ORIGINAL ARTICLE

Life Event Dimensions of Loss, Humiliation, Entrapment, and Danger in the Prediction of Onsets of Major Depression and Generalized Anxiety

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Background: Although substantial evidence suggests that stressful life events predispose to the onset of episodes of depression and anxiety, the essential features of these events that are depressogenic and anxiogenic remain uncertain.

Methods: High contextual threat stressful life events, assessed in 98 592 person-months from 7322 male and female adult twins ascertained from a population-based registry, were blindly rated on the dimensions of humiliation, entrapment, loss, and danger and their categories. Onsets of pure major depression (MD), pure generalized anxiety syndrome (GAS) (defined as generalized anxiety disorder with a 2-week minimum duration), and mixed MD-GAS episodes were examined using logistic regression.

Results: Onsets of pure MD and mixed MD-GAS were predicted by higher ratings of loss and humiliation. Onsets of pure GAS were predicted by higher ratings of loss and danger. High ratings of entrapment predicted only onsets of mixed episodes. The loss categories of death and respondent-initiated separation predicted pure MD but not pure GAS episodes. Events with a combination of humiliation (especially other-initiated separation) and loss were more depressogenic than pure loss events, including death. No sex differences were seen in the prediction of episodes of illness by event categories.

Conclusions: In addition to loss, humiliating events that directly devalue an individual in a core role were strongly linked to risk for depressive episodes. Event dimensions and categories that predispose to pure MD vs pure GAS episodes can be distinguished with moderate specificity. The event dimensions that preceded mixed MD-GAS episodes were largely the sum of those that preceded pure MD and pure GAS episodes.

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ALTHOUGH THE correlation between stressful life events (SLEs)[1-3] and the onset of major depression (MD) has been replicated frequently[4-8] and is probably causal,[9] the attributes that render the events depressogenic are still uncertain.

The concept of loss as the central depressogenic experience can be traced to Freud[10] and was first operationalized in SLE research as "exit events."[11] An alternative view, influenced by evolutionary theory and animal behavior research, is that reduction of status—forcing the individual into a subordinate position—is the essential depressogenic attribute of events.[12] Another perspective, influenced by animal studies,[12-14] is that helpless entrapment is the key feature of depressogenic experiences.

Another central question in life event research is the diagnostic specificity of events, as SLEs also precede episodes of anxiety disorders,[15-17] alcoholism,[18] bulimia,[19] and schizophrenia.[20] Most studies,[15,21,22] however, have examined whether SLEs are divisible into categories of depressogenic vs anxiogenic.

Building on previous methodological developments, Brown and colleagues[13] (G. W. Brown, PhD, unpublished manual, *Guidelines, Examples and LEDS-2 Notes on Rating for a New Classification Scheme for Humiliation, Loss, and Danger*, 1996) proposed a more refined system for rating 4 dimensions of SLEs: loss, humiliation, entrapment, and danger (**Table 1**). To date, only 2 studies[13,23]—both with small samples of women—have used this system.

Several previous studies have examined sex differences in sensitivity to the depressogenic effects of standard SLEs.[24] Most studies[25-28] have reported an increase in sensitivity among women that is either global or restricted to certain events usually involving either interpersonal relations or family. However, analysis of the Epidemiologic Catchment Area study data

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Table 1. Brief Definitions of Stressful Life Event Categories*

Category	Definition
	Loss Dimension
Death	Must have a rating of high moderate or severe in relation to the loss; lower-rated death-related loss was placed in the lesser loss category
Respondent-initiated separation	Same definition as the other-initiated separation category except that the separation is truly by the subject's initiative or mutual consent; the separation must be long term
Other key loss	All other loss events rated at least high moderate
Lesser loss	Any event (including death) loss rating with a level of severity of low moderate or lower
	Humiliation Dimension
Other-initiated separation	A separation from a spouse or partner or a falling out, quarreling, or rift in a relationship involving a close tie† with a reasonable inference that the separation would be permanent or that the rift with the close tie would last several months; the separation or estrangement must have been either initiated by the other person or "forced" by circumstances (such as in response to infidelity or marked violence)
Other's delinquency	Delinquent behavior of a child or a criminal act committed by a close tie
Put down	Rejection or direct verbal or physical attack by a close tie, a person of "authority," or any other person if the put down is highly public; outrageous or markedly irresponsible, upsetting behavior by a close tie or biological family member that could be humiliating or threaten a core role; all rapes; events in which the subject brought about the put down if the subject would feel marked shame, personal failure, or humiliation as a consequence
	Entrapment Dimension
Long-term sustained entrapment	An event that matches in severity ongoing serious difficulties and further serves to prove that circumstances will persist or get worse, with little or no possibility that a resolution can be achieved
Long-term worsened entrapment	An event that leads to a worsening of an ongoing, less serious difficulty of at least 6 mo duration
Failed positive event	An event that suggests that a fresh start went disastrously wrong within 1-2 wk, leaving the person stuck in a situation as bad as or worse than before with seemingly no way forward

*Note that the danger dimension does not have any categories.

†Close tie is defined typically as a spouse/partner, boyfriend/girlfriend, parent/parentlike figure, child, confidant, or close friend. Siblings and other close relatives (including those by marriage) would be included for the other-initiated separation and respondent-initiated separation categories if accompanied by a clear element of rejection and if there was no subject-initiated attempt to reconcile.

found greater male sensitivity to the depressogenic effects of marital disruption,[29] and, examining standard event categories, our group[30] found a stronger depressogenic effect of divorce or separation in men.

In this study, we examine, in 7322 male and female twins from a population-based register, SLEs blindly rated using the 4-dimension system and the onsets in the past year of (1) pure MD episodes, (2) pure episodes of a brief generalized anxiety disorder (GAD) syndrome we call generalized anxiety syndrome (GAS), and (3) mixed MD-GAS episodes. We examine these 2 disorders in part because results of twin studies[31-34] suggest that the genetic factors that influence liability to MD and GAD are so closely related that it is environmental risk factors that determine whether a vulnerable individual develops one or the other or both of these syndromes.

Using these more refined event ratings, we seek to (1) define the features of SLEs that predispose to pure MD, pure GAS, and mixed MD-GAS episodes and (2) determine whether men and women differ in the depressogenic and anxiogenic effects of these event dimensions and categories.

METHODS

SAMPLE

Our twin sample was derived from 2 projects with the population-based Virginia Twin Registry[35] formed from a systematic review of all birth certificates in the Commonwealth of Virginia. The female-female twin pairs come from birth years 1934 to 1974 and were eligible if both members had previously responded to a mailed questionnaire, which had a response rate of approximately 64%. Eighty-eight percent of our sample was first interviewed face to face between 1987 and 1989 and has subsequently been the subject of 3 additional telephone interview waves. We examine herein results from the second wave of telephone interviews, completed between 1992 and 1994.

The male-male and male-female twin pairs, from birth years 1940 to 1974, were ascertained in 1993.[35] We succeeded in interviewing by telephone 72% of those eligible. This sample was followed up in a second wave of interviews (79% of which were completed face to face), the results of which we examine herein. Interviewers were blind to information about the co-twin and previous interviews with the twin. The research protocols were approved by the institutional review board of Virginia Commonwealth University. Signed informed consent was obtained before face-to-face interviews, and verbal consent was obtained before telephone interviews.

DIAGNOSTIC ASSESSMENTS

We assessed the occurrence during the year before interview of 14 individual symptoms disaggregating the 9 A criteria for *DSM-III-R* MD.[36] For each reported symptom, interviewers probed to ensure that it was due to neither medical illness nor medication use. The interviewer and respondent then aggregated these into syndromes of co-occurring symptoms about which they then asked the months of onset and offset. The diagnosis of MD was made using *DSM-III-R* criteria excluding criterion B2.

In addition, we asked whether there were times in the past year when participants felt "anxious, nervous, or worried," their "muscles felt tense," or they "felt jumpy or shaky inside." Positive responses to these probes were followed by an assessment of all the individual symptoms of *DSM-III-R* GAD. For this study, we defined GAS as a syndrome lasting 2 weeks or longer and

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meeting 6 or more *DSM-III-R* D criteria for GAD. We used this definition so that our analyses examine symptomatic differences and not duration differences between GAD-like and MD syndromes.

We examined 3 episode types: pure MD, during the MD episode, the participant never met the criteria for GAS; pure GAS, during the GAS episode, the participant never met the criteria for MD; and mixed MD-GAS, during one episode of illness without any 2-week remission, the participant met the criteria for both MD and GAS.

SLE MEASURES

General Features

As outlined previously,[22] in a separate portion of the interview, we assessed the occurrence by month of 11 "personal" events (assault, divorce or separation, major financial problems, serious housing problems, serious illness or injury, job loss, legal problems, loss of confidant, serious marital problems, robbery, and serious difficulties at work) and 4 classes of "network" events (serious trouble getting along with an individual in the network, a serious personal crisis of someone in the network, and death or serious illness of an individual in the network). All respondents were asked about the occurrence of each of these individual events, which had to be temporally discrete. In an earlier wave of this study, Kendler et al[37] assessed the interrater reliability for the occurrence and dating of our SLE categories and found them to be good to excellent, with κ values equaling 0.93 and 0.82, respectively. Each SLE was interviewer rated on the level of long-term contextual threat,[38] previously shown to have an interrater and test-retest reliability (by weighted κ[39]) of 0.41 and 0.69, respectively.[22] We define high-threat events as those with a long-term contextual threat score of 3 (high moderate) or 4 (severe).

Coding of Event Dimensions and Categories

All high-threat SLEs were selected for additional nonmutually exclusive ratings of loss, humiliation, entrapment, and danger by using an adaptation of the measures developed by Brown et al.[13] Interview audiotapes were reviewed by a team of 1 senior and 2 experienced editors trained according to rating guidelines (G. W. Brown, PhD, unpublished manual, *Guidelines, Examples and LEDS-2 Notes on Rating for a New Classification Scheme for Humiliation, Loss, and Danger*, 1996). No team member was assigned to rate items in interviews from both individuals in a twin pair. Weekly review meetings were held to maintain rating proficiency, and blind cross-ratings of event items by different interviewers were conducted.

Levels of loss, humiliation, entrapment, and danger were rated contextually using a 5-point scale (0 indicates none present; 1, minor; 2, low moderate; 3, high moderate; and 4, severe) taking into account descriptive information provided in the interview itself, the narrative summary, and the tape-recorded interview. Reports of emotional reactions were ignored. Raters remained blind to the association of rated events with onsets of MD or GAS. Brief definitions of the event dimensions are as follows[13]:

Loss. Diminution of a sense of connectedness or well-being potentially covering every aspect of life, including a real or realistically imagined loss of a person, material possessions, health, respect in the community, employment, or a cherished idea about self or a close tie.
Humiliation. Feeling devalued in relation to others or to a core sense of self, usually with an element of rejection or a sense of role failure.
Entrapment. Ongoing circumstances of marked difficulty of at least 6 months' duration that the individual can reasonably expect to persist or get worse, with little or no possibility that a resolution can be achieved as a result of anything that might reasonably be done.
Danger. The level of potential future loss, including the chance that a given traumatic event will recur or reflecting a possible sequence of circumstances in which the full threat or dire outcome has yet to be realized.

We rated all 4 dimensions on each high-threat event (differing thereby from Brown et al,[13] who rated humiliation and entrapment conditional on high ratings of loss and danger). In addition to scoring these dimensions, we scored 1 of 3 hierarchically specific categories for humiliation and entrapment and 1 of 4 categories for loss (Table 1).

Interrater reliability of the dimensions was assessed blindly by pairs of raters examining 348 individual events with the following weighted κ estimates (and 95% confidence intervals [CIs]): loss, 0.77 (0.72-0.83); humiliation, 0.87 (0.84-0.91); entrapment, 0.92 (0.87-0.96); and danger, 0.79 (0.75-0.83). When both raters agreed on a nonzero dimension score, the weighted κ estimates (and 95% CIs) for the categories were as follows: loss, 0.91 (0.87-0.95) (n=348); humiliation, 0.99 (0.97-1.00) (n=107); and entrapment, 0.92 (0.81-1.00) (n=47).

STATISTICAL METHODS

To model an underlying continuous-time process with data grouped into person-months, discrete-time survival analysis was carried out in SAS PROC GENMOD[40] using a complementary log-log link function.[41] Advantages of this approach compared with the logit link are that the model is invariant to intervals of different lengths and that the results can be interpreted similarly to a Cox proportional hazards model. Each person-month of observation contained information as to which, if any, SLEs occurred or when an episode of MD or GAS began. Each observation record also included 3 covariates: sex, previous history of MD or GAS within the past year, and the hazard rate (HR) for MD or GAS for that month. When a twin experienced an episode of MD or GAS, the data were censored until the twin was again at risk, having recovered from that episode.

Our person-month files with high-threat SLEs present 2 sources of clustering: multiple observations per person and per twin pair. To handle this complex covariance structure, we used the method of independence estimating equations,[42] which are generalized estimating equations with a diagonal working correlation matrix. This method gives consistent estimators of standard errors even when the working correlation structure is incorrect. Although our hypotheses were directional, 2-tailed *P* values are reported.

RESULTS

PURE MD

For all of the analyses, the sample contained 7322 twins with 98 592 person-months. Of these person-months, 4251 (4.3%) contained a high-threat event. The polycoric correlations of ratings of the 4 SLE dimensions on these 4251 events were low between humiliation and entrapment, humiliation and danger, and loss and danger (≤0.10 for all) but higher between entrapment and danger (0.48), humiliation and loss (0.39), and entrapment and loss (0.32). The mean (SD) ratings for these 4 dimensions were as follows: loss, 2.74 (0.67); humilia-

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Table 2. Hazard Ratios (95% CIs) for Onset of 3 Disorders by Month After Occurrence of High-Threat Events

Disorder and Life Event Dimension	Month After Event Occurrence			
	0	1	2	3
MD only				
Loss	1.70 (1.47-1.92)*	1.17 (0.91-1.50)	0.90 (0.73-1.12)	1.07 (0.85-1.35)
Humiliation	1.44 (1.28-1.63)*	1.03 (0.80-1.32)	1.01 (0.80-1.29)	1.05 (0.82-1.34)
Entrapment	1.02 (0.89-1.17)	0.96 (0.73-1.26)	0.93 (0.69-1.26)	1.03 (0.81-1.31)
Danger	0.95 (0.82-1.10)	1.04 (0.80-1.36)	1.16 (0.92-1.47)	1.10 (0.81-1.50)
MD and GAS				
Loss	1.51 (1.28-1.78)*	1.29 (0.89-1.86)	1.03 (0.75-1.41)	0.80 (0.59-1.07)
Humiliation	1.43 (1.24-1.64)*	0.80 (0.56-1.14)	0.96 (0.74-1.25)	1.07 (0.81-1.42)
Entrapment	1.12 (0.95-1.31)	1.33 (1.09-1.61)‡	1.10 (0.87-1.39)	1.04 (0.79-1.38)
Danger	1.04 (0.86-1.25)	1.48 (1.12-1.95)‡	1.22 (0.91-1.64)	1.24 (0.92-1.66)
GAS only				
Loss	1.35 (1.13-1.61)*	0.98 (0.66-1.45)	1.26 (0.98-1.60)	0.95 (0.71-1.27)
Humiliation	1.01 (0.84-1.21)	0.99 (0.72-1.36)	1.01 (0.71-1.44)	0.76 (0.49-1.19)
Entrapment	0.98 (0.81-1.18)	0.98 (0.70-1.38)	0.92 (0.63-1.33)	1.08 (0.80-1.47)
Danger	1.18 (1.01-1.39)†	1.13 (0.84-1.51)	1.30 (0.87-1.93)	1.50 (1.13-1.99)‡

Abbreviations: CI, confidence interval; GAS, generalized anxiety syndrome; MD, major depression.
*$P<.001$.
†$P<.05$.
‡$P<.01$.

tion, 0.61 (1.19); entrapment, 0.25 (0.81); and danger, 1.55 (1.38).

The baseline risk per month for a pure MD episode was 0.6%. In the month of occurrence, high-threat events were strongly associated with pure depressive onsets (HR, 10.1; 95% CI, 7.2-14.0; $P<.001$). **Table 2** depicts the impact of event dimensions, in the month of occurrence, on the HRs for pure MD. In months containing high-threat events, the risk for a depressive onset was significantly increased by high ratings for loss (HR, 1.70) and humiliation (HR, 1.44) but not for entrapment (HR, 1.02) or danger (HR, 0.95). We then ran a model containing the 2 strong predictors, and both remained significant (loss: HR, 1.56; 95% CI, 1.34-1.81; and humiliation: HR, 1.29; 95% CI, 1.14-1.46; $P<.001$ for both), indicating that each dimension independently contributed to predicting depressive onsets.

Next, we examined the impact of event dimensions on risk of a pure depressive onset 1, 2, and 3 months after the event occurrence. None were significant (Table 2).

MIXED DEPRESSION/ANXIETY EPISODES

The baseline risk per month for a mixed depression/anxiety episode was 0.5%. In the month of occurrence, high-threat events were strongly associated with the onset of a mixed depression/anxiety episode (HR, 6.6; 95% CI, 5.3-8.3; $P<.001$). In months containing high-threat events, the risk for an onset of mixed episodes was significantly increased by high ratings for loss (HR, 1.51) and humiliation (HR, 1.43) but not for entrapment (HR, 1.12) or danger (HR, 1.04) (Table 2). We then ran a model containing the 2 strong predictors, and both remained significant (loss: HR, 1.37; 95% CI, 1.16-1.63; and humiliation: HR, 1.31; 95% CI, 1.13-1.52; $P<.001$ for both), indicating that each dimension made an independent contribution to the prediction of mixed depression/anxiety onsets. Next, we examined the impact of event dimensions on risk of a mixed episode onset 1, 2, and 3 months after the event occurrence (Table 2). One month after event occurrence, ratings of entrapment (HR, 1.33) and danger (HR, 1.48) significantly predicted onset.

PURE GAS

The baseline risk per month for a pure GAS episode was 0.7%. In the month of occurrence, high-threat events were significantly associated with the onset of a pure anxiety episode (HR, 4.5; 95% CI, 3.6-5.6; $P<.001$). In months containing high-threat events, the risk for an onset of a pure GAS episode was significantly increased by high ratings for loss (HR, 1.35) and danger (HR, 1.18) but not for humiliation (HR, 1.01) or entrapment (HR, 0.98). We then ran a model containing the 2 significant predictors. Loss remained significant (HR, 1.34; 95% CI, 1.12-1.61; $P=.001$), and danger fell below traditional levels of statistical significance (HR, 1.16; 95% CI, 0.99-1.36; $P=.07$). Next, we examined the impact of event dimensions on risk of a pure GAS episode onset 1, 2, and 3 months after the event occurrence (Table 2). The only significant finding was an impact of danger ratings 3 months after event occurrence (HR, 1.50).

LOSS, HUMILIATION, AND ENTRAPMENT CATEGORIES

We examined the categories of loss, humiliation, and entrapment for all analyses in which that SLE dimension significantly predicted onsets (**Table 3**). Compared with SLEs with the category of lesser loss, the specific categories of loss, in the month of event occurrence, carried substantially increased risk for onset of pure MD: death (HR, 2.99), respondent-initiated separation (HR, 3.18), and other key loss (HR, 2.58). Compared with high-threat events with no evidence of humiliation, the risk of a pure depressive onset in the month of event occurrence was

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Table 3. Prediction of Onset of 3 Disorders as a Function of Event Category Within the Month of Occurrence of High-Threat Events

Life Event Dimension and Category	Hazard Ratio (95% CI)		
	MD Only	MD + GAS	GAS Only
Loss			
Death	2.99 (1.76-5.09)*	2.64 (1.34-5.18)†	1.05 (0.49-2.25)
Respondent-initiated separation	3.18 (1.76-5.75)*	1.78 (0.77-4.08)	1.20 (0.52-2.78)
Other key loss	2.58 (1.70-3.93)*	2.97 (1.79-4.92)*	2.06 (1.34-3.18)*
Humiliation			
Other-initiated separation	3.09 (2.10-4.57)*	2.88 (1.87-4.44)*	NE
Other's delinquency	1.58 (0.64-3.82)	1.55 (0.57-4.24)	NE
Put down	1.73 (1.14-2.64)†	1.70 (1.12-2.88)‡	NE
Entrapment			
Long-term sustained entrapment	NE	2.74 (1.19-6.32)‡§	NE
Long-term worsened entrapment	NE	2.18 (0.79-6.02)§	NE
Failed positive event	NE	NE	NE

Abbreviations: CI, confidence interval; GAS, generalized anxiety syndrome; MD, major depression; NE, could not be estimated because of small sample size.
*$P<.001$.
†$P<.01$.
‡$P<.05$.
§Estimated for the month after event occurrence.

substantially increased for those with other-initiated separation (HR, 3.09), with a weaker but still significant effect seen for put down (HR, 1.73).

For mixed depression/anxiety episodes, the pattern of results was similar to that seen for pure MD for the categories of loss and humiliation in the month of event occurrence (Table 3). The only substantial difference was that with mixed episodes, respondent-initiated separation no longer significantly predicted onset. Compared with SLEs with no entrapment rating, mixed depression/anxiety episodes were significantly predicted by long-term sustained entrapment 1 month after event occurrence.

Pure GAS episodes were significantly predicted, in the month of event occurrence, only by other key loss and not by the 2 other categories of loss (death and respondent-initiated separation).

Given the strong and similar predictive roles for loss and humiliation in the month of event occurrence for pure MD and mixed depression/anxiety episodes, we explored the risk for both syndromes collapsed together as a function of the categorizations of both loss and humiliation (**Table 4**). This examination is limited by the strong interdependencies of these 2 ratings. As expected, all death events and nearly all respondent-initiated separations were rated as having no humiliation. Furthermore, other's delinquency and other-initiated separation were rarely seen with lesser loss. The highest risk of onset (21.6%) occurred when an event was rated as other-initiated separation and other key loss. By contrast, if other-initiated separation was linked with lesser loss, the event carried a much lower risk for onset (2.6%).

Four other combinations carried risks for depressive onsets of approximately 10%. Two of these were pure loss events with zero ratings for humiliation: death and respondent-initiated separation. The other 2 each had other key loss ratings accompanied by humiliation categories of either other's delinquency or put down.

Table 4. Raw Risk for a Depressive Onset in the Month of Event Occurrence as a Combination of the Categories of Humiliation and Loss*

Humiliation Category	Loss Category			
	Lesser Loss	Other Key Loss	Respondent-Initiated Separation	Death
None	3.3 ± 0.1	5.8 ± 0.1	10.2 ± 0.6	9.9 ± 0.4
Put down	5.6 ± 0.5	12.8 ± 0.6	5.5 ± 5.5†	‡
Other's delinquency	7.1 ± 7.1†	10.8 ± 1.1	‡	‡
Other-initiated separation	2.6 ± 2.6†	21.6 ± 0.9	‡	‡

*Data are given as mean ± SE percentage.
†Categories with only 1 depressive onset.
‡Categories with fewer than 5 events with no depressive onset.

IMPACT OF EVENT DIMENSIONS AND CATEGORIES IN MEN VS WOMEN

In the month of event occurrence, we examined the interaction between sex and event ratings in the prediction of episode onsets. None of these 12 tests (4 event dimensions times 3 syndromes) were significant.

COMMENT

SLEs AND RISK FOR PURE MD, MIXED MD-GAS, AND PURE GAS

SLE Dimensions

Among high-threat events that were strongly associated with pure depressive onsets (HR, 10.1), we determined whether dimensions of these SLEs particularly reflected risk for MD. We found that both loss and humiliation assess core aspects of depressogenic SLEs. By contrast,

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levels of entrapment and danger were unassociated with risk of pure MD. When examined together, levels of both loss and humiliation substantially predicted onset of MD, with the impact of loss being more potent. In accord with several previous studies[5,7,43] of the SLE-MD relationship, the impact of these events on risk of depression was short-lived, as no significant associations were seen outside the month of event occurrence.

High-threat events, as a class, were also strongly associated with the onset of mixed depression/anxiety syndromes (HR, 6.6). In the month of event occurrence, the risk for such mixed syndromes was also further predicted by high levels of loss and humiliation but not entrapment or danger. However, 1 month after a high-threat event, mixed depression/anxiety episodes were significantly predicted by high levels of entrapment and danger.

The onset of pure GAS episodes was also significantly predicted by high-threat events, although the magnitude of the association (HR, 4.5) was less than that seen with the depressive syndromes. In the month of occurrence of high-threat events, pure GAS episodes were modestly and significantly predicted by loss. Of note, the strength of the association with loss was strongest for pure MD episodes (HR, 1.70), weakest for pure GAS episodes (HR, 1.35), and intermediate for mixed depression/anxiety episodes (HR, 1.51). High ratings of danger also significantly increased risk for a pure anxiety episode in the month of event occurrence and, more strongly, 3 months later.

SLE Categories

In addition to rating dimensions of high-threat events, event categories were available for loss, humiliation, and entrapment. A unique pattern of associations was seen among the 3 categories of loss and the 3 types of episodes. Pure MD was significantly associated with death, respondent-initiated separation, and other key loss. Mixed depression/anxiety episodes were significantly associated with death and other key loss. Pure GAS was only significantly predicted by other key loss.

In contrast, the patterns of findings for the event categories of humiliation were identical for the pure depressive and mixed depression/anxiety episodes: significant associations with other-initiated separation and put down. The entrapment categories were examined only for the mixed episodes, in which a significant association was seen only with long-term sustained entrapment.

The most refined analysis we performed was an examination of the risk for depressive onsets (pure and mixed) as a function of ratings of high-threat events on categories of loss and humiliation. By far, the highest risk was seen for events scored as the loss category of other key loss and the humiliation category of other-initiated separation. The probability of a depressive onset associated with this kind of event was more than twice as great as that seen with pure loss associated with death or respondent-initiated separation.

Previous Literature

Both previous studies[13,23] that used these event ratings examined only depressive onsets and only in women. Like us, Brown et al[13] found that the highest risk of depression was associated with combined humiliation and loss events, whereas danger ratings were at most weakly associated with onsets. Unlike us, however, they found that entrapment events were strongly predictive of risk for MD and that death was more strongly associated with depressive onsets than was respondent-initiated separation. Broadhead and Abas[23] found that with high-threat events, the rates of depressive onset were highest after the combined categories of humiliation or entrapment, next highest with loss due to death, next with other forms of loss, and lowest after danger events. Given the differences between these studies and ours in sample composition, assessment methods, and diagnostic outcomes, the similarity of results is reassuring.

Previous studies, using a variety of samples and methods, have attempted to distinguish anxiogenic and depressogenic features of SLEs. Results have ranged from no evidence of specificity[44,45] to moderate distinctions[16,22,46] to high levels of event specificity.[15] One study[15] examined SLEs before mixed depression/anxiety episodes and found that they were significantly more frequently preceded by severe loss and danger events than were pure depressive or pure anxiety syndromes.

SEX DIFFERENCES IN THE RESPONSE TO EVENT DIMENSIONS

Using relatively refined SLE dimensions, we did not uncover any significant differences in sensitivity to the depressogenic or anxiogenic effects of SLEs in men and women. We were, therefore, unable to contribute to an understanding of the well-documented sex differences in the prevalence of depressive and anxiety disorders.[47]

SIGNIFICANCE

We highlight 5 results. First, beginning with high contextual threat events, themselves strongly related to risk of MD and/or GAS, we detected event characteristics that further predicted onsets. The pathogenic effects of SLEs on depressive and anxiety conditions are not fully captured by a single severity dimension.

Second, in addition to loss, humiliation events were strongly linked to risk of depressive episodes. Indeed, the most potent depressogenic events combined elements of both dimensions. Environmental experiences that involve loss of status and elicit "psychobiological programmes of defeat and submission"[12(p207)] are more depressogenic than those involving solely loss.

Third, we found moderate specificity for the prediction of pure MD vs pure GAS episodes. Using event dimensions, humiliation predicted onsets of pure MD but not pure GAS episodes, and danger predicted pure GAS but not pure MD episodes. Loss was not specific. However, using event categories, death and respondent-initiated separation were specific for pure depressive episodes. These results are consistent with findings[31-33] from twin modeling that suggest that the correlation in environmental risk factors for MD and GAD is positive but only moderate in magnitude.

Fourth, the event dimensions that preceded mixed

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depressive/anxiety episodes were approximately the sum of those that preceded pure MD (loss and humiliation) and pure GAS (danger). The exception to this pattern was the significant association of high levels of entrapment to onsets of mixed episodes.

Fifth, although the effects of loss and humiliation on risk of episode onset were restricted to the month of event occurrence, the impact of danger (and perhaps entrapment) on risk of illness was more prolonged.

LIMITATIONS

Five limitations are noteworthy. First, because our sample consisted entirely of white twins from Virginia, these findings may not extrapolate to other ethnic groups or geographic regions. Second, our analyses assumed that when SLEs occurred in the same month as depressive onsets, the relationship between these 2 was causal. In another section of our interview, we inquired of twins with depressive onsets in the past year whether anything happened to precipitate their episodes. Using data from the first 2 waves of our study,[37] we examined interviews from 96 twins who reported a severe SLE and a depressive onset in the same month. In 84% of them, the twin responded with the same previously reported SLE. In another 11%, they reported a different SLE that had also co-occurred in the same month in an understandable sequence of events including the severe SLE. We replicated these results for a later wave,[22] in which a review of 102 similar cases revealed none in which the depressive onset plausibly caused the SLE. Although our data are retrospective (over the recall interval of up to 1 year), our analyses support the assumption of a largely causal relationship between the SLE and the onset of MD when they occur in the same month. Furthermore, analyses based on a co-twin control design suggest that most of the SLE-MD relationship is a causal one.[9] Third, unlike the methods of Brown et al[13] for rating event dimensions and categories by committee, they were, in our study, performed by a small team of editors with high interrater reliability. Given our sample size, rating each SLE by committee would have been unfeasible. Fourth, our diagnostic category of GAS was unconventional—although the minimum duration was that required for GAD when it was first proposed.[48] We kept differences between GAS and MD to the level of symptoms, thereby not confounding our analyses with differences in duration. We repeated our analysis using a 1-month minimum duration for GAS—as required in *DSM-III*[49]—and found only modest changes.

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