Dimensions of life events and difficulties as predictors of the onset of major depression

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Dimensions of life events and difficulties as predictors of the onset of major depression

by

Michelle Jacqueline Freedman

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY

Major: Psychology (Counseling Psychology)
Major Professor: Carolyn Cutrona

Iowa State University
Ames, Iowa
2000

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This is to certify that the Doctoral dissertation of

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INTRODUCTION

The etiology of psychiatric disorders has long been the subject of research and debate. Today, few investigators would endorse a purely medical model or a purely environmental model of the origins of mental illness (Rabkin, 1993). Most would agree that a combination of genetic, biological, psychological, and environmental factors are likely to contribute to the onset of disorder, yet questions about the relative influence of each of these factors still abound (Engel, 1977; Tennant, Bebbington, & Hurry, 1981; Van Praag, 1981).

From the environmental perspective, a large body of literature exists that consistently demonstrates a relationship between life stress and depression (see Kessler, 1997, or Mazure, 1998, for a review.) Elucidating the specific nature of this relationship has been the primary focus of many research programs. The recognition that most people confronted with severe stress do not develop psychiatric disorders has prompted the exploration for other factors that make some individuals more vulnerable to disorder than others. One major line of inquiry in this area conceptualizes social resources (e.g., social support) and psychological resources (e.g., self-esteem, sense of control, and self-efficacy) as key protective factors in the stress-distress relationship (Brown & Harris, 1978; Cohen & Wills, 1985; DeLongis, Folkman, & Lazarus, 1988; Ensel & Lin, 1991; Folkman, 1984; Lefcourt, Miller, Ware, Sherk, 1981). For example, it has been found that these intervening psychosocial variables mediate or moderate (i.e., buffer) the potential harmful consequences of external stressors such as major life events, role strains, and daily hassles. In addition, a direct or main effect has been found whereby these psychosocial variables guard against distress regardless of whether stressors are present or absent.

The present study was developed to further examine the role of life stress, as measured by events (acute) and ongoing difficulties (chronic), in the onset of major depression. The context in which data was collected occurred over a period of several years that included the summer of 1993 when the entire state of Iowa was declared a disaster area.
due to severe flooding. This natural disaster provided a unique opportunity to further examine the role that severe life events and major difficulties play in the onset of depression. Also, this study examined how the psychosocial resources of perceived social support and sense of control intervene in the relationship between life stress and depression. Finally, a history of depression will be examined to see if it acts as a vulnerability factor to future onsets and if it predisposes people to experience more life events and difficulties.
LITERATURE REVIEW

The concept of stress as a factor in the etiology of psychiatric illness has generated much research over the past 30 years. Three broad traditions have characterized the conceptualization and measurement of stress in its relationship to illness onset (Cohen, Kessler, & Gordon, 1995). The environmental perspective focuses on external events or experiences that are objectively associated with substantial adaptive demands placed on the individual. The psychological tradition focuses on an individual's subjective evaluation of his/her ability to cope with the demands presented by specific events or experiences. The biological perspective focuses on the activation of physiological systems that are particularly responsive to physical and psychological demands.

The main focus of this review will be on the environmental perspective of the stress-illness relationship. A significant portion of this research has conceptualized stress in terms of life events. Over the years, stressful life events, measured and conceptualized in different ways, have been shown to be related to a wide variety of physical and mental disorders (for reviews see Brown & Harris, 1989; Dohrenwend & Dohrenwend, 1974; Mazure, 1998; Thoits, 1983). However, there is much controversy about the interpretation and significance of these relationships (Rabkin & Struening, 1976; Tennant, Bebbington, & Hurry, 1981).

The Study of Life Events

Methods for Assessing Life Events

Checklist approach. There are two predominant methods of measuring life events: self-report checklists and interview-based procedures. The vast majority of studies on the relationship between life events and illness have used some form of a self-report checklist approach (for reviews see Thoits, 1983; Zimmerman, 1983). Much of this research originated from the pioneering work of Holmes and Rahe (1967) who developed the Social Readjustment Rating Scale (SRRS) in an attempt to quantify life stress. Holmes and Rahe were heavily influenced by the work of Adolf Meyer who in the 1930s advocated the use of
the life chart in medical diagnosis. He believed that ordinary life events, if they were stressful, could play a role in the etiology of disease. He urged physicians to undertake a systematic inquiry into such life events as part of their clinical assessment by having them fill out a life chart on their ill patients. Events that Meyer considered important included changes of habitat, entering school, graduations, failures, births and deaths in the family, and other fundamentally important environmental incidents (Meyer, 1951).

Even with such early beginnings, the field of life events research did not flourish until the publication of the SRRS in 1967 which resulted in a proliferation of studies investigating the relationship between life stress and illness (Dohrenwend & Dohrenwend, 1974). The simplicity of the SRRS contributed to its popularity: it is usually self-administered, takes little time to complete, and it seems to provide a straightforward quantitative measure of life stress. However, as investigators have gained more experience with the SRRS and other measures like it, the apparent simplicity has given way to greater appreciation of the complexity of this line of inquiry and the limitations of the checklist approach (Brown, 1974; Gorman, 1993; Katschnig, 1986; McQuaid et al., 1992; Monroe & Roberts, 1990; Raphael, Cloitre, & Dohrenwend, 1991).

The methods used in the SRRS and other life event checklists developed in the same tradition have drawn as much criticism as investigative inquiry (Brown, 1974; Dohrenwend & Dohrenwend, 1978; Katschnig, 1986; Rabkin & Struening, 1976; Tennant et al., 1981). These critics have raised serious questions about the reliability and validity of respondent-based measures of life events. One of the major criticisms of the SRRS is the variability within event categories (Dohrenwend, Link, Kern, Shroot, & Markowitz, 1987). The SRRS presents respondents with a list of 43 life events and asks them to indicate whether or not they have experienced any of the events in a specified period of time. The vague wording of some of the items leaves a significant amount of room for interpretation on the part of the respondent. For example, "change in health of family member" or "death of a close family
member” requires the respondent to determine what constitutes a “change in health” and whom to include as a “close family member.” With nothing to help ensure standardization in interpretation across individuals, there is substantial variability in what respondents may define as events (Dohrenwend et al., 1987; McQuaid et al., 1992).

Other problems with variability involve the weights assigned to each life event on the SRRS. These weights are supposed to represent an objective measure of the magnitude of readjustment associated with the occurrence of each life event. The weights were derived from a calibration study whereby a volunteer sample of 394 judges rated the amount of readjustment each event required (Holmes & Rahe, 1967). Again, the vague specification of the events to be rated resulted in great variability in judges’ scores (Dohrenwend, Krasnoff, Askenasy, Dohrenwend, 1978). This variability within each event category is then lost by assigning to it the average value of the judges’ scores. For example, “change in health of family member” is given a score of 44 for everyone regardless of whether the judge interprets “change” as positive, negative, small, or large, or “family member” as spouse or child versus a distant aunt. Such variability in the interpretation of life event items by both judges and respondents makes it difficult to interpret results that show associations between life events and illness (Brown, 1974; Dohrenwend et al., 1987).

Another major problem with the SRRS is the potential confounding of items on the life event scale with mental health outcome variables. For example, “change in eating habits,” “change in sleeping habits,” and “sexual difficulties” may themselves be symptoms or consequences of physical or psychological disorder. However, the extent to which these items may inflate the correlations between life events and illness is debated (Tausig, 1982; Turner & Wheaton, 1995).

Another issue is whether it is change per se or undesirable change that is most important to the onset of illness. The item content of the SRRS reflects Holmes’ and Rahe’s belief that life change is the crucial dimension of events, regardless of whether is it positive...
or negative. However, most studies addressing this issue have shown that negative or undesirable life events are more powerful predictors of mental health outcomes than positive events or the total amount of change (Gersten, Langner, Eisenberg, & Orzek, 1974; Paykel, 1974; Vinokur & Selzer, 1975). Zautra and Reich (1983) reviewed 17 studies that examined the relationships of desirable and undesirable events to measures of psychological distress and came to the same conclusion that negative events are more highly related to psychological impairment than positive events. These findings suggest that the inclusion of positive events (e.g., “outstanding personal achievement”) and ambiguously worded events (e.g., “change in residence,” “change in financial state”) in checklist measures confound the total amount of change with total undesirable change. Thus, the SRRS and other similar checklists may underestimate the correlation between life events and psychological disorder (Kessler, 1997; Thoits, 1983).

Various life event scales have been developed in response to these and other criticisms (Turner & Wheaton, 1995; Zimmerman, 1983). Some have attempted to increase the comprehensiveness of the measure by expanding the range of events evaluated (Dohrenwend, Askenasy, Krasnoff, & Dohrenwend, 1978); others have taken into account the desirability or valence of the event rather than readjustment (Paykel, Pursoff, & Uhlenhuth, 1971; Sarason, Johnson, & Siegel, 1978; Tennant & Andrews, 1976); and others have used the respondents’ subjective estimates of the stressfulness of the events they experience (Rahe, 1975; Sarason et al., 1978). There is some evidence these “second generation” checklist measures are more reliable and valid than the SRRS (Zimmerman, 1983). Nevertheless, there are those who continue to question the ability of the checklist approach to measure something as complex and multifaceted as life stress (Brown, 1974; Gorman, 1993; Katschnig, 1986; McQuaid et al., 1992; Monroe & Roberts, 1990; Raphael, et al., 1991).
**Interview-based approach.** A more drastic change in the measurement of life events came with the introduction of the interview-based method of assessment developed by Brown & Harris (1978). The instrument they developed, the Life Events and Difficulties Schedule (LEDS), is an in-depth, face-to-face, semi-structured interview designed to gather as full an account as possible of certain life events (discrete stressors) and difficulties (ongoing problems lasting at least 4 weeks) believed to be important in the etiology of disease. Respondents are asked a series of questions about the occurrence of certain types of events over a specified period of time (usually one year). Positive responses are followed up with questions about the objective circumstances surrounding the event such as “What led up to the event?” and “What followed it?” Only general guidelines are given for probing, leaving considerable judgment up to the interviewer to determine whether the respondent reported something severe enough to require additional questioning. The interviewer’s judgment is informed by detailed knowledge of the rules and guidelines of the LEDS scoring system. These rules and guidelines, along with approximately 5,000 case examples of rated life events and difficulties, are contained in dictionaries produced by Brown, Harris, and their colleagues. The case examples allow raters to “anchor” their rating of an event with standardized ratings, which helps to increase reliability and standardization across studies.

Unlike the checklist approach that leaves the operationalization of what constitutes an event in the hands of the respondent, the interview-based procedure depends on the investigator to determine, using explicit criteria and guidelines, if a respondent’s experience qualifies as an event or difficulty. After completing the LEDS interview, a team of raters blind to the respondent’s psychiatric status and emotional reactions is presented detailed information about each life event and difficulty. The raters make consensual ratings on numerous dimensions of life events such as long-term contextual threat, focus (the person whom the event primarily affected), and independence (the degree to which the occurrence of
an event is external to the respondent rather than the result of a possible emotional disorder) (Brown & Harris, 1978).

Long-term contextual threat is a key component in the measurement of severity in the LEDS rating system. “Threat” is the uncertainty and anticipation of negative consequences associated with an event or difficulty. The “long-term” component of this rating specifies that the rating should be based on the probable “threat” that remains 7-10 days after the onset of the event. The rating is “contextual” in that it takes into consideration background information about the respondent and the circumstances surrounding the event or difficulty. For example, the contextual threat rating of a pregnancy in the LEDS system would take into consideration whether the pregnancy was welcome or an unhappy surprise; the woman’s financial and housing situation; marital status and quality of marriage; the number and ages of other children the woman may have; and any other negative consequences brought about by the pregnancy. When taking these factors into consideration, raters make normative judgments in the sense that they base their ratings on how the “average” person with this particular biography and these circumstances would experience this event. Thus, these ratings are more sensitive to the likely meaning of the event to the individual, yet are still anchored in the objective circumstances of the situation (Brown & Harris, 1978).

In order to claim that an event plays a causal role in the onset of depression, researchers must show that the event occurred before the onset of illness. However, establishing the date of onset can be difficult given that some disorders (including depression) can have an insidious onset or prodromal phase. Recognizing the “cart versus horse” issue, many researchers have tried to classify events according to their “independence” from depression or its insidious onset (Brown & Harris, 1978; Dohrenwend et al., 1993). For example, in the LEDS system an event is rated “independent” if on logical grounds its occurrence was outside the control of the subject (e.g., subject’s spouse diagnosed with cancer). Events are classified as “possibly independent” when they are not logically independent of depression
(or its insidious onset) but there is no evidence that they are related to any unusual behavior of the subject. Finally, events are rated “dependent” when it is believed they might be related to illness related behavior (Brown & Harris, 1978).

The LEDS has been criticized on several grounds and has not gained as wide an acceptance in the U.S. as in Europe. First, many researchers are deterred from using this method because the in-depth interviews are very labor intensive (interviewer training, lengthy interviews plus post-interview consensual rating sessions) and therefore very costly. Another obstacle has been the perceived complexity of the LEDS rating system (Kessler, 1997; Wethington, Brown, & Kessler, 1995). On a conceptual level, critics have argued that the contextual rating of threat is so broad in its scope that it confounds the measurement of life events with other variables of etiologic importance. Combining aspects of the respondent’s personal and social environments (e.g., social support) into contextual ratings precludes the independent measurement of these separate, potentially stress-modifying factors (Dohrenwend et al., 1987; Tennant, Bebbington, & Hurry, 1981). As a result, understanding the nature of the stress-illness relationship is hindered since there is no way to determine which factors account for a particular association (Dohrenwend et al., 1987; Dohrenwend, Raphael, Schwartz, Stueve, & Skodol, 1993). However, it should be noted that critics generally agree that the LEDS approach, although far from perfect, is preferable to the checklist approach (Tennant et al., 1981).

Other researchers have developed alternatives to the LEDS approach in an attempt to improve upon some of the weaknesses noted above (for review see Wethington, Brown, & Kessler, 1995). One of the more highly developed of the alternative systems is the Structured Event Probe and Narrative Rating (SEPRATE) which combines components of an event checklist with the qualitative probes of an interview (Dohrenwend et al., 1993). Respondents are presented with a series of yes/no questions about the occurrence of 84 types of events or difficulties. Positive responses are probed with structured questions to obtain a descriptive
narrative detailing what happened before, during, and after the event occurred. Descriptions of the events are abstracted from the interview and rated by two or more raters (other than the interviewer) on several dimensions. However, unlike the LEDS, these event descriptions are edited to remove any reference to the respondent’s social and personal characteristics. This is done to avoid the confounding of these potential “vulnerability” factors with measures of life event characteristics (Dohrenwend et al., 1993). The raters are also blind to the respondent’s emotional response to the event and psychiatric status. Other similar methods based on a life event checklist with qualitative probes include the Detroit Couples Study Life Events Method (Kessler & Wethington, 1991); the Munich Event List (Wittchen, Essau, Hecht, Teder, & Pfister, 1989); and Paykel’s Interview for Recent Life Events (Paykel, 1997).

Some researchers have developed shortened or modified versions of the LEDS in order to simplify it and make it more economical. The Structured Life Events Inventory (SLI) is a more structured version of the open-ended, semi-structured LEDS (Wethington, Kessler, & Brown, 1993). A major goal in designing the SLI was to reproduce the critical measurement and rating features of the LEDS while using interviewing techniques more consistent with conventional American survey methods. The SLI consists of two types of questions: 1) “stem” questions that are read verbatim (e.g., “In the last 12 months, did any close friend, close relative or household member die, someone important to you?”); and 2) structured and/or “free” probes that are administered after a “yes” response to a stem question. Structured probes are read word for word, while free probes serve only as suggestions allowing the interviewer to reword or tailor the questions for individual situations and for individual respondents. This allows the interview to proceed in a more extemporaneous, conversational manner similar to the LEDS. The structured and free probes were designed to elicit the kind of information necessary to rate long-term contextual threat (Wethington, 1997).
Like the LEDS, all probes in the SLI are designed to assess the objective features of events, not the respondent's emotional reactions to them. Interviewers make judgments about the severity of the event or difficulty during the interview and record this rating in the interview, along with a detailed description of the event or difficulty. The burden on the interviewer to obtain such in-depth precise information has been minimized as much as possible by reducing reliance on interviewer memory. The SLI was designed so that as many instructions as possible for determining severity are in the interview schedule itself. Questions were designed to screen out as soon as possible events that are not likely to be severely stressful. This helps to avoid time consuming probing of events and difficulties that are of low severity. Also, for each question sequence, optional probes were designed to be sensitive to contextual variations that make an event more or less severe. Completed interviews are then examined and rerated by an expert rater trained in the LEDS method in order to monitor interviewer judgment and maintain consistency (Wethington et al., 1995).

The more structured nature of the SLI makes it easier to teach and requires less training time than the LEDS. Interviewers are given 3 days of training and a training manual that describes the general principles used to make life event ratings along several different dimensions. Interviewers are also trained in how to probe effectively and complete practice exercises of ratings based on examples from the LEDS dictionaries. In an experimental study launching the SLI in 1992, it was found that the average interview production time (including interviewing, interviewer travel time, coding, rating, and data entry) for the SLI was 9.2 hours per interview compared to 16.3 hours per interview for the LEDS (Wethington, 1997). In addition, an average of 8 SLI interviews were able to be completed per week compared to a weekly average of 3.5 LEDS interviews. Although the SLI is less expensive than the LEDS, it still requires a significant investment of time, training, and supervision. In addition, the SLI requires a higher level of skill from its interviewers than those trained in conventional survey methods.
Reliability of Life Event Measures

Development of reliable and valid measures of life events has been a continual challenge for researchers in this field of study. There has been enormous variability in the reported estimates of reliability and validity of life event measures (Neugebauer, 1984; Thoits, 1983; Zimmerman, 1983). Part of this variability seems to be due to the different techniques used to assess reliability and validity as well as to differences in data collection methods (checklist versus interview). To examine reliability, investigators have generally examined the distribution of recalled events over time, test-retest reliability, and patient-informant agreement (Thoits, 1983).

Some investigators have looked at the "falloff" or decline in reported events over time as a measure of the reliability of recall. One would not expect a significant decline in the average number of events reported from recent to more distant months if recall is accurate. Several studies using self-administered checklists reported fall-off rates between 5% and 9% per month (Nelson, Mensh, Hecht, & Schwartz, 1972; Uhlenhuth, Shelby, Haberman, Balter, & Lipman, 1977). In these studies, significantly more events were reported to have occurred in recent months than in more remote months. Raphael et al. (1991) reported a fall-off rate of 34.4% for persons with temporomandibular pain disorder syndrome and 38% for healthy controls for the more distal 6-month period compared to the more proximal 6-month period. These results occurred even though the checklists were interviewer-administered rather than self-administered. The fall-off rate appears to improve when interview-based methods of data collection are used. Brown & Harris (1982) have reported little to no fall-off in the reporting of severe events over a one year period. For non-severe events there is no fall-off in reporting until after the 33rd-week, at which time reporting is reduced by about one-third. Other interviewer-based measures obtained similar results: The Munich Events List obtained a .36% per month fall-off for severe events (Wittchen, et al., 1989); the Detroit Couples Study Life Event Method reported a 2% to 3% monthly fall-off rate for all events (Kessler &
Wethington, 1991); and the SLI reported a fall-off rate somewhat higher than the LEDS but lower than that found in the Detroit Couples Study Life Event Method (Wethington, 1997).

These findings on fall-off rates of reporting life events suggest that the interview method may have some advantages when it comes to event recall. The use of qualitative probes in the interview may elicit better recall of events over long periods of time compared to self-administered self-report measures (Brown & Harris, 1978). Qualitative probes may also facilitate the use of memory aids (e.g., calendars, personally salient dates such as birthdays, anniversaries, and reminders of events mentioned earlier in the interview) to improve recall and accurate dating of events. Sobell, Toneatto, Sobell, Schuller, & Maxwell (1990) have shown that the use of such aids significantly improves recall compared to relatively unassisted self-report measures. It has also been shown that checklist methods are more susceptible to "telescoping" or the misdating of events by placing them in more recent time periods when they actually occurred in more distant time periods (McQuaid et al., 1992; Raphael et al., 1991).

Test-retest strategies have also been used to estimate reliability, mainly in studies using the checklist approach. One type of comparison considers the total number of events or total life change units (LCU) reported over two or more occasions covering the same historical time period. Based on this approach, reliability estimates of event checklists range from .07 to .94 with the majority falling between .34 and .67 (for reviews see Neugebauer, 1984; Zimmerman, 1983). A major problem in interpreting these results is that the use of total event counts or LCU scores does not reveal whether the reports of specific events are consistent from one testing period to the next (Raphael et al., 1991). Neugebauer (1984) also raises serious concerns about the use of test-retest designs and Pearson's r for life event checklists. He notes that the method chosen to measure reliability must be consistent with the theory and findings of substantive research. He suggests that a test-retest design together with the use of a correlation coefficient to assess the consistency of aggregated scores
involves several assumptions that are widely disputed. One assumption implicitly made with this approach is that a checklist is a direct measure of an individual's level of stress rather than an instrument that measures the number and magnitude of stressors to which the respondent has been exposed. In addition to viewing stress as a unidimensional characteristic of the subject, it is assumed that stress can be measured as a simple linear function of item weights regardless of the type of stressor. These assumptions are controversial as noted earlier in the discussion on the adequacy of the checklist approach to measure something as complex and multifaceted as life stress (Brown, 1974; Gorman, 1993; Katschnig, 1986; McQuaid et al., 1992; Monroe & Roberts, 1992; Raphael et al., 1991). Neugebauer believes that assessing reliability with a test-retest design and Pearson’s r is more appropriate when the instrument measures attributes of a subject (e.g., personality, intelligence) rather than life events which are external to the subject.

A few studies have examined the consistent reporting of specific events from test to retest. Horowitz, Schaffer, Hiroto, Wilner, and Levin (1977) found that only 60% of the events checked in the first testing were reported six weeks later at retest. Steele, Henderson, and Duncan-Jones (1980) found a 70% concordance rate among events reported after a one to two week retest period. Using the Psychiatric Epidemiology Research Interview (PERI; Dohrenwend et al., 1978) life events checklist on 92 depressed patients, McQuaid et al. (1992) reported that only 39% of the life events reported in the initial assessment were consistently reported in the follow-up period six weeks later. Wittchen et al. (1989), using the Munich Events List, an interview combining checklist with qualitative probes, reported nearly perfect test-retest agreement for severe events (Kappa not reported), but lower concordance for less severe events (Kappa=.74).

Several factors make these results difficult to interpret. First, the time interval between test administrations varies widely from one week to one year. When test-retest intervals are extremely short, the first test can serve as rehearsal for the second, making it possible that the
material reported at retest represents recall of the fact that the material was reported during the earlier testing rather than recall of the original material. Also, the recall periods themselves have ranged from six months (Zimmerman, 1983) to 8.5 years (Neugebauer, 1984) with some studies not even reporting this information.

Another strategy to test reliability has been to compare the agreement between life event reports of respondents and informants. This method has been most often used in studies employing personal interviews. An exception is a study by Yager, Grant, Sweetwood, and Grest (1981) using the SRRS covering a two month period of recall. They found that the inter-respondent Kappa coefficients were low, ranging from .35 to .39 for patient and nonpatient pairs, respectively. In a recall period of one year, Hudgens, Robins, and Delong (1970) reported a 57% agreement between patient and informant reports that an event (but not necessarily the same event) had occurred in a given stress area (e.g., “sickness of relative, friend, or spouse,” “financial difficulties”). Brown and colleagues have reported higher inter-respondent reliabilities using the LEDS. When only considering the level of agreement for the occurrence of an event, they found a 79% agreement between depressed patients and relatives. The agreement level increased to 91% when they considered only contextually rated severe events (Brown, Sklair, Harris, & Birley, 1973). In the Detroit Couples study (Kessler and Wethington, 1991), husband and wife couples were interviewed. Inter-respondent reliability for severe events was .64 for husbands and .68 for wives. However, events that were potentially embarrassing (e.g., criminal activity, marital separation) were reported less reliably. They also found that personal events were reported more accurately than events that occurred to one’s spouse. It should be noted that there are critics of the patient-informant method of estimating reliability who suggest that it is unreasonable to assume that an informant would know about all the life events experienced by a respondent (Raphael et al., 1991). One problem is that the reporting of life events by the patient and the
informant are not independent of each other, but are influenced by prior communication (Neugebauer, 1984).

In summary, there has been great variability reported in the reliability estimates of life event measures. Some of the variability seems to be due to how reliability is estimated and to whether a self-administered checklist or an interview was used to collect data. On average the reliabilities tend to be low to moderate in size, yet somewhat higher when the interview method is employed (Thoits, 1983). However, these results should be interpreted with caution given that the methods used to estimate reliability may have limited value when applied to life event measures (Neugebauer, 1984).

Comparisons of the Checklist and Interview-Based Approaches

Most studies that have directly compared checklist and interview methods of measuring life events have found significant differences in the information provided by each (see Gorman, 1993, for a review; Katschnig, 1986; McQuaid, et al., 1992; Zimmerman, Pfohl, & Stangl, 1986). Different types of comparisons have been made between these two approaches. For example, one type of comparison takes event data elicited by an interview and attempts to fit it into a checklist system of categories and normative weights. Brown (1989) attempted to assign the weights from the Psychiatric Epidemiology Research Instrument (PERI; Dohrenwend et al., 1978) to 314 events collected by the LEDS. Twenty-three percent of the LEDS events could not be assigned to a PERI classification. Bebbington, Tennant, Sturt, and Hurry (1984) found similar results using LEDS-elicited events classified according to the Tennant and Andrews (1976) 67-item checklist. The checklist failed to classify 36% of the events elicited by the LEDS. These findings suggest that interview-based methods may be more comprehensive in their coverage of the domain of life events.

Another type of comparison involves studies that have used a noncomparable interview and checklist to collect data. Katschnig (1986) studied 147 depressed patients in remission who were administered the SRRS immediately followed by the LEDS. In the six months
period prior to hospitalization, the presence or absence of any life event according to the LEDS was unrelated to the presence or absence of a checklist event (Kappa=.04; n.s.). When only events of high severity were considered (i.e., LCU score above group mean and "severe" LEDS event) the Kappa agreement coefficient improved somewhat (Kappa=.19; p ≤ .05). Katschnig also wanted to make comparisons at the single life event level. He identified 10 life change categories from the SRRS that clearly corresponded to life events picked up by the LEDS (e.g., divorce/marital separation, personal injury/illness, marriage). The percentage of events picked up by both methods was low, ranging from 6% for “divorce/marital separation” to 50% for “son or daughter leaving home.” Taken together, these results led Katschnig to the conclusion that either the two instruments were measuring different phenomena or the SRRS was generating spurious results due to low reliability.

Other types of comparisons have used checklists and interviews containing identical items. Zimmerman, Pfohl, and Stangl (1986) had 38 depressed patients complete the 152-item Positive and Negative Impact (PANI) life event questionnaire which is a compilation of all the items from two widely used life event scales, one developed by Paykel et al. (1971) and the other by Tennant and Andrews (1976). The next day, the PANI semi-structured life event interview was conducted covering the same 152 events. Of the 555 events reported on the checklist, 229 (41%) were not included in the interview. Likewise, of the 533 events elicited during the interview, 207 (39%) were not reported on the checklist. The number of events common to both forms was 326. McQuaid et al. (1992) administered the 110-item PERI self-report checklist to 92 depressed patients covering the 12 week period prior to treatment entry. After completing the PERI, the patient was interviewed about the events endorsed on the checklist. Data from the interview was rated according to the LEDS system by a panel of raters trained in this method. Of 510 events reported on the checklist, 314 (62%) were discrepant compared to the LEDS. Thirty-six percent of these discrepancies were due to the checklist counting as “events” experiences the LEDS would classify as
ongoing “difficulties.” An additional 25% of the discrepancies were due to events reported on the checklist that did not meet LEDS criteria for an event. There were also reporting errors on the PERI that were detected by the LEDS. For example, 12% of the discrepancies were for reported events that were actually found to be outside the study time period. Also, respondents endorsed the same event twice under different headings (e.g., “trouble with boss” and “trouble at work” in reference to the same fight at work), comprising another 7% of the discrepancies. Only two percent of the discrepancies were due to events elicited by the interview that were not reported on the checklist.

These comparison studies reveal many discrepancies and inconsistencies between the types of information provided by checklist and interview measures of life events. These results are perhaps not so surprising when the conceptual differences between the two measures are examined. Generally, the checklist approach has considered life change or readjustment as the crucial dimension of life events. They usually include negative as well as positive items, events of varied magnitude (i.e., major and minor events), and most do not distinguish acute from chronic stress. In contrast, most interview-based measures focus on more severe negative events and differentiate between acute and chronic stressors. Given these differences, it is obvious why these two methods should not be considered comparable measures of life events (Gorman, 1993).

In conclusion, valid and reliable measurement of life events has proven to be significantly more difficult than originally conceived. The checklist approach has been shown to be methodologically unsound; through their own idiosyncratic interpretation of questionnaire items, respondents are basically given the task of defining for themselves what constitutes a life event. Critics of this approach suggest that for something as complex and multifaceted as life stress, measurement should be in the hands of the investigator using extensive rules, criteria, and case examples to standardize raters’ decisions (Brown & Harris, 1978; Monroe & Roberts, 1990). This approach has been most extensively developed by
Brown and Harris's LEDS interview (Brown & Harris, 1978). Other measures combining checklist features with qualitative probes of the interview are being developed as more economical alternatives to the LEDS. The development of more reliable and valid measures of life events should eventually contribute to a greater understanding of the true nature of the stress-illness relationship.

**The Life Stress Paradigm**

Since the publication of the SRRS, there has been a proliferation of studies examining the relationship between life events and various mental health outcomes. Most research attention has focused on depression, measured either as a diagnosis or a continuous measure of depressive symptoms. Consistently, these studies have found a rather modest yet significant relationship between life events and depression (Rabkin & Struening, 1976; Thoits, 1983). From reported correlations, it has been estimated that life events account from anywhere between 9% (Rabkin & Struening, 1976) to 16% of the variance in illness (Thoits, 1983), a level that has led some to question the etiological significance of life events (Tennant, Bebbington, & Hurry, 1981; Rabkin & Struening, 1976) in addition to the reliability and validity issues of life event measures. However, Cooke (1987) has suggested that the use of statistical significance and explained variance underestimates the true impact of life events on depression. He recommends the use of relative risk or population attributable risk (PAR) as more appropriate indicators of the effects of life events. These concepts will be explained more fully in a later section.

The rather low associations between life events and depression and the recognition that most people who are exposed to life event stressors do not develop depression (Brown & Harris, 1978; Paykel, 1974) has led many investigators to focus on other variables that may modify the impact of stress on depression. Various models of the stress-illness process have been developed (Brown & Harris, 1978; Dohrenwend & Dohrenwend, 1984; Ensel & Lin, 1991; Lazarus & Folkman, 1984); currently the most popular model relevant to psychiatric
disorder seems to be the vulnerability hypothesis (Rabkin, 1993). This view suggests that exposure to life events triggers illness onset in already vulnerable people. Different investigators have defined vulnerability in numerous ways including genetic predisposition and lack of certain social and psychological resources such as social support (Cohen & Wills, 1985), self-esteem (Brown, Bifulco, & Andrews, 1990), locus of control (Lefcourt, Miller, Ware, & Sherk, 1981), and coping skills (Lazarus & Folkman, 1984). The vulnerability model has alternatively been referred to as the "stress-buffering" model when the presence of these psychosocial resources are considered rather than the absence. The next section will review studies that have examined the relationship between life events and depression as well as those that have considered the effects of specific vulnerability factors.

The Effects of Life Events and Difficulties on the Risk of Depression

This review will focus on studies that have used some form of an interview-based measure of life events. Much of this research stems from the pioneering work of Brown & Harris and their development of the LEDS. Some of the earliest work with the LEDS was conducted in Camberwell, a southern borough of London (Brown & Harris, 1978). Two separate random samples totaling 458 women aged 18-65 were drawn from the community. These were mostly inner city, working class women. This study also included a patient sample of 114 women recently treated by local psychiatric services for an onset of depression. In 1976, a second community survey was repeated with a rural population of 187 women living in Lewis, an island off the coast of Scotland (Brown & Prudo, 1981). Most of these women spoke Gaelic as their first language, were born and raised on the island, and came from strong religious communities. In addition to the LEDS, the Present State Examination (PSE-shortened version of the 9th edition; Wing, Cooper, & Satorius, 1974) was administered to collect information about their psychiatric history over the previous 12 months. The diagnostic criteria for the PSE are similar to the DSM-III (Brown & Harris,
and one study (Dean, Surtees, & Sashidharan, 1983) found it to be at least as strict as the Research Diagnostic Criteria (RDC; Spitzer, Endicott, & Robins, 1978). Unlike the first two studies, the third was longitudinal in design covering a 12 month period. The study was conducted in the early 1980s in Islington, an inner-city area in north London. Cooperation of general practitioners was enlisted to obtain a sample of working class women with one child under age 18 at home and a spouse or co-habitating partner who worked in a manual occupation. In addition, all single mothers, regardless of class or occupational status, were included in the sample. Some of the research ideas explored in this study were influenced by the results of the two previous cross-sectional studies: specifically, the role of self-esteem and support were explored. In the initial phase of the study, measures were collected on the quality of personal relationships, amount of support received, self-esteem, and past 12 month psychiatric history. One year later, measures were taken of psychiatric disorders, life events and difficulties, and actual social support received during any significant crises during the intervening 12 months (Brown, Craig, & Harris, 1985; Brown, Andrews, Harris, Adler, & Bridge, 1986).

Results from these three studies indicated that only certain types of life events and difficulties played a role in the etiology of depression. For events, only those rated at the two highest levels ("marked" or "moderate") on long-term contextual threat and that were also focused on the woman herself or jointly with someone else were associated with an increased risk of onset of depression. These types of events are referred to as "severe events." For difficulties, only those lasting two years or longer, rated at the top three points out of a six point scale of contextual severity, and not strictly health-related were found to increase the risk of depression (Brown & Harris, 1978). These types of difficulties are referred to as "major difficulties." In their model of depression, Brown & Harris refer to severe life events and major difficulties as "provoking agents." Their model also includes vulnerability factors defined as factors capable of increasing the risk of depression but only in the presence of a
provoking agent. Since only about 1 out of every 5 women who experienced a provocative agent went on to develop clinical depression, these vulnerability factors may help explain why some women are more susceptible to the effects of life stress than others (Brown & Harris, 1978).

The next two sections will report the findings of studies exploring the effects of life events and difficulties on the onset of depression. Results from the three seminal studies by Brown and colleagues described above will be reviewed first. Next, findings are reported for studies by different investigators using the LEDS or some other interview-based instrument.

Life events. Out of 458 women in the Camberwell community sample, 37 (8%) had an onset of depression at some time during the previous 38-week period before the interview. In addition, 39 (9%) were chronic cases defined as suffering from depression for more than one year before the interview. These women were excluded from the following analyses. Of the 37 onset cases, 68% experienced at least one severe event. Of the women who did not develop depression, only 20% experienced a severe event (p<.001) (Brown & Harris, 1978). When considering the occurrence of a severe event alone without the co-occurrence of a major difficulty, 41% of the onset cases fell into this category. Considering these results from a different perspective, 23% (15/65) of the sample who experienced a severe event in the absence of a major difficulty went on to develop depression. Similarly, 28% (9/32) of the sample who experienced both a severe event and a major difficulty later developed depression (Brown & Harris, 1986).

In the Camberwell patient sample, 49% experienced at least one severe event before onset. Most of the severe events in both the community and patient samples of the Camberwell study were characterized by the experience of loss or disappointment involving a person or object, a role, or an idea. Examples include threat of or actual separation from a key figure, an unpleasant revelation about someone close, a life-threatening illness to a close
relative, and a major material loss or disappointment. There were no significant differences in the occurrence of minor events among these women.

Similar results were reported in the Outer Hebrides, Scotland study (Brown & Prudo, 1981). Sixty-nine percent of the onset cases experienced a severe event in the previous 12 month period compared to 25% of those who were not cases. Severe life events were also found to be highly related to the onset of depression in the Islington study (Brown et al., 1986). Of the 32 women with an onset in the follow-up year, 91% had a severe event in the six months prior to onset.

Using the LEDS, Costello (1982) interviewed 449 women selected randomly from 10 communities in Calgary, Alberta. A significant association was found between the occurrence of a severe event and the onset of depression. The relative risk of onset for women who had a severe event was 6.83. When events were classified into “independent” and “possibly independent,” the relative risks were 3.04 and 7.99, respectively.

Using the same methodology as Brown and Harris (1978), Campbell, Cope, and Teasdale (1983) examined 110 working class women with children in Oxford, England. Of the 110 women, 18 (16%) had an onset of depression during the previous 12 month period. Forty-eight women (44%) experienced a provoking agent and of these, 31% (15) went on to develop depression. This compares to only 5% of those women without a provoking agent who developed depression.

Brown and Harris (1989) summarized the findings of 10 studies through 1986 that replicated their early work. These studies were performed by several different investigators using the LEDS with women from working-class, inner-city environments, rural settings, and general medical practice patients. Across these studies, of the women with an onset of depression, the percentage who experienced a provoking agent ranged from 62% to 94% (average 83%). In contrast, of the women who did not develop depression, the percentage who experienced a provoking agent ranged from 25% to 39% (average 33%). It should be
noted that all but one of these studies were conducted in the United Kingdom; the other was conducted in Canada.

In one of the few studies by US researchers using the LEDS, Frank, Anderson, Reynolds, Ritenour, and Kupfer (1994) examined the relationship between life events and the endogenous subtype of depression. Generally the term "endogenous" is used to define a depression that is presumably due to a biological process characterised by an absence of a precipitating stressor and by unique symptom features. A sample of 90 depressed patients in remission with a history of unipolar depression were classified as endogenous or nonendogenous according to the Research Diagnostic Criteria (RDC). Patients meet the criteria for endogenous subtype if they exhibit six of the following 10 symptoms: 1) distinct quality to depressed mood; 2) lack of reactivity to environmental changes; 3) mood regularly worse in the morning; 4) pervasive loss of interest; 5) self-reproach or inappropriate guilt; 6) early morning awakening or middle insomnia; 7) retardation or agitation; 8) poor appetite; 9) substantial weight loss; and 10) loss of interest or pleasure that is not necessarily pervasive. At least one of the symptoms must come from the first four listed. A chi-square analysis showed that the presence of a provoking agent (i.e., severe event or major difficulty) in the 6 months before depression onset was significantly associated with endogenous and nonendogenous group membership. Sixty-five percent (22/34) of the nonendogenous group experienced at least one provoking agent, compared to only 43% (24/56) of the endogenous group ($\chi^2=4.04, p=.04$). Further analysis of severe events only (excluding major difficulties) suggested a closer temporal relationship between severe events and onset of depression in the nonendogenous group.

The Structured Event Probe and Narrative Rating System (SEPRATE; Dohrenwend et al., 1993) was developed as an alternative to the LEDS. It combines elements of an event checklist with the qualitative probes of an interview. Events are rated for the amount of behavioral change that most people would be expected to experience given the facts of the
situation. Like the LEDS, the SEPRATE elicits narrative descriptions of events to increase precision in rating. However, less “context” is used in the ratings than in the LEDS to avoid confounding social and personal vulnerability factors with ratings of the event. A case/control study used in the development of the SEPRATE examined 98 patients with recent episodes of major depression and 404 controls sampled from the general population (Shrout et al., 1989). For depressed patients, the odds of experiencing a “fateful” (i.e., outside the control of the person; similar to “independent” in LEDS) and disruptive event were 3.38 times as large as the odds for the community control sample. When demographic variables and demoralization at the time of the interview were controlled for, the odds ratio decreased to 2.51, yet was still significant at p<.05. It should be noted that the rating dimensions and procedures used in this study were still in their developmental stages, which may have affected the results of this study.

Kessler and Wethington (1991) developed an interview specifically for large-scale community surveys. The Detroit Couples Study Life Events Method used a checklist with semi-structured probes that were administered after an event was reported. Events were rated on the “loss” and “danger” contextual ratings from the LEDS. However, these ratings were not true replications of the LEDS long-term contextual threat because the interview did not collect enough contextual information to make such ratings. Instead, these ratings may be more similar to life change event ratings. Other features included in the interview were designed to improve recall and accurate dating of events. Participants were 702 husband-wife pairs drawn from a probability sample of married couples in the metropolitan area of Detroit. The results showed that the relative risk of onset of depression after experiencing a severe event in the previous 12 months was 2.43 (Wethington et al., 1995).

Surtees, Miller, Ingham, Kreitman, Rennie, and Sashidharan (1986) conducted a study based largely on the LEDS except that they used a checklist as the initial procedure for eliciting information on potential life events and difficulties. The interviewer then probed the
items endorsed for all the information necessary to make contextual ratings. The first wave of data of this longitudinal study came from a random sample of 576 women, age 18-65, from Edinburgh. Results from the first wave of data showed that the relative risk of onset of psychiatric disorder (depression or anxiety) for those who experienced any severe event was 2.4.

As described earlier, the Structured Life Events Inventory (SLI) is a more structured version of the LEDS. It was fielded in an experimental study to compare it with the LEDS in terms of reliability and validity. A community sample of 243 people were interviewed, half with the SLI and half with the LEDS. The estimated relative risk of onset of depression within three months of a severe event was 3.12 using the SLI (compared to 3.83 using the LEDS) (Wethington, 1997).

In summary, these studies suggest that severe life events play a significant role in the etiology of depression for women. Findings from the LEDS were consistent with those using alternative interview-based methods. However, in terms of the magnitude of the relative risk of onset, studies using the LEDS appear to result in somewhat larger estimates of this figure (see Table 1 for summary of results).

**Difficulties.** Major difficulties also play a significant etiological role in depression. In the Camberwell community sample (Brown & Harris, 1978), 49% of the 37 onset cases experienced at least one major difficulty before onset. When major difficulties were considered alone, without the co-occurrence of a severe event, 24% of the onset cases belonged to this category. Considering the results from a different perspective, 18% (9/51) of the sample who experienced a major difficulty but no severe event went on to develop depression (Brown & Harris, 1986). In the Camberwell patient sample, 47% experienced at least one major difficulty. When major difficulties were considered alone, without the co-occurrence to a severe event, 14% of the onset cases belonged to this group.
Table 1
Summary of studies using the LEDS or alternative interview-based instruments in non-patient samples.

<table>
<thead>
<tr>
<th>Studies</th>
<th>Study period</th>
<th>Onset cases</th>
<th>Non-cases</th>
<th>Severe Events</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Severe event</td>
<td>Major difficulty</td>
<td>Severe event or major difficulty</td>
</tr>
<tr>
<td>Brown &amp; Harris (1978): Camberwell</td>
<td>38 weeks</td>
<td>25/37 (68%)</td>
<td>18/37 (49%)</td>
<td>33/37 (89%)</td>
</tr>
<tr>
<td>Brown &amp; Prudo (1981)</td>
<td>1 year</td>
<td>11/16 (69%)</td>
<td>6/16 (38%)</td>
<td>13/16 (81%)</td>
</tr>
<tr>
<td>Brown, Andrews, Harris, Adler, &amp; Bridge (1987)</td>
<td>1 year</td>
<td>29/32 (91%)</td>
<td>15/32 (47%)</td>
<td>30/32 (94%)</td>
</tr>
<tr>
<td>Campbell, Cope, &amp; Teasdale (1983)</td>
<td>1 year</td>
<td>15/18 (83%)</td>
<td>34/92 (37%)</td>
<td>92/485 (19%)</td>
</tr>
<tr>
<td>Costello (1982)</td>
<td>1 year</td>
<td>18/38 (47%)</td>
<td>20/38 (53%)</td>
<td></td>
</tr>
<tr>
<td>Shrout et al., (1989) (case/control study)</td>
<td>1 year</td>
<td>26/96 (27%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surtees et al., (1986)</td>
<td>6 months</td>
<td>7/35 (20%)</td>
<td>12/35 (34%)</td>
<td>16/35 (46%)</td>
</tr>
<tr>
<td>Kessler &amp; Wethington (1991)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wethington et al., (1995)</td>
<td>1 year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wethington (1997)</td>
<td>3 months</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Based on occurrence of a severe event or major difficulty (i.e., provoking agent).
* Used 'fateful and disruptive' events - different from LEDS 'severe event.'
Costello (1982) interviewed 449 women selected randomly from 10 communities in Calgary, Alberta. In contrast to Brown & Harris’s definition of a ‘major difficulty’ (i.e., rated on the top three points of severity out of a 6-point scale, lasting at least two years, and not involving health problems), Costello used the label ‘severe difficulty’ to describe difficulties lasting at least four weeks with a severity rating on the highest two points (‘marked’ and ‘moderate’) of a 3-point scale. The results indicated a significant association between the presence of a severe difficulty and the onset of depression (relative risk =2.54). However, the significant association held only for ‘possibly independent’ difficulties (relative risk=3.26) and not for ‘independent difficulties’ (relative risk=.91). Consistent with Brown and Harris (1978), they found that health-related difficulties were not significantly associated with onset.

Surtees et al. (1986) found a relative risk of onset of psychiatric disorder (depression or anxiety) of 3.30 for all major difficulties. When only ‘dependent’ major difficulties were considered, the relative risk was 2.78 compared to 3.37 for ‘independent’ major difficulties. It should be noted that the Surtees et al. (1986) definition of ‘major difficulty’ varied slightly from Brown & Harris’s (1978), the main difference being that Surtees required the difficulty to be current at the time either of onset of the disorder or interview.

Additivity of life events and difficulties. Implicit in the checklist approach with its total LCU score or total event count is the idea that the effects of life events can summate or be added together. Similar to a dose-response concept, it is assumed that higher total scores result in more psychological distress. In contrast, Brown and Harris have concluded that it is largely the impact of just one event or difficulty of sufficient severity that is most important to the onset of illness. For example, they found that the rate of onset of depression was not significantly different between those with both a severe event and a major difficulty (28% or 9/32), those with a severe event but no major difficulty (23% or 15/65), and those with a major difficulty but no severe event (18% or 9/51) (Brown & Harris, 1986). From these
results they concluded there was little evidence that having both a severe event and a major
difficulty increased the risk of depression over and above the occurrence of either one alone.

Brown and Harris acknowledge that the rating of contextual threat in the LEDS complicates
the issue of additivity. By considering relevant background information, a
particular rating may take into account prior events or ongoing difficulties. When events and
difficulties are related in such a manner, Brown and Harris suggest there is likely to be an
additive effect that is already accounted for in the contextual rating. They suggest that a
better way to investigate this issue is to consider 'unrelated' events and difficulties. Using
the Camberwell data, they found that of the women who developed depression, 28% had
experienced two or more 'unrelated' severe events compared to 9% of the normal comparison
group. They did not find any additive effect when considering unrelated major difficulties,
either in conjunction with a severe event or with another major difficulty. They concluded
that there is at best a modest additive effect of two or more unrelated severe events (Brown &

In the Islington study, Brown and Harris examined more closely the effects of related
provoking agents. For each severe event, a judgement was made as to whether it was related
to an ongoing marked (rated 1-3 on 6 point scale of severity) difficulty. It was not necessary
that there be a causal relationship between the event and difficulty in order for them to be
linked. For example, an unexpected pregnancy could be rated severe because of the presence
of an ongoing financial difficulty. In this case, the severe event (unexpected pregnancy)
would be considered linked to the ongoing financial difficulty. Brown and Harris refer to this
type of event as a "D-event." In Islington, of the 130 women with a severe event 35 (27%)
had at least one rated as a D-event in which the difficulty it was related to had lasted at least
six months. Of these women with a D-event, 46% went on to develop depression compared
to only 14% who developed depression without a D-event. They also found evidence for the
additivity of 'clusters' (three or more severe events) of related severe events; however, this effect was confined to clusters involving a D-event (Brown, Bifulco, & Harris, 1987).

In a study by one of the few US research groups to use the LEDS, Frank et al. (1996) examined the effect of additional life events occurring after an initial provoking agent. Out of a sample of 142 recurrent unipolar patients in remission, analyses were conducted on the 52 patients who experienced at least one severe life event in the six months prior to onset. Both positive and negative aspects of life events were captured by grouping events into eight categories reflecting decreasing levels of negativity. They found that additional life events (both severe and neutral) occurring after an initial provoking agent significantly increased the risk of illness onset. Additional findings using survival analysis to model the temporal relationship between event occurrence and onset found that when the additional event that occurred (after the initial provoking agent) was a severe event, the time to onset was decreased. Positive events or positive aspects of negative events did not significantly delay time to onset following a provoking agent-level event.

The issue of whether multiple life events and difficulties significantly increase the risk of onset over and above the occurrence of one severe event or major difficulty remains unsettled. Surtees (1989) has proposed a continuous model of life stress as an alternative to the binary model of life events exhibited in the work of Brown and colleagues. The binary approach sets boundaries for the presence or absence of life events or difficulties. Generally, the presence or absence of a severe life event or a major difficulty is determined. Surtees's continuous model, referred to as a decay model, considers events of all severity levels and assumes they summate in their stressful effect. He also incorporates the idea that the effect of an event or difficulty decays with time. Thus, given the occurrence of multiple events and assuming a constant rate of decay for each of them, the model can determine the residual stress remaining at any time in the study period following their occurrence. Surtees believes his approach more accurately captures how stressors work in the real world and hopes his
work will stimulate the development of new ideas and theoretical insights into etiological processes.

Relative risk and population attributable risk. In response to critics who conclude that life events are of no significant etiologic importance due to low correlations and low levels of “explained variance,” some investigators have turned to reporting results in terms of relative risk or population attributable risk percent (PAR) (Brown & Harris, 1989; Cooke, 1987; Paykel, 1978). An example using cigarette smoking and lung cancer illustrates the point of why “variance explained” is not an appropriate indicator of the etiological significance of life events. Most people would accept that cigarette smoking has a powerful effect on the incidence of lung cancer even though much less than 1% of the variance is explained by this association. This finding is due to the fact that variance explained takes into account not only the fact that most people with lung cancer are heavy smokers, but also the fact that most heavy smokers do not have lung cancer. The fact that most people with lung cancer are heavy smokers gets lost in the “two-way” measure of association because those people without lung cancer greatly outnumber those with it (Brown & Harris, 1989; Cooke, 1987).

A parallel relationship exists between life events and depression. The majority of people developing depression experience a provoking agent before onset, yet most people experiencing a provoking agent do not develop depression. From epidemiological research, measures of relative risk and PAR appear to be more appropriate indexes for describing this type of data (Cooke, 1987).

Relative risk can be defined as the ratio of the rate of depression among those who have experienced a provoking agent to the rate of depression among those who have not experienced such an agent (Cooke, 1987). It can be calculated as shown in Table 2 (Lilienfeld & Lilienfeld, 1980). In the Camberwell study the relative risk for onset of depression was 6.65 (Brown & Harris, 1989). This means that someone who has experienced a severe event is 6.65 times as likely to become depressed as someone who has not
Table 2
Calculation of Relative Risk in Life Events Research

<table>
<thead>
<tr>
<th>Occurrence of Life Event</th>
<th>Case</th>
<th>Non-case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>No</td>
<td>c</td>
<td>d</td>
</tr>
</tbody>
</table>

Cohort studies:

Relative risk = \( \frac{a(c + d)}{c(a + b)} \)

Case-control studies:

Relative risk = \( \frac{ab}{bc} \)

experienced such an event. When major difficulties were included, the relative risk increased to 15.11. In a LEDS study that included men as well as women in the Camberwell community, the relative risk for depression was found to be 4.2 for individuals who had experienced a severe life event (Bebbington, Tennant, and Hurry, 1981).

PAR is defined as the maximum percentage of cases of a disorder that can be directly attributed to the experience of a life event of difficulty (Cooke, 1987). It can be calculated as shown in Table 3 (Lilienfeld & Lilienfeld, 1980). A PAR of 57% was found in the Camberwell study which means that 57% of the cases of depression could be attributed to the effect of a severe event (Brown & Harris, 1989). This is in contrast to an explained variance of only 10.18%. When the occurrence of a major difficulty was included, the PAR increased to 83%. Cooke (1987) reviewed a select set of studies on depression that did not use a simple checklist approach but rather the LEDS or something similar to it. Also in his review he only included studies that analyzed “independent” events. In seven studies with strictly female samples, the PAR ranged from 37% to 69%. The two studies that included both males and females in their samples reported identical PARs of 29%. 
Table 3
Calculation of Population Attributable Risk Percent in Life Events Research

<table>
<thead>
<tr>
<th>Occurrence of Life Event</th>
<th>Case</th>
<th>Non-case</th>
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<tr>
<td>Yes</td>
<td>a</td>
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<tr>
<td>No</td>
<td>c</td>
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Cohort studies:

\[ \text{PAR} \% = \frac{ad - bc}{(a + c)(c + d)} \times 100 \]

Case-control studies:

\[ \text{PAR} \% = \frac{ad - bc}{(a + c)d} \times 100 \]

Vulnerability Factors and the Onset of Depression

The study of vulnerability factors has become increasingly popular among stress researchers seeking to understand why the majority of people exposed to stressful life experiences do not become depressed. In an attempt to explain this finding, investigators have examined characteristics of the individual or the individual’s environment that may modify the effects of stressful life events. Vulnerability factors are believed to increase the risk of disorder only in the presence of a stressor. A wide array of factors have been investigated such as social support, coping skills, intellectual capabilities that facilitate cognitive flexibility and effective problem-solving, and various aspects of personality. Three vulnerability factors will be discussed below: social support, sense of control, and history of depression.

Social support. In the Camberwell investigation, working class women who lacked a close, intimate relationship with a husband or boyfriend were at greater risk of developing depression than women who had such a relationship. In the presence of a provoking agent, 41% of the onset cases lacked a close intimate relationship with a husband or boyfriend.
compared to only 10% of the onset cases with such a relationship. Furthermore, low intimacy in the absence of a provoking agent was rarely associated with depression (Brown & Harris, 1978).

In a study of working-class and middle-class women in Canada, Costello (1982) examined both lack of intimacy with a spouse, cohabitant, or boyfriend and whether the woman had a confidant. Brown and Harris (1978) included both of these (intimacy and presence of a confidant) in the same scale. Unlike previous findings that usually find low social support increases risk of onset only in the presence of a severe life event, Costello found that lack of intimacy with a partner and the absence of a confidant were both directly and independently associated with an increased risk of onset of depression.

A study using the same methodology as Brown and Harris (1978) examined a sample of 110 working class women with children in Oxford, England (Campbell, Cope, & Teasdale, 1983). Like Brown and Harris (1978), lack of an intimate, confiding relationship with a husband or boyfriend increased the risk of onset but only in the presence of a provoking agent. Forty-six percent (12/26) of those without an intimate relationship developed depression compared to only 13% (3/23) of those with an intimate relationship.

A study in the Regent's Park area of London, a largely middle-class area, also found that an intimate confiding relationship with a partner protected women against depression after experiencing a severe event (Finlay-Jones, 1989).

In the Islington survey, Brown and colleagues measured support by the 'negative elements in close relationships' (NECR) index (Brown, Bifulco, & Andrews, 1990). The index included conflict with partner or children, or lack of support outside the home in the case of single mothers. The index was associated with an increased risk of onset of depression. Of the women with inadequate support and a severe event, 35% (26/74) had an onset of depression; of the women with adequate support and a severe event, only 5% (3/56) went on to develop depression.
A more recent study was undertaken to replicate many of the findings from the Islington study (Bifulco, Brown, Moran, Ball, & Campbell, 1998). A sample of 105 women was solicited through general practitioners in Islington, North London. Selection into the study was based on the following criteria: mothers who were married/cohabiting with partners in manual occupations or unemployed; those mothers without live-in partners were included regardless of occupation; free of depressive disorder; presence of vulnerability defined as low self-esteem (NES-negative evaluation of self) or inadequate support (NECR-negative elements in close relationships). These women were interviewed three times over a 14 month period. The presence of vulnerability was assessed at the first interview while life events, using the LEDS, and depression were measured at each of the five-month follow-up interviews. The results showed that 39 (37%) of these vulnerable women became depressed in the follow-up period. Of these 39 women, 20 (51%) had a severe life event and the presence of both vulnerability factors. The risk of onset for women with one vulnerability factor was surprisingly similar to the risk for women with both vulnerability factors; of the 39 onset cases, 15 (44%) had a severe life event and only one vulnerability factor (separate results were not reported for each vulnerability factor). Logistic regression confirmed that in the presence of a severe life event, combining the vulnerability factors did not add to the predictive power over and above the presence of one vulnerability factor.

Findings from these studies are consistent with the vast literature on social support that has developed over the past 20 years. Research has consistently found that social support moderates or “buffers” the effect of stress on psychological disorder (Cohen & Wills, 1985; Sarason & Sarason, 1985; Veiel & Baumann, 1992). A moderating effect suggests that social support is only beneficial (or lack of social support harmful) to persons under high levels of stress and is either less helpful (harmful) or ineffective for persons under low levels of stress. These type of effects are generally found in studies measuring “perceived” social support (Cohen & Wills, 1985). When social support is measured in terms of the structure of the
support network (i.e., quantity or type of social connections), direct or main effects are usually found. This suggests that social support has a beneficial effect (or lack of social support a harmful effect) on mental health regardless of whether or not individuals are under stress (Cohen & Wills, 1985).

**Sense of control.** Another resource believed to be an important stress moderator is a sense of personal control over one’s life. The study of the relation between control and adaptational outcomes has been addressed in many different forms from generalized beliefs about control (Lefcourt, 1976), sometimes referred to as dispositional characteristics, to perceptions of control in specific situations (Averill, 1973). Some have studied the effects of an illusion of control on well-being (Alloy & Abramson, 1982; Alloy & Clements, 1992; Taylor & Brown, 1988) and others have incorporated control issues into theories of depression (Beck, 1972; Abramson, Seligman, & Teasdale, 1978). Folkman (1984) discusses the complexities of this concept within the framework of a cognitive theory of stress and coping. Both generalized and situational beliefs about control are thought to influence how people appraise situations (e.g., as harmless or threatening) and the coping mechanisms used to deal with stressful circumstances. In this conceptualization, beliefs about personal control can be stress-reducing or stress-inducing depending on several factors. These factors include the personal meaning an event has for the individual, the aspect(s) of a situation over which the person believes he or she has control, and the fit between appraisals of controllability and the reality of the situation and between appraisals of controllability and coping. To make this review more manageable and relevant to the current study, the focus will be on studies examining the effects of generalized beliefs about personal control.

Generalized beliefs about personal control are commonly measured by Rotter’s (1966) locus of control scale, which was designed to assess general beliefs about the controllability of outcomes in one’s own life. People with an internal locus of control believe that outcomes are controllable, in that they are contingent upon one’s own behavior. People with an
external locus of control believe that outcomes are not contingent upon one’s behavior and are thus beyond personal control. Numerous studies have investigated the relationship between locus of control and psychological outcomes. Johnson and Sarason (1978) found that among college students with an external locus of control, the association was much stronger between negative life events and anxiety and depression than among students with an internal locus of control. Similarly, Lefcourt, Miller, Ware, and Sherk (1981) found that externals had higher mood disturbances at both high and low levels of negative life events than internals. Using the concept of mastery as an index of personal control, Pearlin, Menaghan, Lieberman, and Mullen (1981) found that low mastery significantly exacerbated the psychological effects of negative events. Husaini, Neff, Newbrough, and Moore (1982) found that personal competence, a concept they suggest is similar to locus of control, had both direct and buffering effects against life event stress in a sample of rural married adults. Benassi, Sweeney, and Dufour (1988) conducted a meta-analysis of 97 studies that investigated the relationship between locus of control and depression from 1966 to 1986. Results indicated that higher levels of externality were associated with higher levels of depression and higher levels of internality were associated with lower levels of depression.

Mirowsky and Ross (1990) examined how the effect of locus of control orientation on psychological distress varied as a function of whether one believed they had control over outcomes that were positive or negative. Individuals were grouped into one of four categories depending on whether they claimed or denied responsibility (control) for good (success) or bad (failure) outcomes. Instrumentalists are those who feel responsible for both good and bad outcomes; fatalists deny responsibility or control for both good and bad outcomes; self-defenders feel responsible for good but not for bad outcomes; and self-blamers feel responsible for bad but not for good outcomes. In a random sample of 809 Illinois residents, they found that a sense of responsibility for both good and bad outcomes (instrumentalism) was associated with lower levels of depression. Fatalists, self-defenders,
and self-blamers did not differ significantly in their level of depression. These findings seem to contradict Beck’s (1972) model of depression, which suggests that depressed persons tend to assume personal responsibility for negative events and see good events as outside of their control (i.e., self-blamers). Findings by Abramson and colleagues (Abramson, Seligman, & Teasdale, 1978) that depressed persons tend to make internal, stable, and global attributions for negative events also seem to contradict the findings by Mirosky and Ross (1990). To date, no adequate resolution to this “depressive paradox” has been offered (Banassi et al., 1988).

Locus of control beliefs have also been associated with various types of coping activities. In a review of locus of control and health-related behavior, Strickland (1978) found that internals as opposed to externals were more likely to seek out information about their disease and treatment when it was relevant to their well-being. Anderson (1977) found in a sample of businessmen who sustained flood damage to their businesses that internals employed more task-centered (problem-focused) coping behaviors and fewer emotion-centered coping behaviors than externals. Also, externals were found to be more stressed than internals. Sandler and Lakey (1982) examined whether internal-external locus of control orientations affected perceptions of control over specific negative events and the receipt and impact of social support. Their findings failed to show differences between internals and externals on their perceptions of control over the occurrence or consequences of negative life events. Externals were found to receive higher quantities of social support than internals, however only internals enjoyed the stress-buffering effects of social support. Lefcourt, Martin, and Saleh (1984) found similar results in that social support significantly reduced the association between negative life events and mood disturbance for those who were more internal on affiliation and achievement locus of control scales. Persons rated as externals on these scales did not receive the same degree of benefit from social support.
In summary, generalized beliefs about personal control were found to have both direct and buffering effects against stress. Specifically, persons with a low sense of personal control (externals) were generally found to be more psychologically distressed than those with a high sense of personal control (internals). Further research appears necessary to reconcile some of the findings on general beliefs about control over positive and negative outcomes to those found in the study of depressed patients. Locus of control orientations also appear to influence coping in important ways. Persons with an internal locus of control are more likely to engage in active problem-focused coping and are better able to find and make use of information. Finally, there is some suggestion that locus of control moderates the effects of stress by influencing the utilization of social support.

History of depression. Some observers note that a major limitation of much of the research on life stress and onset of depression is the failure to consider the effects of a history of depression (Kessler, 1997; Kessler & Magee, 1994). There is some evidence that suggests history of depression may be an important predictor of current stress. For example, Hammen's 'stress generation hypothesis' suggests that individuals with a history of depression may actually cause stressful conditions and events due to a mixture of maladaptive personality characteristics and disrupted social support networks (Hammen, 1991). Depressed individuals may have interpersonal styles that provoke other people to act in nonsupportive ways toward them. As a result, this may increase a depressed person's exposure to events involving interpersonal loss (Coyne, 1976; Monroe & Steiner, 1986). Thus, failure to control for history of depression may lead to biased conclusions about the importance of risk factors such as severe life events and social support. Only a few studies have investigated this possibility empirically.

Results from the Epidemiologic Catchment Area (ECA) study show that most people with a history of clinical depression have their first episode by their early 20s (Sorenson, Rutter, & Aneshensel, 1991). Kessler and Magee (1994) analyzed data from the ECA public-
use file and found that 91% of the respondents who reported an episode of depression in the 12 months prior to the baseline ECA interview had a history of depression. This suggests that most episodes that occur in the adult years are recurrences rather than first onsets. Not surprisingly, history of depression was found to be a powerful predictor of recent onset with an odds-ratio close to 40, an association considerably larger than the effects of any other risk factor in the literature on depression (Kessler & Magee, 1994).

History of depression has also been shown to be significantly associated with a variety of psychosocial risk factors for depression. In a longitudinal survey of over 2,800 noninstitutionalized persons aged 25 and older, a set of 20 risk factors were assembled to predict onset of major depression in the three year interval between the baseline and follow-up interviews (Kessler & Magee, 1994). Significant relationships were documented between most of the 20 predictors and subsequent episodes of depression. A series of models was then estimated to determine whether history of depression significantly predicted these risk factors. Fourteen of the 20 risk factors were significantly associated with history of depression. When history of depression was added as a control variable to the risk-factor analysis predicting recent onset of depression, the estimated effects of 13 of the 20 risk factors were substantially reduced.

In the same study, Kessler and Magee (1994) tested for interaction effects between history of depression and the 20 risk factors in predicting onset. Ten interactions were significant and the majority were in the direction such that risk factors were more strongly associated with onset among those with a history of depression than among those without a history of depression. In addition, they found that a number of previously significant stress-buffering effects became statistically insignificant, and the effects of others were substantially reduced when they controlled for history of depression. They also found that the effects of a variety of retrospectively reported childhood adversities on recent onset of depression were largely mediated by history of depression.
In one of the few studies outside of Kessler’s work to consider history of depression, Bifulco et al. (1998) reported findings consistent with those reported above. Just over one-half (53%; 55/103) of a working class sample of mothers reported a prior episode of depression that reached case level. Of the women with a prior episode, 47% (26/55) became depressed in the follow-up period; of the women with no prior history of depression, 25% (12/48) became depressed (p<.05). However, once the effect of teenage depression (e.g., onset before age 20) was removed, the association between depression at age 20 or after and recent onset was greatly reduced (38% versus 25%, significance not reported). A logistic regression model including childhood adversity, teenage depression, and prior depression age 20 or over showed that only teenage depression remained a significant predictor of onset of depression. Teenage depression was then examined in conjunction with severe life events and both were shown to be significant independent predictors of depression. A final logistic regression model including all four factors (childhood adversity, teenage depression, prior depression age 20 or over, and severe life events) confirmed that severe life events and teenage depression provided the best prediction of onset such that in terms of goodness of fit, 73% of the subjects were correctly classified.

In summary, studies investigating the relationship between life events and recent onset of depression in adult samples should explicitly recognize that they are, for the most part, studying recurrence of depression. Thus, history of depression should be taken into consideration in analyses of risk factors. Failure to do so may lead to faulty conclusions about the importance of stress and stress-modifying variables in the onset of depression.

**Present Study**

The entire state of Iowa was declared a disaster area in July 1993 due to severe flooding. This natural disaster provided a unique opportunity to further explore the nature of the stress-depression relationship among individuals with varying amounts of exposure to the flood and other life stressors. Both acute (life events) and chronic (difficulties) types of stress
were examined. Certain vulnerability factors were also studied to gain a better understanding of how their presence affects the relationship between life stress and onset of depression. Specific predictions are outlined below.

Hypotheses

Since previous studies suggest that the risk of onset is highest in the first three months following the occurrence of a severe life event (Brown et al., 1987; Dohrenwend et al., 1995; Kendler, Karkowski, & Prescott, 1999; Surtees et al., 1986), these analyses were limited to life events that occurred in the three month period before onset. Another reason for restricting the time frame to three months was to minimize the loss of valuable life event information for cases of major depressive disorder (MDD) who had onsets early in the study period. For example, information was collected on life events that occurred from June 1993 to the time of interview (Fall 1994) for both cases and non-cases. This meant that if a subject had an onset of MDD, for example, in the second month of the study period (July 1993), the only event information that could be used to predict onset would be from those that occurred in the previous month. Thus, keeping the risk period to three months before onset minimized the loss of event data and, therefore, allowed for a more robust test of the relationship between life events and onset of MDD. It was predicted that the risk of onset would be higher in the first month following a severe life event, followed by a lower risk of onset in the second and third month, respectively.

Unfortunately, the nature of this data set prohibits the use of life event predictors that occurred in the same month as onset of MDD. The specific day the life event or onset of MDD occurred was not known and therefore it was virtually impossible to determine which came first, the life event or the depression. Therefore, it was necessary in these analyses to control for events that occurred in the same month as onset.

Main effects. Much of the early literature on life events examined total event counts rather than level of severity or qualitative dimensions such as independence or focus. Studies
have shown that total event count has little etiological significance compared to other aspects of life events, particularly severity (Brown & Harris, 1978; 1989). An attempt was made to replicate this finding by comparing the predictive power of total number of life events to the presence or absence of a single severe event. The events examined occurred in the 3-month period before onset or interview for cases and non-cases, respectively. The definition of "severe event" for the purpose of this analysis was consistent with that of Brown and Harris (1978). That is, it was 1) rated at the top two levels on a 4-point scale of long-term contextual threat (1 = severe threat; 2 = high moderate threat; 3 = low moderate threat; 4 = minor or no threat); 2) rated at the top four levels on 11-point scale of "independence," meaning the event was unlikely the result of the subject's own behavior or personality characteristics; and 3) was focused on the subject or jointly with another person.

The significance of "independence" and "focus" was explored further by examining the etiological relevance of events rated "dependent" (likely caused by the subject's behavior) and those focused on another person, pet, or possession ("other focused"). Following Brown & Harris (1978), it was expected that severe events with these characteristics would not significantly increase the risk of onset. Also, severe events that were related (although not necessarily causally) to a major difficulty were expected to be more predictive of onset than severe events that were not related to any difficulty. The definition of "major difficulty" used in this study was consistent with the one used in the LEDS. That is, an ongoing problem that has lasted at least two years, rated at the top three points of a six point scale of contextual severity, and not strictly related to health problems. In addition to examining the effect of a major difficulty when it was related to a severe event, it was also important to look at whether a major difficulty occurring alone, not in association with a severe event, was a factor in increasing risk of onset. It was predicted that this type of chronic stress would also increase the risk of onset during the study period. Finally, it was predicted that a lifetime
history of depression and depressive symptoms at wave 1 would significantly predict the onset of MDD.

Since most onsets of depression in adults are recurrent episodes (Kessler & Magee, 1994), it is important to explore whether individuals with a history of depression have a different life event-depression relationship than those without a history of MDD. Hammen (1991, 1995) suggests that stress researchers have for too long emphasized a one-way relationship between stress and disorder (i.e., life events predict illness onset). She argues that it is critical to consider the other direction – that people with a history of depression may contribute to event occurrence. She notes that mood disorders, especially if recurrent, can significantly impair functioning in many domains of a person’s life (e.g., family, work, interpersonal). In her “stress generation” hypothesis, Hammen suggests that people with a history of recurrent depression “generate” more stressful conditions and events in their lives due to maladaptive behavior patterns, personality characteristics, and disrupted interpersonal relations (Hammen, 1991) than people without such a history. One interpretation that follows from this hypothesis is that people with a history of multiple episodes of depression should experience a greater number of “dependent” events than individuals with no history of depression. This hypothesis was addressed in the current study.

**Moderating effects.** A history of depression was expected to act as a vulnerability factor by increasing the risk of onset in the presence of a severe life event. Also, a low sense of personal control and a low level of perceived social support were expected to act as vulnerability factors by increasing the risk of onset of MDD but only in the presence of a severe event. Thus, in the absence of life event stress, a low sense of personal control and a low level of perceived social support was not expected to affect the risk of onset of MDD.

**Mediating effects.** The occurrence of severe life events was expected to mediate the relationship between history of depression and the onset of MDD. In other words, a history
of depression was predicted to influence current onset of MDD indirectly by increasing the occurrence of severe life events which in turn directly increase the risk of onset of MDD.
METHOD

Sample and Data Collection Procedures

Wave One

In the spring of 1992, the Iowa Health Poll, a state-wide longitudinal survey of health and mental health needs and service use was conducted. A sample of 2,043 randomly selected adults living in households were interviewed by telephone. These telephone interviews were conducted by trained interviewers in the Computer-Assisted Telephone Interviewing (CATI) Lab at the Center for Family Research in Rural Mental Health, Iowa State University, Ames, Iowa. The sample was stratified by region, producing a moderate over-sampling of rural households. A supplement to the main sample was added in the fall of 1992 to increase minority representation. Census tracts with at least a 30% minority population were sampled, resulting in an additional 363 respondents, 190 of whom were minorities. The areas sampled in this supplemental component were all in urban locations. As a result, the combined sample is representative of the urban/rural composition of the entire state population. In both samples, respondents were selected randomly from the eligible adults (age 18 or older) in screened households. The combined sample of 2,406 represented a response rate of 76%.

Wave Two

During the spring and summer of 1993, the state of Iowa experienced a series of severe storms with record-breaking rainfalls. The resulting floods were some of the worst in the state’s history and the entire state was declared a disaster area in July 1993. Approximately three months after the floods, a follow-up study was conducted. The research team was able to locate 90% of the original sample and 80% agreed to participate in the interview. A total of 1,735 persons were re-interviewed in the follow-up study, representing 72% of the original sample. All interviews were conducted over the phone by the CATI Lab.
Wave Three

Approximately one year after the floods, a sub-sample was drawn from the 1,735 respondents who participated in wave two data collection. Based on preliminary analysis of wave two data, an attempt was made to identify individuals whose lives had been affected by the flood. A pool of 250 potential participants was selected based on high exposure to the flood as measured by a series of questions assessing level of flood exposure (see Appendix A). Out of this pool of 250 subjects, a smaller sample was drawn. Approximately half of the subjects were selected from those who obtained a high score on at least one of three measures of depressive symptoms, anxiety symptoms, or alcohol use measured at wave 2. The remaining half was recruited from those who obtained low scores on all three measures. This method was chosen to help insure variation in mental health outcomes.

Of those targeted for follow-up, 125 were interviewed in face-to-face interviews in the fall of 1994. Most interviews were conducted in the respondent’s home and lasted between one to three hours. All respondents received $25 for their participation.

Measures

Wave One

Demographics. Information was obtained on age, gender, marital status, education level, income level, and employment status of the respondent.

Social support. Perceived social support was assessed with the following two items taken from the Social Provisions Scale: 1) “I have someone I can really talk to,” and 2) “I have someone I can turn to for support and understanding when things get rough” (Cutrona & Russell, 1987). Respondents were asked to indicate their level of agreement with each item using a 4-point response scale consisting of “strongly agree,” “agree,” “disagree,” or “strongly disagree.” Items were scored so that higher scores represent higher levels of perceived social support. The reliability for the total scale (24 items) has been reported at .92 based on studies using samples of college students, public school teachers, and nurses from a
military hospital (Cutrona & Russell, 1987). The coefficient alpha for the present sample was .84. Construct validity of the measure was supported by findings of the relationship between the scale and measures of loneliness and interpersonal relationships. Discriminant validity was supported by findings that the scale measures a construct that is distinct from measures of social desirability, introversion-extraversion, and neuroticism.

**Sense of control.** Sense of control over one’s life was measured by Mirowsky and Ross’s (1991) 8-item index. The scale is balanced in that it includes items that measure acceptance and denial of control over both good and bad outcomes. Cronbach’s alpha for the instrument was reported to be .66 in a college student sample and .57 in a statewide sample. The alpha in the current study was .70. Respondents are asked to indicate their level of agreement with statements like “I have little control over the bad things that happen to me” and “I am responsible for my own success.” Response options are “strongly agree” (coded +2), “agree” (coded +1), “disagree” (coded -1), and “strongly disagree (coded -2). A composite index is computed by adding the level of agreement with instrumental statements about both good and bad outcomes and subtracting from it the level of agreement with fatalistic statements about both good and bad outcomes.

**Depressive symptoms.** The 20-item Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was used to measure depressive symptoms. Designed for community samples, it measures current level of depressive symptoms. Each item has a 4-point response format: (a) rarely or none of the time (less than 1 day); (b) some or a little of the time (1-2 days); (c) occasionally or a moderate amount of time (3-4 days); and (d) most or all of the time (5-7 days). The scale has a possible range of 0 to 60. Higher scores indicate higher levels of depression. The scale has a Cronbach’s alpha of approximately .85 in the general population and .90 in a patient sample (Radloff, 1977). In the current sample, the alpha was .93.
Wave Two

None of the measures collected during wave two were used in the current study and therefore will not be described here.

Wave Three

Life events and difficulties. The Structured Life Events Inventory (SLI) is a face-to-face in-depth interview designed to elicit detailed information about life events and difficulties that people may experience (Wethington, Kessler, & Brown, 1993). The SLI is a more structured version of the open-ended, semi-structured LEDS. A life event is defined as an objective change or occurrence in the social or physical environment that poses a threat or challenge to an individual. A difficulty is defined as a problematic situation or condition that has lasted at least four weeks. Interviewers ask questions about events or difficulties in 11 domains of life: education, work, reproduction (pregnancy, abortion, etc), housing, financial, crime/legal, health, marital, other relationships, death, and miscellaneous. The SLI consists of two types of questions: 1) “stem” questions that are read verbatim (e.g., “In the last 12 months, did any close friend, close relative or household member die, someone important to you?”); and 2) structured and/or “free” probes that are administered after a “yes” response to a stem question. Structured probes are read word for word, while free probes serve only as suggestions allowing the interviewer to tailor the questions to individual situations. See Appendix B for an example of a module taken from the SLI.

During the interview, interviewers make judgments about whether a subject’s response is severe enough to require additional probing. If so, responses to these probes are written down and the interviewer makes a summary judgment about the severity of the event or difficulty being reported and records this rating in the interview. This is to help ensure that the interviewer has elicited enough information to make the contextual threat rating. If the interviewer struggles to make this rating during the interview, it may be a sign that he/she does not have enough information about the situation and needs to ask more questions.
Another very important aspect of the life event or difficulty that is recorded is the month in which it occurred.

After completing the SLI, the interviewer filled out a separate rating form for each event and difficulty recorded in the interview. In addition to providing a detailed description of the event or difficulty, interviewers rated each of them along several of the same critical dimensions as those contained in the LEDS. One of the most important dimensions was that of "long-term contextual threat" defined as the probable unpleasantness or severity remaining 10-14 days after the onset of the event. Contextual ratings take into account background information about the respondent and were rated from the perspective of what 'most people' in the same circumstance would likely experience as a result of the event. Long-term contextual threat was rated on a four point scale from "severe" to "minor/none." Also rated on this scale was "reported threat" which was the interviewer's judgment of the respondent's emotional reaction to the event including his/her style of reporting it. "Focus" refers to who the event or difficulty happened to. Focus was rated on the following four point scale: "1-subject focused"; "2-joint focused with other"; "3-focused on a possession or pet"; and "4-focused on another person(s)." Another dimension was "independence" which refers to the probability that the origins of a particular event were external to the respondent rather than the result of the subject's own actions or disorder process. Independence was rated on an 11-point scale from independent (1-4) to possibly independent (5-11).

Another dimension that was rated was "loss," defined broadly to include not only loss of a person through death or separation, but also loss of a role, material possession, health, and cherished idea. Loss was rated on a four point scale from "severe" to "minor/none." "Danger" was defined as the threat of a future loss (as defined above) as a result of the occurrence of an event. Ratings of "loss" and "danger" were only made for events, not difficulties. The domain of life that the event or difficulty occurred in was rated in one of the 11 categories mentioned above. For life events, each domain was broken down into sub-
categorical to more specifically classify the nature of the event. However, difficulties were only rated using the 11 broad domain categories. Also rated was whether the event or difficulty was related to the flood: "0- not flood related"; "1- possibly flood related"; and "2-definitely flood related." Finally, a linking variable was coded if the event was related to an ongoing difficulty.

Once the interviewer completed the rating task, each interview was examined by the two projects managers independently. Whenever a project manager disagreed with the initial rating assigned by the interviewer, the other project manager would review the materials and they would reach an agreement as to the most appropriate rating. This task was accomplished through discussion and referencing the LEDS scoring manuals for guidance. Early in the study it became obvious that some of the examples given in the LEDS scoring manuals, which were based primarily on a sample of British women in the 1970s, were not relevant to our American sample of men and women living in the mid-west in the 1990s. Therefore, in circumstances where there was no clear guidance from the LEDS manuals for rating a unique event or difficulty, the two project managers developed a new rating scheme with the aim of being as consistent with the LEDS rating philosophy as possible. Eventually, this led to the creation of a rating manual that was specific to this study and the unique events and difficulties experienced by the sample.

The SLI was fielded in an experimental study in 1992 to examine its reliability and validity compared to the LEDS (Wethington, 1997). Half of the participants were administered the SLI and the other half the LEDS. There were no significant differences between the SLI and the LEDS in terms of the total number of severe events and difficulties reported. Nor were there significant differences in the number of severe events reported in each of the 11 life domain categories. However, there was a significant difference between the two measure in terms of the "fall-off" or decline in reported events over time. For the LEDS, the fall-off of reporting severe events was less than 1% per month (Brown & Harris,
1982). The SLI reported a fall-off rate somewhat higher than the LEDS but lower than the 2%-3% monthly fall-off rate found in the Detroit Couples Study Life Event Method (Wethington, 1997). Consistent with other findings (Kessler & Wethington, 1991), socially stigmatizing events or difficulties were less reliably reported than other less embarrassing situations on both the SLI and the LEDS. Predictive validity was examined by looking at whether the occurrence of a severe event increased the risk of onset of depression. For the SLI, the estimate of relative risk of onset within three months of a severe event was 3.12 compared to the relative risk using the LEDS of 3.83. Overall, the SLI appears to be a good alternative to the LEDS.

**Mental health outcome measures.** A diagnostic assessment was made of MDD using components from the University of Michigan version (UM-CIDI; Wittchen & Kessler, 1994) of the Composite International Diagnostic Interview (CIDI; Robins et al., 1989). The CIDI is a comprehensive, non-clinician administered, structured diagnostic interview that generates diagnoses according to the definitions and criteria of both the Diagnostic and Statistical Manual of Mental Disorders, Third Edition-Revised (DMS-III-R; APA, 1987) and the Diagnostic Criteria for Research of the International Classification of Disease-10 (ICD-10; WHO, 1991). It was developed primarily for use in epidemiological studies of mental disorders throughout the world.

The UM-CIDI made several changes to the CIDI yet maintained the basic structure of the instrument. Some of the changes include removing certain diagnoses that could not be measured reliably or were of no interest to the research team; modified the order of questions to improve flow; redesigned the stem question administration procedures to minimize the problem of a “no” response set; added probe questions to clarify the meaning of certain CIDI questions; on the depression and mania sections, probed symptoms at the episode level rather than probing the initial symptom questions. Whenever possible, the rewording of CIDI questions was avoided.
The test-retest and interrater reliability findings of the CIDI field trials have been reported by Wittchen (1994). For major depressive disorder, single episode, the Kappa was .66 for test-retest reliability and .97 for interrater reliability. For major depressive disorder, recurrent, the Kappa was .62 for test-retest reliability and .93 or interrater reliability. These findings are based on studies conducted around the world with predominantly patient populations. Also, good overall diagnostic concordance between a DSM-III-R clinical checklist and CIDI diagnoses has been found (depressive disorders k=.84; anxiety and phobic disorders k=.76) (Janca, Robins, Cottler, & Early. 1992). This group also found high clinical confirmation rates for ICD-10 diagnoses.

The UM-CIDI diagnosis of MDD requires meeting four diagnostic criteria (A-D) for a major depressive episode as well as having never met UM-CIDI criteria for manic or hypomanic episodes. The four diagnostic criteria are:

Criterion A: At least five symptoms must be present during the same two-week period and present a change from previous functioning. At least one of these symptoms must be depressed mood or loss of interest. The other symptoms include change in appetite, change in sleep patterns, lack of energy, psychomotor retardation or agitation, feelings of worthlessness or guilt, poor concentration, and recurrent thoughts of suicide.

Criterion B: It cannot be established that an organic factor initiated and maintained the disturbance or that the disturbance is a normal reaction to the death of a loved one.

Criteria C and D: At no time during the episode were there delusions or hallucinations for as long as two weeks in the absence of prominent mood symptoms. Also, the episode is not superimposed on schizophrenia, schizophreniform disorder, delusional disorder, or psychotic disorder, not otherwise specified.

In the current study, the UM-CIDI was placed at the end of the interview after the SLI had been administered. Only select portions of the instrument were administered to cut down on interview length (see Appendix C). The section on psychosis that is normally used to
determine the status of MDD criteria C and D was not administered. Therefore, the presence of psychosis cannot be ruled out in making the diagnosis of MDD. Nor can the presence of a manic or hypomanic episode be ruled out as these sections were not administered either. There are other limitations with this instrument that prohibit a definitive diagnosis of MDD. For the main purpose of this study, the only depressive episodes of interest were those with an onset between June 1993 and the time of interview in the Fall of 1994. However, the only depressive episode the UM-CIDI fully probes to determine if it meets all the diagnostic criteria for MDD is the most severe episode in the person's life. Therefore, unless the person's most severe episode occurred within the study period, we are also unable to determine if criterion B is met. Only criterion A can be safely estimated for onsets within the study period. Thus, it is important to note that for the purposes of the present study, MDD classification was based on criterion A only.

The MDD section of the UM-CIDI also collects information on lifetime history of depression. Respondents are asked how many periods in their lifetime lasting two weeks or more have they had some of the symptoms described in Criterion A. As with the MDD diagnosis, it cannot be determined if these past episodes also meet criteria for B, C, and D. The other limitation of this measure is that for individuals who had their first onset during the study period (n = 4), the exact month of onset was not ascertained. However, month of onset during the study period was established for individuals who had multiple episodes of MDD in their lifetime. Month of onset is necessary to perform discrete-time survival analysis as will be explained below. As a result, data from the four subjects who had their first onset of MDD during the study period was not included these analyses.

**Data Analysis**

All descriptive analyses, including t-tests and chi-square analyses, were conducted from the base file of 125 respondents using all of the life events and difficulties experienced throughout the 18-month study period. The base file or "person-oriented" file contained one
record for each person. This was in contrast to the discrete-time survival analyses that
required the construction of a person-period data set (Willet & Singer, 1993, 1995). In a
person-period data set, each person has multiple records, each one pertaining to a different
time period. In this study, the time unit was one month for a total study period of 18 months.
Thus, each person in the sample could have up to 18 records. This would occur if the person
failed to have an onset of MDD within the study period. However, if the person had an onset.
for example, in the seventh month there would be seven person-period records for that
person. Thus, the unit of analysis was each participant month rather than the individual
participant. All person-period records were made up of identical variables indicating the
state of each person in each monthly period. Included were 18 dichotomous dummy-coded
variables that took on the value of “1” to identify the particular month being referenced. For
predictor variables, appropriate values are recorded for each month. This method of analysis
can accommodate both time-invariant and time-varying predictors.

Discrete-time survival analysis was used to model the effects of life events on
depression over time. Discrete-time survival analysis is well suited to answer questions of
“whether” and, if so, “when” an event of interest occurs (Willet & Singer, 1993, 1995). In
the present study, the event of interest is the onset of depression. Discrete-time survival
analysis is a subclass of survival methodology that originated from the seminal work of Cox
(1972) on statistical models for lifetime data, also known as event histories. Another
subclass of survival methodology is continuous-time survival analysis which is perhaps more
widely used than its discrete-time cousin. There are several important distinctions between
these two methods. First, continuous-time survival analysis requires that time-to-event be
recorded on a continuous scale. Discrete-time survival analysis only requires knowledge of
the discrete time period in which the event of interest occurred. Second, time-varying
predictor variables whose values change over time can be more easily included in the
analyses of a discrete-time model than a continuous-time model. Also, continuous-time
models are predicated on the often unrealistic assumption that the effect of a predictor on event occurrence is constant over time. This assumption of "proportionality" can easily be tested in the discrete-time model by adding interactions between selected predictors and time to the model. Finally, in discrete-time survival analysis, all the required statistical calculations can be carried out using standard methods of logistic regression analysis (Allison, 1982, 1984; Yamaguchi, 1991).

Discrete-time survival analysis shows how the chance of onset of disorder varies from time period to time period and therefore indicates whether and when an onset is most likely to occur. This is particularly important when studying the temporal relationship between the occurrence of life events and the onset of disorder. In discrete-time survival analysis, the principal quantity being modeled, referred to as a 'hazard,' describes the risk of event occurrence over time. The "hazard probability" refers to the proportion of the risk set (the group of people known to be eligible to experience the event in a particular time period) who experience the event (i.e., onset of depression) in that time period. The term "hazard function" is a summary representation of the hazard probability for each time period under study. Thus, it reveals how the risk of event occurrence changes from time period to time period. Similarly, the term "survival probability" refers to the proportion of an initial population that does not experience the event (i.e., onset) of interest through each of several successive time periods. The term "survivor function" refers to the chronological pattern of these probabilities over time (Willet & Singer, 1993, 1995).

To fit a discrete-time hazard model, the outcome variable is regressed on the selected predictor variables (including all of the dummy-coded time variables) using logistic regression analysis. The regression coefficients obtained under this method are maximum likelihood estimates of the parameters in the discrete-time hazard model.

In this study, logistic regression was used for models predicting the dichotomous outcome variable of MDD. In predicting the onset of MDD, an initial hazard model was
estimated using no substantive predictors other than the 18 dummy-coded time variables, one for each month. This model provided the overall temporal profile of the risk of onset basically as a function of time (i.e., the main effect of time). This initial hazard model provided a benchmark against which to compare the goodness of fit of more complex models.

To determine the main effect of each predictor variable on the outcome variable, a separate logistic regression equation was estimated by first entering the dummy-code time variables, followed by the demographic control variables of gender, age, education level, and income level and finally the CES-D score measured at wave 1. The predictor variable of interest was entered last to determine whether it contributed any unique explanatory information over and above the control variables.

To test for the hypothesized moderator effects of history of depression, low social support, and low sense of control, separate logistic regression models were estimated for each hypothesized moderator. A moderating effect was identified by a significant interaction between a vulnerability factor and stress (operationalized as a life event or a major difficulty). Thus, in each equation predicting MDD the dummy-coded time variables were entered first followed by the demographic control variables followed by CES-D scores measured at wave 1. Next, a severe life event or a major difficulty was entered, followed by one of the vulnerability factors. Finally, the interaction term, formed by multiplying the standardized values of the life event or difficulty variable and the vulnerability variable, was entered. If the interaction term was significant, there was evidence of a moderating effect.

Finally, one mediating effect was tested. First, it was hypothesized that people with a history of major depressive disorder may experience more life events and difficulties (presumably because of their behavior while depressed and their effect on other people) and thus have a higher risk of onset of MDD. To meet the requirements for mediation set forth by Baron and Kenny (1986), three conditions must be satisfied. First, a history of major
depressive disorder must significantly predict the occurrence of a severe life event or
difficulty. Next, a history of major depressive disorder must significantly predict onset of
MDD. Finally, when both history of depression and life events/difficulties are entered into a
regression equation predicting MDD, only life events/difficulties remain significant. Perfect
mediation is indicated if history of depression has no effect on MDD when the mediator (life
events/difficulties) is present. Baron and Kenny (1986) have noted that in many areas of
psychology that deal with phenomena that have multiple causes, a more realistic approach
may be to seek mediators that significantly reduce the relationship between the independent
variable (history of depression) and the dependent variable (MDD) rather than totally
eliminating it.
RESULTS

Descriptive Analyses

Demographic and clinical characteristics of the wave 3 sample are presented in Table 4. The average age of participants was 48 years (range, 20-81 years) and 61% were married. This compares to the wave 1 sample (excluding wave 3) where the average age was 49 years (range, 19-88) and where 68% of the sample was married. Over one-half of the wave 3 sample was female (57%) compared to 66% for wave 1. Ninety-six percent of the wave 3 sample identified themselves as White and 3% as Black. This compares to wave 1 in which 93% were White and 6% were Black. In general, the respondents were well educated. Only 7% of the wave 3 sample had less than a high school education compared to 10% from wave 1. Just over 50% of the wave 3 respondents had a minimum of some college, vocational, or technical training compared to 69% from wave 1. Incomes ranged from below $5,000 to above $75,000. Seventeen percent of the wave 3 sample had incomes of $15,000 or less compared to 16% from wave 1. The majority of wave 3 respondents (66%) had incomes over $25,000 compared to 62% from wave 1. With regard to the primary outcome variable, major depressive disorder (MDD), 26 (21%) of the respondents met criteria. Of those 26 people with MDD, 18 (69%) were female. MDD was only assessed at wave 3.

Table 5 describes the types of life events and difficulties experienced by participants. Of the total 427 life events experienced by the sample, 72 (17%) were classified as “severe” as defined in the LEDS by Brown and Harris (1978) (i.e., rated 1-marked or 2-moderate on 4-point scale of long-term contextual threat, independent, and focused on self or jointly with another person). Of those events rated severe, the largest percentage (26%) belonged to the “Health / Accidents” category which included events such as physical illness, hospitalization (medical and psychiatric), operations, suicide attempts, and accidents. It is noted that the subject’s own psychological problems that may lead to life events such as psychiatric
Table 4
Demographic and Clinical Characteristics of Sample

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age:</strong></td>
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<td></td>
</tr>
<tr>
<td>20 – 34</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td>35 – 49</td>
<td>57</td>
<td>46</td>
</tr>
<tr>
<td>50 – 64</td>
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<td>25</td>
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<tr>
<td>65 – 81</td>
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<td>14</td>
</tr>
<tr>
<td><strong>Marital status:</strong></td>
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<tr>
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<tr>
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<td>2</td>
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<tr>
<td>Divorced</td>
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<td>19</td>
</tr>
<tr>
<td>Widowed</td>
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<td>7</td>
</tr>
<tr>
<td>Never married</td>
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<td>10</td>
</tr>
<tr>
<td><strong>Sex:</strong></td>
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<td></td>
</tr>
<tr>
<td>Male</td>
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<td>43</td>
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<tr>
<td>Female</td>
<td>69</td>
<td>57</td>
</tr>
<tr>
<td><strong>Race:</strong></td>
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<td></td>
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<tr>
<td>White</td>
<td>117</td>
<td>96</td>
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<td>3</td>
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<tr>
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<td>1</td>
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<td><strong>Education:</strong></td>
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<tr>
<td>Less than high school</td>
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<td>7</td>
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<td>High school or G.E.D.</td>
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<td>40</td>
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<tr>
<td>Some college, vocational, technical</td>
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<td>25</td>
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<td>Associate degree</td>
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<td>3</td>
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<tr>
<td>Bachelor degree</td>
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<td>16</td>
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<tr>
<td>Some graduate work</td>
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<td>3</td>
</tr>
<tr>
<td>Advanced degree</td>
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<td>3</td>
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<tr>
<td><strong>Income</strong></td>
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<tr>
<td>Below $ 5,000</td>
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<td>3</td>
</tr>
<tr>
<td>$ 5,000 to $15,000</td>
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<td>14</td>
</tr>
<tr>
<td>$15,000 to $25,000</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>$25,000 to $35,000</td>
<td>27</td>
<td>22</td>
</tr>
<tr>
<td>$35,000 to $45,000</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>$45,000 to $55,000</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>$55,000 and above</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td><strong>Cases of MDD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>Non-cases of MDD</td>
<td>95</td>
<td>76</td>
</tr>
<tr>
<td>History of MDD</td>
<td>58</td>
<td>46</td>
</tr>
<tr>
<td>Cases with history of MDD</td>
<td>26</td>
<td>87</td>
</tr>
</tbody>
</table>

*Note.* MDD = Major Depressive Disorder.
Table 5
Number and Percentage of Events and Difficulties by Life Domain

<table>
<thead>
<tr>
<th>Life domain</th>
<th>All events</th>
<th>Severe events</th>
<th>All difficulties</th>
<th>Major difficulties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Total</td>
<td>427</td>
<td>72</td>
<td>413</td>
<td>30</td>
</tr>
<tr>
<td>Education</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Work</td>
<td>67</td>
<td>17</td>
<td>51</td>
<td>3</td>
</tr>
<tr>
<td>Pregnancy / birth</td>
<td>10</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Housing</td>
<td>39</td>
<td>6</td>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td>Money</td>
<td>83</td>
<td>8</td>
<td>60</td>
<td>6</td>
</tr>
<tr>
<td>Legal / crime</td>
<td>29</td>
<td>1</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Health / accidents</td>
<td>53</td>
<td>19</td>
<td>115</td>
<td>-</td>
</tr>
<tr>
<td>Marital relationship</td>
<td>25</td>
<td>0</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>Other relationship</td>
<td>68</td>
<td>2</td>
<td>107</td>
<td>12</td>
</tr>
<tr>
<td>(includes children)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>51</td>
<td>18</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>(includes death)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flood related</td>
<td>90</td>
<td>13</td>
<td>87</td>
<td>0</td>
</tr>
</tbody>
</table>

*a* Included major difficulties (n=3) that were linked to severe life events. *b* Flood related life events and difficulties are subsumed under the other life domains but are separated out here for informative purposes only.

Hospitalization or suicide attempt are likely results of depression rather than predictors of it. Including these types of events as predictors of MDD would confound the results and therefore they were excluded from these analyses.

The second highest percentage (25%) of severe events was in the “Miscellaneous” domain, which included events such as death, pet events, ceremonies, and other miscellaneous crises that did not clearly fall under another life domain.

Of the 413 difficulties experienced by the respondents, 30 (7%) were major difficulties as defined by Brown and Harris (1978) (i.e., top two points on SLI-modified severity scale, lasting at least two years, and not involving health problems). The life domain containing the largest percentage of major difficulties was “Other Relationships” (40%) which contained interpersonal difficulties involving people that were close to the respondent (e.g., family, friends, children) excluding romantic/marital partners. The second highest
percentage of major difficulties was in the “Money / Possessions” domain (20%) which contained ongoing problems with financial obligations, debts, repossessions, and loss, damage, or threat to property.

When the definition of ‘major difficulty’ was expanded to include health-related difficulties from the “Health / Accident” domain, the total number increased from 30 to 57. Since these health-related difficulties made up the largest percentage of major difficulties, it was decided to include them in the analyses. However, a word of caution is necessary when interpreting these results. As previously noted, the rating of difficulties into life domains was not as detailed as it was for life events. For example, the rating for an event not only indicated that it was in the “Health / Accident” domain but it was further classified into subcategories such as “physical illness, operation, suicide attempt, etc.” In contrast, difficulties were only rated by the broad domain (e.g., “Health / Accident”) and not the more detailed subcategories. This was a problem primarily for difficulties rated in the “Health / Accident” domain because this category included difficulties that might involve psychiatric illness. Since the rating of difficulties precluded the identification of those that might be related to the subject’s own psychiatric illness, there was a possibility that the predictor variable (difficulty) could be confounded with the outcome variable (onset of MDD). It was believed that this possibility was small given that there were only four events rated in this category and none of them involved the subject’s own psychiatric problems but rather those of someone close to him/her.

Table 6 contains the correlations computed for the primary study variables. Onset of MDD was significantly positively correlated with history of depression, depressive symptoms at wave 1, total number of events, total severe events, total independent events, and major difficulties (including both durations of 2 years and 6 months and health-related or non-health related difficulties). History of depression was significantly negatively correlated with age and positively correlated with gender (female), depressive symptoms at wave 1,
<table>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender</td>
<td>1.00</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Age</td>
<td>.01</td>
<td>1.00</td>
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<td>3. Education</td>
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<td>-.08</td>
<td>1.00</td>
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<td>4. Income</td>
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<td>-.08</td>
<td>.35**</td>
<td>1.00</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>5. Depressive symp. wave 1</td>
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<td>-.16†</td>
<td>-.17†</td>
<td>-.26**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>6. MDD</td>
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<td>.13</td>
<td>.01</td>
<td>-.13</td>
<td>.22**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
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<td>7. History of depression</td>
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<td>-.19*</td>
<td>.07</td>
<td>-.04</td>
<td>.32**</td>
<td>.55**</td>
<td>1.00</td>
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<tr>
<td>8. Total number of events</td>
<td>.17†</td>
<td>-.21*</td>
<td>-.12</td>
<td>-.12</td>
<td>.19*</td>
<td>.27**</td>
<td>.31**</td>
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<tr>
<td>9. Severe events</td>
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<td>.03</td>
<td>-.08</td>
<td>-.28**</td>
<td>.06</td>
<td>.27**</td>
<td>.21*</td>
<td>.69</td>
<td>1.00</td>
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<tr>
<td>10. Independent events</td>
<td>.26**</td>
<td>-.06</td>
<td>-.11</td>
<td>-.23*</td>
<td>.20*</td>
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<td>.28**</td>
<td>.78**</td>
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<td>.11</td>
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<td>.76**</td>
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<td>16. Sense of Control</td>
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<td>-.19*</td>
<td>-.19*</td>
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<td>-.01</td>
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</table>

* Two or more years duration, excludes health-related difficulties, not linked (related) to event.  
** At least two years duration, includes health-related difficulties, not linked to event.  
† At least six months duration, includes health-related difficulties, not linked to event.  
†† At least six months duration, excludes health-related difficulties, not linked to event.  
* p < .05.  ** p < .01.
<table>
<thead>
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<th>Variable</th>
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<td>1.00</td>
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<td></td>
<td></td>
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<td>13. Major difficulties(^a)</td>
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<td>14. Major difficulties(^b)</td>
<td>.44*</td>
<td>.72*</td>
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<tr>
<td>15. Major modified difficulties(^c)</td>
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<td>.65*</td>
<td>.77*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Sense of control</td>
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<td>.07</td>
<td>-.01</td>
<td>.04</td>
<td>.00</td>
<td>1.00</td>
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<td>17. Social support</td>
<td>-.06</td>
<td>.12</td>
<td>.06</td>
<td>.00</td>
<td>.31*</td>
<td>1.00</td>
</tr>
</tbody>
</table>
onset of MDD, and all of the life event and difficulty measures specified in Table 6.
Interestingly, severe events were negatively correlated with income. They were positively
correlated with gender (female), onset of MDD, history of depression, and major difficulties
(all three types). Surprisingly, sense of control was significantly negatively correlated with
education and income. Social support was not significantly correlated with any of these
variables.

Gender Differences

T-tests and chi-square analyses were conducted to test for differences between men and
women on all of the central study variables. The results are presented in Table 7. Eight out
of 17 comparisons were significant at $p < .05$ or less and another three were marginally
significant at $p < .10$. Turning first to data collected at wave 1, men reported significantly
higher levels of income than women, yet there were no significant differences in their level of
education. Also, depressive symptoms measured at wave 1 were significantly higher for
women than for men. There were no significant differences between men and women in
terms of the level of perceived social support and sense of control reported.

Turning next to wave 3 data, chi-square analyses determined that significantly more
women reported having at least one prior episode of MDD before the study period than men.
However, there were no significant differences between men and women in the onset of
MDD during the study period. With respect to life events, women reported significantly
higher occurrences than men of severe events (regardless of “independence” or “focus”) and
independent events. The only type of event that women did not report at least marginally
significantly more than men was dependent events. With regard to difficulties, women
reported significantly higher levels than men in three out of four categories, the fourth being
marginally significant.

Table 8 shows tests for mean differences between cases and non-cases of MDD on
several dimensions of life events and difficulties for the entire study period (not just before
<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Sample (N=125)</th>
<th>Males (n=53)</th>
<th>Females (n=69)</th>
<th>t</th>
<th>chi-square</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
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<td>Wave 1</td>
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<td>Education</td>
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<td>1.84</td>
<td>3.57</td>
<td>2.04</td>
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<td>7.04</td>
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<td>5.35</td>
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<td>7.38</td>
<td>7.04</td>
<td>11.09</td>
<td>9.93</td>
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<td>Social Support</td>
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<td>0.62</td>
<td>3.34</td>
<td>.54</td>
<td>3.40</td>
<td>.67</td>
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<tr>
<td>Perceived Control</td>
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<td>.14</td>
<td>.38</td>
<td>.19</td>
<td>.42</td>
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<td>Wave 3</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of MDD</td>
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<td>.50</td>
<td>.30</td>
<td>.46</td>
<td>.59</td>
<td>.49</td>
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<tr>
<td>MDD</td>
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<td>.41</td>
<td>.15</td>
<td>.36</td>
<td>.26</td>
<td>.44</td>
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<tr>
<td>All Events</td>
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<td>3.02</td>
<td>2.25</td>
<td>3.78</td>
<td>2.31</td>
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<td>Severe</td>
<td>1.11</td>
<td>1.35</td>
<td>.77</td>
<td>1.20</td>
<td>1.42</td>
<td>1.41</td>
</tr>
<tr>
<td>Severe</td>
<td>.58</td>
<td>.84</td>
<td>.43</td>
<td>.69</td>
<td>.72</td>
<td>.94</td>
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<td>Independent</td>
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<td>1.53</td>
<td>1.87</td>
<td>1.27</td>
<td>2.67</td>
<td>1.63</td>
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<td>Dependent</td>
<td>1.12</td>
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<td>1.15</td>
<td>1.60</td>
<td>1.12</td>
<td>1.38</td>
</tr>
<tr>
<td>All Difficulties</td>
<td>3.30</td>
<td>2.36</td>
<td>2.70</td>
<td>2.29</td>
<td>3.81</td>
<td>2.35</td>
</tr>
<tr>
<td>Major</td>
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<td>.53</td>
<td>.15</td>
<td>.41</td>
<td>.32</td>
<td>.61</td>
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<tr>
<td>Major (incl. health diff.)</td>
<td>.46</td>
<td>.80</td>
<td>.30</td>
<td>.67</td>
<td>.59</td>
<td>.88</td>
</tr>
<tr>
<td>Major Modified</td>
<td>.93</td>
<td>1.27</td>
<td>.62</td>
<td>.95</td>
<td>1.19</td>
<td>1.45</td>
</tr>
</tbody>
</table>

* Regardless of independence or focus. † As defined by Brown & Harris (1978; severe, independent, self-focused). ‡ At least 2 years duration, severe, excludes health-related difficulties. § At least 6 months duration, severe, includes health-related difficulties. tp < .10. *p < .05. **p < .01. ***p < .001.
Table 8
Comparison of Life Events and Difficulties in Cases and Non-Cases of MDD

<table>
<thead>
<tr>
<th></th>
<th>Cases of MDD (n=26)</th>
<th>Non-Cases (n=99)</th>
</tr>
</thead>
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<tr>
<td></td>
<td>M</td>
<td>SD</td>
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<td>Life events</td>
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<tr>
<td>Total life events</td>
<td>4.62</td>
<td>2.42</td>
</tr>
<tr>
<td>Severe(^a)</td>
<td>1.00</td>
<td>1.17</td>
</tr>
<tr>
<td>Severe(^b)</td>
<td>1.81</td>
<td>1.41</td>
</tr>
<tr>
<td>Independent</td>
<td>3.19</td>
<td>1.60</td>
</tr>
<tr>
<td>Dependent</td>
<td>1.42</td>
<td>1.47</td>
</tr>
<tr>
<td>Difficulties</td>
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<tr>
<td>Total difficulties</td>
<td>4.92</td>
<td>2.50</td>
</tr>
<tr>
<td>Major(^c)</td>
<td>.42</td>
<td>.70</td>
</tr>
<tr>
<td>Major (incl. health diff.)</td>
<td>.73</td>
<td>.87</td>
</tr>
<tr>
<td>Major modified(^d)</td>
<td>1.23</td>
<td>1.07</td>
</tr>
</tbody>
</table>

\(^a\) As defined by Brown & Harris (1978). \(^b\) Severe event regardless of "independence" or "focus."
\(^c\) At least 6-months duration, includes health-related diff.
\(^d\) \(p<.10. \) \(^*p<.05. \) \(^**p<.01. \) \(^***p<.001.\)

onset). Six out of nine comparisons were significant \((p<.05)\) and two were marginally significant. Individuals with an onset of MDD had significantly more events in all categories except for dependent events. Regarding difficulties, cases of MDD had marginally significantly higher occurrences of major difficulties regardless of whether health-related difficulties were included. However, when the definition of major difficulty was modified to include those with a duration of at least 6 months, rather than 2 years, the difference between the two groups was highly significant \((p<.01)\).

**Tests of Study Predictions**

To test whether total number of events versus a single severe event was more predictive of onset, logistic regression was conducted using the base data file of 125 subjects. Total events were counted for the three-month period before onset for cases and before interview
for non-cases. Both variables were entered into the regression equation after controlling for demographic control variables and depressive symptoms at wave 1. Results indicate that after taking into account the total number of events in the three month period before onset or interview, a single severe event remained marginally significant in predicting the onset of MDD, \( \chi^2 (1, N=125) = 3.45, p = .06 \). After controlling for demographic variables and depressive symptoms at wave 1, total number of events did not significantly predict onset even when a single severe event was not controlled for.

Logistic regression was used in the next set of analyses to perform discrete-time survival analysis using the person-period data set with \( N=1,976 \) person-months. In predicting the onset of MDD, an initial hazard model was estimated using the 17 dummy-coded time variables, one for each month minus one \( (18-1=17) \) for the contrast variable. This model was basically a test for the main effect of time. It served as a benchmark with which to compare the goodness of fit of more complex models. None of the variables representing each month of the study period significantly increased the risk of onset of MDD. This suggested that the risk of becoming depressed did not increase purely as a function of the passage of time.

Next, the effect of lifetime history of MDD on current risk of onset was examined. The odds ratio for history of depression in predicting the occurrence of MDD was calculated on the basis of the relative risk of onset in the two groups. For individuals with a prior history of depression, the risk for subsequent depression was 26/32, or .81 (see Table 9). For individuals without a prior history of depression, the risk for subsequent depression was 4/63, or .06. The odds ratio was therefore .81/.06, or 13.50. Thus, individuals with a history of depression were 13.50 times more likely to become depressed during the study period than individuals without a history of depression. Unfortunately, data could not be used in the discrete-time survival analyses from the four subjects who became depressed during the study period but who had no prior history of depression. This occurred because the exact month of onset of MDD for these four subjects was not determined due to an error in the diagnostic
Table 9

Relationship of History of Depression to Onset of MDD

<table>
<thead>
<tr>
<th>History of depression</th>
<th>Onset of MDD</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
<td>26</td>
<td>4</td>
<td>95</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>32</td>
<td>63</td>
<td>30</td>
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<tr>
<td>Total</td>
<td></td>
<td>58</td>
<td>67</td>
<td>125</td>
</tr>
</tbody>
</table>


The next analysis explored how depressive symptoms measured at wave 1 affected the risk of onset at wave 3. After controlling for the dummy-coded time variables and the demographic control variables, depressive symptoms at wave 1 were marginally significant in increasing the risk of onset of depression. $\chi^2(22, N = 1,886) = 3.00, p < .10$. This finding suggests that when two individuals are one point apart on the depressive symptom scale, the estimated odds of onset for the person reporting a higher symptom level is 1.03 times the odds of onset of the person with the lower symptom level.

The next set of analyses examined the relation between the risk of onset of MDD in the first, second, and third month following the occurrence of certain types of severe life events. Table 10 shows the results for individual predictor variables in each of the three
months following the occurrence of an event. The first event category examined was that of "any severe event" which refers to events that were rated at the top two levels on a 4-point scale of long-term contextual threat ("1=severe threat" or "2=high moderate threat") regardless of their ratings on "independence" or "focus." As seen in Table 10, the risk of onset was not significantly increased at any time in the three-month period after the occurrence of "any severe event." However, when severe events were restricted to those that were independent and focused on the subject or jointly with another person (same as Brown & Harris's definition of "severe event"), their etiological relevance increased. Specifically, the risk of onset increased significantly two months after the occurrence of this type of event. However, contrary to prediction, the risk of onset one month after the event was lower than the risk of onset two months after the event (odds ratio of 2.14 and 5.50, respectively).

Analyses were not conducted on the category of "severe, independent, other focused" events due to insufficient cell size (i.e., there were no instances of a subject with a "severe, independent, other focused" event who experienced an onset of MDD within three months of the event occurrence).

Turning next to "severe dependent" events, only one of them was "other focused." All of the others were "self-joint focused." Therefore, analyses were not conducted separately on these two categories but combined into the "severe dependent" category. The results indicate that severe dependent events did not significantly increase the risk of onset in any of the three month risk periods, as was expected. When "severe independent" and "severe dependent" events were entered into the same regression equation, "severe independent" events remained marginally significant in predicting onset in the second month after event occurrence.

The next hypothesis tested was whether a severe event that was related to a long-term, ongoing stressor (i.e., "major difficulty) would increase the risk of onset over and above a severe event that was not related to any type of difficulty. When each variable was estimated
Table 10

Life Events Predicting Onset of MDD in the First, Second, and Third Month After Event Occurrence

<table>
<thead>
<tr>
<th>Event Description</th>
<th>1-Month after event</th>
<th>2-Months after event</th>
<th>3-Months after event</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>SE</td>
<td>χ²</td>
</tr>
<tr>
<td>1. Any severe event</td>
<td>.86</td>
<td>.66</td>
<td>1.68</td>
</tr>
<tr>
<td>(89, 84, 79)</td>
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<tr>
<td>2. Severe, independent</td>
<td>.58</td>
<td>.79</td>
<td>.54</td>
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<tr>
<td>(67, 63, 58)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Severe, independent, self-joint focus</td>
<td>.76</td>
<td>.80</td>
<td>.90</td>
</tr>
<tr>
<td>(53, 49, 44)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Severe, dependent</td>
<td>1.30</td>
<td>1.10</td>
<td>1.41</td>
</tr>
<tr>
<td>(27, 26, 25)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sev. evt. related to major difficulty</td>
<td>2.67</td>
<td>1.21</td>
<td>4.85*</td>
</tr>
<tr>
<td>(10, 9, 8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Sev. evt. not related to any difficulty</td>
<td>1.15</td>
<td>.83</td>
<td>1.92</td>
</tr>
<tr>
<td>(34, 30, 27)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Unable to calculate odds ratio due to small cell size.

b Number of specified events in each of the three months, respectively.

† p < .10.  *p < .05.
individually in a regression equation. only the severe event related to a major difficulty was significant. The effect of this type of event was significant both one month, $\chi^2 (1, N = 1,766) = 4.85, p < .05$. and two months. $\chi^2 (1, N = 1,648) = 5.69, p < .05$, after its occurrence.

When both variables were entered into the logistic regression equation, a severe event related to a major difficulty remained significant at the $p < .05$ level for both the first and second month risk periods.

It is noted that because there were no onsets of MDD three months after the occurrence of any of the event types listed in Table 10, regression equations were not able to be estimated reliably for this time period.

In addition to testing the significance of major difficulties when they were related to severe events, it was also important to examine these chronic stressors when they were not associated with any type of event. Major difficulties according to the LEDS definition last at least two years. Since the study period was only 18 months long, all major difficulties began before the beginning of the study period and extended, at least for some time, into the 18 month period of the study. Thus, an onset of MDD during the study period had to have occurred after a major difficulty began. Since the timing issue of which came first stress or disorder was already determined, it was possible to use the base data file of 125 subjects in this analysis rather than the person-month data set. Using logistic regression, results indicate that the effect of a major difficulty at least two years in duration and not related to any type of event was marginally significant, $\chi^2 (1, N = 125) = 3.06, p < .10$. Similar results were obtained when health related difficulties were included in the definition of major difficulty, $\chi^2 (1, N = 125) = 2.80, p < .10$.

When conducting discrete-time survival analysis, one issue that arises is whether the effect of a predictor variable changes over time. To evaluate this possibility, interaction terms between the severe life event predictor and month (1-18) were created. These terms were then entered as a block into the logistic regression equation after entering the variables
corresponding to the specific month and the different event predictors. Only the three event predictors that were significant from the previous analyses (see Table 10) were tested to determine if their effect was consistent over time. First, the effect of a “severe, independent, self-joint focused” event on onset two months after event occurrence was tested along with the interaction terms between each month and event. This block of variables was not significant, $\chi^2 (14, N = 1,648) = 5.38$, indicating that the effect of this type of event on the risk of onset was consistent over time. Parallel analyses were conducted on the effect of a severe event that was related to a major difficulty. The first model examined the risk over time associated with this type of event, one month after its occurrence. This model was not significant, $\chi^2 (4, N = 1,766) = 3.58$. The second model examined the risk over time associated with this same type of event but two months after its occurrence. This model also was not significant, $\chi^2 (4, N = 1,648) = 1.59$. These results suggest that the effect on risk of onset of a severe event that is related to a major difficulty is the same over time.

The next set of analyses was designed to test whether people with a history of recurrent depression “generate” more stressful events in their lives than people without such a history. The idea that people contribute to the negative events that they experience is consistent with the life event dimension of “dependence.” T-tests were conducted to determine whether there were differences in the number of dependent life events between those subjects with a history of depression and those without such a history. Both “dependent” and “severe dependent” events were examined. Results indicate that individuals with a history of depression had significantly more dependent events ($M = 1.43$, $SD = 1.61$) than those with no history of depression ($M = .85$, $SD = 1.27$), $t (123) = 2.21$, $p < .05$. When “severe dependent” events were considered, differences between those with a history of depression ($M = .50$, $SD = .86$) and those without such a history ($M = .24$, $SD = .12$) approached significance $t (123) = 1.62$, $p = .11$. 
The prediction that a history of depression would moderate the relationship between life events and onset of MDD was not tested here. As mentioned previously, the removal from the analyses of four subjects due to missing data compromised the computation of an odds ratio and other logistic regression parameters for the history of depression variable.

The next set of analyses was designed to evaluate whether the relation between severe events and depression varied by the participant's perceived social support or sense of control. First, the moderating effect of social support was examined by including in the model an interaction term between a severe life event and social support after entering the severe event and social support variables individually. Demographic control variables and depressive symptoms at wave 1 were also controlled. This model was estimated twice, once to predict the risk of onset one month after the event, and the second to predict the risk of onset two months after the event. The risk associated with an event that occurred three months ago was not estimated since there were no individuals who had an onset of MDD and experienced a severe life event three months previously. This set of interaction terms was not significant for both one month after event occurrence, $\chi^2 (1, N = 1,766) = .18$, and two months after event occurrence, $\chi^2 (1, N = 1,648) = .41$. These results indicate that the effect of severe life events on risk of depression onset is similar for individuals with low and high levels of perceived social support.

A parallel analysis was conducted to test for the moderating effects of a sense of control. An interaction term between a severe life event and sense of control was entered in the model after entering each of these variables individually. Again, this model was estimated twice to look at risk one month and two months after event occurrence. The moderating effect estimated for one month after event occurrence was not significant, $\chi^2 (1, N = 1,766) = .02$. Neither was the moderating effect estimated for two months after event occurrence significant, $\chi^2 (1, N = 1,648) = 1.80$. 
The final set of analyses was designed to examine the mediating effect of severe life events on the relation between history of depression and onset of MDD. However, due to the problems noted earlier with the history of depression variable, these analyses could not be completed.
DISCUSSION

The primary purpose of this dissertation was to examine whether life stress, measured as events and difficulties, increases the risk of onset of major depression. In addition, several characteristics of life events and difficulties were tested in an attempt to better understand which aspects of these stressors were particularly important in risk for the onset of depression. Also, the psychosocial resources of perceived social support and sense of control were examined to determine their effect on the relation between stress and depression. In testing for these relations, the use of discrete-time survival analysis allowed for an examination of how the risk of onset changed over a three month period of time after event occurrence. Significant findings are summarized below and evaluated in light of other findings in the literature.

Summary, Interpretation, and Integration of Results

It was predicted that a single event rated "severe" using an investigator-based "contextual" approach would significantly increase the risk of onset compared to a simple count of total life events. When estimated in separate logistic regression equations, the presence of a single severe event in the three month target period significantly increased the risk of depression, whereas the total number of life events that occurred in that same three month period did not. Furthermore, when both variables were placed in the same regression equation, a single severe event remained marginally significant in predicting onset. Number of life events remained nonsignificant. This finding is consistent with past studies that found severe events more predictive of depression than a total count of events or total life change units, which are commonly associated with the checklist or respondent-based approach to measuring life stress (Brown & Harris, 1978, 1986; Dohrenwend et al., 1987, 1993; Rabkin & Struening, 1976).
In addition to severity, other life event characteristics were examined that have been found in previous research to be of etiological importance. Results showed that the issue of "independence," or how much control the individual had in bringing about the event, was of some importance in increasing risk of onset. Specifically, "severe independent" events were marginally significant at increasing the risk of onset two months after the event occurred. "Severe dependent" events (i.e., those that could be the result of the person's behavior or psychological condition) did not significantly increase the risk of onset in any of the three month risk periods.

These findings are consistent with many studies in the literature that find that "severe independent" events are more predictive of onset and more prevalent in cases of MDD in the months before onset than they are for non-cases (Brown & Harris, 1978, 1989; Dohrenwend et al., 1995; Shrout et al., 1989). However, there are conflicting results in the literature. For example, Dohrenwend et al. (1995) found that "fateful negative" (his version of "independence") and "nonfateful negative" were both significantly related to the onset of depression when considering a one-year risk period and a more proximal risk period of three months. He emphasized that the relationship between "major fateful negative" events and episodes of depression was stronger than between "major nonfateful negative" events and depression when considering the three month risk period (odds ratio = 6.99 and 2.39, respectively). However, when the full year is considered, "major nonfateful negative" events had a higher odds ratio than "major fateful negative" events (odds ratio = 4.67 and 3.04, respectively). Similarly, Surtees et al. (1986) found that severe dependent events had a stronger effect on illness onset than did severe independent events, although this effect diminished with decreasing time to onset. Others have found similar results with depressed adolescents (Williamson, Birmaher, Anderson, Al-Shabbout, & Ryan, 1995). Kendler et al. (1999) found that when event severity was controlled, dependent events were more strongly
associated with onsets of depression than were independent events. However, when severity was not controlled for, independent events were more predictive.

One possible explanation for these inconsistent findings is that investigators may be defining "independence" and "dependence" differently. For example, in their original work, Brown and Harris (1978) placed events in one of three categories: 1) "logically independent" events were those that were beyond the subject's control (e.g., father's serious illness); 2) "possibly independent" events were those not logically independent of psychological illness but there was no evidence to suggest that they were related to unusual behavior of the subject (e.g., acquisition or loss of opposite-sex friends or change in jobs); and 3) "illness related" (also referred to as "dependent") events were likely related to the subject's psychiatric problems. Few differences emerged when "logically independent" and "possibly independent" event categories were analyzed separately, so Brown and colleagues generally combined the two categories in their analyses (for discussion see Brown & Harris, 1986). "Illness related" events were always excluded from their analyses. Others (including this investigator) have taken a more conservative approach and considered some events "dependent" that Brown and colleagues would likely rate as "possibly independent," particularly events involving interpersonal difficulties (Bebbington, Tennant, & Hurry, 1981; Dohrenwend et al., 1995; Kendler et al., 1999; Shrout et al., 1989).

In commenting on this issue, Stueve, Dohrenwend, and Skodol (1998) note that Brown and Harris's definition of "independence" is generally limited to independence from disorder or its insidious onset rather than independence from a person's behavior. In B. P. Dohrenwend's more conservative approach, an event is defined as "fateful" if "both the sequence of transactions leading to the event and its actual occurrence were rated as mostly or completely outside the control of the respondent and as almost certainly independent of his or her personal dispositions" (Stueve et al., 1998, pp. 345-346). This distinction between behavior related to illness (or its insidious onset) and behavior related to "personal
dispositions” would seem to be rather difficult to accurately distinguish within the scope of methods currently available in this area of stress-disorder research. However, this distinction appears to be a very important one to make in order to avoid using as predictors events that are actually consequences of disorder rather than causes of it.

With all this said, the jury is still out on the relative importance of “independent” versus “dependent” life events and the onset of depression. When “independence” is defined more conservatively (i.e., excludes “possibly independent” events or those that could possibly be influenced by the subject’s personal dispositions or behavior), there appears to be consistent support for the hypothesis that social/environmental stress plays a role in the etiology of depression. Less consistent findings suggest the possibility that events likely brought on by an individual’s own behavior are associated with depressive symptoms and/or disorder onset.

Another life event dimension examined was that of “focus.” Primarily used by Brown and colleagues, “focus” identifies the primary person(s) to whom the event happened. To examine “focus” in this study, I intended to divide the event categories of “severe independent” and “severe dependent” into two sub-categories: “self-joint focused” or “other focused.” However, this was not possible because there were no occurrences of an onset of MDD and either a “severe, independent, other focused” event or a “severe, dependent, other focused” event in the three month risk period. Although a direct test was not possible, there is some evidence that “focus” may be an important characteristic of life events. As noted earlier, “severe independent” events were marginally significant at increasing the risk of onset two months after the event occurred. When this category was restricted to only “severe, independent, self-joint focused” events, the results became significant at the $p < .05$ level and the odds ratio increased from 3.81 to 5.84. Again, this increased risk of onset was limited to the two month period following event occurrence. Thus, it appears that individuals have an
So far this discussion has been limited to the effect of a single life event on the risk of disorder onset. However, it rarely seems that life stressors occur one at a time in isolation from other life problems. More often, acute stressors occur in the context of more enduring, chronic difficulties. Outside the work of Brown and colleagues, investigators have rarely examined the effects of both acute and chronic stressors simultaneously. This study took what can only be described as a preliminary step towards that end.

Events and ongoing difficulties are often highly interrelated in that events can lead to difficulties and difficulties can lead to events. However, there does not necessarily have to be a causal link between the two for one type of stressor to affect the other. For example, in the LEDS system (and the one used in this study) an event could be rated severe because it occurred in the context of a difficulty that on the surface appeared unrelated. For instance, the birth of a baby could be rated "severe" because it occurred in the context of chronic financial difficulties. In this study, I examined whether a person was at a higher risk of developing depression if he or she had a "severe" event that was also related to a "major difficulty" than if he or she experienced a "severe" event that was not related to a difficulty.

Consistent with the LEDS, a "major difficulty" was defined as an ongoing problem of at least two years duration, rated at the top three points of a six point scale of "contextual threat," and not solely related to the health of the respondent or someone close to him or her. Also, when used here "severe" refers to the LEDS definition and therefore includes only those that are "independent" and "self-joint focused."

The findings suggest that the presence of a "major difficulty" is very important in explaining increased risk of disorder onset. Specifically, when a "severe" event occurred in the context of a related "major difficulty," the risk of onset increased significantly in the first and second month after event occurrence. When a "severe event not related to any type of
difficulty" was added to the regression equation, the effect of a "severe event related to a major difficulty" remained significant in the same two month risk periods as before. Surprisingly, when a "severe event not related to any difficulty" was tested alone, its effect on risk was not significant. This suggests that the previously reported significant effect of a "severe, independent, self-joint focused" event (i.e., same as Brown & Harris defined "severe" event) on risk of onset was largely accounted for by events that were related to a "major difficulty." Supplemental analyses tested this hypothesis by entering a "severe, independent, self-joint focused" event and a "severe event related to a major difficulty" into a regression equation simultaneously. The hypothesis was partially supported in that after controlling for a related "major difficulty," the effect of a "severe, independent, self-joint focused" event was reduced to a marginally significant level ($p = .10$).

Having established some evidence of the importance of a "major difficulty" when related to a "severe" event, the next step was to examine the effect of these chronic stressors when they were not associated with any acute event. The findings indicate that when these long-term stressors were not related to any type of acute event during the study period, they were only marginally significant in increasing the risk of onset. It should be emphasized that this analysis was limited to examining the effect of the co-occurrence of "related" events and difficulties. However, events and difficulties can co-occur and not be causally or otherwise related.

As mentioned earlier, these analyses were a preliminary attempt to measure the effects of both acute and chronic stressors simultaneously. The conclusions to be drawn from these findings or from comparisons to other studies are limited. The complexity of this type of investigation and its rather early stage of development is evidenced by the abundance of different definitions and approaches used to examine these relations. For example, definitions of what constitutes a difficulty vary from those that are four weeks in duration to those over two years in length. Some studies look at the "independence" of difficulties and
others do not. In reporting the separate effects of events and difficulties, it is unclear in many studies whether the effect of the other type of stressor was controlled for. Also, when reporting the combined effect of an event and a difficulty, many studies do not specify whether the event and difficulty are related (Broadhead & Abas, 1998; Brown & Harris, 1978; Costello, 1982; Surtees et al., 1986; Williamson et al., 1998). It is probably safe to say that both severe events and chronic problems play an important role in the etiology of depression. However, the relative importance of each when controlling for the other and in combination needs further investigation.

One hypothesis that was not fully supported was that the risk of onset would be highest in the first month after event occurrence and that risk of onset would decrease through the second and third month. Instead, the results showed that the risk of onset was significant only in the second month after a severe event occurred (odds ratio = 5.50). However, when the category of severe events was restricted to only include those that were related to a major difficulty, the risk of onset was significant in both the first and second month following the event. Although risk of onset was significant in both months, the odds ratio was higher in the second month (19.23) than in the first month (14.40).

These findings are consistent with other studies that find that the risk of onset is significant within the first few months after the occurrence of a severe event. Many of these studies also examined longer risk periods, such as 6 to 12 months, and found that the risk of onset increased with decreasing time to event occurrence. In fact, the risk appears to be highest in the three month period after event occurrence (Brown, Harris, & Hepworth, 1994; Frank et al., 1994; Kendler et al., 1998, 1999; Stueve et al., 1998). Kendler is one of the few investigators to report the risk of onset by month rather than combining several months into one risk period. This allowed for a more direct comparison of results with the current study. Kendler et al. (1998) examined 15 specific life events (e.g., assault, divorce, job loss, problems getting along with family members) and in 13 of them he found that the risk of
onset of depression was highest in the month of event occurrence. Unfortunately, similar analyses to determine the threat associated with events that occurred in the same month as onset could not be performed in this study because there was no definitive way to determine which came first, the event or onset. Also in Kendler's study, the risk associated with 11 types of events could be reliably estimated in both the first and second month risk periods. In the one month period before onset, the occurrence of two types of severe events (legal problems and marital problems) significantly increased the risk of onset. However, two months before onset three types of severe events (finance, legal, and loss of confidant) significantly increased onset, two of which were not significant in the first month of risk. In fact, when comparing the risk of onset for all 11 types of events from the first to second month risk period (regardless of significance), 6 out of the 11 odds ratios were higher in the second month than in the first month.

These findings and the results from the current study suggest that the risk of onset after event occurrence is not necessarily consistent over time. For some types of events, the risk of onset may actually increase as time passes rather than decrease. This is consistent with the concept of "stress incubation" explored by Bebbington and colleagues (Bebbington, Der, MacCarthy, Wykes, Brugha, Sturt, & Potter, 1993). Their idea of "incubation" is that the response to an event does not appear immediately but only after a delay. They found some evidence of incubation in women but it was much less important than the effect of life events that occurred closer to onset.

Neither Kendler et al. (1998) nor Bebbington et al. (1993) speculate as to why these results may occur. Perhaps initially after a severe event a person's social support network is mobilized to help the individual through a difficult time. However, as the weeks pass, actual support received may diminish as the support providers become over-extended and unable to provide the same level of support. Or perhaps the individual is able to use his or her personal and social resources to cope in the immediate aftermath of the severe event. However, as
time passes and the minor events and hassles of daily life accumulate, the individual may reach a threshold beyond which his or her coping resources are exhausted. In a related manner, the present study found that it was the occurrence of a severe event in the context of an ongoing, related difficulty that carried the highest risk for onset. In this instance, it may be that coping with a chronic stressor depletes an individual's personal and social resources to a level that makes coping with an acute severe event beyond the person's capability. Additional research is needed to further explore how the risk of onset changes over time. An encouraging development toward this end is the recent application of more sophisticated statistical methods to the study of the stress-disorder relationship (Brown et al., 1994; Frank et al., 1994; Kendler et al., 1998, 1999; Stueve et al., 1998). Specifically, the use of discrete-time survival analysis provides a method to study the temporal relationship between the occurrence of life events and the onset of disorder.

Next, certain findings from this study appear to be consistent with the "stress generation" hypothesis, which suggests that depressed individuals actually contribute to the occurrence of stressful events in their lives (Davila, Hammen, Burge, Daley, & Paley, 1995; Hammen, 1991; Harkness, Monroe, Simons, & Thase, 1999). In the current study, it was found that individuals with a history of depression experienced more of the type of events that they themselves contributed to (i.e., "dependent" events) than those with no history of depression. These findings highlight the importance of considering the bidirectional nature of the stress-disorder relationship.

Finally, the current study did not find support for the hypothesized moderating effects of social support or perceived control. Turning first to social support, there are several possibilities that may account for this null finding. First, the measure used for social support at wave 1 was restricted to two items. Another potential problem is the measurement redundancy between severe life events and social support. Many investigators have commented on how measures of life stress often include items that involve interpersonal
relationships and social exits (e.g., dissolution of a friendship, marital problems, death of close family member). As can be seen in these examples, the distinction between life event and difficulty stressors and support (or lack of it) becomes blurred. Similarly, the LEDS approach has been criticized on the grounds that the rating of “contextual” threat is so broad that is precludes the independent measurement of other variables of potential etiologic importance (Dohrenwend, et al., 1987; Tennant, Bebbington, & Hurry, 1981). Thus, any potential effect for social support may have already been accounted for in the rating of contextual threat. Likewise, the nonsignificant findings for the measure of sense of control may in part be affected by measurement redundancy. Also, a sample size of 125 may have precluded the detection of a significant relation.

Limitations of Study

The demographic characteristics of the sample may limit the external validity of the results. The racial homogeneity (96% White) and the socioeconomic status of the sample limit the generalizability of the findings to predominantly white, well educated, middle class individuals. It is possible that the results found in this study may vary for individuals of different cultural, educational, and economic backgrounds. Another problem with generalizability is that the selection of subjects for wave 3 was not totally random. Although wave 3 subjects came from a larger sample that was randomly selected, their selection into wave 3 was based on their high exposure to a major flood. This selection process may in part account for the extremely high percentage of onsets of MDD (24%) and of subjects with a history depression (46%) in the sample. For example, individuals with mental disorders such as depression may not be fully employed which leads to lower income, which generally means living in poorer neighborhoods. It is often the case that cheaper residential dwellings are found in less desirable locations such as flood planes, which leaves this population more vulnerable to the damaging effects of floods. Thus, by sampling individuals with more severe flood exposure, an oversampling of people at higher risk for depression may have
occurred. In this regard, the results from this sample may not be comparable to the results one might find in a random community sample.

Also, due to an error in the diagnostic interview measure, data from four subjects was not used in these analyses. These four subjects had their first onset of depression during the study period but the exact month of onset was not obtained and therefore their data could not be used in the discrete-time survival analyses. It is possible that the relationship between life events and disorder is different for people experiencing their first episode versus those with multiple episodes. Several studies have addressed this issue with mixed results. Some findings show that life events are significantly more likely to occur in the first or second episode of unipolar depression than in recurrent episodes (Ezquiaga, Gutierrez, & Lopez, 1987; Kendler et al., 1999). In contrast, other studies have found little or no support for this hypothesis (Stueve et al., 1998; Williamson et al., 1998). Although Williamson et al. (1998) found no difference in the rate of life events between depressed adolescents with a first versus recurrent onset of depression, they did find that significantly more depressed adolescents with recurrent depression reported a major difficulty.

Another limitation is that life event and diagnostic information was reported retrospectively. This calls into question the accurate recall of respondents who were given a rather difficult task of having to date to the exact month events and mood states that may have occurred up to 18 months before. However, it has been shown that one of the benefits of an investigator-based approach to life event assessment is that the interviewer can introduce memory aids (calendars, personally salient dates such as birthdays, holidays, or seasons of the year, and reminders of events previously mentioned in the interview) to improve recall (Sobell et al., 1990). Perhaps more problematic is the fact that mood was not assessed and therefore not controlled for at the time of the wave 3 interview. It has been shown that mood affects recall such that depressed individuals at the time of interview may recall more negative events than people who are not depressed (Blaney, 1986). However,
even when controlling for demoralization at the time of interview. Shrout et al. (1989) still found that the odds for experiencing a fateful, disruptive event was 2.5 times larger for the people with onsets of depression than for the control group.

The inability to compute interrater reliability is another potential limitation of this study. However, certain procedures were implemented to help insure that the rating of life events and difficulties was consistent and reliable. All interviewers and the two project managers completed an intensive three-day training session conducted by Elaine Wethington. Dr. Wethington was trained by Brown and Harris in the LEDS scoring scheme and she was the primary developer of the SLI. After the interviewer completed the interview and the rating of events and difficulties, the two project managers examined the documents independently. Whenever a project manager disagreed with the initial rating assigned by the interviewer, the other project manager would review the materials and they would reach an agreement as to the most appropriate rating. This task was accomplished through discussion and referencing the LEDS scoring manuals for guidance. Also, the project managers met frequently with all the interviewers as a group to discuss difficult rating issues. When an interviewer’s rating was deemed problematic, he/she met individually with a project manager to review and correct problem areas.

It is also important to recognize the potential difficulty in trying to measure comparable risk periods when both event and episode onset are dated to their month of occurrence. For example, if one person experiences an onset in late December and an event in early October and another person experiences an onset in early December and an event in late October, both would be coded as reporting an event two months before onset. Thus, it is possible that the actual risk period associated with any given “month” could range from 1 to 60 days.

Finally, because this is a correlational study, causal relationships among variables cannot be proven. Other variables that were not assessed in this study (e.g., personality
characteristics) may have affected both the predictor and the outcome variables. Thus, the findings of this study may be the result of a mutual relationship that the predictor and outcome variables have to a third variable.

**Implications and Future Directions**

Today, much more is known about the course and consequences of depression than when early investigators began exploring its relation to stress more than 20 years ago. Depression is increasingly recognized as a recurrent or even chronic disorder of variable duration and of relatively young onset (Burke, Burke, Regier, & Rae., 1990; Thornicroft & Sartorius, 1993). These findings have significant implications for the study of stress and disorder. For example, most studies of the stress-disorder relationship are designed to explore how adverse life events lead to the onset of depression, with the implicit assumption that this relationship is the same whether it is a person's first or sixth depressive episode (Coyne & Downey, 1991). With the recognition that most onsets of depression are recurrent episodes, it is likely that what is actually being examined in life event models is relapse of disorder rather than initial episodes. Thus, it is possible that the stress-disorder relationship differs between these two groups.

In fact, Post (1992) has suggested that repeated episodes of depression might alter brain chemistry so that individuals are more sensitive to stress. This increased sensitivity suggests that lower levels of stress would be required to precipitate a recurrence. Thus, the role of minor events and daily hassles may become more important in explaining relapse or recurrence of disorder.

It is also very likely that the social context in which people with and without a history of depression experience life events is quite different. For example, it is well documented that depression, especially if it is recurrent or chronic, can significantly impair a person's functioning in many life domains. Particularly striking is depression's negative effect on family and interpersonal relationships (for review see Hammen, 1997). Also, depressed
people may contribute to the occurrence of stressful interpersonal events both because of their depression and because of more stable personal characteristics. Thus, it is possible that for many individuals a destructive cycle of disorder-events-disorder develops. This has significant implications for life event research where investigators have extended great effort to identify events that are "independent" of disorder to avoid confounding the predictor variable with the outcome variable (Brown & Harris, 1978; Dohrenwend et al., 1993). Many have questioned this strategy of focusing on "independent" events and have emphasized that gaining a better understanding of how interpersonal stressors relate to recurrence of depression is crucial (Coyne & Downey, 1991; Depue & Monroe, 1986; Hammen, 1995, 1997).

Others have noted that even "independent" events are not immune from the "cart versus horse" issue (i.e., does stress cause disorder or does disorder cause stress?). Robins & Robertson (1998) reasoned that if an "independent" event occurred after a psychiatric disorder was already present, then the event was clearly not the cause of the disorder. Furthermore, the event could not be a consequence of the disorder because by definition, an "independent" event is not associated with a person’s behavior. Therefore, they would not necessarily expect an association between post-onset "independent" events and disorder. However, if an association did exist, the investigators questioned whether it would continue once the disorder was no longer present. They reasoned that since "independent" events are not caused by an individual’s behavior, they should be as likely to occur during the disorder as when the disorder is in remission.

To examine this question, Robins & Robertson (1998) used a sub-sample of 1826 individuals ages 18 to 45 from the St. Louis Epidemiologic Catchment Area (ECA) study. Interviews were conducted in 1981 and one year later in 1982. Substance abuse and adult antisocial behavior were examined because it was believed that these disorders almost always have their onset in the late teens or early twenties. According to the investigators, this
insured that the events they were investigating occurred after the age of risk of onset and therefore could not be the cause of the disorder. They divided events into those that were likely “affected” by the antisocial personality or substance abusing behaviors of the respondents (fired from job, homeless, financial problems, marital status, arrests/incarcerations) and those considered “independent” of these behaviors (illness of self, illness/death of household member, robbed, mugged, accident). Both categories of events were significantly correlated with severe substance abuse and antisocial behavior even after controlling for demographic variables. After the disorder went into remission, they found a marked decline in these correlations for both “independent” and “affected” events to a level only slightly higher than that found in persons who had never had the disorder. Since “affected” events are likely caused by the person’s illness related behavior, a decline in the association between disorder and these types of events was expected once the disorder was in remission. However, the investigators thought it “counterintuitive” that the correlations also declined between disorder and “independent” events when the disorder was in remission.

In their interpretation of these results, Robins and Robertson (1998) suggest that since the disorder, that was now in remission, could not have caused the “independent” events, it may have increased the chance of exposure to them. They speculated that either through a genetic contribution to a disorder or if the disorder is associated with assortive mating, the chances are high that other household members will have the disorder. By virtue of living with a relative or spouse with the disorder, a respondent is more likely to be exposed to events caused by these people. Another possible explanation they offer is that mental disorders frequently affect capacity to work, which leads to lower income, which in turn means living in poor neighborhoods. This puts the individual at risk for experiencing several “independent” events such as being a victim of crime. Or if the person is the sole wage earner, his or her family members will also be poor which increases their risk of illness and premature death. Thus, the affected person will experience more deaths of family members.
To further support their hypotheses, these investigators report findings from a study of Vietnam veterans who were enlisted in the Army in 1970 to 1971. They studied the relation between combat experience and depression at 10 months and again at 3 years after returning home from the war. The significant association they found between combat and depression almost disappeared when they controlled for the veterans’ pre-service deviant behaviors (school dropout, juvenile arrest, fighting, and substance use). They claimed that the risk of exposure to combat was not “an equal opportunity event for Vietnam soldiers.” This was in contrast to news stories that spoke of the Vietnam War as a war without a front in that every soldier was at risk of being fired on. They stated that infantrymen had the highest exposure to combat and that they were usually high school dropouts who enlisted voluntarily presumably because they were unskilled and could not find a job. The authors suggest that if they had stayed in school and learned a trade of use to the Army, they would have been back at the base camp functioning as typists, medical aides, and cooks rather than being in combat.

These investigators also point to a previous study by one of the authors of people exposed to a natural and man-made disaster in rural Missouri. They found that individuals whose homes had been flooded reported more symptoms than those whose homes had escaped. However, when pre-disaster symptoms were controlled, the difference was greatly reduced (Smith, Robins, Przybeck, Goldring, & Solomon, 1986). The people exposed to the flood tended to be younger, poorer, less well educated, and more likely separated or divorced, characteristics often associated with psychiatric disorder. They speculated that these individuals had greater exposure to floods because they were more likely to live where homes are cheap which is often on the flood plain. They concluded from these two studies that exposure to combat and natural disaster, events that are not caused by psychiatric illness, was more likely among people with pre-existing psychiatric disorder.

Similarly, recent twin studies suggest that exposure to stressful life events is substantially influenced by genetic factors. Foley, Neale, and Kendler (1996) found that
some individuals have a stable pattern of selecting themselves into high risk situations that are likely to result in stressful life events. They suggest that people do not experience stressful life events at random. Furthermore, Kendler and colleagues found that the genetic risk factors for stressful life events are positively correlated with the genetic risk factors for major depression (Kendler et al., 1993). They interpreted this to mean that a genetically influenced set of traits both increase an individual’s probability of placing him or her self into high-risk situations likely to produce stressful life events and increases the person’s vulnerability to major depression.

Perhaps the one thing that most investigators would agree on is that there is nothing simple or unidirectional in the relationship between life events and depression. Some have suggested that with the limitations of nonexperimental studies, there is perhaps no sure way to determine whether life events act as causes, correlates, or consequences of disorder and attempts to disentangle these relations are futile (Lieberson, 1985). Other investigators have expressed similar sentiments. “The search for the etiology of mental illness remains a bootstrap operation of approximations and rethinking questions of plausibility with each association discovered” (Robins & Robertson, 1998, p. 340).

Given that depression is a heterogeneous disorder, it is unlikely that its etiology can be explained by a single risk factor. Today, most researchers support the idea that depression is multi-determined by a wide array of variables both internal (biological, psychological) and external (environmental/social factors) to the individual (Hammen, 1997; Kendler et al., 1993; Mazure & Druss, 1995). With this said, there is still a great need for the integration of the biological, psychological, and social factors involved in this complex disorder.
APPENDIX A

FLOOD EXPOSURE QUESTIONS
Flood Exposure Questions

First, I would like to ask some questions about how you and your family may have been affected by the weather and flooding in Iowa.

1. Have you had to temporarily evacuate or move out of your home anytime since June 1993 because of problems with water or flooding?
   1 = Yes
   2 = No
   9 = Refused

2. Did you get water in your home from the flooding this summer?
   1 = Yes
   2 = No
   8 = Don’t Know
   9 = Refused

3. Was there water on your property?
   1 = Yes
   2 = No
   8 = Don’t Know
   9 = Refused

4. Were you temporarily or permanently out of work due to the flood?
   1 = Yes, temporary
   2 = Yes, permanent
   3 = No
   8 = Don’t Know
   9 = Refused

5. Were other members of your household temporarily or permanently out of work due to the flood?
   1 = Yes, temporary
   2 = Yes, permanent
   3 = No
   8 = Don’t Know
   9 = Refused

6. Did you or other household members lose income due to the flood?
1 = Yes
2 = No
8 = Don’t Know
9 = Refused

7. Did you lose water service due to the flood?

1 = Yes
2 = No
8 = Don’t Know
9 = Refused

8. Did you lose electrical service due to the flood?

1 = Yes
2 = No
8 = Don’t Know
9 = Refused

9. Did you have any illness or injury as a result of the flood?

1 = Yes
2 = No
8 = Don’t Know
9 = Refused

10. Was anyone else in your household ill or injured as a result of the flood?

1 = Yes
2 = No
8 = Don’t Know
9 = Refused

11. We are interested in the damages and losses you may have experienced as a result of the weather or flooding. Did you experience any damage or loss to your property or possessions?

1 = Yes
2 = No
8 = Don’t Know
9 = Refused

12. I am going to read a list of items, Please identify any losses or damage that you had because of the flood. Did you experience any damage or loss to your...
13. Not counting persons in your household, did you have any close relatives or friends who experienced damage, losses, or injury due to the flooding?

1 = Yes  
2 = No  
8 = Don't Know  
9 = Refused

14. Did you have any flooding in the area that you live?

1 = Yes  
2 = No  
8 = Don't Know  
9 = Refused

15. Did you have anyone move into your home, either temporarily or permanently, because of the flooding?

1 = Yes  
2 = No  
8 = Don't Know  
9 = Refused
APPENDIX B
SAMPLE MODULE FROM SLI
SECTION C: RELATIONSHIPS

C1. (RB, PAGE 1) Please look at the list on page 1 of the booklet. In the past 12 months, did you have any serious ongoing tensions, conflicts, or arguments with any of these sorts of people?

| 1. YES | 5. NO | TURN TO C9, P. 57 |

Free Probes: (USE FREE PROBING TO FILL IN THE GRID)

Cla. What was their relationship to you?

Clb. At the time of the problem, was (he/she) living with you?

Clc. How serious was this tension or conflict -- would you say very serious, somewhat, or not very serious?

Cl.d. In the past 12 months, were there any other serious tensions, conflicts, or arguments with any person on this list?

<table>
<thead>
<tr>
<th>RELATIONSHIP TO R</th>
<th>LIVING WITH R?</th>
<th>SERIOUSNESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ____________</td>
<td>1. YES 5. NO</td>
<td>1. VERY 2. SOMewhat 3. NOT VERY</td>
</tr>
<tr>
<td>2. ____________</td>
<td>1. YES 5. NO</td>
<td>1. VERY 2. SOMewhat 3. NOT VERY</td>
</tr>
<tr>
<td>3. ____________</td>
<td>1. YES 5. NO</td>
<td>1. VERY 2. SOMewhat 3. NOT VERY</td>
</tr>
<tr>
<td>4. ____________</td>
<td>1. YES 5. NO</td>
<td>1. VERY 2. SOMewhat 3. NOT VERY</td>
</tr>
</tbody>
</table>
C2. INTERVIEWER CHECKPOINT: (EVENT SELECTION)

☐ 1. R RATES NO INTERPERSONAL PROBLEMS AS "VERY" OR "SOMETHING SERIOUS" ——— TURN TO C9, P. 57

☐ 2. R RATES ONLY ONE OR TWO INTERPERSONAL PROBLEM AS "VERY" OR "SOMETHING SERIOUS" ——— GO TO C4

☐ 3. R RATES MORE THAN TWO INTERPERSONAL PROBLEMS AS "VERY" OR "SOMETHING SERIOUS" ——— CONTINUE

C3. With which two of these people did you have the most serious tensions, conflicts, or arguments?

#1 RELATIONSHIP TO R

#2 RELATIONSHIP TO R

C4. The next questions are about the problems with (RELATIONSHIP #1). (I'll have questions about (RELATIONSHIP #2) in just a few moments.)

C4a. When did these problems start?

MONTH/YEAR

C4b. Did these problems get significantly better or worse for a month or more during the last 12 months, or has there been no major change?

1. BETTER

2. NO CHANGE

3. WORSE

NEXT PAGE, C4e

[IF BOTH BETTER AND WORSE, PROBE AND DATE BOTH INSTANCES].

C4c. A lot (better/worse), somewhat, or only a little (better/worse)?

1. A LOT

2. SOMEWHAT

3. ONLY A LITTLE
C4d. In what month and year did these problems (get better/get worse)?

MONTH/YEAR

C4e. Have these problems ended now, or are they still going on?

1. ENDED
2. STILL GOING ON

GO TO C4g

C4f. In what month and year did they end?

MONTH/YEAR

C4g. (What (are/were) these problems about?

PLEASE USE TACT IN PROBING. PROBE FREELY TO ESTABLISH SEVERITY, INDEPENDENCE & DURATION

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

FIELD CODE:

☐ 1. SEVERE ☐ 2. HIGH MODERATE ☐ 3. LOW MODERATE OR LESS
C5. During the past 12 months, was there any particularly serious crisis or event associated with these problems (other than what you have already described)?

1. YES  5. NO  → NEXT PAGE, C6

PROBE FREELY TO ESTABLISH SEVERITY AND INDEPENDENCE.

Free Probes:

C5a. What happened?

C5b. When did that happen?  MONTH/YEAR

C5c. Was there any other specific event that made things worse?

EVENT DESCRIPTION:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

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FIELD CODE:

☐ 1. SEVERE  ☐ 2. HIGH MODERATE  ☐ 3. LOW MODERATE OR LESS
C6. INTERVIEWER CHECKPOINT - REFER TO C1, P. 60

1. MORE THAN ONE SERIOUS TENSION OR CONFLICT  → CONTINUE
2. ALL OTHERS  → TURN TO C9, P. 67

C7. Now I have some questions about the problems with (RELATIONSHIP #2).

C7a. When did these problems start?

MONTH/YEAR

C7b. Did these problems get significantly better or worse for a long time during the last 12 months, or has there been no major change?

1. BETTER  2. NO CHANGE  3. WORSE

NEXT PAGE, C7e

[IF BOTH BETTER AND WORSE, DATE BOTH INSTANCES]

C7c. A lot (better/worse), somewhat, or only a little (better/worse)?

1. A LOT  2. SOMewhat  3. ONLY A LITTLE

C7d. In what month and year did these problems (get better/get worse)?

MONTH/YEAR
C7e. Have these problems ended now, or are they still going on?

1. ENDED

2. STILL GOING ON

C7f. In what month and year did they end?

MONTH/YEAR

C7g. (What are/were these problems about?)

PLEASE USE TACT IN PROBING. PROBE FREELY TO ESTABLISH SEVERITY AND INDEPENDENCE.

________________________________________________________________________
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FIELD CODE:

[ ] 1. SEVERE [ ] 2. HIGH MODERATE [ ] 3. LOW MODERATE OR LESS
C8. During the past 12 months, was there any particularly serious crisis or event associated with these problems (other than what you have already described?)

1. YES  5. NO  NEXT PAGE, C9

PROBE FREELY TO ESTABLISH SEVERITY AND INDEPENDENCE.

Free Probes:

C8a. What happened?

C8b. When did that happen?  ____________  MONTH/YEAR

C8c. Was there any other specific event that made things worse?

EVENT DESCRIPTION:

_____________________________________________________________________
_____________________________________________________________________
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FIELD CODE:

☐ 1. SEVERE  ☐ 2. HIGH MODERATE  ☐ 3. LOW MODERATE OR LESS
C9. During the past 12 months, did something happen to make you change your view of the character of a very close friend or relative -- something that made you realize that they were not the person you thought they were?

1. YES  
5. NO  → TURN TO SECTION D, P. 59

C9a. (Briefly, what did you find out?) (How has this affected your relationship?)

C9b. (IF NECESSARY) Who was that? (What is their relationship to you?)

RELATIONSHIP TO R

C9c. When did you find this out?

MONTH/YEAR

PROBE FREELY TO ESTABLISH SEVERITY AND INDEPENDENCE

_____________________________________________________
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C9d. FIELD CODE

☐ 1. SEVERE  ☐ 2. HIGH MODERATE  ☐ 3. LOW MODERATE OR LESS

TURN TO SECTION D, P. 59
C9d. When did you find this out?

MONTH/YEAR

C9e. Before you found this out, did you have any inkling of this, or was it a complete surprise?

1. R HAD AN INKLING
2. COMPLETE SURPRISE

9f. Looking back over things, were there signs of this situation, before you found out for sure, or was there no warning at all?

1. SIGNS
5. NO WARNING

C9g. (What was that/What were those) sign(s)?

________________________________________________________________________
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NEXT PAGE, SECTION D
APPENDIX C
PORTIONS OF UM-CIDI USED IN STUDY
TO ASSESS MDD
SECTION DP: SADNESS

DP1. Have you ever had a continuous period lasting two years or more when you felt depressed or sad most days, even if you felt O.K. sometimes?  
MARK RESPONSE FOR SCREENER DP1 ON REFERENCE CARD

- 1. YES
- 5. NO

DP1a. Did a period like that ever last two years without being interrupted by you feeling O.K. for two months? 
MARK RESPONSE FOR SCREENER DP1a ON REFERENCE CARD

- 1. YES
- 5. NO

DP2. In your lifetime, have you ever had two weeks or more when nearly every day you felt sad, blue, or depressed? MARK RESPONSE FOR SCREENER DP2 ON REFERENCE CARD

- 1. YES
- 5. NO

DP2a. Have you ever had two weeks or more when nearly every day you felt down in the dumps, low, or gloomy? MARK RESPONSE FOR SCREENER DP2a ON REFERENCE CARD

- 1. YES
- 5. NO

DP3. Has there ever been two weeks or more when you lost interest in most things like work, hobbies, or things you usually liked to do for fun?  
MARK RESPONSE FOR SCREENER DP3 ON REFERENCE CARD

- 1. YES
- 5. NO

DP3a. Did you ever completely lose all interest in things like work or hobbies or things you usually liked to do for fun?  
MARK RESPONSE FOR SCREENER DP3a ON REFERENCE CARD

- 1. YES
- 5. NO

INTERVIEWER CHECKPOINT: TAKE FIRST MATCH

- 1. DP1a “YES” → GO TO SECTION CC, P. 251
- 2. DP2 “YES” → GO TO SECTION DD, P. 253
- 3. DP2a “YES” → GO TO SECTION DD, P. 253
- 4. ALL OTHERS → GO TO DP4, NEXT PAGE
DP4. Now, I am going to read some statements about how you might have felt during the past week. Please tell me the number of days in the past week including today that:

You felt happy:

<table>
<thead>
<tr>
<th></th>
<th>0 DAYS</th>
<th>1-2 DAYS</th>
<th>3-4 DAYS</th>
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DP5. You felt people were unfriendly

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DP6. Your sleep was restless

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DP7. You felt sad

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DP8. You enjoyed life

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DP9. You had crying spells

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DP10. You felt hopeful about the future

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DP11. You felt you were as good as other people

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DP12. You felt that people disliked you.

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DP13. You felt bothered by things that usually don't bother you.

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DP14. You thought your life had been a failure.

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</table>
DP15. You felt like not eating; your appetite was poor.

1. 0 DAYS  2. 1-2 DAYS  3. 3-4 DAYS  4. 5-7 DAYS

DP16. You felt you could not get going?

1. 0 DAYS  2. 1-2 DAYS  3. 3-4 DAYS  4. 5-7 DAYS

DP17. You felt lonely?

1. 0 DAYS  2. 1-2 DAYS  3. 3-4 DAYS  4. 5-7 DAYS

DP18. You had trouble keeping your mind on what you were doing.

1. 0 DAYS  2. 1-2 DAYS  3. 3-4 DAYS  4. 5-7 DAYS

DP19. You felt that you could not shake off the blues even with help from your family or friends?

1. 0 DAYS  2. 1-2 DAYS  3. 3-4 DAYS  4. 5-7 DAYS

DP20. You felt that everything you did was an effort?

1. 0 DAYS  2. 1-2 DAYS  3. 3-4 DAYS  4. 5-7 DAYS

DP21. You felt fearful?

1. 0 DAYS  2. 1-2 DAYS  3. 3-4 DAYS  4. 5-7 DAYS

DP22. You talked less than usual?

1. 0 DAYS  2. 1-2 DAYS  3. 3-4 DAYS  4. 5-7 DAYS

DP23. You felt depressed.

1. 0 DAYS  2. 1-2 DAYS  3. 3-4 DAYS  4. 5-7 DAYS

GO TO SECTION U, P. 280
# Section CC: ONGOING SADNESS

## CATEGORY #1

<table>
<thead>
<tr>
<th>Question</th>
<th>YES (1)</th>
<th>NO (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC1. You mentioned earlier that you had periods lasting two years or longer when you felt depressed or sad most days, even if you felt O.K. sometimes. During one of these two year periods of feeling depressed or sad most days...</td>
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<tr>
<td>CC1a. ... were you often in tears?</td>
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<tr>
<td>CC1b. ... did you frequently feel hopeless?</td>
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<tr>
<td>CC1c. ... did you often feel that you could not cope with your everyday life and responsibilities?</td>
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<td>CC1d. ... did you feel that your life had always been bad and was not going to get any better?</td>
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<tr>
<td>CC1e. INTERVIEWER: IF ANY &quot;YES&quot; RESPONSE IN CC1a- CC1d, CHECK &quot;SADNESS&quot; CATEGORY #1 BOX ON REFERENCE CARD</td>
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<td></td>
</tr>
</tbody>
</table>

**CC2.** Can you remember your **exact** age the first time you had a period lasting two years or longer when you felt depressed or sad most days?

1. **YES**

   **CC2a.** How old were you when that period started?  
   _______ YEARS OLD

2. **NO**

   **CC2b.** About how old were you the first time a period of this sort started?  
   (ACCEPT A RANGE RESPONSE.)  
   _______ YEARS OLD

   **CC2c.** What is the earliest age you can clearly remember having a period of this sort?  
   (ACCEPT A RANGE RESPONSE)  
   _______ YEARS OLD
CC3. Since that time, has the depression been a fairly constant thing in your life, something that comes and goes, or something that only happened once?

1. FAIRLY CONSTANT
2. COMES AND GOES
3. ONLY ONE PERIOD OF DEPRESSION

GO TO CC4

CC3a. How long do the periods of depression usually last?

_____ # DAYS WEEKS MONTHS YEARS

CC3b. How much time usually goes on between the end of one period of depression and the beginning of the next?

_____ # DAYS WEEKS MONTHS YEARS

CC4. When was the last time you were in a period of depression lasting two years or longer -- in the past month, past six months, past year, or more than a year ago?

1. PAST MONTH
2. PAST SIX MONTHS
3. PAST YEAR
4. MORE THAN A YEAR AGO

NEXT PAGE, DD1

CC4a. How old were you the last time?

_____ YEARS OLD

NEXT PAGE, DD1
SECTION DD: SADNESS

DEFINITION: "PERIOD OF TWO WEEKS OR MORE" MEANS MOST OF THE TWO-WEEK PERIOD: INTERRUPTIONS OF ONE OR TWO DAYS ARE OKAY IF THE TOTAL TIME IS TWO WEEKS OR MORE.

**CATEGORY #2**

DD1. SEE REFERENCE CARD, "SCREENERS" DP2, DP2a

IF "YES" RESPONSE IN DP2 OR DP2a, CHECK "SADNESS" CATEGORY #2 BOX ON REFERENCE CARD

**CATEGORY #3**

<table>
<thead>
<tr>
<th>Question</th>
<th>YES (1)</th>
<th>NO (5)</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD2. Has there ever been a period of 2 weeks or longer when you lost your appetite?</td>
<td></td>
<td>☐</td>
<td>GO TO DD4</td>
</tr>
<tr>
<td>DD3. During any of these periods did you completely lose your appetite?</td>
<td></td>
<td>☐</td>
<td>GO TO DD6</td>
</tr>
<tr>
<td>DD4. Have you ever lost weight without trying to -- as much as 2 pounds a week for several weeks or as much as 10 pounds altogether?</td>
<td></td>
<td>☐</td>
<td>GO TO DD6</td>
</tr>
<tr>
<td>DD5. During any of these periods, how much weight did you lose?</td>
<td># POUNDS</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>DD6. Has there ever been at least 2 weeks when you had an increase in appetite, other than when you were growing (or pregnant)?</td>
<td></td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>DD7. Have you ever had a period when your eating increased so much that you gained as much as 2 pounds a week or 10 pounds altogether?</td>
<td></td>
<td>☐</td>
<td>GO TO DD8a</td>
</tr>
<tr>
<td>DD8. What is the most you ever gained in one of these periods?</td>
<td># POUNDS</td>
<td>☐</td>
<td></td>
</tr>
</tbody>
</table>

DD8a. INTERVIEWER: IF ANY "YES" RESPONSE IN DD2 – DD7

CHECK "SADNESS" CATEGORY #3 BOX ON REFERENCE CARD
### CATEGORY #4

<table>
<thead>
<tr>
<th>Question</th>
<th>YES (1)</th>
<th>NO (5)</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD9. Have you ever had 2 weeks or more when nearly every night you had trouble falling asleep?</td>
<td>(#6)</td>
<td></td>
<td>GO TO DD11</td>
</tr>
<tr>
<td>DD10. Have you ever had 2 weeks or more when nearly every night it took you at least 2 hours to fall asleep?</td>
<td>(#7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD11. Have you ever had 2 weeks or more when nearly every night you had trouble staying asleep?</td>
<td>(#8)</td>
<td></td>
<td>GO TO DD13</td>
</tr>
<tr>
<td>DD12. Did you ever have 2 weeks or more when nearly every night you lay awake more than one hour?</td>
<td>(#9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD13. Have you ever had 2 weeks or more when nearly every morning you woke up too early?</td>
<td>(#10)</td>
<td></td>
<td>GO TO DD15</td>
</tr>
<tr>
<td>DD14. Have you ever had 2 weeks or more when nearly every morning you would wake up at least 2 hours before you wanted to?</td>
<td>(#11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD15. Have you ever had 2 weeks or longer when nearly every day you were sleeping too much?</td>
<td>(#12)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DD15a.** INTERVIEWER: IF ANY [YES] RESPONSE IN DD9-DD15, CHECK "SADNESS" CATEGORY #4 BOX ON REFERENCE CARD
### CATEGORY #5

<table>
<thead>
<tr>
<th>Question</th>
<th>YES (1)</th>
<th>NO (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD16. Has there ever been a period lasting 2 weeks or more when you lacked energy or felt tired out all the time even when you had not been working very hard?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD17. Have you ever been completely without energy for 2 weeks or more?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD18. Did you ever have 2 weeks or more when you felt very bad when you got up, but felt better later in the day?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DD18a. INTERVIEWER: IF ANY YES RESPONSE IN DD16 OR DD18,**  
CHECK "SADNESS" CATEGORY #5 BOX ON REFERENCE CARD

### CATEGORY #6

<table>
<thead>
<tr>
<th>Question</th>
<th>YES (1)</th>
<th>NO (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD19. Has there ever been 2 weeks or more when nearly every day you talked or moved more slowly than is normal for you?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD20. During (this/one of these) period(s) did anyone else notice that you were talking or moving more slowly?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD21. Has there ever been 2 weeks or more when nearly every day you had to be moving all the time - that is, you could not sit still and paced up and down?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DD21a. INTERVIEWER: IF ANY YES RESPONSE IN DD19 OR DD21,**  
CHECK "SADNESS" CATEGORY #6 BOX ON REFERENCE CARD
<table>
<thead>
<tr>
<th>CATEGORY #7</th>
<th>YES (1)</th>
<th>NO (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD22. SEE REFERENCE CARD, &quot;SCREENERS&quot; DP3</td>
<td>□</td>
<td>GO TO DD24</td>
</tr>
<tr>
<td>INTERVIEWER: ENTER &quot;YES&quot; OR &quot;NO&quot; RESPONSE FROM &quot;SCREENERS&quot; DP3 HERE</td>
<td>(#19)</td>
<td></td>
</tr>
<tr>
<td>DD23. SEE REFERENCE CARD, &quot;SCREENERS&quot; DP3a</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>INTERVIEWER: ENTER &quot;YES&quot; OR &quot;NO&quot; RESPONSE FROM DP3a HERE</td>
<td>(#20)</td>
<td></td>
</tr>
<tr>
<td>DD24. Have you ever had 2 weeks or longer when you lost the ability to enjoy having good things happen to you, like winning something or being praised or complimented?</td>
<td>□</td>
<td>GO TO DD26a</td>
</tr>
<tr>
<td>(#21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD25. Has there ever been a period of several weeks when your interest in sex was a lot less than usual?</td>
<td>□</td>
<td>GO TO DD26a</td>
</tr>
<tr>
<td>(#22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD26. Did you ever completely lose your interest in sex?</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>(#23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD26a. INTERVIEWER: IF ANY YES RESPONSE IN DD22-DD25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHECK &quot;SADNESS&quot; CATEGORY #7 BOX ON REFERENCE CARD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>YES (1)</td>
<td>NO (5)</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td>DD27. Has there ever been 2 weeks or more when nearly every day you felt worthless?</td>
<td>(24)</td>
<td>□</td>
</tr>
<tr>
<td>DD28. Did you ever feel completely worthless for a week or more?</td>
<td>(25)</td>
<td></td>
</tr>
<tr>
<td>DD29. Has there ever been 2 weeks or more when nearly every day you felt sinful?</td>
<td>(26)</td>
<td>□</td>
</tr>
<tr>
<td>DD30. Has there ever been 2 weeks or more when nearly every day you felt guilty?</td>
<td>(27)</td>
<td>□</td>
</tr>
<tr>
<td>DD31. Has there ever been a period of two weeks or longer when you felt that you were not as good as other people or inferior?</td>
<td>(28)</td>
<td>□</td>
</tr>
<tr>
<td>DD32. Has there ever been a period of two weeks or longer when you had so little self-confidence that you would not try to have your say about anything?</td>
<td>(29)</td>
<td>□</td>
</tr>
<tr>
<td>DD33. Did you ever have a period of two weeks or more when you entirely lost your self-confidence?</td>
<td>(30)</td>
<td></td>
</tr>
</tbody>
</table>

DD33a. **INTERVIEWER: IF ANY YES RESPONSE IN DD27- DD32,**

CHECK "SADNESS" CATEGORY #8 BOX ON REFERENCE CARD
<table>
<thead>
<tr>
<th>CATEGORY #9</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD34. Has there ever been 2 weeks or more when nearly every day you had a lot more trouble concentrating than is normal for you?</td>
<td>(1)</td>
<td>(5)</td>
</tr>
<tr>
<td>DD35. Has there ever been 2 weeks or more when you were unable to read things that usually interest you, or watch television or movies you usually like, because you could not pay attention to them?</td>
<td>(31)</td>
<td></td>
</tr>
<tr>
<td>DD36. Have you ever had 2 weeks or more when nearly every day your thoughts came much slower than usual or seemed mixed up?</td>
<td>(32)</td>
<td></td>
</tr>
<tr>
<td>DD37. Have you ever had 2 weeks or more when nearly every day you were unable to make up your mind about things you ordinarily have no trouble deciding about?</td>
<td>(33)</td>
<td></td>
</tr>
<tr>
<td>DD38. Has there ever been a period when you were completely unable to make up your mind about things you ordinarily have no trouble deciding about?</td>
<td>(34)</td>
<td></td>
</tr>
</tbody>
</table>

**DD38a.** INTERVIEWER: IF ANY YES RESPONSE IN DD34- DD37,

CHECK "SADNESS" CATEGORY #9 BOX ON REFERENCE CARD
DD39. INTERVIEWER CHECKPOINT

SEE REFERENCE CARD, "SCREENERS" DP1a

1. "YES" RESPONSE IN DP1a
   - 2. ALL OTHERS → NEXT PAGE, DD41

DD40. INTERVIEWER CHECKPOINT

SEE REFERENCE CARD, "SADNESS"

1. TWO OR MORE BOXES CHECKED IN "SADNESS" ON REF. CARD
   - 2. ALL OTHERS → NEXT PAGE, DD41

DD40A. CHECK "QUALIFIERS" DD40 BOX ON REFERENCE CARD.
**CATEGORY #10**

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD41. Has there ever been a period of 2 weeks or more when you thought a lot about death—either your own, someone else’s, or death in general?</td>
<td>(1)</td>
<td>(5)</td>
</tr>
<tr>
<td>DD42. Has there ever been a period of 2 weeks or more when you felt like you wanted to die?</td>
<td>(1)</td>
<td>(5)</td>
</tr>
<tr>
<td>DD43. Have you ever felt so low you thought about committing suicide?</td>
<td>(1)</td>
<td>(5)</td>
</tr>
<tr>
<td>DD44. Have you ever attempted suicide?</td>
<td>(1)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

**DD44a.** INTERVIEWER: IF ANY [YES] RESPONSE IN DD41 - DD44,
CHECK "SADNESS" CATEGORY #10 BOX ON REFERENCE CARD

**DD45. INTERVIEWER CHECKPOINT**

SEE REFERENCE CARD, "SADNESS"

1. THREE OR MORE CATEGORIES #3 - #10 CHECKED IN "SADNESS" ON REFERENCE CARD

2. ALL OTHERS ----> GO TO SECTION U, P. 279

**DD45a.** (R CARD, P. 2) Turn to Page 2 of the card. Please circle the following numbers next to the problems you just told me about so that you can refer to them in the next questions.

INTERVIEWER: READ ALOUD NUMBERS IN PARENTS FOR EACH [YES] AND EACH "YES" RESPONSE IN DD2-DD44, STARTING ON P. 253

WHEN FINISHED, NEXT PAGE, DD46
DD46. INTERVIEWER CHECKPOINT

SEE REFERENCE CARD, "SCREENERS" DP1a, DP2

1. "YES" RESPONSE IN DP1a OR DP2
2. ALL OTHERS

DD46a. INTERVIEWER CHECKPOINT

SEE REFERENCE CARD, "SCREENERS" DP3

1. "YES" IN DP3
2. ALL OTHERS

INTERVIEWER: CHECK "KEY PHRASE ONE" OPTION "A" ON REF. CARD, AND USE "SAD, BLUE, OR NO INTEREST IN THINGS"

DD46b. INTERVIEWER CHECKPOINT

SEE REFERENCE CARD, "SCREENERS" DP2a

1. "YES" IN DP2a
2. ALL OTHERS

INTERVIEWER: CHECK "KEY PHRASE ONE" OPTION "B" ON REF. CARD, AND USE "DOWN IN THE DUMPS OR NO INTEREST IN THINGS"

DD46c. INTERVIEWER CHECKPOINT

SEE REFERENCE CARD, "SCREENERS" DP3

1. "YES" IN DP3
2. ALL OTHERS

INTERVIEWER: CHECK "KEY PHRASE ONE" OPTION "C" ON REF. CARD, AND USE "DOWN IN THE DUMPS OR NO INTEREST IN THINGS"

INTERVIEWER: CHECK "KEY PHRASE ONE" OPTION "D" ON REF. CARD, AND USE "SAD, BLUE, OR NO INTEREST IN THINGS"

INTERVIEWER: CHECK "KEY PHRASE ONE" OPTION "E" ON REF. CARD, AND USE "NO INTEREST IN THINGS"

DD47. (R CARD, STILL ON P. 2) You said you had a period in your life when you felt (KEY PHRASE ONE) and also said you have had the other problems just circled. Has there ever been a time when the period(s) of feeling (KEY PHRASE ONE) and some of these other problems circled on Page 2 occurred together—that is, within the same month?

1. YES
5. NO
8. DON'T KNOW

GO TO SECTION U, P. 279

NEXT PAGE, DD48

DD47a. Let me make sure I am clear about this. There has never been a period when you felt (KEY PHRASE ONE) at the same time you were having some of these other problems on Page 2. Is that correct?

1. YES
5. NO

GO TO SECTION U, P. 279
DD48. Did you ever tell a doctor other than a psychiatrist about your period(s) of feeling (KEY PHRASE ONE) and having some of these other problems circled on Page 2? (Doctor include medical doctors, osteopaths, and students in training to become medical doctors or osteopaths.)

DEFINITION: "TELL A DOCTOR" MEANS YOU CONTACTED A DOCTOR DIRECTLY BY TELEPHONE OR IN PERSON

1. YES 5. NO ---> NEXT PAGE, DD51

DD48a. How old were you the first time [you told a doctor other than a psychiatrist about your period(s) of feeling (KEY PHRASE ONE)]?

__________________ YEARS OLD

DD49. Did a doctor other than a psychiatrist ever prescribe medication for you because of your period(s) of feeling (KEY PHRASE ONE)?

DEFINITION: "PRESCRIBE" MEANS A DOCTOR'S PRESCRIPTION NEEDS TO BE HANDED TO A PHARMACIST TO OBTAIN THE MEDICATION.

1. YES 5. NO ---> GO TO DD50

DD49a. How old were you the first time [a doctor other than a psychiatrist prescribed medication for you because of your period(s) of feeling (KEY PHRASE ONE)]?

__________________ YEARS OLD

DD50. Did a doctor other than a psychiatrist ever advise you to see a mental health specialist (someone like a psychiatrist, psychologist or social worker) about your period(s) of feeling (KEY PHRASE ONE)?

1. YES 5. NO ---> NEXT PAGE, DD51

DD50a. How old were you the first time [a doctor other than a psychiatrist advised you to see a mental health specialist]?

__________________ YEARS OLD
DD51. Did you ever **see** a mental health specialist about your period(s) of feeling (KEY PHRASE ONE)? (By mental health specialist we mean psychiatrists, psychologists, or social workers.)

1. **YES**  
5. **NO** ---› **GO TO DD52**

DD51a. How old were you the first time you saw a mental health specialist about your period(s) of feeling (KEY PHRASE ONE)?

__________ YEARS OLD

DD52. Did you ever **see** any other professional about your period(s) of feeling (KEY PHRASE ONE)? (Other professionals include nurses, rabbis, priests, ministers, and counselors.)

1. **YES**  
5. **NO** ---› **GO TO DD53**

DD52a. How old were you the first time you saw any other professional because of your period(s) of feeling (KEY PHRASE ONE)?

__________ YEARS OLD

DD53. Did you ever take medication more than once because of your period(s) of feeling (KEY PHRASE ONE)?

DEFINITIONS: MEDICATION (MORE THAN ONCE) MEDICINE TAKEN ANYWHERE OVER THE COUNTER OR A DRUG PILLS PRESCRIBED BY A DOCTOR OBTAINED ILLEGALLY, ETC.

1. **YES**  
5. **NO** ---› **GO TO DD54**

DD53a. How old were you the first time you took medication because of your period(s) of feeling (KEY PHRASE ONE)?

__________ YEARS OLD

DD54. How much did your period(s) of feeling (KEY PHRASE ONE) ever interfere with your life or activities—*a lot, some, a little, or not at all*?

1. A LOT  
2. SOME  
3. A LITTLE  
4. NOT AT ALL
DD55. Was any period of feeling (KEY PHRASE ONE) so bad that it kept you from working or from seeing friends or relatives?

1. YES  5. NO

DD56. Were you ever hospitalized for your period(s) of feeling (KEY PHRASE ONE)?

1. YES  5. NO  ---> GO TO CP-DD57

DD56a. How old were you the first time?

______________ YEARS OLD

DD57. INTERVIEWER CHECKPOINT

☐ 1. ONE OR MORE  □  RESPONSES IN DD48-DD56

☐ 2. ALL OTHERS  ---> GO TO SECTION U, P. 279

DD58. (R CARD, STILL ON P. 2) In your lifetime, how many periods have you had that lasted two weeks or more when you felt (KEY PHRASE ONE) and also had some of the other problems circled on Page 2?

**DEFINITION:** PERIODS SHOULD BE COUNTED SEPARATELY IF THE RECOVERY TIME BETWEEN THEM IS TWO MONTHS OR MORE

00. NONE  01. ONE  MORE THAN ONE: ______ NUMBER

GO TO SECTION U, P. 279

DD59. When did that period start—in the past month, past six months, past year, or more than a year ago?

1. PAST MONTH  2. PAST SIX MONTHS  3. PAST YEAR  4. MORE THAN A YEAR AGO

NEXT PAGE, D61

DD60. Can you remember your exact age when this period started?

1. YES  5. NO

DD60a. (How old were you?)  DD60b. About how old were you (when this period started)? (ACCEPT A RANGE RESPONSE)

______________ YEARS OLD
DD61. Did this period of feeling (KEY PHRASE ONE) occur just after someone close to you died?

1. YES
5. NO

DD61a. Was there anything else going on in your life at that time which might have caused you to feel (KEY PHRASE ONE)?

1. Yes
5. NO

GO TO DD62

DD61b. (Briefly, what was going on?)


DD62. (R CARD, STILL ON P. 2) Has that period of feeling (KEY PHRASE ONE) and having some of the other problems circled on Page 2 ended or is it still going on?

1. ENDED
2. STILL GOING ON

GO TO DD63

DD62a. When did it end (in the past month, past six months, past year, or more than a year ago?)

1. PAST MONTHS
2. PAST SIX MONTHS
3. PAST YEAR
4. MORE THAN A YEAR AGO

GO TO DD63

DD62b. Can you remember your exact age when it ended?

1. YES
5. NO

DD62c. (How old were you?)

DD62d. About how old were you (when this period ended)?

YEARS OLD

DD63. How long did this period last (before it ended/so far)?

_______ # OF DAYS WEEKS MONTHS YEARS

TURN TO P. 273, DD61a
[MORE THAN ONE PERIOD OF DEPRESSION IN LIFETIME]

DD64. (R CARD, STILL ON P. 2) When was the first time you had a period of two weeks or more when you had some of these problems circled on Page 2 and also felt (KEY PHRASE ONE) -- in the past month, past six months, past year, or more than a year ago?

1. PAST MONTHS
2. PAST SIX MONTHS
3. PAST YEAR
4. MORE THAN A YEAR AGO
5. NEVER [IF VOL.]

NEXT PAGE, DD67

NEXT PAGE, DD66

TURN TO P. 279, SECTION U

DD65. Can you remember your exact age the first time you had a period of two weeks or more when you had some of these problems circled on Page 2 and also felt (KEY PHRASE ONE)?

1. YES
5. NO

DD65a. (How old were you?)

DD65b. About how old were you (the first time you had a period of this sort lasting two weeks or more)?
(ACCEPT A RANGE RESPONSE)

_________ YEARS OLD

DD65c. What is the earliest age you can clearly remember having a period of this sort lasting two weeks or more?
(ACCEPT A RANGE RESPONSE)

_________ YEARS OLD
DD66. (R CARD, STILL ON P. 2) When was the last time you had a period of two weeks or more when you had some of these problems circled on Page 2 and also felt (KEY PHRASE ONE) -- in the past month, past six months, past year, or more than a year ago?

1. PAST MONTH  2. PAST SIX MONTHS  3. PAST YEAR  4. MORE THAN A YEAR AGO

DD66a. How old were you the last time (you had a period of this sort)?

Years Old

NEXT PAGE, DD68

DD67. How many periods of feeling (KEY PHRASE ONE) lasting two weeks or longer have you had in the past 12 months?

01. ONE

MORE THAN ONE:

Number

DD67a. In what month and year did this period start?

Month/Year

DD67b. Has this period of feeling (KEY PHRASE ONE) ended or is it still going on?

1. ENDED  2. STILL GOING ON

DD67c. How long did this period last (so far)?

Month/Year

Number

DD67d. In what month and year did the first of these (NUMBER FROM DD67) periods start?

Month/Year

DD67e. How long did this first period of feeling (KEY PHRASE ONE) last?

# OF

Days  Weeks  Months  Years
DD68. INTERVIEWER QUERY

SEE DD58, P. 264

# OF PERIODS IN DD58 IS ________.

DD69. You have had (NUMBER FROM DD68) periods of feeling (KEY PHRASE ONE) in your lifetime. Between (any of) these periods were you feeling O.K. at least for some months?

1. YES  5. NO \(\rightarrow\) GO TO DD70

DD69a. Between (any of) these periods were you fully able to work and enjoy being with other people?

1. YES  5. NO \(\rightarrow\) GO TO DD70

DD69b. Did that "normal" period ever last at least 6 months?

1. YES  5. NO

DD69c. Did it ever last at least 2 months?

1. YES  5. NO

DD70. Did any of these periods of feeling (KEY PHRASE ONE) occur just after someone close to you died?

1. YES  5. NO \(\rightarrow\) NEXT PAGE, DD72

DD70a. (R CARD, STILL ON P. 2) Did you ever have a period of feeling (KEY PHRASE ONE) along with some of these other problems circled on Page 2 at times when it was not just after a death?

1. YES  5. NO \(\rightarrow\) NEXT PAGE, DD72
DD71. What about your most recent period of feeling (KEY PHRASE ONE)? Was that due to someone close to you dying?
1. YES 5. NO

DD72. Did most of your periods of feeling (KEY PHRASE ONE) begin in the same month or the same time of the year?
1. YES 5. NO ← NEXT PAGE, DD74

DD72a. (In what months?) (ACCEPT MONTH OR RANGE OF MONTHS, NOT SEASON. IF R MENTIONS SEASON, PROBE: What months would that be?)

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DD72b. About how many of your (NUMBER FROM DD68) periods of feeling (KEY PHRASE ONE) began in (TIME FROM DD72a)? (ACCEPT NUMBER OR PERCENT)

________ # of PERIODS  OR  ___________ % OF PERIODS

DD72c. Did you ever have two years in a row when a period of feeling (KEY PHRASE ONE) started in (TIME FROM DD72a)?
1. YES 5. NO
DD73. Did most of these periods end in the same month or the same time of year?

1. YES  
5. NO  
GO TO DD74

DD73a. (In what months?) (ACCEPT MONTH OR RANGE OF MONTHS, NOT SEASON. IF R MENTIONS SEASON, PROBE: What months would that be?)

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DD73b. About how many of the periods of feeling (KEY PHRASE ONE) that began in (TIME FROM DD72a) ended in (TIME FROM DD73a)? (ACCEPT NUMBER OR PERCENT)

_________ # of PERIODS  OR  ___________ % OF PERIODS

DD73c. When you came out of these periods of feeling (KEY PHRASE ONE) in (TIME FROM DD73a), were your mood and energy back to normal or were they much better than normal?

1. BACK TO NORMAL  
2. MUCH BETTER THAN NORMAL  
3. LESS THAN NORMAL [IF VOL.]

DD74. (R CARD, STILL ON P. 2) What is the longest period you ever had when you felt (KEY PHRASE ONE) and had several of these other problems circled on Page 2 at the same time?

_________ # OF  
WEEKS  OR  MONTHS  OR  YEARS
DD75. INTERVIEWER CHECKPOINT

INTERVIEWER: MARK 1ST CHECKPOINT OPTION WHICH APPLIES

☐ 1. "YES" IN "SCREENERS" DP1a ON REFERENCE CARD → NEXT PAGE, DD78

☐ 2. TWO YEARS OR LONGER IN DD74

☐ 3. ALL OTHERS → NEXT PAGE, DD78

DD76. (R CARD, STILL ON P. 2) Can you remember your exact age the first time you had two years or more when you felt (KEY PHRASE ONE) and had some of the problems circled on Page 2 at the same time?

1. YES

DD76a. How old were you when that period started?

_________ YEARS OLD

5. NO

DD76b. About how old were you the first time a period of this sort started? (ACCEPT A RANGE RESPONSE)

_________ YEARS OLD

DD76c. What is the earliest age you can clearly remember having a period of this sort? (ACCEPT A RANGE RESPONSE.)

_________ YEARS OLD
DD77. (R CARD, STILL ON P. 2) What about the last time you had a period of two years or more when you felt (KEY PHRASE ONE) and had some of these problems circled on Page 2. Was this going on in the past month, past six months, past year, or more than a year ago?

1. PAST MONTH  2. PAST SIX MONTHS  3. PAST YEAR  4. MORE THAN A YEAR AGO

GO TO DD78

DD77a. How old were you the last time (you had a period of this sort lasting two years or longer)?

_________ YEARS OLD

DD78. (R CARD, STILL ON P. 2) How old were you when you felt (KEY PHRASE ONE) for at least two weeks and had the largest number of these other problems circled on Page 2 at the same time?

_________ YEARS OLD

GO TO DD80

95. "ALL SPELLS ALIKE" OR "NO ONE SPELL WITH MOST" [IF VOL.]

DD79. Can you think of a particularly bad one?

1. YES  5. NO

DD79a. (How old were you when that period occurred?)

DD79b. Then think of your most recent period. How old were you (when it occurred)?

_________ YEARS OLD

DD80. Was there anything going on in your life at that time which caused you to feel (KEY PHRASE ONE)?

1. YES  5. NO

GO TO NEXT PAGE, DD81

DD80a. (Briefly, what was going on?)

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

NEXT PAGE, DD81
DD81. INTERVIEW QUERY

SEE P. 272, DD78 OR DD79

AGE MARKED IN DD78 OR DD79 IS ____________.

DD81a. (RC, STILL ON P. 2) Now, take your time to carefully review the list of problems you circled on page 2, and tell me the numbers of all the problems you had during that period of feeling (KEY PHRASE ONE). (PROBE: Any others?) (CHECK ALL MENTIONS.)

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DD81b. (RC, STILL ON P. 2) Now, take your time to carefully review the list of problems you circled on Page 2, and tell me the numbers of all the problems you had during that period of feeling (KEY PHRASE ONE) when you were (AGE FROM DD81). (PROBE: Any others?) (CHECK ALL MENTIONS).

DD81c. INTERVIEWER CHECKPOINT

SEE DD81a-DD81b

☐ 1. THREE OR MORE CATEGORIES HAVE AT LEAST ONE BOX CHECKED

☐ 2. ALL OTHERS → NEXT PAGE, DD82

DD81d. CHECK "QUALIFIERS" DD81 BOX ON REFERENCE CARD.
DD82. INTERVIEWER CHECKPOINT

SEE DD81a-DD81b

1. 03 CHECKED IN DD81a-DD81b

2. ALL OTHERS → GO TO DD83

DD82a. During this period of feeling (KEY PHRASE ONE) how much weight did you lose?

______________ # POUNDS

DD83. INTERVIEWER CHECKPOINT

SEE DD81a-DD81b

1. 05 CHECKED IN DD81a-DD81b

2. ALL OTHERS → GO TO DD84

DD83a. During this period of feeling (KEY PHRASE ONE) how much weight did you gain?

______________ # POUNDS

DD84. (RC, STILL ON P. 2) Could any of these problems circled on Page 2 have been due entirely to medication, drugs, alcohol, physical illness or injury?

1. YES 5. NO → NEXT PAGE, DD85

DD84a. (RC, STILL ON P. 2) Which of these problems circled on Page 2 were caused by medications, drugs, alcohol, physical illness or injury during period(s) of feeling (KEY PHRASE ONE)? Just tell me the numbers. (Any others?) (CHECK ALL MENTIONS.)

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DD85. INTERVIEWER CHECKPOINT

SEE P. 264, DD58

1. "ONE" RESPONSE IN DD58 (ONE PERIOD IN LIFETIME)
   - □
2. ALL OTHERS → TURN TO P. 277, DD90

DD86. (RC, STILL ON P. 2) Did your period of (KEY PHRASE ONE) and having some of the other problems circled on Page 2 occur at a time in your life when you were drinking alcohol or using drugs more than usual?

**DEFINITION:** "DRUGS" INCLUDE PRESCRIPTION DRUGS USED WITHOUT A DOCTOR'S PRESCRIPTION OR MORE THAN PRESCRIBED, AS WELL AS ILLEGAL DRUGS.

1. YES
2. DRINKING/DRUG USE
3. BOTH AT THE SAME TIME
4. IT VARIES
5. NO

GO TO DD87

NEXT PAGE, DD88

DD86a. Which started first—the period of feeling (KEY PHRASE ONE) or the increase in drinking or drug use?

1. FEELING
2. DRINKING/DRUG USE
3. BOTH AT THE SAME TIME
4. IT VARIES
5. NO

DD87. Did you drink more than usual or use drugs not prescribed by a doctor or in greater amounts than prescribed to help you feel better during your period of (KEY PHRASE ONE)?

1. YES
2. DRINKING/DRUG USE
3. BOTH AT THE SAME TIME
4. IT VARIES
5. NO

GO TO DD87

NEXT PAGE, DD88

DD87a. Did this help you feel better?

1. YES
2. DRINKING/DRUG USE
3. BOTH AT THE SAME TIME
4. IT VARIES
5. NO

GO TO DD88

NEXT PAGE, DD88

DD87a. Did this help you feel better?

1. YES
2. DRINKING/DRUG USE
3. BOTH AT THE SAME TIME
4. IT VARIES
5. NO
DD88. INTERVIEWER CHECKPOINT

SEE REFERENCE CARD, "QUALIFIERS" X13

1. X13 BOX CHECKED ON REFERENCE CARD

2. ALL OTHERS → GO TO SECTION U, P. 279

DD89. Earlier you told me that you had periods lasting six months or more when you were worried or anxious. Did one of these periods of worry occur during the time when you had a period of feeling (KEY PHRASE ONE)?

1. YES 5. NO → GO TO SECTION U, P. 279

DD89a. Which one started first--the worry or the period of feeling (KEY PHRASE ONE)?

1. WORRY 2. FEELING 3. BOTH AT THE SAME TIME [IF VOL.] 4. IT VARIES [IF VOL.]

DD89b. Which one went away first -- [the worry or the period of feeling (KEY PHRASE ONE)]?

1. WORRY 2. FEELING 3. BOTH AT THE SAME TIME [IF VOL.] 4. IT VARIES [IF VOL.]

GO TO SECTION U, P. 279
MORE THAN ONE PERIOD IN LIFETIME

DD90. (RC, STILL ON P. 2) You told me you had more than one period of feeling (KEY PHRASE ONE). During any of your other periods, did you have as many of these problems circled on Page 2 as you did in the period you just described?

1. YES  
5. NO

DD91. (RC, STILL ON P. 2) Did your periods of feeling (KEY PHRASE ONE) and having some of the other problems circled on Page 2 ever occur at times in your life when you were drinking or using drugs more than usual?

DEFINITION: "DRUGS" INCLUDE PRESCRIPTION DRUGS USED WITHOUT A DOCTOR'S PRESCRIPTION OR MORE THAN PRESCRIBED, AS WELL AS ILLEGAL DRUGS.

1. YES  5. NO  → GO TO DD92  6. NEVER DRINK OR USE DRUGS [IF VOL.]  → GO TO DD93

DD91a. Did the periods of feeling (KEY PHRASE ONE) always occur at times in your life when you were drinking or using drugs more than usual?

1. YES  5. NO

DD91b. Which one would start first—the periods of feeling (KEY PHRASE ONE) or the increase in drinking or drug use?

1. FEELING  2. DRINKING/DRUG USE  3. BOTH AT THE SAME TIME [IF VOL.]  4. IT VARIES [IF VOL.]

DD92. Did you ever drink more than usual or use drugs not prescribed by a doctor or in greater amounts than prescribed to help you feel better during your periods of feeling (KEY PHRASE ONE)?

1. YES  5. NO  → NEXT PAGE, DD93

DD92a. Did this help you feel better?

1. YES  5. NO  3. YES AT FIRST, BUT NOT LATER ON [IF VOL.]
DD93. INTERVIEWER CHECKPOINT

SEE REFERENCE CARD, "QUALIFIERS" X13

☐ 1. X13 BOX CHECKED ON REFERENCE CARD
☐ 2. ALL OTHERS \(\rightarrow\) NEXT PAGE, UO

DD94. Earlier you told me you had periods lasting six months or more when you were worried or anxious. Have these periods of worry ever occurred during a time when you were also having a period of feeling (KEY PHRASE ONE)?

1. YES \(\rightarrow\) NEXT PAGE, DD95
5. NO

DD94a. Did your periods of worry always occur during a time when you were also having a period of feeling (KEY PHRASE ONE)?

1. YES \(\quad\) 5. NO

DD94b. During times you had both, which one would start first--the worry or the period of feeling (KEY PHRASE ONE)?

1. WORRY \(\quad\) 2. FEELING \(\quad\) 3. BOTH AT THE SAME TIME [IF VOL.] \(\quad\) 4. IT VARIES [IF VOL.]

DD94c. Which would go away first--(the worry or the period of feeling (KEY PHRASE ONE))? 

1. WORRY \(\quad\) 2. FEELING \(\quad\) 3. BOTH AT THE SAME TIME [IF VOL.] \(\quad\) 4. IT VARIES [IF VOL.]
REFERENCES


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Paykel, E. S. (1997). The Interview for Recent Life Events. Psychological Medicine, 27, 301-310.


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