SITB and conducted the mediation and moderation analyses using this composite variable. The results parallel those for each frequency of behavior individually, suggesting that the results are not the artifact of a particular response to one question. Our use of only a single item to measure self-reported self-criticism requires that results using this variable be interpreted with caution. Also notable is that the item used ("If others criticize me, they must be right") requires that adolescents respond regarding both self-criticism and the perception of criticism from others. As a result, this study cannot speak to whether adolescent self-criticism without the perception of criticism from others influences SITB in the face of high levels of EE. Second, the sample was relatively small and was required to present for a laboratory-based study with a parent. It will be important to replicate these findings in a larger and more representative sample and with adult self-injurers. Despite these limitations, the findings of this study advance both scientific and clinical understanding in this area.

Clinical Implications

Working with parents to lessen EE in the home has proven effective in reducing patient relapse across a number of different disorders (Fristad et al., 1998; Goldstein and Miklowitz, 1995; Holder and Anderson, 1990; Honig et al., 1997; Kim and Miklowitz, 2004; Pharoah et al., 2003) and may ultimately be useful for youths at risk of self-injury as well. The interaction with adolescent self-criticism shown in this study also suggests the potential benefit of working with youths to decrease their use of a self-critical cognitive style. Low self-criticism may serve as one protective factor for an adolescent in a highly critical family environment. The direction of these effects remains to be demonstrated, and future work should examine whether treatments that aim to lower criticism in the family and/or adolescent decrease such criticism and ultimately whether they also decrease the likelihood of SITB.

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REFERENCES

American Psychiatric Association (2000), *Diagnostic and Statistical Manual of Mental Disorders*. Washington, DC: American Psychiatric Association

Asarnow JR, Goldstein MJ, Tompson M, Guthrie D (1993), One-year outcomes of depressive disorders in child psychiatric in-patients: evaluation of the prognostic power of a brief measure of expressed emotion. *J Child Psychol Psychiatry* 34:129–137

Asarnow JR, Tompson M, Woo S, Cantwell DP (2001), Is expressed emotion a specific risk factor for depression or a nonspecific correlate of psychopathology. *J Abnorm Child Psychol* 29:573–583

Baron RM, Kenny DA (1986), The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *J Pers Social Psychol* 51:1173–1182

Barrowclough C, Hooley JM (2003), Attributions and expressed emotion: a review. *Clin Psychol Rev* 23:849–880

Bolton C, Calam R, Barrowclough C et al. (2003), Expressed emotion, attributions and depression in mothers of children with problem behaviour. *J Child Psychol Psychiatry* 44:242–254

Brennan PA, Hammen C, Katz AR, Le Brocque RM (2002), Maternal depression, paternal psychopathology, and adolescent diagnostic outcomes. *J Consult Clin Psychol* 70:1075–1085

Butzlaff RL, Hooley JM (1998), Expressed emotion and psychiatric relapse: a meta-analysis. *Arch Gen Psychiatry* 55:547–552

Calam R, Peters S (2006), Assessing expressed emotion: comparing Camberwell Family Interview and Five-Minute Speech Sample ratings for mothers of children with behaviour problems. *Intl J Methods Psychiatr Res* 15:107–115

Dunkley DM, Grilo CM (2007), Self-criticism, low self-esteem, depressive symptoms, and over-evaluation of shape and weight in binge eating disorder patients. *Behav Res Ther* 45:139–149

Fotti SF, Katz LY, Afifi TO, Cox BJ (2006), The association between peer and parental relationships and suicidal behaviors in early adolescents. *Can J Psychiatry* 51:698–703

Fristad MA, Gavazzi SM, Soldano KW (1998), Multi-family psychoeducation groups for childhood mood disorders: a program description and preliminary efficiency data. *Contemp Fam Ther* 20:385–402

Glassman LH, Weierich MR, Hooley JM, Deliberto TL, Nock MK (2007), Child maltreatment, non-suicidal self-injury, and the mediating role of self-criticism. *Behav Res Ther* Apr 18 e-pub ahead of print

Goldstein MJ, Miklowitz DJ (1995), The effectiveness of psychoeducational family therapy in the treatment of schizophrenic disorders. *J Marital Fam Ther* 21:361–376

Gould MS, Greenberg T, Velting DM, Shaffer D (2003), Youth suicide risk and preventative interventions: a review of the past 10 years. *J Am Acad Child Adolesc Psychiatry* 42:386–405

Grilo CM, Sanislow CA, Fehon DC, Lipschitz DS, Martino S, McGlashan TH (1999), Correlates of suicide risk in adolescent inpatients who report a history of child abuse. *Compr Psychiatry* 40:422–428

Grunbaum J, Kann L, Kinchen S et al. (2002), Youth risk behavior surveillance—United States, 2001. *J Sch Health* 72:313–328

Hirshfeld DR, Biederman J, Brody L, Faraone SV, Rosenbaum JF (1997), Associations between expressed emotion and child behavioral inhibition and psychopathology: a pilot study. *J Am Acad Child Adolesc Psychiatry* 36:205–213

Holder D, Anderson C (1990), Psychoeducational family intervention for depressed patients and their families. In: *Depression and Families: Impact and Treatment*, Keitner GI, ed. Washington, DC: American Psychiatric Press

Holmbeck GN (1997), Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: examples from the child-clinical and pediatric psychology literature. *J Consult Clin Psychol* 65:599–619

Holmbeck GN (2002), Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *J Pediatr Psychol* 27:87–96

Honig A, Hofman A, Rozendaal N, Dingemans P (1997), Psycho-education in bipolar disorder: effect on expressed emotion. *Psychiatry Res* 72:17–22

Hooley JM (1985), Expressed emotion: a review of the critical literature. *Clin Psychol Rev* 5:119–139

Hooley JM (2007), Expressed emotion and relapse in psychopathology. *Annu Rev Clin Psychol* 3:349–372

Hooley JM, Ho DT, Slater JA, Lockshin A (2002), Pain insensitivity and self-harming behavior. Paper presented at the Annual Meeting of the Society for Research in Psychopathology, San Francisco, September 26–29

Hooley JM, Orley J, Teasdale JD (1986), Levels of expressed emotion and relapse in depressed patients. *Br J Psychiatry* 148:642–647

Hooley JM, Parker HA (2006), Measuring expressed emotion: an evaluation of the shortcuts. *J Fam Psychol* 20:386–396

Hooley JM, Teasdale JD (1989), Predictors of relapse in unipolar depressives: expressed emotion, marital distress, and perceived criticism. *J Abnorm Psychol* 98:229–235

Ivanovic M, Vuletic Z, Bebbington P (1994), Expressed emotion in the families of patients with schizophrenia and its influence on the course of illness. *Soc Psychiatry Psychiatr Epidemiol* 29:61–65

Kaufman J, Birmaher B, Brent D et al. (1997), Schedule for affective disorders and schizophrenia for school-age children-present and lifetime version (K-SADS-PL): initial reliability and validity data. *J Am Acad Child Adolesc Psychiatry* 36:980–988

Kessler RC, Borges G, Walters EE (1999), Prevalence of a risk factors for lifetime suicide attempts in the national comorbidity survey. *Arch Gen Psychiatry* 56:617–626

Kim EY, Miklowitz DJ (2004), Expressed emotion as a predictor of outcome among bipolar patients undergoing family therapy. *J Affect Disord* 82: 343–352

Leeb B, Hahlweg K, Goldstein MJ et al. (1991), Cross-national reliability, concurrent validity, and stability of a brief method for assessing expressed emotion. *Psychiatry Res* 39:25–31

Linehan MM, Armstrong HE, Suarez A, Allmon D, Heard HL (1991), Cognitive-behavioral treatment of chronically parasuicidal borderline patients. *Arch Gen Psychiatry* 48:1060–1064

Linszen DH, Dingemans PM, Nugter MA, Van der Does AJ, Scholte WF, Lenior MA (1997), Patient attributes and expressed emotion as risk factors for psychotic relapse. *Schizophr Bull* 23:119–130

Lopez SR, Nelson Hipke K, Polo AJ et al. (2004), Ethnicity, expressed emotion, attributions, and course of schizophrenia: family warmth matters. *J Abnorm Psychol* 113:428–439

Lowenstein LF (2005), Youths who intentionally practise self-harm. Review of the recent research 2001-2004. *Int J Adolesc Med Health* 17:225–230

Magaña AB, Goldstein MJ, Karno M, Miklowitz DJ, Jenkins J, Falloon IRH (1986), A brief method for assessing expressed emotion in relatives of psychiatric patients. *Psychiatry Res* 17:203–212

Magaña Amato A (1990), *Manual for Coding Expressed Emotion from the Five Minute Speech Sample*. Los Angeles: University of California Press

Marom S, Munitz H, Jones PB, Weizman A, Hermesh H (2005), Expressed emotion: relevance to rehospitalization in schizophrenia over 7 years. *Schizophr Bull* 31:751–758

McCarty CA, Weisz JR (2002), Correlates of expressed emotion in mothers of clinically-referred youth: an examination of the five-minute speech sample. *J Child Psychol Psychiatry* 43:759–768

McCleary L, Sanford M (2002), Parental expressed emotion in depressed adolescents: prediction of clinical course and relationship to comorbid disorders and social functioning. *J Child Psychol Psychiatry* 43:587–595

Miklowitz DJ, Goldstein MJ, Neuchterlein KH, Snyder KS, Mintz J (1988), Family factors and the course of bipolar affective disorder. *Arch Gen Psychiatry* 45:225–231

Nelson DR, Hammen C, Brennan PA, Ullman JB (2003), The impact of maternal depression on adolescent adjustment: the role of expressed emotion. *J Consult Clin Psychol* 71:935–944

Nock MK, Holmberg EB, Photos VI, Michel BD (in press), The self-injurious thoughts and behaviors interview: development reliability, and validity of a new measure. *Psychol Assessment*. Also available at: *http://www.wjh.harvard.edu/~nock/nocklab/publications.html*. Accessed May 1, 2007

Nock MK, Kazdin AE (2002), Examination of affective, cognitive, and behavioral factors and suicide-related outcomes in children and young adolescents. *J Clin Child Adolesc Psychol* 31:48–58

Nock MK, Kessler RC (2006), Prevalence of and risk factors for suicide attempts versus suicide gestures: analysis of the National Comorbidity Survey. *J Abnorm Psychol* 115:616–623

O'Farrell T, Hooley J, Fals-Stewart J, Cutter W (1998), Expressed emotion and relapse in alcoholic patients. *J Consult Clin Psychol* 66:744–752

Parker G, Hadzi-Pavlovic D (1990), Expressed emotion as a predictor of schizophrenic relapse: an analysis of aggregated data. *Psychol Med* 20: 961–965

Peris TS, Baker BL (2000), Applications of the expressed emotion construct to young children with externalizing behavior: stability and prediction over time. *J Child Psychol Psychiatry* 41:457–462

Pharoah FM, Rathbone J, Mari JJ, Streiner D (2003), Family intervention for schizophrenia. *Cochrane Database Syst Rev* CD000088

Ross S, Heath N (2002), A study of the frequency of self-mutilation in a community sample of adolescents. *J Youth Adolesc* 31:67–77

Tarrier N, Sommerfield C, Pilgrim H (1999), Relatives' expressed emotion (EE) and PTSD treatment outcome. *Psychol Med* 29:801–811

Vaughn C, Leff J (1976), The measurement of expressed emotion in the families of psychiatric patients. *Br J Soc Clin Psychol* 15:157–165

Wagner BM (1997), Family risk factors for child and adolescent suicidal behavior. *Psychol Bull* 121:246–298

Whitlock J, Eckenrode J, Silverman D (2006), Self-injurious behaviors in a college sample. *Pediatrics* 117:1939–1948

Zoroglu SS, Tuzun U, Sar V et al. (2003), Suicide attempt and self-mutilation among Turkish high school students in relation with abuse, neglect and dissociation. *Psychiatry Clin Neurosci* 57:119–126