

BRIEF REPORTS

A Comparison of Two Life Stress Assessment Approaches: Prospective Prediction of Treatment Outcome in Recurrent Depression

John R. McQuaid
University of California, San Diego, and
Veterans Affairs San Diego Healthcare System

Scott M. Monroe
University of Oregon

John E. Roberts
State University of New York at Buffalo

David J. Kupfer and Ellen Frank
University of Pittsburgh

Research on life stress has been characterized by inconsistent results, which some researchers attribute to different assessment methodologies. Generally, studies have used either self-report checklists or investigator-based interviews. To test whether different results are derived from these approaches, the authors compared information from a self-report measure of life stress with the additional data available from a follow-up investigator-based measure in prospectively predicting the outcome of treatment for recurrent major depression. The 2 approaches produced different results, with investigator-based life events predicting lower probability of remission and self-report life events either predicting increased likelihood of remission or not predicting at all. The results demonstrated that methodology may account for some of the inconsistencies in the life stress literature.

Life stress has been proposed as a central mechanism in the etiology and course of psychological disorders, particularly major depression (Brown & Harris, 1989; Monroe, Kupfer, & Frank, 1992; Reno & Halaris, 1990). However, researchers examining the role of stress in depression have found inconsistent results. Some have argued that mixed findings suggest that stress does not play a major role in certain forms of psychopathology and these findings have brought diathesis-stress theories into question (Tennant, Bebbington, & Hurry, 1981). Other investigators, however, suggest that different results across studies stem from the use of different measurement approaches (Brown, 1981; Katschnig, 1986; McQuaid et al., 1992). To test the impact of life events

assessment approaches on the understanding of stress, we (a) compare two common life event measures on predicting outcome of treatment for major depression, (b) describe the differences in results obtained with these two instruments, and (c) discuss the implications of these findings for research on psychological disorders.

For this project, we compared instruments that represent the two most common approaches for assessing life events: self-report (SR) checklists and investigator-based (IB) interviews with consensus team ratings. SR checklists require respondents to choose events they have experienced from a list of options. IB methods typically use a semistructured interview to gather information about stress, which is then presented to a panel of raters who define events and provide ratings along various theoretical dimensions.

Critics of SR checklists have argued that such measures add error variance into stress assessment, because determining which of the respondent's experiences match those on the list is left to the respondent (Brown, 1981; B. P. Dohrenwend, Link, Kern, Shrout, & Markowitz, 1987). Additionally, SR checklists may introduce systematic bias into the data, because depressive symptoms may lead to increases in reported negative items (Cohen, Towbes, & Flocco, 1988). IB approaches may reduce these biases. Although IB measures also suffer from some limitations (e.g., they still rely on the patient's report, and interviewers may vary in the amount they probe for data), they reduce idiosyncratic bias by placing responsibility for defining and categorizing stress in the hands of the researcher rather than in the hands of the respondent (Brown & Harris, 1989; B. P. Dohrenwend, Raphael, Schwartz, Stueve, & Skodol, 1993; Hammen, 1991).

Variability between SR and IB measures may also stem from different theoretical models of stress. Checklists generally assume an additive model of stress, whereas IB procedures often are based

John R. McQuaid, Department of Psychiatry, University of California, San Diego, and Veterans Affairs San Diego Healthcare System, San Diego, California; Scott M. Monroe, Department of Psychology, University of Oregon; John E. Roberts, Department of Psychology, State University of New York at Buffalo; David J. Kupfer and Ellen Frank, Department of Psychiatry, University of Pittsburgh.

This work was sponsored in part by National Institute of Mental Health Research Grants MH39139 and MH29618-13. John R. McQuaid is supported in part by the National Alliance for Research on Schizophrenia and Depression (NARSAD) Joseph S. Scher Young Investigator Award.

We thank Joan Anderson for participating in stress ratings, performing data entry, and data management; Greg Garamoni for conducting patient interviews; Karyn Angell, Sheri Johnson, Yvonne Johnson, Scott Fischer, Brian Goff, and Diane Spangler for participating in stress ratings; and C. Michael Mann for helpful comments on this article.

Correspondence concerning this article should be addressed to John R. McQuaid, Psychiatry Services (116-B), V.A. San Diego Healthcare System, 3350 La Jolla Village Drive, San Diego, California 92161. Electronic mail may be sent to jmcquaid@ucsd.edu.

on a threshold model of stress (e.g., whether a severe event is present or not; Monroe & Simons, 1991). These different models lead to assessment of specific aspects of stress that may have unique relationships to the disorder in question.

Several authors have described differences between operational outcomes resulting from SR and IB measures of stress. Gorman (1993) reviewed 11 studies that compared SR checklists with interview measures. He concluded that checklists often led to overreporting of "trivial events." McQuaid et al. (1992) examined the nature of disagreements between a common IB measure, the Life Events and Difficulties Schedule (LEDS; Brown & Harris, 1989) and an SR checklist measure. The instruments differed on what was included as stressors (e.g., 15% of checklist events did not meet the LEDS criteria as a stressor), and respondents often made errors when self-reporting on a checklist (e.g., the same event was reported in two different categories).

It appears that SR checklists yield different operational indices when compared with IB procedures and that checklist approaches may introduce both random and systematic error. These findings suggest different outcomes for SR measures versus IB measures for specific conditions. For example, currently depressed participants are likely to report inflated levels of events on checklists, and groups that differ on mood (e.g., depressed vs. nondepressed) will show significant differences on SR measures.

The few studies that have directly compared SR and IB stress assessment on specific outcomes do suggest that conclusions reached on the basis of SR measures are influenced by reporting biases. In a retrospective study, Katschnig (1986) found that hospitalized depressed patients reported high levels of stress prior to admission on both SR and IB measures. However, he also found large discrepancies between the measures, and suggested that either (a) both measures examined distinct constructs relevant to depressive symptoms or (b) the self-report checklist produced spurious results. In another retrospective study, ShROUT et al. (1989) found that individuals who had suffered an episode of depression reported higher levels of events on an SR measure than never-depressed controls did, but this effect became nonsignificant after controlling for current depressive symptoms. They found a significant effect using an IB procedure, however, even after controlling for symptoms.

Although these retrospective studies suggested differences between SR and IB measures, this report is the first prospective study comparing these approaches. Theoretically, pretreatment severe life stressors, defined as events that have significant threat and unpleasantness for an extended period of time, are predicted to tax coping resources and to reduce the likelihood that patients can benefit from treatment (Brown & Harris, 1989; Monroe et al., 1992). However, we anticipate that SR checklists will not predict outcome because of the interference of error variance.

In previous communications, we have described the operational differences between these two approaches (McQuaid et al., 1992) and the predictive utility of investigator-based methods (Monroe et al., 1992). For the latter study, although we first administered a SR checklist, we confined our analyses to the IB assessment, on the assumption that it was the more methodologically sound. However, on the basis of our current review of the literature, we believe this assumption has not been adequately examined empirically. If SR life stress checklists produce different results than IB methods, we conclude that at least some of the inconsistencies in the life-stress literature arise from method differences.

Method

Participants

Participants were 91 outpatients enrolled in a larger treatment project for recurrent major depression at Western Psychiatric Institute and Clinic at the University of Pittsburgh (Frank et al., 1990), and methods are more fully described elsewhere (Monroe et al., 1992). Participants were required to (a) have a history of at least two prior episodes of definite major depression, on the basis of Research Diagnostic Criteria (Spitzer, Endicott, & Robins, 1978); (b) be between 21 and 65 years of age; (c) have had a previous depressive episode within the past 2.5 years; (d) score 7 or above on the Raskin Severity of Depression Scale (RSDS; Raskin, Schulerbrandt, Reatig, & McKeon, 1969); and (e) score 15 or above on the 17-item Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960). Exclusion criteria included medical conditions precluding the use of tricyclic antidepressants and other psychiatric conditions. The sample was mostly women (73%) and White (96%). Nearly half were married (47%) and all had at least two prior depressive episodes ($M = 6$, $SD = 6.3$).

Procedure

Participants were recruited through self-referral, medical referral, and a public information campaign. Following a 2-week drug-free washout period, participants were reevaluated, and those who continued to meet the severity criteria were admitted to the protocol. All participants received both imipramine, 150–300 mg per day, and interpersonal psychotherapy (Klerman, Weissman, Rounsaville, & Chevron, 1984). At the beginning of the treatment phase, we assessed life events that occurred during the prior 12 weeks. Depressive symptoms were assessed at each clinic visit (i.e., weekly for the first 12 weeks of treatment, biweekly for the next 8 weeks, and monthly thereafter) by nurse clinicians with bachelor's or master's degrees.

Measures

Schedule for Affective Disorders and Schizophrenia (SADS; Endicott & Spitzer, 1978). The SADS is a well-validated, semistructured interview administered when patients were screened for entry into treatment. It was used to diagnose depression, as well as to assess demographic variables, depression history and clinical characteristics.

Definition of remission. Remission of depression was defined on the basis of two clinician-based measures; the HRSD (Hamilton, 1960), a semistructured interview for assessing depressive symptoms and the RSDS (Raskin et al., 1969), in which the clinician rates each of three areas, behavioral signs of depression, secondary symptoms, and verbal expression of mood, on the basis of observation of the patient. Both measures have been shown to have adequate reliability and validity (Rabkin & Klein, 1987). We defined remission as scores of ≤ 7 on the HRSD and ≤ 5 on the RSDS for 3 consecutive weeks (see Frank et al., 1990).

Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI is a standardized self-report measure of depressive symptoms that has been shown to have adequate reliability and validity (Rabkin & Klein, 1987).

Life stress. Life stress was assessed in three stages. Patients initially completed a modified version of the Psychiatric Epidemiology Research Interview (PERI) Life Events Scale (B. S. Dohrenwend, Krasnoff, Askenasy, & Dohrenwend, 1978), a self-report measure of life stress consisting of 104 events and space to add additional events. In the second stage, an interviewer administered a semistructured interview tailored to assess each endorsed event, as well as to gather information about other aspects of the respondent's life. In the third stage, a presenter provided the relevant information from the interview to a panel of raters (typically 2–4 persons) trained in the Bedford College LEDS rating procedures and for whom the respondent's clinical status was masked.

The LEDS is a manualized rating procedure that includes specific guidelines for (a) defining life stress and (b) rating dimensions of these

stressors (Bifulco et al., 1989). Raters were allowed to ask clarifying questions, then each rater provided a score for the major dimensions of each stressor. Raters discussed all discrepancies and achieved consensus using the LEDSD manual to provide standardization. Interrater reliability for the LEDSD was .79 to .81 (Monroe et al., 1992).

Operational Procedures and Data Analyses

For the LEDSD, patients were grouped on the basis of the presence or absence of a severe event (Brown & Harris, 1989). Severe events are stressors explicitly defined by the LEDSD system that have a high degree of contextual threat and unpleasantness and a high likelihood of prolonged adverse consequences. (See Brown & Harris, 1989; Monroe et al., 1992, for further details.) All stressors that were direct consequences of depressive symptoms (e.g., missing work because of depressed mood) were excluded from the analyses.

For the PERI, data were quantified in two ways. The first approach used the traditional sum of event change scores, as established by B. S. Dohrenwend et al. (1978). The second approach defined stress as the presence of a PERI severe event (PSE) and was designed to parallel as closely as possible LEDSD severe events. PSEs were defined as undesirable, having a

change score 1 standard deviation above the overall mean for PERI events, and not caused by the respondent's disorder.

We used hierarchical logistic regression to test the relationship between life stress and the likelihood of remission of symptoms. To test whether the LEDSD adds to the prediction of outcome beyond PERI data, we ran separate equations in which each PERI variable was entered first, followed by the presence of severe LEDSD events. We chose this model because the LEDSD was assessed after the PERI and was likely influenced by the PERI responses.

Results

Preliminary Analyses

Seven participants (8%) dropped out before the end of treatment. Sixty-seven patients (80% of completers) achieved remission at some point in treatment. Table 1 shows results of preliminary analyses of the relationship of potential covariates (i.e., initial BDI and HRSD scores and number of previous episodes) to outcome and stress measures. Remitters had lower initial BDI and HRSD scores, LEDSD severe events were related to higher initial

Table 1
Preliminary Comparisons of Stress and Outcome Variables With Initial Symptoms and History of Previous Episodes

Measure	Value		Measure	Value		
	PERI Total score (<i>r</i> , <i>n</i>)			Remission, Week 16		
Initial BDI score	.11, 73			Remitted	Unremitted	<i>p</i>
Initial HRSD score	-.12, 79					
No. of previous episodes	-.11, 90		Initial BDI score			
	PERI severe event		<i>M</i>	21.0	27.6	-3.16**
	Absent	Present	<i>SD</i>	8.0	8.9	
			<i>n</i>	41	26	
Initial BDI Score			Initial HRSD score			
<i>M</i>	23.6	26.2	<i>M</i>	19.6	23.5	-3.54**
<i>SD</i>	9.1	8.1	<i>SD</i>	4.7	4.0	
<i>n</i>	57	16	<i>n</i>	48	25	
Initial HRSD score			No. of previous episodes			
<i>M</i>	21.2	20.5	<i>M</i>	6.5	5.6	.62
<i>SD</i>	4.5	5.3	<i>SD</i>	7.7	2.8	
<i>n</i>	59	20	<i>n</i>	54	29	
No. of previous episodes						
<i>M</i>	6.5	4.3				
<i>SD</i>	6.9	2.3				
<i>n</i>	72	27				
	LEDSD severe event			Remission, any point		
	Absent	Present		Remitted	Unremitted	<i>p</i>
Initial BDI score			Initial BDI score			
<i>M</i>	22.7	29.7	<i>M</i>	21.9	29.7	-3.12**
<i>SD</i>	8.7	7.8	<i>SD</i>	8.0	9.5	
<i>n</i>	58	15	<i>n</i>	53	14	
Initial HRSD Score			Initial HRSD score			
<i>M</i>	20.8	22.0	<i>M</i>	20.1	23.9	-2.92**
<i>SD</i>	4.4	5.6	<i>SD</i>	4.7	4.2	
<i>n</i>	63	16	<i>n</i>	57	16	
No. of previous episodes			No. of previous episodes			
<i>M</i>	6.5	4.7	<i>M</i>	6.2	5.9	.20
<i>SD</i>	6.9	2.2	<i>SD</i>	7.1	3.1	
<i>n</i>	72	18	<i>n</i>	66	17	

Note. *Ns* vary because of missing HRSD and BDI data. BDI = Beck Depression Inventory, HRSD = Hamilton Rating Score for Depression, PERI = Psychiatric Epidemiology Research Interview, LEDSD = Life Events and Difficulties Schedule.

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

BDI scores; and PERI severe events were associated with fewer previous episodes of depression.

Life Stress and Remission

Table 2 shows the results of the hierarchical logistic analyses. After controlling for initial depressive symptoms, the traditional PERI score did not predict outcome of treatment. However, the presence of a PSE predicted increased likelihood of remission overall (although not by Week 16). As previously reported, LEDS severe events predicted decreased likelihood of remission at 16 weeks, as well as at any time, even after controlling for depressive symptoms and self-reported life events.¹

Discussion

Previous research has demonstrated methodological and theoretical differences between IB and SR checklists. The present report details the first prospective study of major depression to explicitly demonstrate that the LEDS and the PERI produce different conclusions in predicting relevant outcomes, even when researchers attempt to control for theoretical differences between the measures. The results for the LEDS are consistent with the theory that severe life events have prolonged negative consequences. Some authors have argued that such events generate further stress, and this may be the mechanism by which severe events affect fairly distal outcomes such as treatment response (Hammen, 1991). Whereas the LEDS significantly predicted treat-

ment outcome in this sample, the traditional PERI score did not, and PERI severe events predicted in the opposite direction from LEDS severe events. In addition, only the LEDS was related to pretreatment depressive symptoms, thus demonstrating that differences between measures extend to other relevant outcomes.

These findings emphasize that investigators cannot assume that different measures of stress are equivalent. The difference between PERI severe events and LEDS severe events is particularly striking, because we attempted to design a PERI measure that best matched the LEDS concept of a severe event. Although we cannot definitively state that differences between SR and IB measures stem from flaws in checklists, the inclusion of a measure designed to approximate the LEDS severe events reduces the likelihood that differences are solely due to theoretical variation. In addition, the LEDS is related to concurrent self-reported symptom levels, whereas the PERI is not, suggesting that the relationships between symptoms and events measures are not solely due to shared methods (e.g., self-report or interview).

There are some limitations to this study. All participants received the PERI before the LEDS, and it is possible that the LEDS benefited from an order effect. For example, participants, initially primed by the PERI to think about events, may have remembered additional details by the time of the LEDS interview. Although this effect does not alleviate concerns regarding the PERI, it may suggest that we overestimate the accuracy of the LEDS alone. A future comparison of the PERI and LEDS combination versus the traditional LEDS interview would help clarify these effects. In addition, we did not control for events that occurred during treatment, which could be the mechanism by which pretreatment events affect likelihood of remission. Further studies need to address these concerns. The sample size precludes us from making conclusions about nonsignificant findings, which may simply reflect a lack of power.

Finally, this study examines only one of many stress and disorder relationships and only two instruments. Further work is needed with other investigator-based procedures that may reflect different theoretical models of stress (e.g., the full LEDS; Brown & Harris, 1989; B. P. Dohrenwend et al., 1993; Hammen, 1991). More elaborate SR approaches may produce results more consistent with IB procedures, although the basic difference (who decides what is an event) will always remain. Other outcomes of interest (e.g., onset of depression, recurrence) may not show differences between SR and IB measures.

The primary goal of this study was to extend previous work describing the differences in operational products generated by SR and IB stress assessments and to show that their differences may lead in turn to important differences in the prediction of relevant outcomes. Researchers considering the role of life stress need to choose measures that are the most likely to assess their conceptualization of stress. Our hope is that investigators will recognize that

Table 2
Hierarchical Logistic Regression: Change in χ^2 for PERI and LEDS Events Predicting Treatment Outcome, After Controlling for Depressive Symptoms

Variable	Improvement χ^2	Odds ratio
Sum of PERI events and LEDS severe events		
Remission, Week 16		
Step		
1. Sum of PERI events	0.17	1.00
2. LEDS severe event	5.68*	0.12
Remission, any time		
Step		
1. Sum of PERI events	3.22	1.00
2. LEDS severe event	9.81**	0.04
PERI severe events and LEDS severe events		
Remission, Week 16		
Step		
1. PERI severe event	1.74	2.69
2. LEDS severe event	5.14*	0.14
Remission, any time		
Step		
1. PERI severe event	4.70*	8.48
2. LEDS severe event	5.98**	0.11

Note. $n = 59$ due to missing HRSD and BDI data. Odds ratios < 1 represent decreased likelihood. Initial depressive symptoms, entered prior to life events, predicted remission at week 16 ($\chi^2 = 16.78, p < .001$) and any time ($\chi^2 = 13.63, p < .01$). PERI = Psychiatric Epidemiology Research Interview, LEDS = Life Events and Difficulties Schedule, HRSD = Hamilton Rating Score for Depression, BDI = Beck Depression Inventory.

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

¹ For LEDS severe events, 44% of those participants with an event responded by 16 weeks, versus 71% of those without stress. Only 56% with a LEDS event responded at some point, versus 85% of those without stress. For PSEs 83% achieved remission at 16 weeks versus 61% of those without events. To verify the results and test whether our findings may be due to selective drop out from treatment, we repeated the analyses on the intent to treat sample, coding drop outs as nonresponders. All results were identical.

variability in research on stress and psychopathology relationships does not, at this time, imply a definitive answer to the role of stress in mental disorders. Rather, that variability reflects a science in early development, which needs to continue the task of careful definition and measurement of its constructs.

References

- Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 53–63.
- Bifulco, A., Brown, G. W., Edwards, A., Harris, T., Neilson, E., Richards, C., & Robinson, R. (1989). *Life Events and Difficulties Schedule: LEDS II*. London: Royal Holloway and Bedford New College, University of London.
- Brown, G. W. (1981). Life events, psychiatric disorder and physical illness. *Journal of Psychosomatic Research*, 25, 461–473.
- Brown, G. W., & Harris, T. (1989). *Life events and illness*. New York: Guilford Press.
- Cohen, L. H., Towbes, L. C., & Flocco, R. (1988). Effects of induced mood on self-reported life events and perceived and received social support. *Journal of Personality and Social Psychology*, 55, 669–674.
- Dohrenwend, B. P., Link, B. G., Kern, G., Shrout, P. E., & Markowitz, J. (1987). Measuring life events: The problem of variability within event categories. In B. Cooper (Ed.) *Psychiatric epidemiology: Progress and prospects*. (pp. 103–119). London: Croom Helm.
- Dohrenwend, B. P., Raphael, K. G., Schwartz, S., Stueve, A., & Skodol, A. (1993). The structured event probe and narrative rating method for measuring stressful life events. In L. Goldberger and S. Breznitz (Eds.), *Handbook of stress: Theoretical and clinical aspects* (2nd ed.). New York: The Free Press.
- Dohrenwend, B. S., Krasnoff, L., Askenasy, A. R., & Dohrenwend, B. P. (1978). Exemplification of a method for scaling life events: The PERI life events scale. *Journal of Health and Social Behavior*, 19, 205–229.
- Endicott, J., & Spitzer, R. L. (1978). A diagnostic interview: The schedule for affective disorders and schizophrenia. *Archives of General Psychiatry*, 35, 837–844.
- Frank, E., Kupfer, D. J., Perel, J. M., Cornes, C., Jarrett, D. B., Mallinger, A. G., Thase, M. E., McEachran, A. B., & Grochocinski, V. J. (1990). Three-year outcomes for maintenance therapies in recurrent depression. *Archives of General Psychiatry*, 47, 1093–1099.
- Gorman, D. M. (1993). A review of studies comparing checklist and interview methods of data collection in life event research. *Behavioral Medicine*, 19, 66–73.
- Hamilton, M. (1960). A rating scale for depression. *Journal of Neurology, Neurosurgery and Psychiatry*, 23, 56–62.
- Hammen, C. (1991). Generation of stress in the course of unipolar depression. *Journal of Abnormal Psychology*, 100, 555–561.
- Katschnig, H. (1986). Measuring life stress—a comparison of the checklist and the panel technique. In H. Katschnig (Ed.), *Life Events and Psychiatric Disorders: Controversial Issues*. (pp. 74–106). Cambridge, England: Cambridge University Press.
- Klerman, G. L., Weissman, M. M., Rounsaville, B. J., & Chevron, E. S. (1984). *Interpersonal psychotherapy of depression*. New York: Basic Books.
- McQuaid, J. R., Monroe, S. M., Roberts, J. R., Johnson, S. L., Garamoni, G. L., Kupfer, D. J., & Frank, E. (1992). Toward the standardization of life stress assessment: Definitional discrepancies and inconsistencies in methods. *Stress Medicine*, 8, 47–56.
- Monroe, S. M., Kupfer, D. J., & Frank, E. (1992). Life stress and treatment course of recurrent depression I: Response during index episode. *Journal of Consulting and Clinical Psychology*, 60, 718–724.
- Monroe, S. M., & Simons, A. D. (1991). Diathesis stress theories in the context of life stress research: Implications for the depressive disorders. *Psychological Bulletin*, 110, 406–425.
- Rabkin, J. G., & Klein, D. F. (1987). The clinical measurement of depressive disorders. In A. J. Marsella, R. M. A. Hirschfeld, & M. M. Katz (Eds.), *The measurement of depression* (pp. 30–83). New York: Guilford Press.
- Raskin, A., Schulerbrandt, J., Reatig, N., & McKeon, J. J. (1969). Replication of factors of psychopathology in interview, word behavior, and self-report ratings of hospitalized depressives. *Journal of Nervous and Mental Disorders*, 148, 87–98.
- Reno, R., & Halaris, A. (1990). The relationship between life stress and depression in an endogenous sample. *Comprehensive Psychiatry*, 31, 25–33.
- Shrout, P. E., Link, B. G., Dohrenwend, B. P., Skodol, A. E., Stueve, A., & Mirotznik, J. (1989). Characterizing life events as risk factors for depression: The role of fateful loss events. *Journal of Abnormal Psychology*, 98, 460–467.
- Spitzer, R. L., Endicott, J., & Robins, E. (1978). Research Diagnostic Criteria. *Archives of General Psychiatry*, 34, 773–782.
- Tennant, C., Bebbington, B., & Hurry, J. (1981). The role of life events in depressive illness: Is there a substantial causal relation? *Psychological Medicine*, 11, 379–389.

Received September 2, 1997

Revision received January 7, 2000

Accepted April 7, 2000 ■