The Treatment of Chronic Depression, Part 3:

Psychosocial Functioning Before and After Treatment With Sertraline or Imipramine

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Background: Previous research has suggested that depressed patients, and particularly chronically depressed patients, have significant impairments in many areas of their lives. While previous studies suggested that these "psychosocial" impairments improve following pharmacologic treatment, no large scale definitive study using multiple measures of psychosocial functioning has been reported.

Method: We assessed multiple domains of psychosocial functioning using interviewer-rated and self-report measures within the context of a 12-week acute treatment trial of sertraline and imipramine for patients with chronic depression (double depression and chronic major depression). We also compared the psychosocial functioning data of this sample before and after treatment with normative data available from published community samples.

Results: Chronically depressed patients manifested severe impairments in psychosocial functioning at baseline. After treatment with sertraline or imipramine, psychosocial functioning improved significantly. Significant improvements appeared relatively early in treatment (week 4). Despite these highly significant improvements in functioning during acute treatment, the study sample as a whole did not achieve levels of psychosocial functioning comparable to a comparator nondepressed community sample. However, patients who reached full symptomatic response (remission) during acute treatment did have levels of psychosocial functioning in most areas at endpoint that approached or equaled those of community samples.

Conclusion: These results indicate that successful antidepressant treatment with sertraline or imipramine can alleviate the severe psychosocial impairments found in chronic depression.

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In recent years, there has been increasing recognition that mood disorders are associated with significant functional impairments in a number of nonsymptomatic areas.[1,2] Stimulated by the provocative findings from the Medical Outcomes Study (MOS),[3–5] which indicate that depressed patients manifest equivalent or greater levels of impairment in well-being and functioning than many patients with chronic medical conditions such as diabetes or arthritis, recent studies have begun to explore the parameters of these functional impairments in depressed patients. These studies have replicated and extended the MOS findings by demonstrating that depression has adverse effects in a large number of areas.

Depressed patients have significant impairments in numerous areas of interpersonal and social functioning.[6–8] Perhaps even more importantly, depressive disorders affect the patient's family and significant others by impairing the patient's capacity to maintain his or her roles in the family system.[9–12] Depressed patients manifest impaired

functioning as spouses, parents, and resource providers.[7,10,12,13] In turn, the relatives and children of depressed patients suffer, as demonstrated by evidence of increased levels of stress, dysfunction, psychiatric disorder, and poorer school performance among relatives and offspring of depressed patients.[9,10,14]

The effects of depression extend beyond the patient and his or her family into the community as well. Depressed patients have substantial difficulty functioning effectively in the workplace and school, with high levels of unemployment, underemployment, disability, and decreased work performance.[15–18] Depressive disorders produce substantial costs to society as well, with the indirect costs due to functional impairments in depression estimated at 72% of the total $43 billion annual cost of depression in the United States.[17]

Thus, depressive disorders include both depressive symptoms and clinically significant impairments in many areas of daily life. These impairments have serious adverse effects on the patient, his or her family and immediate community, and society as a whole. For the purposes of this article, we shall refer to these nonsymptom areas of functioning as "psychosocial" functioning.

Patients with chronic forms of depression (dysthymic disorder, double depression, and chronic major depression) may manifest even greater levels of psychosocial impairment. One might assume that a longer course of depression will result in greater psychosocial impairment. Empirically, however, the data have been mixed, with some studies reporting that chronically depressed patients have greater psychosocial impairment[4,5] and other studies reporting equivalent levels of impairment among chronic and episodic depressed patients.[7,19] In a recent review, Friedman[20] concluded that (1) there were few studies investigating social adjustment in chronic depression, and (2) the available evidence, while not conclusive, does suggest that patients with chronic depression had greater levels of social impairment than other depressed patients.

Preliminary research[13,18,21–24] suggests that antidepressant treatment may improve psychosocial functioning. However, these previous studies have been limited by exclusive reliance on patient-rated measures, reliance on single measures of psychosocial functioning, and reliance on relatively small sample sizes. The time course of improvement in psychosocial function has not been examined.

Clearly, we need to further study changes in psychosocial functioning during treatment for depression. Here, we sought to address these issues within the context of a large scale multicenter study evaluating optimal treatment strategies in chronic depression (see the previous 2 articles in this issue).[25,26] More specifically, we evaluated the functional impairment of patients with double depression or chronic major depression before, during, and after acute treatment with either sertraline or imipramine.

The current study sought to address 7 questions:

1. Do patients with chronic depression manifest impairments in psychosocial functioning?
2. Do patients with double depression and chronic major depression differ in the level or pattern of psychosocial impairments?
3. Do these psychosocial impairments improve with treatment?
4. Do sertraline and imipramine treatments result in different levels of improvement?
5. What is the time course of changes in psychosocial symptoms (i.e., do changes in psychosocial functioning or specific domains of psychosocial functioning occur early in treatment)?
6. Are improvements in psychosocial functioning related to changes in depressive symptoms?
7. Does acute treatment yield "normal" levels of psychosocial functioning comparable to a nondepressed community sample?

SUBJECTS AND METHOD

This study was a multicenter, randomized clinical trial comparing sertraline and imipramine for patients with double depression or chronic major depression. The specific methods of this project are described in the preceding companion articles.[25,26] Here, we present psychosocial outcome data from the acute treatment phase.

Psychosocial Variables

Data from 4 scales that assess psychosocial functioning are presented here, including (1) the Longitudinal Interval Follow-Up Evaluation (LIFE), (2) the Social Adjustment Scale-Self Report (SAS-SR), (3) the Medical Outcome Study Short Form 36 item (SF-36), and (4) the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q). The SAS-SR, SF-36, and Q-LES-Q measures were administered at baseline, week 4, and endpoint. The LIFE was administered at baseline and endpoint.

The LIFE is an interviewer-administered assessment of symptoms and psychosocial functioning with demonstrated reliability and validity.[27] We report here on 6 items from the LIFE: (1) overall social adjustment (interviewer rated), (2) overall social adjustment (patient rated), (3) work impairment, (4) social relationships with spouse, (5) social relationships with friends, and (6) global satisfaction. Raters from all sites were trained to administer the LIFE by its developers prior to beginning the study.

The SAS-SR is a self-report version of the Social Adjustment Scale[28] and is composed of 8 subscales and a total adjustment score. For this study, we averaged the 3 work-related subscales to form one work composite scale.

The SF-36[29] is a self-report measure, designed to assess generic health status and functioning. In assessing

Table 1. Overall Psychosocial Adjustment*

Variable	Total Sample (N = 635)		Community Sample (N = 482†)		Therapeutic Categories Defined by Response at Endpoint: Nonresponse (N = 299)		Satisfactory Response (N = 122)		Remission (N = 202)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
SAS-SR total[a]										
Baseline[b]	2.60	0.49	1.59	0.4	2.63	0.51	2.67	0.46	2.51	0.48
Week 4[c]	2.31	0.49	1.59	0.4	2.49	0.46	2.33	0.48	2.11	0.45
Endpoint[d]	2.13	0.56	1.59	0.4	2.44	0.53	2.14	0.42	1.71	0.39
	%		%		%		%		%	
LIFE global (interviewer)[e]										
Baseline[f]										
Very good	0.3		NA		0.0		0.0		1.0	
Good	1.4		NA		0.7		2.5		2.0	
Fair	20.0		NA		20.1		13.1		23.8	
Poor	52.4		NA		51.8		56.6		51.0	
Very poor	25.9		NA		27.4		27.9		22.3	
Endpoint[g]										
Very good	11.6		NA		0.4		2.6		31.6	
Good	34.3		NA		10.2		50.4		56.1	
Fair	29.4		NA		38.6		39.3		11.7	
Poor	20.3		NA		41.3		6.8		0.5	
Very poor	4.4		NA		9.5		0.9		0.0	
LIFE global (patient)[h]										
Baseline										
Very good	0.2		NA		0.0		0.8		0.0	
Good	1.7		NA		1.3		3.3		1.5	
Fair	13.0		NA		11.4		11.5		15.8	
Poor	47.7		NA		49.2		41.0		49.0	
Very poor	37.4		NA		38.1		43.4		33.7	
Endpoint[i]										
Very good	12.2		NA		0.4		6.0		31.3	
Good	29.6		NA		12.7		34.5		48.7	
Fair	27.4		NA		26.1		49.1		16.4	
Poor	23.5		NA		45.1		9.5		3.6	
Very poor	7.3		NA		15.8		0.9		0.0	

*Sample sizes vary due to sporadic missing data. Abbreviations: LIFE = Longitudinal Interval Follow-Up Evaluations, NA = not applicable, SAS-SR = Social Adjustment Scale-Self-Report.
†From Weissman et al.[31]
[a]For the *total sample*, there were significant ($p \leq .05$) differences in SAS-SR scores, wk 4 vs baseline, endpoint vs baseline, and endpoint vs wk 4.
[b]For the *therapeutic response categories* at baseline, there were significant ($p \leq .05$) differences in SAS-SR scores between remission vs nonresponse and remission vs satisfactory response.
[c]For the *therapeutic response categories* at wk 4, there were significant ($p \leq .05$) differences in SAS-SR scores between satifactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.
[d]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in SAS-SR scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.
[e]For the *total sample*, there were significant ($p \leq .05$) differences in LIFE global (interviewer) scores, endpoint vs baseline.
[f]For the *therapeutic response categories* at baseline, there were significant ($p \leq .05$) differences in LIFE global (interviewer) scores between remission vs nonresponse and remission vs satisfactory response.
[g]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in LIFE global (interviewer) scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.
[h]For the *total sample*, there were significant ($p \leq .05$) differences in LIFE global (patient) scores, endpoint vs baseline.
[i]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in LIFE global (patient) scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.

psychosocial outcomes, we did not use the energy/fatigue or mental health scales since those items reflect depressive symptoms.

The Q-LES-Q[30] is a 16-item self-report scale assessing parameters of quality of life on 5-point scales (very poor to very good). A summary score represents overall quality of life.

Treatment Response Categories

As defined in the previous article,[27] patients' response to treatment at endpoint was categorized into 1 of 3 categories: remission, satisfactory therapeutic response, or nonresponse.

DATA ANALYSES

Dimensions of Psychosocial Functioning

The scales included in this study (SAS-SR, SF-36, LIFE, Q-LES-Q) yield a large number of subscales. Since there is conceptual overlap among many of these subscales, we grouped the variables into 5 categories in order to clarify presentation. These categories are

Table 2. Quality of Life*

Variable	Total Sample (N = 635)		Community Sample		Therapeutic Categories Defined by Response at Endpoint: Nonresponse (N = 299)		Satisfactory Response (N = 122)		Remission (N = 202)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Q-LES-Q[a]										
Baseline[b]	53.4	9.9	NA		52.3	10.0	52.0	9.9	55.8	9.5
Week 4[c]	61.7	12.0	NA		57.1	10.7	60.3	11.9	67.5	11.0
Endpoint[d]	67.0	15.1	NA		57.4	11.9	67.8	11.1	79.4	11.4
	%		%		%		%		%	
LIFE satisfaction[e]										
Baseline[f]										
Very good	0.3		NA		0.0		0.8		0.5	
Good	1.6		NA		1.4		0.8		2.5	
Fair	32.9		NA		29.6		29.8		38.6	
Poor	48.4		NA		49.2		52.9		45.5	
Very poor	16.8		NA		19.9		15.7		12.9	
Endpoint[g]										
Very good	12.5		NA		0.8		9.4		29.6	
Good	34.7		NA		10.6		45.3		59.7	
Fair	33.5		NA		48.8		39.3		10.2	
Poor	15.3		NA		31.9		4.3		0.5	
Very poor	4.1		NA		7.9		1.7		0.0	

*Sample sizes vary due to sporadic missing data. Abbreviation: Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire.
[a]For the *total sample*, there were significant ($p \leq .05$) differences in Q-LES-Q scores, wk 4 vs baseline, endpoint vs baseline, and endpoint vs wk 4.
[b]For the *therapeutic response categories* at baseline, there were significant ($p \leq .05$) differences in Q-LES-Q scores between remission vs nonresponse and remission vs satisfactory response.
[c]For the *therapeutic response categories* at wk 4, there were significant ($p \leq .05$) differences in Q-LES-Q scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.
[d]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in Q-LES-Q scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.
[e]For the *total sample*, there were significant ($p \leq .05$) differences in LIFE satisfaction scores, endpoint vs baseline.
[f]For the *therapeutic response categories* at baseline, there were significant ($p \leq .05$) differences in LIFE satisfaction scores between remission vs nonresponse and remission vs satisfactory response.
[g]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in LIFE satisfaction scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.

(1) overall psychosocial adjustment, (2) quality of life, (3) work functioning, (4) interpersonal functioning, and (5) physical health.

General Population Samples

To provide a normative reference for the level of psychosocial function of our sample, we compared the functioning (SAS-SR, SF-36) of this sample of chronically depressed patients with other, previously reported community samples of the general population (SAS-SR,[31] SF-36[32]). While these between study comparisons are necessarily limited by differences in time, location, demographics, methods of administration, and so on, they do provide a normative reference for psychosocial impairment. The Weissman et al.[31] and McHorney et al.[32] samples approximated the demographic characteristics from the current chronically depressed sample, although our sample tended to be somewhat younger (41.1 years) than the Weissman et al. (no mean reported; age distribution reported approximates a mean of 49 years) and the McHorney et al. (mean age = 43.7 years) sample, and our sample has a higher proportion of females (63%) than the Weissman et al. (58%) and the McHorney et al. (56%) samples.

Data Analytic Procedures

Comparisons between the study sample and the community samples[31,32] were conducted using t tests. Chronic major depression and double depression patients were compared at baseline for continuous measures using analysis of variance (ANOVA), adjusting for treatment group and study site. Ordinal LIFE measures and employment status were assessed for depression type differences at baseline using Cochran-Mantel-Haenszel chi-square tests stratified over the treatment group and the study site. Treatment groups and treatment response categories were compared at baseline using similar techniques, adjusting for depression type and study site. Analysis of treatment response categories was also adjusted for treatment group. Changes in psychosocial functioning from baseline to week 4 or endpoint and from week 4 to endpoint were evaluated using 1-sample t tests for all continuous and ordinal measures and the McNemar test for employment status.

Treatment groups were compared for changes in psychosocial functioning from baseline with analysis of covariance (ANCOVA) for all continuous and ordinal variables, adjusting for depression type, study site, and

Table 3. Work Functioning*

Variable	Total Sample (N = 635)	Community Sample (N = 482†) (N = 334‡)	Therapeutic Categories Defined by Response at Endpoint: Nonresponse (N = 299)	Satisfactory Response (N = 122)	Remission (N = 202)
	%	%	%	%	%
% Employed					
Baseline[a]	70.8		73.2	61.5	73.8
Endpoint[b]	73.7		70.3	70.1	80.6
LIFE work functioning[c]					
Baseline					
High	9.3	NA	7.3	11.3	10.9
Satisfactory	15.0	NA	16.7	15.0	13.3
Mild impairment	33.7	NA	34.2	25.0	37.0
Moderate impairment	27.8	NA	26.5	33.8	26.7
Severe impairment	14.2	NA	15.4	15.0	12.1
Endpoint[d]					
High	38.0	NA	19.1	41.7	58.2
Satisfactory	30.8	NA	23.9	41.7	32.9
Mild impairment	22.1	NA	36.4	15.5	8.9
Moderate impairment	7.0	NA	15.8	1.2	0.0
Severe impairment	2.1	NA	4.9	0.0	0.0

	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Hours worked per wk[e]										
Baseline[f]	27.4	20.9			27.2	20.3	23.4	22.8	30.5	20.5
Endpoint[g]	37.2	16.6			35.5	16.8	39.4	18.4	38.0	15.1
SAS work composite[h]										
Baseline	2.39	0.69	1.40	0.46	2.41	0.67	2.46	0.79	2.34	0.66
Week 4[i]	2.06	0.65	1.40	0.46	2.22	0.70	2.06	0.63	1.90	0.56
Endpoint[j]	1.86	0.66	1.40	0.46	2.21	0.66	1.82	0.55	1.45	0.42§
SF-36 role limitation-emotional[k]										
Baseline	20.1	29.5	80.8	31.9	17.9	27.7	20.4	27.0	22.9	32.4
Week 4[l]	34.4	36.8	80.8	31.9	24.7	33.8	38.8	36.7	42.5	37.8
Endpoint[m]	53.4	41.9	80.8	31.9	30.3	37.1	56.7	36.7	82.3	30.9§

*Sample sizes vary due to sporadic missing data. Abbreviation: SF-36 = Medical Outcome Study Short Form 36 item.

†From Weissman et al.[31] (SAS).

‡From McHorney et al.[32] (SF-36).

§Indicates SAS and SF-36 scores did not differ significantly from community sample.

[a]For the *therapeutic response categories* at baseline, there were significant ($p \leq .05$) differences in the number of subjects employed between satisfactory response vs nonresponse and remission vs satisfactory response.

[b]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in the number of subjects employed between satisfactory response vs nonresponse and remission vs nonresponse.

[c]For the *total sample*, there was a significant ($p \leq .05$) difference in LIFE work functioning scores, endpoint vs baseline.

[d]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in LIFE work functioning scores between satisfactory response vs nonresponse and remission vs nonresponse.

[e]For the *total sample*, there was a significant ($p \leq .05$) difference in the number of hours worked per week, endpoint vs baseline.

[f]For the *therapeutic response categories* at baseline, there was a significant ($p \leq .05$) difference in the number of hours worked per week, satisfactory response vs remission.

[g]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in the number of hours worked per week between satisfactory response vs nonresponse and remission vs satisfactory response.

[h]For the *total sample*, there were significant ($p \leq .05$) differences in SAS work composite scores, wk 4 vs baseline, endpoint vs baseline, and endpoint vs wk 4.

[i]For the *therapeutic response categories* at wk 4, there were significant ($p \leq .05$) differences in SAS work composite scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.

[j]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in SAS work composite scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.

[k]For the *total sample*, there were significant ($p \leq .05$) differences in SF-36 role limitation (emotional) scores, wk 4 vs baseline, endpoint vs baseline, and endpoint vs wk 4.

[l]For the *therapeutic response categories* at wk 4, there were significant ($p \leq .05$) differences in the SF-36 role limitation (emotional) scores between satisfactory response vs nonresponse and remission vs nonresponse.

[m]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in the SF-36 role limitation (emotional) scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.

Table 4. Interpersonal Functioning: LIFE*

Variable	Total Sample (N = 635),%	Community Sample,%	Therapeutic Categories Defined by Response at Endpoint: Nonresponse (N = 299),%	Satisfactory Response (N = 122),%	Remission (N = 202),%
LIFE interpersonal-friends[a]					
Baseline					
Very good	15.6	NA	16.3	10.3	18.0
Good	21.8	NA	22.0	20.5	22.0
Fair	34.8	NA	31.6	36.8	38.0
Poor	16.9	NA	17.0	23.9	13.5
Very poor	10.8	NA	13.1	8.6	8.5
Endpoint[b]					
Very good	25.0	NA	13.2	30.4	37.2
Good	32.3	NA	26.7	30.4	40.8
Fair	26.5	NA	33.9	25.2	17.4
Poor	11.0	NA	17.5	9.6	3.6
Very poor	5.2	NA	8.8	4.4	1.0
LIFE interpersonal-spouse[c]					
Baseline[d]					
Very good	11.8	NA	8.8	8.8	15.9
Good	20.2	NA	17.5	17.7	24.8
Fair	30.6	NA	30.7	29.4	31.0
Poor	23.9	NA	29.0	27.9	16.8
Very poor	13.5	NA	14.0	16.2	11.5
Endpoint[e]					
Very good	34.9	NA	14.1	34.5	52.3
Good	28.0	NA	25.0	27.6	30.6
Fair	21.8	NA	32.6	19.0	14.4
Poor	10.0	NA	19.6	12.1	0.9
Very poor	5.4	NA	8.7	6.9	1.8

*Sample sizes vary due to sporadic missing data.
[a]For the *total sample*, there were significant ($p \leq .05$) differences in LIFE interpersonal (friends) scores, endpoint vs baseline.
[b]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in LIFE interpersonal (friends) scores between satisfactory response vs nonresponse and remission vs nonresponse.
[c]For the *total sample*, there were significant ($p \leq .05$) differences in LIFE interpersonal (spouse) scores, endpoint vs baseline.
[d]For the *therapeutic response categories* at baseline, there were significant ($p \leq .05$) differences in LIFE interpersonal (spouse) scores between satisfactory response vs remission and remission vs nonresponse.
[e]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in LIFE interpersonal (spouse) scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.

baseline value. Changes in employment status (gained employment, lost employment) were compared with a Mantel-Haenszel chi-square test stratified over study site. No adjustment was made for depression type because of the small sample size. Treatment response categories were compared using similar techniques, adjusting for the same parameters plus treatment group. Paired treatment response category comparisons were conducted only if the overall test for response categories was significant.

RESULTS

Psychosocial Functioning at Baseline

Overall functioning. Patients with chronic depression manifested clinically significant impairments in overall social adjustment. On the LIFE, over 75% of chronically depressed patients were rated as having poor or very poor overall social functioning at baseline. This high level of impairment was supported by the SAS-SR total score (Table 1), which was more than 2 standard deviations higher than the community sample.[31]

Quality of life. Ratings on the Q-LES-Q averaged in the poor to fair range. Similarly, patients' life satisfaction on the LIFE was rated as poor or very poor in 65% of the patients (Table 2).

Work functioning. Patients had notable impairments in work functioning. On the SAS-SR, 21% of the patients reported current unemployment. Only 58% reported being employed full time. An additional 37% reported being employed below their educational level. On the LIFE, over 75% of the sample who were employed outside the home were rated as having impaired work functioning (Table 3). Similarly, the SF-36 role limitation due to mental health was more than 2 standard deviations lower than the score of the community sample (Table 3).

Interpersonal functioning. Similar results were found for baseline interpersonal functioning. Among married patients, 37% were rated as having poor or very poor marital functioning on the LIFE (Table 4). On the SAS-SR and SF-36, the scores on all of the interpersonal subscales were all significantly ($p \leq .05$) elevated relative to normative data (Table 5). As in other areas, impairments in interpersonal functioning were severe, averaging more than 2 standard deviations higher than the scores of the community comparisons.

Table 5. Interpersonal Functioning: SAS and SF*

	Total Sample (N = 635)		Community Sample (N = 482†) (N = 334‡)		Therapeutic Categories Defined by Response at Endpoint: Nonresponse (N = 299)		Satisfactory Response (N = 122)		Remission (N = 202)	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
SAS social[a]										
Baseline	3.01	0.70	1.83	0.52	3.07	0.71	3.02	0.64	2.93	0.72
Week 4[b]	2.72	0.69	1.83	0.52	2.95	0.66	2.68	0.69	2.49	0.64
Endpoint[c]	2.48	0.75	1.83	0.52	2.85	0.70	2.49	0.69	1.99	0.55
SAS extended family[d]										
Baseline	2.16	0.51	1.34	0.33	2.16	0.53	2.21	0.49	2.13	0.51
Week 4[e]	1.91	0.50	1.34	0.33	2.01	0.48	1.93	0.48	1.80	0.50
Endpoint[f]	1.79	0.53	1.34	0.33	2.01	0.56	1.83	0.43	1.49	0.38
SAS marital[g]										
Baseline[h]	2.69	0.71	1.75	0.48	2.77	0.65	2.90	0.68	2.51	0.75
Week 4[i]	2.41	0.73	1.75	0.48	2.74	0.64	2.54	0.70	2.09	0.68
Endpoint[j]	2.24	0.75	1.75	0.48	2.61	0.65	2.42	0.72	1.81	0.63§
SAS parental[k]										
Baseline	2.26	0.70	1.40	0.42	2.24	0.69	2.41	0.73	2.19	0.69
Week 4[l]	1.90	0.58	1.40	0.42	1.98	0.54	2.13	0.63	1.71	0.53
Endpoint[m]	1.74	0.60	1.40	0.42	1.96	0.64	1.86	0.56	1.45	0.43§
SAS family unit[n]										
Baseline	2.56	0.86	1.46	0.58	2.58	0.87	2.66	0.92	2.49	0.80
Week 4	2.20	0.77	1.46	0.58	2.31	0.80	2.26	0.76	2.05	0.74
Endpoint[o]	1.98	0.77	1.46	0.58	2.28	0.82	2.05	0.67	1.60	0.57
SF-36 social functioning[p]										
Baseline[q]	49.8	26.1	82.7	22.5	47.6	26.5	46.5	25.5	55.4	25.2
Week 4[r]	61.0	25.7	82.7	22.5	52.4	25.4	62.7	26.1	69.4	22.8
Endpoint[s]	71.8	27.5	82.7	22.5	55.4	26.7	77.2	22.8	90.6	14.9

*Sample sizes vary due to sporadic missing data.

†From Weissman et al.[31] (SAS).

‡From McHorney et al.[32] (SF-36).

§Indicates SAS and SF-36 scores did not differ significantly from community sample.

[a] For the *total sample*, there were significant ($p \leq .05$) differences in SAS social scores, wk 4 vs baseline, endpoint vs baseline, and endpoint vs wk 4.

[b] For the *therapeutic response categories* at wk 4, there were significant ($p \leq .05$) differences in SAS social scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.

[c] For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in SAS social scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.

[d] For the *total sample*, there were significant ($p \leq .05$) differences in SAS extended family scores, wk 4 vs baseline, endpoint vs baseline, and endpoint vs wk 4.

[e] For the *therapeutic response categories* at wk 4, there were significant ($p \leq .05$) differences in SAS extended family scores between remission vs nonresponse.

[f] For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in SAS extended family scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.

[g] For the *total sample*, there were significant ($p \leq .05$) differences in SAS marital scores, wk 4 vs baseline, endpoint vs baseline, and endpoint vs wk 4.

[h] For the *therapeutic response categories* at baseline, there were significant ($p \leq .05$) differences in SAS marital scores between remission vs nonresponse and remission vs satisfactory response.

[i] For the *therapeutic response categories* at wk 4, there were significant ($p \leq .05$) differences in SAS marital scores between remission vs nonresponse and remission vs satisfactory response.

[j] For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in SAS marital scores between remission vs nonresponse and remission vs satisfactory response.

[k] For the *total sample*, there were significant ($p \leq .05$) differences in SAS parental scores, wk 4 vs baseline, endpoint vs baseline, and endpoint vs wk 4.

[l] For the *therapeutic response categories* at wk 4, there were significant ($p \leq .05$) differences in SAS parental scores between remission vs satisfactory response.

[m] For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in SAS parental scores between remission vs nonresponse and remission vs satisfactory response.

[n] For the *total sample*, there were significant ($p \leq .05$) differences in SAS family unit scores, wk 4 vs baseline, endpoint vs baseline, and endpoint vs wk 4.

[o] For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in SAS family unit scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.

[p] For the *total sample*, there were significant ($p \leq .05$) differences in SF-36 social functioning scores, wk 4 vs baseline, endpoint vs baseline, and endpoint vs wk 4.

[q] For the *therapeutic response categories* at baseline, there were significant ($p \leq .05$) differences in SF-36 social functioning scores between remission vs nonresponse and remission vs satisfactory response.

[r] For the *therapeutic response categories* at wk 4, there were significant ($p \leq .05$) differences in SF-36 social functioning scores between satisfactory response vs nonresponse and remission vs nonresponse.

[s] For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in SF-36 social functioning scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.

Table 6. Physical Health*

	Total Sample (N = 635)		Community Sample (N = 334†)		Therapeutic Categories Defined by Response at Endpoint: Nonresponse (N = 299)		Satisfactory Response (N = 122)		Remission (N = 202)	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
SF-36 physical functioning[a]										
Baseline	79.9	22.8	88.7	17.5	79.4	23.4	78.5	24.4	82.3	20.0
Week 4[b]	82.2	20.0	88.7	17.5	78.7	22.4	82.1	19.9	86.3	16.5§
Endpoint[c]	83.2	20.5	88.7	17.5	78.9	22.4	81.5	21.5	89.9	14.7§
SF-36 role limitation-physical[d]										
Baseline	63.7	40.3	84.2	31.3	63.1	39.5	63.1	40.9	65.5	40.9
Week 4[e]	65.5	39.2	84.2	31.3	59.6	40.6	65.1	39.1	72.1	36.6
Endpoint[f]	69.3	38.1	84.2	31.3	54.5	39.8	69.9	37.5	88.8	25.1§
SF-36 pain[g]										
Baseline	63.3	23.3	74.5	22.0	63.0	24.1	60.8	23.5	65.4	21.7
Week 4	67.5	21.5	74.5	22.0	65.2	22.0	66.1	21.4	70.8	20.8
Endpoint[h]	70.8	22.2	74.5	22.0	64.2	23.8	70.3	20.6§	79.9	17.1
SF-36 general health[i]										
Baseline	63.3	21.0	74.7	18.4	62.7	21.4	63.7	21.0	63.8	20.3
Week 4[j]	67.4	20.3	74.7	18.4	64.0	20.9	67.7	20.2	70.9	19.2
Endpoint[k]	70.7	21.4	74.7	18.4	63.1	23.2	71.9	19.3§	80.1	15.6

*Sample sizes vary due to sporadic missing data.
†From McHorney et al.[32]
§Indicates SAS and SF-36 scores did not differ significantly from community sample.
[a]For the *total sample*, there were significant ($p \leq .05$) differences in SF-36 physical functioning scores, wk 4 vs baseline and endpoint vs baseline.
[b]For the *therapeutic response categories* at wk 4, there were significant ($p \leq .05$) differences in SF-36 physical functioning scores between satisfactory response vs nonresponse and remission vs nonresponse.
[c]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in SF-36 physical functioning scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.
[d]For the *total sample*, there were significant ($p \leq .05$) differences in SF-36 role limitation (physical) scores, endpoint vs baseline and endpoint vs wk 4.
[e]For the *therapeutic response categories* at wk 4, there were significant ($p \leq .05$) differences in SF-36 role limitation (physical) scores between remission vs nonresponse and remission vs satisfactory response.
[f]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in SF-36 role limitation (physical) scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.
[g]For the *total sample*, there were significant ($p \leq .05$) differences in SF-36 pain scores, wk 4 vs baseline, endpoint vs baseline, and endpoint vs wk 4.
[h]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in SF-36 pain scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.
[i]For the *total sample*, there were significant ($p \leq .05$) differences in SF-36 general health scores, wk 4 vs baseline, endpoint vs baseline, and endpoint vs wk 4.
[j]For the *therapeutic response categories* at wk 4, there were significant ($p \leq .05$) differences in SF-36 general health scores between remission vs nonresponse and remission vs satisfactory response.
[k]For the *therapeutic response categories* at endpoint, there were significant ($p \leq .05$) differences in SF-36 general health scores between satisfactory response vs nonresponse, remission vs nonresponse, and remission vs satisfactory response.

Physical health. Although the study criteria excluded patients with severe general medical illnesses, our sample did report significant ($p \leq .05$) but relatively modest impairments in physical health, with differences ranging 0.4 to 0.7 standard deviations.

Differences Between Double Depression and Chronic Major Depression Patients

Comparisons between patients with chronic major depression and those with double depression yielded few significant results. The only notable difference concerned current employment. Significantly fewer patients with chronic major depression had been gainfully employed full time for the past year (52%) than patients with double depression (62%). Patients with chronic major depression also worked significantly fewer hours per week than patients with double depression (24.4 vs. 29.9 hours per week).

Changes in Psychosocial Functioning After Acute Treatment

In general, chronically depressed patients manifested significant ($p \leq .05$) improvements in their psychosocial functioning after acute treatment.

Changes in overall functioning. The proportion of subjects having poor or very poor overall adjustment scores on the LIFE decreased from over 78% at baseline to approximately 25% at endpoint (see Table 1). The SAS-SR total score paralleled these findings, with significant differences between baseline and endpoint.

Changes in quality of life. Similar results were found in overall quality of life scores. The proportion of

Table 7. Psychosocial Functioning of Patients Treated With Sertraline or Imipramine, Selected Measures*

Variable	Sertraline (N = 426)		Imipramine (N = 209)	
	%		%	
% Employed				
Baseline	71.1		70.2	
Endpoint	74.4		72.3	
LIFE work functioning				
Baseline				
High or satisfactory	26.7		19.5	
Endpoint				
High or satisfactory	71.3		63.6	
LIFE global (interviewer)				
Baseline[a]				
Very good or good	1.4		2.4	
Endpoint				
Very good or good	47.1		43.6	
	Mean	SD	Mean	SD
Hours worked per wk				
Baseline	26.8	20.9	28.8	21.1
Endpoint	36.8	15.8	38.2	18.1
SAS-SR total				
Baseline	2.61	0.49	2.58	0.49
Endpoint	2.12	0.56	2.15	0.57
SAS work composite				
Baseline	2.39	0.70	2.40	0.66
Endpoint	1.84	0.65	1.89	0.68
SAS social				
Baseline	3.04	0.71	2.94	0.67
Endpoint[b]	2.46	0.74	2.52	0.77
SF-36 physical functioning				
Baseline	80.0	22.9	79.9	22.6
Endpoint[c]	84.4	19.8	80.7	21.8
SF-36 role limitation-physical				
Baseline	62.1	40.1	66.8	40.5
Endpoint	69.6	37.3	68.7	39.7

*Sample sizes vary due to sporadic missing data.
[a]At baseline, there was a significant ($p \leq .05$) difference in the number of "very good or good" LIFE global (interviewer) responses, sertraline treatment group vs imipramine treatment group.
[b]At endpoint, there was a significant ($p \leq .05$) difference in SAS social scores, sertraline treatment group vs imipramine treatment group.
[c]At endpoint, there was a significant ($p \leq .05$) difference in SF-36 physical functioning scores, sertraline treatment group vs imipramine treatment group.

patients reporting their life satisfaction on the LIFE measurement as poor or very poor improved from 65% at baseline to 19% at end of treatment. The Q-LES-Q also showed significant improvement in this area (see Table 2).

Changes in work functioning. Although the acute phase of this study was only 12 weeks long, significant ($p < .05$) improvements occurred in work functioning during this time. The mean weekly number of working hours increased significantly (see Table 3). On the LIFE, the proportion of patients rated as impaired decreased from 76% to 31%. Significant ($p \leq .05$) improvements were also observed on the SAS-SR work composite subscale and SF-36 role limitation due to mental health scale (see Table 3).

Changes in interpersonal functioning. Significant ($p \leq .05$) improvements from baseline to endpoint scores were found on all scales assessing interpersonal functioning. On the LIFE, the percentage of patients with poor or very poor functioning with their spouse decreased from 37% to 15%. The percentage of patients with poor interpersonal functioning with friends decreased from 28% to 16% (see Table 4).

Changes in physical health. Although this sample did not provide evidence regarding substantial baseline impairments in physical health, treatment did produce significant ($p \leq .05$) improvements in the SF-36 scales assessing physical functioning (Table 6).

Differences Between Patients Treated With Sertraline and Imipramine

We found few differences in psychosocial response between patients receiving sertraline and those receiving imipramine. Although a complete presentation of separate sertraline and imipramine data is precluded by space concerns, representative data are presented in Table 7. The only significant ($p \leq .05$) differences between the 2 treatments were on the SF-36 physical functioning scale and the SAS-SR social functioning scale. On the SF-36 physical functioning scale, patients treated with sertraline reported significant ($p \leq .05$) improvement from baseline to end of treatment (mean ± SD = 3.7 ± 15.9), while patients receiving imipramine did not (mean ± SD = 1.6 ± 16.6). On the SAS-SR social functioning scale, patients receiving sertraline reported significantly greater ($p \leq .05$) improvement from baseline to endpoint than patients receiving imipramine did. Changes from baseline to endpoint were significant within each treatment group for all other psychosocial measures.

When Does Improvement in Psychosocial Functioning Occur?

Since the SAS-SR, Q-LES-Q, and the SF-36 scales were administered at week 4 as well as at baseline and endpoint, we conducted analyses to determine whether psychosocial functioning changed early in treatment. These analyses indicate that significant ($p \leq .05$) improvement on most measures occurred by the end of the first month of treatment. The percentage of total (baseline to endpoint) change in psychosocial functioning that occurred by week 4 ranged from 40% to 80% depending on the measure (see Tables 1–6). Substantial change did occur early in treatment, and psychosocial functioning continued to improve significantly ($p \leq .05$) between week 4 to endpoint (see Tables 1–6).

Are Improvements in Psychosocial Functioning Related to Changes in Depressive Symptoms?

To assess the relationship between change in depressive symptoms and change in psychosocial functioning,

we compared the psychosocial functioning of patients with 3 different degrees of response to treatment (remission, satisfactory therapeutic response, and nonresponse). Overall, these analyses indicated highly significant ($p \leq .05$) differences in psychosocial functioning between patients with different degrees of treatment response. Not surprisingly, these differences were especially pronounced at endpoint.

Patients who achieved remission at treatment endpoint reported better psychosocial functioning at baseline than patients who responded less well. More specifically, when compared with patients in the satisfactory therapeutic response and nonresponse groups, patients who met criteria for remission were found at baseline to have significantly ($p \leq .05$) better overall adjustment (LIFE, SAS-SR), levels of satisfaction (Q-LES-Q, LIFE), marital functioning (SAS-SR), and levels of social functioning (SF-36, LIFE) (see Tables 1–6).

By week 4, the differences between the treatment response groups increased, with significant ($p \leq .05$) differences between the remission and nonresponse group found for every measure except SAS parental and family unit and SF-36 pain (see Tables 1–6). Remission patients also had significantly better ($p \leq .05$) functioning than satisfactory therapeutic response patients on most psychosocial measures. At week 4, the satisfactory therapeutic response patients manifested better functioning compared with nonresponse patients on several scales from the SAS-SR, SF-36, and Q-LES-Q (see Tables 1–6).

At endpoint, these differences persisted, with significant differences between the 3 therapeutic response groups on almost every psychosocial measure. The remission patients had better functioning scores than those patients in the satisfactory response and nonresponse groups, while the satisfactory response patients had better functioning scores than the nonresponse patients.

Does Psychosocial Functioning Achieve "Normal" Levels at the End of Acute Treatment?

To determine whether psychosocial functioning reaches "normal" levels at endpoint, we compared the psychosocial functioning of the chronically depressed sample at endpoint with the normative data for the SAS-SR[31] and the SF-36.[32] Overall, at endpoint, this sample of treated chronically depressed patients continued to manifest impairment in psychosocial functioning relative to "normals" on all measures. It should be noted, however, that the magnitude of differences between chronically depressed patients and the general population decreased substantially with treatment. While at baseline, the chronically depressed patients were about 2 standard deviations below the general population, but following treatment, the patients' impairments ranged from 0.2 to 1.3 standard deviations below the community samples. On the LIFE, approximately 20% to 30% of the total sample continued to report poor or very poor functioning at endpoint in most areas of psychosocial functioning (overall, work, life satisfaction, interpersonal functioning).

While analyses of the total sample indicated impairments in psychosocial functioning after treatment, the more relevant question is the degree of improvement in functioning among patients who responded to treatment. To address this issue, we compared the psychosocial functioning of our 3 treatment response categories to norms for the SAS-SR and SF-36. While the patients who exhibited a satisfactory response or nonresponse showed continued impairment in psychosocial functioning on virtually every variable, patients who met criteria for remission had high levels of psychosocial adjustment and approached or matched the psychosocial adjustment of the "normal" groups (see Tables 1–6).

More specifically, after acute treatment, 88% of remitted patients were rated by the LIFE interviewer as having good or very good overall psychosocial adjustment. Eighty percent of remitted patients rated themselves as having good or very good adjustment, and 89% reported good or very good quality of life. While the remission group differed significantly from Weissman's sample on the SAS-SR total scale, the absolute difference was small (1.71 vs. 1.59; 0.3 standard deviations). In work functioning, the remitted chronically depressed patients were equivalent to the general community on both the SAS-SR work composite and the SF-36 role limitation due to emotional problems scales. Only 9% of these patients were rated as having any work impairment on the LIFE work item whereas 58% were rated as having high levels of work performance. In the interpersonal area, remitted patients were found to have achieved levels of functioning on the SF-36 social functioning and the SAS-SR marital and parental scales comparable to nondepressed community samples. Other SAS scales showed similar levels of improvement, but with small residual impairments on the SAS-SR social/leisure, extended family, and family unit scales. Most remitted patients were rated as having good or very good relationships with their spouses (83%) and friends (78%). Remitted patients reported equivalent or better physical health than the general population on the SF-36 scales.

Thus, the psychosocial adjustment of patients who experienced a full remission of symptoms virtually normalized by the end of the 12-week treatment trial.

DISCUSSION

This study provides the strongest evidence to date for both the severe and pervasive impairment in psychosocial functioning among chronically depressed patients and the degree of improvement in psychosocial functioning following successful antidepressant treatment.

Consistent with previous research,[13,18,21–24] untreated chronically depressed patients with either double depression or chronic major depression manifested generally severe and pervasive impairments in most areas of psychosocial functioning. During treatment with sertraline or imipramine, these problems in psychosocial functioning improved by the fourth week of treatment and continued to improve through 12 weeks of treatment. Despite these highly significant improvements in functioning during acute antidepressant treatment, the study sample, as a whole, did not reach normal levels of psychosocial functioning during acute treatment. However, patients who had a full symptomatic response during acute treatment did achieve levels of psychosocial functioning at endpoint that approached or equaled those of community samples in most areas. Those patients who responded but did not reach remission criteria reported improved psychosocial functioning but did not return to a normal level of functioning.

Sertraline and imipramine produced equivalent improvement in most areas. However, patients treated with sertraline reported significant improvements on the SF-36 physical functioning scale while patients treated with imipramine did not, and sertraline-treated patients reported greater change on the SAS social functioning scale than imipramine patients. These 2 areas were the only areas of difference.

Improvements in psychosocial functioning were evident by the end of the first month of acute treatment. Since previous studies assessed psychosocial functioning only at baseline and end of treatment, these findings are the first evidence that effective pharmacotherapy can produce change in psychosocial symptoms relatively rapidly. In fact, 40% to 80% of the total improvement in psychosocial functioning occurred in the first month of treatment.

The analyses of treatment response categories yielded several important and interesting findings. First, these results suggest that patients who have a full symptomatic response to treatment also manifest an almost full psychosocial response despite years of depressive symptomatology. At endpoint, the level of psychosocial functioning in remitted patients was quite good, with 88% of the patients being rated by an interviewer as having good or very good overall psychosocial adjustment and with scores on the SAS-SR and SF-36 that were equivalent (or very close) to those of general population samples.

A second interesting result from the analyses of treatment response groups is that patients who remitted by the end of treatment had significantly better psychosocial functioning prior to treatment than patients with lesser degrees of response. These results may suggest that depressed patients with less severe psychosocial impairments may be better candidates for pharmacologic monotherapy. One might speculate that a combination of pharmacotherapy and psychotherapy might have a preferential benefit for patients with more severe psychosocial impairments, but this hypothesis remains to be investigated.

The severe initial impairments in functioning coupled with the relatively large and rapid changes in psychosocial functioning that paralleled symptomatic improvement may raise questions concerning the degree to which reported psychosocial functioning was biased by the patient's mood state. Since this study did not obtain independent verification of psychosocial changes from nonpatient sources, this potential bias cannot be ruled out, although the use of the clinician-rated LIFE provided a more impartial and less biased assessment.

Finally, it should be noted that while blind to treatment condition (sertraline or imipramine), patients and interviewers were not blind to the fact that patients were receiving active medication nor were they blind to the time of assessment (baseline, week 4, endpoint). Therefore, possible biases due to treatment expectations cannot be ruled out. Subsequent studies investigating these issues may want to control for these effects by having interviewers blind to the time of assessment.

In conclusion, the results of this study provide convincing evidence that pharmacologic treatment can produce substantial, clinically meaningful, and relatively rapid changes in the psychosocial impairments of chronically depressed patients. These results are particularly impressive in light of the greater than 15-year mean lifetime duration of depression. As with treatment of depressive symptoms, however, a key question is how well these chronically depressed patients function over a longer time period. Does psychosocial functioning continue to improve as the patient's recovery consolidates during longer term treatment? Or do patients tend to relapse psychosocially after short-term improvements and return to less adaptive functioning? The continuation and maintenance phases of the current study will allow us to address these issues in subsequent reports.

Drug names: imipramine (Tofranil and others), sertraline (Zoloft).

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