HELPLESSNESS, DEPRESSION, AND MOOD IN END-STAGE RENAL DISEASE

by

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Depression and Mood in End-Stage Renal Disease

Ph.D. Psychology

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Abstract

End-stage renal disease (ESRD) and its treatment are generally considered to be highly stressful and the associated loss of control over important life dimensions is believed to induce widespread depression. This situation was employed as a "living stress laboratory" in which to test the reformulated learned helplessness theory of depression. Results indicated that reduced perceived control over a variety of life dimensions was importantly related to increased depression, although the attributional reformulation of helplessness theory was not supported. Moreover, reanalyses of these data from a social learning theory perspective indicated that perceived self-efficacy contributed uniquely to this negative correlation in addition to expectancies regarding response-outcome contingency (Rotter I-E scores). The hypothesis that the negative correlation between depression and perceived control might also be explained in terms of patients' psychological differentiation and the intrusiveness of ESRD was subsequently examined. Results revealed that perceived intrusiveness contributed uniquely to perceived control and to affect, indicating that perceived control and intrusiveness each contribute independently to mood. Surprisingly, a low prevalence of clinical depression was observed, contradicting the general consensus that helplessness and depression are unavoidable psychological sequelae to ESRD. These findings are equally applicable to several other chronic and life-threatened patient populations (e.g., cancer, cardiac, diabetic) and thus underline the need for a general theory of the emotional impact of illness.

Ph.D. Psychologie

SENTIMENT D'IMPUISSANCE, DEPRESSION ET HUMEUR DANS LA MALADIE RENALE EN PHASE TERMINALE

Gerald Michael Devins

Résumé

La maladie rénale en phase terminale (MRPT) et son traitement sont généralement considérés comme étant extrêmement stressants, et on croit que la perte de contrôle associée de plusieurs dimensions importantes du vécu induit une dépression généralisée. Cette situation fut utilisée en tant que "laboratoire de stress vécu" où évaluer la théorie reformulée de la dépression comme impuissance apprise. Les résultats indiquèrent que la réduction du contrôle perçu quant à une variété de dimensions du vécu avait une relation importante avec la dépression accrue, bien que la reformulation de la théorie de l'impuissance apprise en termes d'attribution ne fut pas supportée. En outre, de nouvelles analyses des données selon une perspective théorique d'apprentissage social indiquèrent une contribution exceptionnelle de la perception de l'efficacité personnelle à cette corrélation négative en plus des attentes concernant la contingence réponse-conséquence (Rotter, scores I-E). L'hypothèse selon laquelle la corrélation négative entre la dépression et le contrôle perçu puisse aussi être expliquée en termes de différenciation psychologique des patients et d'importunité de la MRPT fut ensuite examinée. Les résultats révélèrent une contribution exceptionnelle de l'importunité perçue au contrôle perçu et à l'affect, indiquant que le contrôle et l'importunité perçus contribuent chacun indépendamment à l'humeur. Etonnamment, une faible prédominance de dépression clinique fut observée, contredisant ainsi le consensus général selon lequel l'impuissance et la dépression sont des séquelles psychologiques inévitables de la MRPT. Ces conclusions sont également applicables à plusieurs

autres populations de patients chroniques dont la vie est en danger (ex: cancéreux(ses), cardiaques, diabétiques) et soulignent donc le besoin d'une théorie générale concernant l'impact émotionnel de la maladie.

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HELPLESSNESS, DEPRESSION, AND MOOD IN END-STAGE RENAL DISEASE

The primary function of the human kidney is to remove toxic metabolic waste products from the blood, a function which is essential to the maintenance of life. Irreversible renal failure may occur, however, due to a wide variety of diseases, genetically transmitted diatheses, or accidents. Estimates of its incidence have ranged between 35 and 85 new cases per million per year, afflicting males more than females in a proportion of approximately 3:2 (Friedman, 1979). Irreversible renal failure can develop in any age group and its course may vary widely across individual patients, although each patient typically follows a continuous and consistent course (Friedman, 1979). End-stage renal disease (ESRD), which has been operationally defined as that point at which one has irreversibly lost 75% or more renal function (Rosenbaum, 1979), may occur within as short a period as 12 months or as long as 10 or more years after the initial onset of renal failure. A number of patients reach this end stage without prior knowledge of their condition, however, while many more never progress to the point of ESRD (Friedman, 1979).

The primary outcome of chronic renal failure is the uremic syndrome, a constellation of neurological (e.g., ataxia, aphasia, paraplegia), cardiovascular (e.g., hypertension, arrhythmia, pericarditis), hematological (e.g., anemia, purpura, bleeding), gastrointestinal (e.g., nausea, diarrhea, anorexia), dermatological (e.g., excoriation. calcification, pallor), ocular (e.g., conjunctival vessels, sclera, band keratopathy), and psychological symptoms (e.g., impaired attention, memory deficits, psychosis). In its extreme expression as uremic coma, the patient behaves as if poisoned, experiencing hypothermia, intermittent seizures, a bleeding diathesis, cardiac

arrhythmias, vomiting, and rapid, shallow, respirations. If left untreated, the ultimate outcome is death (Friedman, 1978). Fortunately, however, ESRD has been treatable since the introduction of maintenance hemodialysis and renal transplantation in the early 1960's and so the uremic syndrome can now be prevented from progressing to this fatal extreme.

Hemodialysis is presently the most widely used treatment for ESRD and it is estimated that 80,000 patients are currently receiving this form of treatment throughout the world (Manis & Friedman, 1979). In hemodialysis, the patient's blood is cleansed extracorporeally by circulation through an artificial kidney. Treatments typically last from 4 to 8 hours and usually occur three times weekly. Unfortunately, hemodialysis cannot replace the kidney's endocrine functions and so these must be supplemented via medications. In addition, the intermittent schedule of the treatment--as compared to the continuous functioning of the normal, healthy, kidney--requires that patients adhere to a series of stringent dietary and fluid-intake restrictions. Hemodialysis may be performed in a hospital or satellite center (hospital dialysis) or in the patient's own home (home dialysis). In the former the patient may be required to accept primary responsibility for administering and monitoring the progress of treatment (self-hospital) as is the case in home dialysis or he may remain relatively passive, leaving these responsibilities to medical personnel (staff-hospital). However, no uniform consensus has been reached regarding a number of important issues such as the limits of "reasonable" compliance with the regimen or the optimum degree of patient participation, among others, and so these parameters vary across treatment centers (Czaczkes & Kaplan De-Nour, 1978; Delano, 1978; Manis, 1978; Manis & Friedman, 1979; Roman & Frankel, 1977; Rosenbaum & Wicks, 1979).

As might be expected, treatment by hemodialysis is relatively expensive. Home dialysis is the most economical form, costing between $8,000 and $11,000 per patient-year; staff-hospital dialysis, on the other hand, may exceed $25,000 per patient-year; and self-hospital may range from $14,000 to $22,000 (Manis & Friedman, 1979). Fortunately for patients, these costs are covered by government health programs in Canada and the United States.

Continuous ambulatory peritoneal dialysis (CAPD) is a much more recent treatment, emerging in the mid-1970's. In CAPD the blood is cleansed continuously and within the patient's own body as he performs his regular schedule of of daily activities. The peritoneum, the membrane which lines the abdominopelvic walls, is employed as an artificial kidney by gently bathing it with a dialysate solution. Typically, four daily exchanges are performed. In each exchange, dialysate is deposited into the abdominal cavity, left to bathe the peritoneum, and then drained. Each exchange requires 30-60 minutes. As in the case of hemodialysis, CAPD does not replace the kidney's endocrine functions and so its associated regimen must include a series of medications. The regimen also entails a series of dietary retrictions; however, these are usually less severe than those accompanying hemodialysis and do not include fluid-intake limitations. CAPD patients periodically return to the hospital (e.g., monthly) to clean and change dressings, access tubes, etc. (Nolph, Miller, Rubin & Popovich, 1980; Nolph, Popovich, & Moncrief, 1978; Oreopoulos, 1979; Popovich, Moncrief, Nolph, Ghods, Twardowski, & Pyle, 1978). The risks of infection, at the access site, and particularly the risk of peritonitis are much greater in CAPD as compared with maintenance hemodialysis. However, the advantages of CAPD over the latter include reduced risk of accidental death (since the patient's blood need not be removed from his body), lower cardiovascular stress, more

efficient dialysis (due to its continuous schedule), and lower costs ($8,000-$10,000 per patient-year). Such considerations would appear to be responsible for the rapidly expanding application of CAPD to increasing numbers of ESRD patients (Burton & Hirschman, 1979; Nolph et al., 1980; Oreopoulos, 1979).

Finally, renal transplantation involves the surgical implantation of an immunologically matched human kidney. It has been estimated that more than 25,000 transplants have been performed to date throughout the world (Rosenbaum & Wicks, 1979). If successful, transplantation is generally considered to be the closest approximation to an ideal therapy since both excretory and endocrine renal functions are replaced. The subsequent treatment regimen typically entails daily administration of immunosuppressive medication in tablet form. With the exception of moderate salt restrictions, there are no dietary or fluid-intake limitations. Patients rarely return to hospital except, perhaps, on an annual basis at which time they receive a thorough medical assessment. Successful transplantation is also the most economical therapy for ESRD and total costs rarely exceed $35,000 (Rosenbaum & Wicks, 1979). However, many individuals are ineligible for transplantation due to considerations of age, histocompatibility, or nonrenal pathology (Guttmann, 1979; Rosenbaum & Wicks, 1979). Kountz (1978) has estimated that only 30% of all newly diagnosed ESRD patients ultimately become transplant recipients. Even those individuals who do receive a successful transplant may lose their new kidney through a rejection episode. While it appears that approximately 75%-90% of all transplanted kidneys survive the first year posttransplant (Rosenbaum & Wicks, 1979), the international cumulative 5-year survival rate has been reported to be 78.2% for sibling transplants, 74.5% for parent-to-offspring transplants, and only 51% for

cadaver grafts (Advisory Committee to the Renal Transplant Registry, 1977). In Canada and the United States more than 50% of transplanted patients return to dialysis within 2 or 3 years posttransplant because of the high percentage of cadaver transplants (Burton & Hirschman, 1979). Thus, neither dialysis nor transplantation is considered to be a cure for ESRD. Rather, these two treatment modalities are viewed as compatible alternatives which, in many cases, both will be employed in one's medical management as an ESRD patient (Guttmann, 1979; Guttmann & Binik, in press; Kountz, 1978; Rosenbaum & Wicks, 1979).

Given this brief introduction, one might be tempted to ask "Why should a psychologist be interested in studying ESRD? After all, it would seem as if all that is involved is the artificial supplementation of a biologically deficient function." But, in fact, upon closer examination a number of particularly fascinating psychological issues become apparent. The situation faced by ESRD patients on dialysis and transplantation, for example, is characterized by a number of significant stresses and, collectively, these might be construed as producing a "living stress laboratory" within which a wide range of research issues--both theoretical and applied--may be explored. For example, despite the feelings of improved physical and psychological well-being which result from reversal of the symptoms of progressive uremia, life on long-term (maintenance) dialysis is generally considered to be very stressful. Among the stressors most commonly identified are the constant threat of death, dependency on medical machinery and personnel, economic burdens, reduced freedom of movement, the large amount of time required for treatment, and the stringent dietary and fluid-intake restrictions (Abram, 1974; Calland, 1972; Crammond, 1970, Czaczkes & Kaplan

De-Nour, 1978; Farmer, Bewick, Parsons, & Snowden, 1979; Ford & Castelnuovo-Tedesco, 1977; Goldstein, 1976; Goldstein & Reznikoff, 1971; Hampers, Schupak, Lowrie, & Lazarus, 1973; Kaplan De-Nour, 1976; Levy, Abram, Kemph, McKegney, & Scribner, 1974; Reichsman & McKegney, 1978; Shea, Bogdan, Freeman, & Schreiner, 1965; Short & Alexander, 1969; Short & Wilson, 1969; Teschan, 1970; Wright, Sand, & Livingston, 1966; Ziarnik, Freeman, Sherrard, & Calsyn, 1977). Many of these stresses also accompany life on CAPD and posttransplant, each of which has its own unique threats in addition. In the case of CAPD, for example, patients must guard against high risks of infection at the access site and peritonitis (Oreopoulos, 1979). Posttransplant patients must learn to live with the possibility that their new kidneys may fail at any time and for no apparent reason (Guttmann, 1979). Hence, as the quality of biomedical care has improved, psychological factors have become increasingly more important in determining the extent to which a patient will cope successfully with treatment (Abram, Moore, & Westervelt, 1971; Czaczkes & Kaplan De-Nour, 1978; Lipowski, 1977; Reichsman & Levy, 1974; Simmons, Klein, & Simmons, 1977).

A wide body of literature regarding the psychological and social impact of ESRD and its treatment by dialysis and transplantation has, in fact, evolved. Clinicians and researchers have been concerned with such issues as patients' compliance with the medical regimen (Hart, 1979; Hartman & Becker, 1978; Kaplan De-Nour & Czaczkes, 1972, 1976), vocational and social adjustment (Abram, 1972; Brown, Craick, Davies, Johnson, Dawborn, & Heale, 1978; Hagberg & Malmquist, 1974; Hughson, Collier, Johnston, & Tiller, 1974; Kaplan De-Nour & Czaczkes, 1976; Malmquist, 1973; Poll & Kaplan De-Nour, 1980), sexual function and dysfunction (Hughson et al., 1974; Kaplan De-Nour,

1978; Milne, Golden, & Fibus, 1978; Procci, Hoffman, & Chatterjee, 1978), and the quality of life afforded by dialysis and transplantation (Beard, 1971; Guttmann & Binik, in press; Kaplan De-Nour & Shanan, 1980; Levy & Wynbrandt, 1975 Poznanski, Miller, Salguero, & Kelsh, 1978). Others have focussed on the impact of ESRD and its treatment upon the patient's family (Brackney, 1979; Brown et al., 1978; Holcomb & MacDonald, 1973; Kaplan De-Nour, 1975; Kemph, 1966, 1970; Malmquist & Hagberg, 1974; Maurin & Schenkel, 1976; Simmons, 1977; Simmons et al., 1977; Simmons, Hickey, Kjellstrand, & Simmons, 1971; Simmons & Kamstra-Hennen, 1979; Speidel, Koch, Balck & Kneiss, 1979) as well as their effects on treatment personnel (Abram, 1969; Alexander, 1976; Halper, 1971; Mabry, Acchiardo, & Trapp, 1977; McKegney & Lange, 1971). Contributions of psychosocial factors to patient survival and the prediction of longevity (Eisendrath, 1969; Farmer, Parsons, & Snowden, 1979; Foster, Cohn, & McKegney, 1973; Foster & McKegney, 1978; Levy, 1979a) and treatment efficacy and patient selection have also been explored (Bryan & Evans, 1979, 1980; Corson & Corson, 1971; Czaczkes & Kaplan De-Nour, 1972; Evans & Bryan, 1981; Kaplan De-Nour & Czaczkes, 1974; Marshall, Rice, O'Mera, & Shelp, 1975; Moore, 1971; Short & Alexander, 1969; Rusk, 1978). Patients' coping behavior, particularly the use of denial and other defense mechanisms, has been the subject of much research and clinical attention (Clark & Levy, 1975; Goldstein, 1972, 1976; Kaplan De-Nour, Shaltiel, & Czaczkes, 1968; Short & Wilson, 1969). Others have examined the contributions of the social climate of treatment settings to patients' well-being (Calland, 1972; Kaplan De-Nour & Czaczkes, 1974), illness behavior (Pritchard, 1974a, 1977), and the phenomenological meaning of ESRD (Clark, Hailstone, & Slade, 1979; Pritchard, 1974b, c; Viederman, 1974). Finally, from a more applied perspective, researchers and clinicians have explored potential

applications of psychological testing (Freeman, Calsyn, Sherrard, & Paige, 1980; Strauch-Rahauser, Schafheutle, Lipke, & Strauch, 1977; Yanagida & Streltzer, 1979) and rehabilitation counseling (Cole, Stelzer, & Bayersdorfer, 1979; Wingate, 1979). Patients' emotional reactions, however, appear to have attracted the greatest attention from clinicians and researchers alike.

Patients' emotional reactions to ESRD have been varied. However, the most frequently reported psychological response has been depression (Czaczkes & Kaplan De-Nour, 1978; Ford & Castelnuovo-Tedesco, 1977; Hampers et al., 1973; Levy, 1978, 1979b; Reichsman & McKegney, 1978; Seime & Zimmerman, in press). Psychotic and other neurotic reactions seem to occur relatively rarely (Abram, 1972; Kemph, 1966, 1970; Kaplan De-Nour et al., 1968). A high prevalence of depression was first suggested by early publications of clinical impressions. Shea, Bogdan, Freeman, and Schreiner (1965), for example, reported elevated levels of depression among the first nine patients admitted to Georgetown University's maintenance hemodialysis program. Although patients were reported to have received a "detailed psychiatric evaluation" including psychological testing, these data were not presented. Rather, Shea et al. simply concluded that "acceptance of and emotional adjustment to the basic disease process has generally been poor .... To most patients, dialysis is not viewed as a form of treatment but rather as a complicated experiment which offers them their last remote chance of survival" (p. 562). Similarly, Kemph (1966) reported his clinical impressions of 12 early kidney transplant recipients and commented that "frequent periods of severe depressive reaction" (p. 1272) characterized the long-term follow-up period subsequent to transplantation. This observation was later corroborated by Kemph's clinical impressions of 37 transplant recipients and their donors (Kemph, 1970). Kemph also indicated

that a variety of psychological test data had been collected from patients but failed to report them, as did Shea et al. (1965).

These early descriptive publications were important insofar as no other information had yet been reported regarding patients' emotional reactions to ESRD and its treatment by dialysis and transplantation. However, they lacked the internal and external validity necessary for the establishment of a sound scientific literature. In addition to small sample sizes and a lack of valid objective data, these researchers failed to measure the contributions made by the psychological factors hypothesized to be responsible for elevated depression levels. Moreover, they failed to take into account or to control for relationships with relevant medical and demographic background variables (e.g., general nonrenal health, age, socioeconomic status) as well as the potentially mood-influencing effects of prescribed medications. While improving along some of these dimensions, later studies failed, unfortunately, to correct adequately for these shortcomings. Thus, although they too suggested a high incidence of depression among ESRD patients on dialysis and transplantation, no firm conclusions could be drawn due to serious flaws in experimental design.

Kaplan De-Nour and Czaczkes (1976), for example, administered a semi-structured interview to 100 maintenance hemodialysis patients sampled from six separate treatment facilities. Data regarding patients' depression, anxiety, and suicidal risk were collected and revealed a very high prevalence of negative mood states: 53% of the participants were "moderately to severely depressed", 27% were "moderately to severely" anxious, and 27% were judged to be at suicidal risk. Data were also collected regarding dietary compliance and significantly poorer compliance was observed among depressed patients. While the generalizability of these findings was

strengthened by the large number of patients included and the fact that patients were sampled from six separate dialysis centers, there were also a number of serious weaknesses. The study failed to employ valid and objective psychological measures. Depression, for example, was simply assessed along a subjective 3-point-scale--"none or minimal, medium, and severe" (p. 326). Thus, the potential for bias due to experimenter expectancy effects was considerable (Rosenthal & Rubin, 1978). Furthermore, although the researchers reported information regarding the age, sex, and socioeconomic status of participants, they failed to assess the relationships between these variables and patients' negative mood states and failed to control for them statistically--i.e., as general nonillness factors which might have been responsible for increased depression rather than any ESRD-specific ones which might be suspected. Finally, in discussing their findings Kaplan De-Nour and Czaczkes speculated about the significance of three ESRD-specific sources of psychological stress--"restrictions, dependency, and the resulting aggression" (p. 330)--but did not collect any data with which these interesting hypotheses might have been tested empirically.

Similarly, Hughson, Collier, Johnston, and Tiller (1974) reported the results of a survey of "rehabilitation after transplantation" in which 56 transplant recipients submitted to an interview with a social worker who administered a retrospective questionnaire regarding the prevalence of "neurotic symptoms" such as depression, apathy, insomnia, anxiety, and irritability, among other indices of rehabilitation (e.g., employment status, recreational activities, sexual function and residual physical handicap). Results indicated that 25 patients (45%) reported "moderate" to "marked" increases in these symptoms following transplantation as compared with the period preceding the onset of their illness. Like Kaplan

De-Nour and Czaczkes (1976), Hughson et al. included a relatively large sample of patients; however the study's internal validity is seriously compromised by the lack of valid standardized measures, failure to assess and control for the potentially confounding influences of relevant background variables, and failure to measure the psychological factors postulated--post hoc--to contribute to elevated levels of depression in ESRD. Unfortunately, no study appears to have been reported in which these weaknesses have been circumvented adequately, although some researchers have corroborated with more standardized measures the conclusion that the prevalence of depression is high in ESRD patient populations.

Isiadinso, Sullivan, and Baxter (1975) administered an extensive battery of standard psychological tests, including the WAIS, MMPI, Rorschach, and TAT, to a sample of 84 maintenance hemodialysis patients. Detailed developmental and social histories were also obtained. However, Isiadinso et al. limited their report of the results to global and uninformative summaries: e.g., "Depression, disappointment, and frustration were prominent in patients who could not pursue their instinctual drives or achieve their goals because of limitations imposed by their illness" (p. 800). It is unfortunate that such valuable and important data, obtained from a relatively large sample of patients, were not analysed and presented in greater detail.

Wright, Sand, and Livingston (1966) administered the MMPI to 12 early maintenance hemodialysis patients and reported significantly higher Depression (D) and Hysteria (Hs) scale scores among these patients than among a control group of unspecified "normals". Similar results were reported by Goldstein and Reznikoff (1972) who administered the MMPI to a group of 22 male Veterans' Administration (VA) hospital hemodialysis

patients and 24 male VA general medical patients with "minor medical problems such as appendicitis". However, Goldstein and Reznikoff also pointed out that the MMPI D and Hs scales are both heavily contaminated with items concerning physical symptoms. Thus, elevations of these scales in the profiles of patients suffering a chronic illness such as ESRD may simply "mirror their medical condition" (p. 158).

A later study by Ziarnik, Freeman, Sherrard and Calsyn (1977) did, in fact, document a strong degree of association among elevations of these MMPI clinical scales, physical deterioration and even early death in a comparable group of 47 male VA hemodialysis patients. Ziarnik et al. divided their sample into three groups on the basis of survival and number of years on dialysis. Group A included 14 patients who had died within 1 year of initiating dialysis, Group B included 23 who had been alive on dialysis between 3 and 7 years, and Group C included 12 who had been alive on dialysis between 7 and 10 years. Both depression and the prevalence of intercurrent nonrenal pathology (e.g., heart disease, hypertension, diabetes, stroke) were greatest in Group A, intermediate in Group B, and lowest in Group C ($p < .05$). Furthermore, a series of t-tests compared the MMPI profiles of those Group A patients who had some form of serious nonrenal medical problem with the profiles of those Group A patients who did not and revealed "no significant differences at the .01 level"(p. 212). The authors concluded that the direction of causality was thus from increased depression to increased physical deterioration and death. However, this conclusion hardly seems justified by the evidence. The small subsample ($n=14$) upon which the t-statistic was estimated could not reasonably be expected to afford sufficient statistical power to test this hypothesis at the .05 level of confidence, let alone at the .01 level

(Cohen, 1969). A statistically more powerful and appropriate approach might have examined the relationship between depression and survival in the entire sample (N=47) and only after relevant demographic and medical characteristics (e.g., presence of intercurrent nonrenal pathology) had been controlled statistically (Cohen & Cohen, 1975). In the absence of such an important test it would seem more parsimonious to infer that the causal priorities were, in fact, opposite to those argued by Ziarnik et al.--i.e., increased depression secondary to physical decline--especially given Goldstein and Reznikoff's (1972) comments about the somatic bias intrinsic to the MMPI D scale.

Research employing more traditional psychiatric indices of depression has also yielded evidence of elevated depression in ESRD patient samples, although these estimates are considerably lower than the 53% prevalence reported by Kaplan De-Nour and Czaczkes (1976). Farmer, Snowden, and Parsons (1979) surveyed a sample of 32 home hemodialysis patients for the frequency of "psychiatric illness"--i.e., patients considered to be comparable in symptomatology with a general outpatient psychiatric population. An experienced psychiatrist completed a standardized interview (Goldberg, Cooper, Eastwood, Kedward, & Shepherd, 1970) which assessed 11 patient-reported symptoms (e.g., depression, anxiety, irritability) and 12 interviewer-reported "abnormalities" (e.g., slow, apathetic, suspicious, histrionic). This procedure identified 10 patients (31%) judged to be "psychiatrically ill", including ICD diagnoses of endogenous depression (3 cases), depressive neurosis (1 case), anxiety neurosis (4 cases), neurasthenia (1 case), and hysterical neurosis (1 case). Similarly, Lowry and Atcherson (1979) administered "a structured interview and brief battery of psychological tests" (p. 748) to 58 patients entering home hemodialysis

training. While the interview and test data, themselves, were not reported, the authors interpreted them in terms of the DSM-III criteria for major depressive disorder and identified 13 patients (22%) who satisfied these criteria. Unfortunately, Lowry and Atcherson failed to report whether these patients were new to dialysis or whether they had already been established on another form of treatment (e.g., hospital dialysis). The prevalence of depression reported in these two studies, while considerably lower than those reported in the earlier studies reviewed above, greatly exceed estimates that the prevalence of unipolar depression ranges between 4% and 11% in the general (i.e., non-ESRD) population (Amenson & Lewinsohn, 1981; Lehman, 1971).

Consistent with the reports of elevated depression in ESRD patient populations have been claims of a strikingly increased frequency of suicide. Abram, Moore, and Westervelt (1971) mailed questionnaires regarding suicidal behavior in maintenance hemodialysis patients to 201 treatment centers across the United States. The researchers defined suicidal behavior as any of the following:

> active and successful suicide through such means as overdosing and exsanguination (through disconnection or cutting of the arterio venous [AV] shunt); unsuccessful, active suicidal attempts; requests for withdrawal from dialysis programs with ensuing death; deaths through an inability or refusal to adhere to the dialysis regimen; and accidents and accidental deaths (through shunt separation). (p. 1199)

Of the 201 questionnaires mailed, 127 (63%) were completed and returned, yielding data regarding a sample of 3,478 hemodialysis patients. Results indicated that 20 (0.6%) "successful" suicides and 17 (0.5%) unsuccessful

attempts had been committed; 22 (0.6%) patients died due to withdrawal from dialysis programs; and a striking 117 (3%) died due to noncompliance with the regimen. There were also 9 (0.3%) accidental deaths and 107 (3%) accidents without death. Including all of these as instances of suicidal behavior, Abram et al. concluded that the incidence of such behavior is 400 times the rate observed in the general public (assuming 10 suicides per 100,000 as the average rate). Excluding the high number of deaths due to noncompliance, they estimated an incidence of suicidal behavior among hemodialysis patients which is 100 times greater than the national rate. However, these estimates have been criticized as inflated on two separate premises. Kaplan De-Nour and Czaczkes (1972), for example, have questioned the validity of classifying deaths due to noncompliance or accident as suicidal since such a categorization requires crucial evidence--e.g., narrowing of interests, withdrawal from interpersonal relations, decrease in future planning, and other signs or symptoms that the patient is "fed up"--to suggest that patients intended their noncompliance to be suicidal, evidence which Abram et al. failed to collect. Kaplan De-Nour and Czaczkes went on to provide anecdotal data that, in fact, in their experience suicide has been independent of compliance with the dialysis regimen. From a different tack, Levy (1978) also suggested that the Abram et al. figures are inflated, noting that the national suicide statistics are inaccurate and that the rate of 10 suicides per 100,000 upon which the researchers based their comparisons probably underestimates the true rate of suicide in the general population. Nevertheless, Levy agreed that suicidal behavior is much more frequent in ESRD patient populations than in the general public, a conclusion which he suggested is

probably also true for other groups of patients suffering chronic illnesses.

While the majority of reports have concluded that depression is a common concomitant of ESRD, some have reported evidence of relatively normal mood states. Yet rather than interpreting such unexpected findings as questioning the conclusion of the larger body of research--despite its numerous weaknesses, as outlined above--researchers have interpreted them as evidence of unconscious denial by patients. The post hoc nature of this interpretation, together with the fact that no behaviorally validated objective measure of denial has yet been developed (Kastenbaum & Costa, 1977; Weisman, 1972), would seem to suggest that there may exist a bias in the assessment of ESRD patients on dialysis and transplantation, a bias to overestimate the prevalence of depression and other negative mood states. Kaplan De-Nour et al. (1968), for example, reported that the Taylor (1953) Manifest Anxiety Scale scores of eight hemodialysis patients followed over a 1-year period did not differ from those of an unspecified group of "normals". Although no measure of denial was administered, the researchers attributed this unexpected lack of difference to "partial denial of ill-health and threat of death, as well as ... complete denial and projection of aggression" (p. 530). Similarly, Glassman and Siegal (1970) reported that the California Personality Inventory (CPI; Gough, 1967) and Shipman (1963) Anxiety and Depression Scale profiles of a group of seven hemodialysis patients were within normal limits (as indicated in the test manuals). The researchers noted a "remarkable disparity", however, between the test data and their clinical impressions of the patient population. Whereas the former indicated normal levels of personality function,

the researchers perceived the patients as "lethargic" and "depressed", apparently due to a high prevalence of medical complications (e.g., pruritis, neuropathies, shunt infections). Yet rather than attributing these clinical impressions to the patients' poor physical status, Glassman and Siegal discounted the validity of the psychological test data, concluding that "patients cope with the stress of this program by the massive use of denial as an adaptive mechanism" (p. 573). They further speculated that "the danger of this massive denial is that it may continue into a delusional process" (p. 573). These concluding comments would appear to evidence distortion by the researchers rather than by participants, however, since each of the seven participating patients' CPI profiles was within normal limits and thus offered no evidence of a "delusional process". Moreover, three of the 18 CPI scales administered by the researchers --i.e., the Sense of Well-Being (Wb), Good Impression (Gi), and Communality (Cm) scales--provide indices of the respondent's tendencies to minimize problems (Wb), to present himself in a favorable light (Gi), and the extent to which a profile deviates from the modal pattern established for the inventory (Cm). While such data might have been employed to assess the researchers' speculation that patients were, in fact, using "massive denial", Glassman and Siegal appear not to have examined them.

Goals of the Present Research

It is widely believed that the prevalence of depression is much elevated in ESRD patient populations, despite the fact that the research base from which this conclusion has been drawn is seriously flawed. As indicated, this literature appears to consist largely of clinical observations and uncontrolled studies, typically characterized by small samples and non-

objective, often idiosyncratic, measures. Moreover, researchers have failed to assess and/or to take into account relationships with relevant medical and demographic background variables as well as the potentially mood-influencing effects of medications typically prescribed to dialysis and posttransplant patients. Finally, there appears to have been no attempt in the literature to assess the relative contributions associated with such background variables as compared to the contributions made by a number of psychological stressors which have been cited widely in the literature (e.g., threat of death, dependencies on medical technology and personnel, stringent dietary and fluid-intake restrictions). The unfortunate consequence of this weak research literature is that inferences regarding the significance--practical or theoretical--of the latter cannot be drawn with confidence. Thus, three serious deficiencies would appear to characterize the literature regarding depression in ESRD: a) no adequately controlled, systematic, survey of the incidence and intensity of the depression experienced by ESRD patient populations appears to have been reported; b) the relationships between depression and relevant medical and demographic background variables appear not to have been explored empirically; and c) the relative importance of psychological as compared to background variables has not yet been assessed. The present research represents an attempt to address these three needs.

In the first of two studies here to be reported, the reformulated learned helplessness theory of depression (Abramson, Seligman, & Teasdale, 1978) was explored as a potential psychological explanation for the development and maintenance of helplessness and depression in ESRD. A series of 16 variables was selected to measure these negative mood states.

These were drawn, largely, from measures used previously in studies of helplessness and depression and included a standard laboratory task; self-report measures, and separate ratings by hospital staff, significant others, and patients themselves. Information was also collected regarding a wide range of medical and demographic background variables and their relationships with patients' feelings of helplessness and depression were explored. Finally, the study was based on an hierarchical multiple regression/correlation design in which the contributions to mood made by psychological factors were assessed after controlling statistically for those associated with the background variables. The strategy, thus, was to assess the explanatory power of the psychological factors regarding depression in an ESRD patient population above and beyond that afforded by relevant medical and demographic information (Cohen & Cohen, 1975).

STUDY 1: HELPLESSNESS AND DEPRESSION IN END-STAGE RENAL DISEASE

Two patient reactions have often been identified in the clinical literature as associated with the depression experienced in ESRD: feelings of helplessness--i.e., the perceived loss of control over a number of important life dimensions--and feelings of hopelessness given that the condition is irreversible except for the limited availability of transplants (Abram, 1974; Corson & Corson,1971; Crammond, 1970; Goldstein, 1976; Goldstein & Reznikoff, 1971; Kaplan De-Nour et al., 1968; Reichsman & Levy, 1974; Short & Wilson, 1969). Yet the intensity of these reactions varies among patients. The experience of hopelessness, for example, may be mediated by patients' differing eligibility for transplantation (e.g., as a result of age considerations, histocompatibility, intercurrent non-renal disease) an alternative which, if successsful, reduces many of the restrictions imposed by dialysis. Similarly, the intensity of the experience of helplessness may vary as a function of treatment delivery. In hemodialysis, for example, staff-hospital dialysis would appear to afford patients with the least degree of personal control over their treatment, home the greatest, and self-hospital an intermediate level.

Variations in control over dialysis and control over other life dimensions, which typically accompany life on maintenance hemodialysis, would appear to provide a natural setting within which to test the recently reformulated learned helplessness hypothesis (Abramson, Seligman, & Teasdale, 1978) both as a theoretical model of depression and as an explanation for psychological reactions to renal failure. Briefly, this hypothesis posits the following causal chain in the development of helplessness and depression: a) the individual experiences objective uncontrollability; b) he perceives

this lack of control and c) formulates a causal attribution to account for it; d) on the basis of the perceived uncontrollability and its associated attribution, he then forms an expectancy of future uncontrollability which is later manifested in the symptoms of helplessness and depression (cf. Abramson et al., 1978, Figure 1, p. 52, reproduced in Figure 1a). In addition, Seligman, Abramson, Semmel, and von Baeyer (1979) have recently specified the particular attributional style associated with depression, i.e., a pattern of attributing negative outcomes to internal, stable, and global causes while attributing positive outcomes to external, unstable, specific ones.

It is hypothesized that hemodialysis patients experiencing limited control over their life-maintaining treatments are more likely to form general and health-specific expectancies of response-outcome independence than are those experiencing greater control. These expectancies might be predicted to be strongest in staff-hospital dialysis patients, intermediate in self-hospital patients, and weakest in home patients, all other factors being equal. Second, it is hypothesized that helplessness and depression in dialysis patients will be associated with both a perception of limited control over their treatment and a pattern of external, unstable, specific causal attributions for this control. Third, given the contrast between the restrictions associated with dialysis as compared with transplantation, helplessness and depression should be more prevalent among patients in the former group. Finally, to the extent that transplantation implies elimination of an individual's dependency on dialysis, the probability of a patient's receiving a transplant might be expected to interact with the effects of treatment uncontrollability (in the case of posttransplant patients, this probability corresponds to the likelihood that the trans-

planted kidney will continue to function adequately). A high probability of transplantation, for example, might lead a patient to construe his dependency on dialysis as relatively temporary and thereby attenuate any dialysis-induced expectancy of uncontrollability. On the other hand, for a patient who highly values transplantation this expectancy might be increased by the awareness that this form of treatment is unlikely. The moderating role of the factor of transplant probability would then be expected to have corresponding effects on the incidence and magnitude of symptoms of helplessness and depression. Similarly, the perceived stability of transplant function should play a corresponding role in the posttransplant population.

The present study is an empirical attempt to address these hypotheses. Figure 1a displays the usual sequence of events postulated by Abramson et al. (1978, p. 52) as responsible for the development of helplessness and depression. Also depicted in Figure 1 are the corresponding sequences of events which were derived in applying the theory to life on maintenance hemodialysis (Figure 1b) and more generally to dialysis and posttransplant patients combined (Figure 1c). The operational referents are described below in detail. The sequential nature of the reformulated model suggested an hierarchical multiple regression/correlation design (Cohen & Cohen, 1975) to assess the unique contribution of each postulated element. In addition, a simultaneous regression analysis was performed to test the ability of the entire model (i.e., the set of postulated causal factors considered simultaneously) to account for helplessness and depression. Relevant demographic and medical variables were entered in an initial step so that their effects could be controlled statistically. Hypotheses regarding the roles of the probability of transplant and stability of

Figure 1. Sequence of events responsible for the development of helplessness and depression a) as postulated by Abramson, Seligman, and Teasdale (1978) and corresponding sequences derived b) specifically for life on maintenance hemodialysis and c) more generally for dialysis and posttransplant patients combined.

POSTULATED FLOW OF EVENTS

a) Objective Noncontingency → Perception of Present and Past Noncontingency → Attribution for Present and Past Noncontingency → Expectation of Future Noncontingency → Symptoms of Helplessness & Depression

b) Type of Dialysis → Perceived Control Over Dialysis → Attribution for Control Over Dialysis → Perceived Control X Attribution Interaction → Helplessness & Depression

c) Dialysis or Posttransplant Patient Status → Perceived Control Over Eight Nondialysis Life Dimensions → Attributional Style → Perceived Control X Attributional Style Interaction → Helplessness & Depression

transplant function factors were examined by entering these last into the regression equation.

Method

Subjects

Hemodialysis and posttransplant patients from four local hospitals participated. Stringent inclusion criteria were adopted to preclude a number of potentially confounding influences. For dialysis patients these included: a) absence of serious nonrenal pathology; b) equal capability of receiving treatment by any of the three modes of delivery; and c) initiation of treatment and/or related training had been completed no less than three months prior to participation in the study. The following inclusion criteria applied to posttransplant patients: a) absence of serious nonrenal pathology; b) not currently experiencing a rejection crisis; and c) transplantation had been performed no less than one year prior to participation in the study. Given these restrictions, a sample of 45 hemodialysis patients (including 15 staff-hospital, 15 self-hospital, and 15 home dialysis patients) and 25 posttransplant patients consented to participate in the study. Fifteen patients (17.6%) declined to participate; however, they were not disproportionately distributed across the different patient groups, χ^2 (3)=7.56, $p > .05$. Both English (n=56) and French (n=14) speaking individuals were included so that an adequate sample size could be obtained (all of the materials to be described below were consequently translated into French or standard translations were used). Relevant demographic and medical descriptive statistics are presented in Table 1.

Table 1

Demographic and Medical Descriptive Statistics

Variable	Hemodialysis			Post-transplant (n = 25)	Total Sample (N = 70)
	Staff-Hospital (n = 15)	Self-Hospital (n = 15)	Home (n = 15)		
Sex[a]: Female (n)	8	4	2	10	24
Male (n)	7	11	13	15	46
Age[b] (M)	41.7	46.7	41.7	35.8	40.6
SES[c] Index (M)	7.8	6.7	7.9	7.2	7.4
IQ[d] (M)	30.7	31.3	35.6	33.5	32.9
Global Health Rating[e] (M)	3.9	4.1	4.3	4.4	4.2
Previous Transplants[f] (M)	0.7	0.2	0.2	0.2	0.3
Years on Dialysis[g] (M)	4.0	2.4	3.4	-	3.3
Years posttransplant (M)	-	-	-	5.1	5.1
Present Kidney Function[h] (M)	-	-	-	1.3	1.3

[a] $\chi^2(3) = 6.09$, $p > .05$.

[b] $F(3,66) = 2.64$, $p > .05$

[c] Socioeconomic status (SES) was reflected by a composite score which combined indices of educational and occupational achievement (range = 0-13). $F(3,66) = 1.21$, $p > .05$.

[d] Intelligence (IQ) was indexed by the sum of the individual's scaled scores on the Information and Picture Completion subtests of the WAIS plus their scores on the Visual Reproduction subtest of the Wechsler Memory Scale.

(range = 0-51). $F(3,66) = 1.90$, $p > .05$.

[e]Nonrenal physical status was rated by attending staff along a 5-point scale, ranging from 1 = very poor to 5 = very good. $F(3,66) = 1.11$, $p > .05$.

[f]$F(3,66) = 2.81$, $p < .05$.

[g]$F(2,42) = 2.53$, $p > .05$.

[h]Current level of transplanted kidney function was rated by attending staff along a 5-point scale, ranging from 1 = normal to 5 = severe chronic rejection. Lower ratings, therefore, reflect healthier levels of function.

Experimental Factors

Experimental factors representative of each of the operational referents depicted in Figures 1b and 1c were operationally defined as follows:

1. Demographic and medical status. The following were obtained for each participant: age, sex, marital status, education, occupation, religious affiliation, intelligence, general nonrenal health status, primary renal disease, sudden vs. insidious onset of renal failure, family history of renal disease, number of previous transplant failures, number of dialyses and number of hours of dialysis per week (dialysis patients only), number of years and/or months on dialysis (dialysis patients only), and number of years posttransplant (posttransplant patients only).

2. Objective control was defined in terms of the participant's status as a staff-hospital, self-hospital, home dialysis, or posttransplant patient.

3. Perceived control. Dialysis patients' perceived control over their treatment was indicated by self-ratings along a 7-point scale (ranging from little control to a lot of control). These scores were multiplied by participants' 7-point ratings of the personal importance of control over dialysis (ranging from not very important to very important). For all participants, scores reflecting perceived control over eight nondialysis life dimensions were obtained by summing eight similar ratings regarding perceived control over a variety of life dimensions (e.g., work, social relations, recreation) important in determining "quality of life" (e.g., Flanagan, 1978).

4. Causal attributions. An Attributional Style Questionnaire (Semmel,

Abramson, Seligman, & von Baeyer, Note 1) provided an index of the attributional style described by Seligman et al. (1979). Using the same format, dialysis patients were also asked to formulate a causal attribution to account for their self-rated degree of control over dialysis and to classify this cause in terms of the internality, stability, and globality dimensions.

5. Expectation of future control. Abramson et al. (1978) postulated that the expectancy of future control is a product of the conditional relationship between perceived control and its associated causal attribution. Cohen and Cohen (1975) have suggested that the simplest means of representing such relationships is via the partialed product(s) of the factors involved (i.e., the interaction term). Hence, the expectancy of future control over dialysis was represented by a set of three variables which included the products of each patient's perceived control over dialysis times the self-reported internality, stability, and globality of his associated causal attribution. The expectancy of future control, in the case of dialysis and posttransplant patients combined, was similarly represented by a set of three variables which included the products of each patient's perceived control over eight nondialysis life dimensions times his internality, stability, and globality scores on the Semmel et al. Attributional Style Questionnaire.

6. Probability of transplant and stability of transplant function within the upcoming year were assessed by patients' self-ratings. Perceived probability of transplant was assessed by the product of dialysis patients' responses to two items which were answered along a 9-point scale (ranging from very unlikely to very likely): a) "My chances of

receiving a transplant within 1 year from now are _____" and b) "If I were to get a new kidney, my chances of being cured would be _____". Stability of transplant function was assessed by the product of posttransplant patients' responses along the same 9-point scale to the following: a) "My chances of maintaining my transplant for the upcoming year are ____" and b) "Now that you have a new kidney, to what extent do you consider yourself cured?" Attending staff also provided an "objective" probability of transplant rating along a 5-point scale (ranging from very unlikely to very likely).

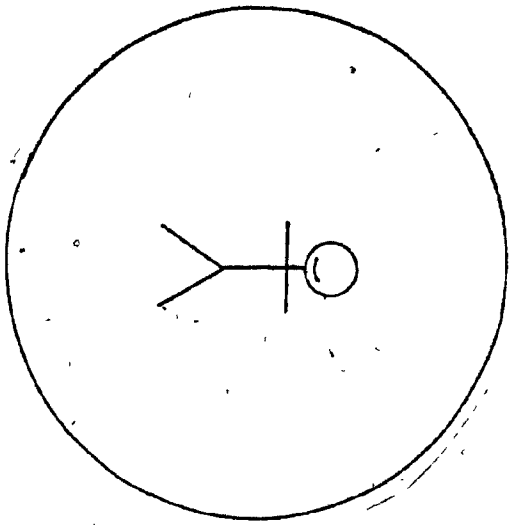
Measures of Helplessness and Depression

A series of 16 variables was selected to measure helplessness and depression. These were in large part drawn from measures used in previous studies of helplessness and depression and included a standard laboratory task, self-report measures, and separate "helplessness ratings" by hospital staff, family members, and participants themselves. External locus of control was included as an important facet of helplessness and depression since the helplessness theory posits that both of these are the direct result of an expectancy of response-outcome independence.

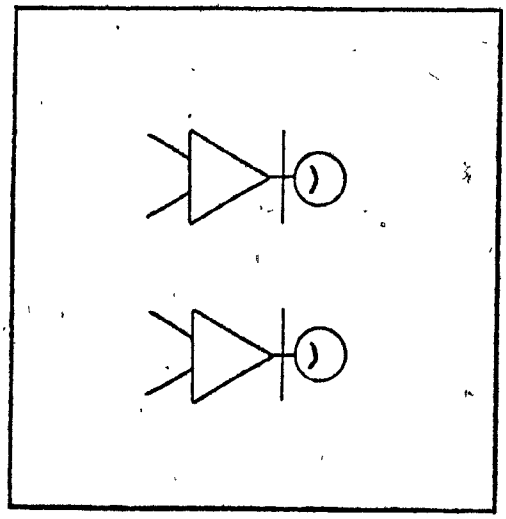
1. Laboratory task. A concept formation task similar to that described by Levine (1971) was employed. Four 12-trial multidimensional simultaneous-discrimination problems were constructed. Each trial was initiated by the display of two stimulus patterns (cf. Figure 2). One pattern consisted of a set of values from each of four two-valued dimensions (e.g., one smiling male figure within a circle, Figure 2a); the other pattern consisted of the complementary values of the dimensions (e.g., two frowning female figures within a square, Figure 2b).

Figure 2. A simultaneous-discrimination stimulus constructed from four dimensions (sex, male-female, number of figures, one-two; facial expression, smile-frown; and border, circle-square) used in the concept formation task.

A



B



The wide range of educational and intellectual levels characteristic of the ESRD sample led the writer to suspect that the original Levine problems would be too difficult and insufficiently personally involving for this population. Hence, whereas the Levine stimulus patterns varied along eight dimensions, the present research employed only four. Further, the stimulus patterns used by Levine seemed too abstract to maintain the interest of patient participants. Consequently, stimuli which were more social in nature were employed. Preliminary pilot testing revealed the four-dimensional and more social problems to be well suited to this population (e.g., the mean number of problems solved correctly = 2.5 out of 4, SD = 1.4, range = 0-4). Similar variants of the Levine (1971) problems (i.e., four- and fewer dimensional stimulus patterns involving attribute dimensions different from those used by Levine) have been used by others (e.g., Diener & Dweck, 1978; Erickson, 1968).

From trial to trial the dimension values shifted from one pattern to the other, following the rules specified by Levine (these rules were adapted for four-dimensional problems): a) on each pair of adjacent trials, values from two dimensions remained paired together (i.e., were on the same side for both trials) while the values from the other two dimensions were changed (shifted sides from one trial to the next); b) no two dimension values stayed paired with each other for more than three consecutive trials (e.g., woman and circle could not be paired more than three times in a row); and c) for any dimension value there was one and only one other value paired for the three trials (cf. Levine, 1971, p. 131).

Participants were first shown the sample stimuli depicted in Figure 2 and received the following instructions:

The next task involves a series of discrimination problems. Here is a sample. Notice that there are two drawings and that these differ from each other in four ways. The one on the left, A, contains a male figure whereas the drawing on the right, B, shows females. Also A contains only one figure whereas B has two. The figure in A is smiling while those in B are frowning and A is surrounded by a circle whereas the border for B is a square. To repeat, drawings A and B differ in four ways: sex (male or female), number of figures (one or two), facial expression (smile or frown), and border (circle or square). Also notice that between drawings A and B, each of these eight features has been used--and used only once. That is, A contains four of the features and B includes the complementary four. Finally, none of the features which make up A are present in B and vice versa.

Before we begin each problem, I will select one of the eight features--that is, one of male, female, smile, frown, one, two, circle, or square--without telling you which one it is. Your challenge will be to discover within 12 attempts which feature I have in mind by performing the following task. On each attempt, you will be presented with a page similar to this example. Your task will be to identify the drawing--by saying "A" or "B"--in which you suspect this "mystery feature" is displayed. For example, if you suspected that the mystery feature was

that there were two figures in the drawing, you would say "B" because in the example it is drawing B which contains two figures, A shows only one. Or, if you suspected that the mystery feature was the feature male, you would say "A" because drawing A shows a man whereas B shows women. After you have guessed A or B, I will tell you whether or not the mystery feature appears in the drawing you have identified. An answer of "yes" means that the mystery feature is displayed in the drawing you selected. An answer of "no" means that it occurs in the other (that is, in the drawing you did not pick). Once we have completed an attempt we will go on to the next one and cannot look back at earlier ones. After we have completed all 12 attempts, I will ask you to name the mystery feature and we will continue on to the next problem. In total, there are four problems, each consisting of 12 attempts.

One final aspect. Before you state your guess on each attempt, please rate between zero and ten how confident you are as to whether or not you will be correct or incorrect. As shown on the scale, a zero indicates "certain failure"--that you are 100% sure you'll be wrong. A ten means "certain success"--or that you are 100% sure you'll be right. I'll record all of your answers on this sheet.

Do you have any questions? Fine, let's begin.

A standard predetermined schedule of correct solutions (one figure, circle, two figures, circle) was employed for all participants. Four practice trials

preceded the first 12-trial problem.

Five measures were derived from the concept formation task: (a) total appropriate expectancy shifts (i.e., increases in expectancies of success following success and decreases following failure), (b) total inappropriate expectancy shifts (i.e., decreases following success and increases following failure), (c) final expectancy of success, (d) number of correct solutions, and (e) total trials to criterion (criterion = four consecutive correct solutions). Partipants' causal attributions to skill, effort, task difficulty, and luck (9-point scales) for their performance on this task were also obtained.

2. Self-report measures. These included the Beck (1967) Depression Inventory (BDI); the Rotter (1966) Internal-External (I-E) Locus of Control Scale; the Health Locus of Control (HLC) Scale (Wallston, Wallston, Kaplan & Maides, 1976); and the Coopersmith (1967) Self Esteem Inventory (SEI).

3. Helplessness ratings were obtained from hospital staff, family members or close friends, and the participants themselves. Hospital staff members and significant others each provided three types of ratings: (a) locus of control and tendency to cope actively with frustrations were indicated by the sum of their responses along 9-point scales (ranging from not at all to definitely) to three questions ("If something is upsetting or disturbing [patient's name], how likely is he/she to do something about it; that is, to try to alleviate the problem?" "How much does [patient's name] realize that when he/she is upset by some thing or event, that he/she can act to do something to alleviate his/her discomfort; that is, that he/she can do something to make the situation less of a problem?", "Does [patient's name] seem to believe, in general, that he/she

can control the things that happen to him/her in life?"); b) depression was indicated by the product of the rater's estimate of the frequency of depression in the participant ("What percentage of the time does [patient's name] seem to be sad or depressed?", response = actual percentage reported) times an intensity rating ("How strong or intense are these feelings of depression?", 9-point scale ranging from not very intense to very intense); and c) self-esteem was indicated by the rater's response to a single item ("How does [patient's name] feel about himself/herself in general: good and worthy or bad and worthless?", 9-point scale ranging from worthless and bad to worthy and good). Participants' responses (along a 9-point scale ranging from strongly disagree to strongly agree) to two items--"These days I feel like I just can't do anything" (to reflect the cognitive deficit characteristic of helplessness and depression) and "These days I feel like I just don't want to do anything" (to reflect the motivational deficit)--were multiplied to produce a self-rating of helplessness. All of the materials employed in Study 1 have been included in Appendix A.

Experimenter-Interviewers

Two experimtenter-interviewers were employed. A bilingual research associate conducted 17 assessments (these included all of the 14 French-speaking participants). The writer conducted the remaining 53.

Procedure

A standardized interview assessment procedure was employed. A number of cognitive, somatosensory, neuromuscular and autonomic nervous system functions are impaired in patients suffering ESRD due to the accumulation of uremic blood toxins (these deficits are reversible, however, by hemodialysis; Teschan, 1979). Thus, in the case of dialysis patients all data were collected while participants were undergoing dialysis to minimize

the possibly confounding influences of fluctuations between dialyses. For staff-hospital and self-hospital patients, the experimental materials were administered over three (typically consecutive) sessions. Each assessment session required approximately 45-60 minutes. The quieter environment of a private residence enabled home dialysis patients to be assessed in one session which usually required about 2 hours. All posttransplant patients were interviewed while hospitalized for a standard annual check-up and, as in the case of the home dialysis group, these assessments were completed in one 2-hour session. In the cases of persons consenting to participate, needed demographic and medical information was first collected after which the assessment was initiated. All measures were administered verbally by the interviewer and in a random sequence. Hospital and family ratings were obtained once all interactions with a patient had been completed.

Results

The data analysis strategy was first, to perform preliminary validity checks; second, to reduce via principal-components analysis the 16 separate measures of helplessness and depression to a smaller, more tractable number of factors; third, to select a subset of demographic and medical variables whose potentially confounding effects could be statistically controlled; fourth, to test the two families of helplessness hypotheses; and fifth, to assess the hypotheses regarding the probability of transplant and stability of transplant factors. Finally, the interrelationships among helplessness, locus of control, and depression were explored. An additional series of analyses was performed to verify the uniformity of these results across the 16 individual measures.

Validity Checks

The assumption that perceived control over dialysis varies because of its

mode of delivery was supported by a 1-factor (Type of Dialysis) ANOVA applied to participants' self-ratings along this dimension: $F(2,42)=5.89$, $p < .006$. Examination of the 95% confidence intervals revealed that staff-hospital patients ($M = 4.4$) experienced significantly less control over their treatment than either self-hospital ($M = 5.9$) or home ($M = 6.2$) dialysis patients. Perceived control over eight nondialysis life dimensions did not differ between dialysis ($M = 39.0$) and posttransplant ($M = 40.8$) patients, however $t(68) = -1.03$. All participants were fully aware of their life-threatened status as revealed by their responses to a 7-point scale which inquired about the implications of treatment unavailability (ranging from nothing at all would happen to I would get very sick and definitely would die; dialysis $M = 6.96$, posttransplant $M = 6.92$). Dialysis patients appeared to share their nephrologists' expectations regarding the probability of receiving a transplant within the upcoming year, $r(43) = .44$, $p < .001$.

Analyses of partipants' causal attributions for concept formation task performance revealed that effort ($M = 6.9$ on a 9-point scale), skill ($M = 5.8$), and task difficulty ($M = 5.8$) all were considered to be important determinants. Luck ($M = 3.3$) was regarded as less important. Participants viewed their performance on this task as similar to that of "most people " ($M = 5.3$) on a 9-point scale ranging from much worse to much better) and considered the task to be of moderate relevance to "success in other aspects of life" ($M = 4.7$ on a 9-point scale). Three findings questioned the validity of this task as an indicator of helplessness, however. First, since the expectancy shifts and problem-solving measures have been proposed as measures of the cognitive deficit characteristic of learned helplessness (Gregory, Chartier, & Wright, 1979; Seligman, 1978), these measures would

be expected to correlate significantly with the other measures which were collected of locus of control, depression, and subjective feelings of helplessness. Yet only nine out of 40 possible of these correlations were significant and these were internally inconsistent. Second, appropriate and inappropriate expectancy shifts correlated positively with each other, $r(68) = .47$, $p < .0005$. Third, none of participants' causal attributions for performance on this task was significantly related to any of the five concept formation task measures (as tested via a series of regression analyses).

Finally, since data were collected in two languages, by two interviewers, from patients on a variety of potentially mood-influencing medications (e.g., antihypertensives, immunosuppressives, hormone supplements) and receiving treatment at four separate hospitals, these four factors were explored as potential sources of bias. No consistent pattern of relationship emerged, however, among any of these variables and the dependent measures and their inclusion in the initial covariate predictor set had no effect on the results obtained (i.e., the significance of all F tests remained unchanged). They were thus omitted from the analyses reported below.

Data Reduction via Principal-Components Analysis

Statistics descriptive of the 16 separate measures of helplessness and depression are presented in Table 2 and the varimax rotated final solution of a principal-components analysis applied to these data appears in Table 3. Six principal components (PCs) were extracted, collectively accounting for 69.0% of the variance in the raw data set. Variables whose squared loadings equaled or exceeded 50% of the corresponding communalities were viewed as important in interpreting and labeling the final solution. The first principal component to be extracted, PC1, was labeled depression; PC2 was termed

Table 2

Descriptive Statistics: 16 Measures of Helplessness and Depression

Variable	M	SD	Minimum Observed Value	Maximum Observed Value
Beck Depression Inventory	7.9	5.6	0	25
Self-Esteem Inventory	19.3	3.7	8	25
I-E Locus of Control	9.0	3.4	2	16
Health Locus of Control	38.9	8.6	18	55
Appropriate Expectancy Shifts	25.8	20.8	0	145
Inappropriate Expectancy Shifts	8.7	9.0	0	38
Final Expectancy of Success	7.8	3.3	0	10
Trials to Criterion	39.4	7.9	20	48
Number of Problems Solved	2.5	1.4	0	4
Hospital Rating 1: Locus of Control	20.2	5.8	6	27
Hospital Rating 2: Depression	150.9	145.2	1	600
Hospital Rating 3: Self-Esteem	7.6	1.6	1	9
Family Rating 1: Locus of Control	20.9	5.1	7	27
Family Rating 2: Depression	150.2	185.3	5	891
Family Rating 3: Self-Esteem	7.6	2.0	1	9
Self-Rating of Helplessness	20.6	17.4	3	77

Table 3

Principal-Components Analysis of 16 Measures of Helplessness and Depression

Variable	Principal Components						h^2
	1	2	3	4	5	6	
Beck Depression Inventory	67	05	-23	-16	-26	28	68
Self-Esteem Inventory	-40	31	27	35	35	14	60
I-E Locus of Control	16	10	15	-43	-64	11	66
Health Locus of Control	34	13	26	06	-06	76	79
Appropriate Expectancy Shifts	13	-11	20	77	-09	-16	69
Inappropriate Expectancy Shifts	-13	-01	-03	81	04	15	70
Final Expectancy of Success	-48	-45	05	24	-19	-14	55
Trials to Criterion	04	91	-05	-05	-05	03	84
Number of Problems Solved	-07	-88	17	02	-02	-15	83
Hospital Rating 1: Locus of Control	-02	-18	47	07	-06	-71	77
Hospital Rating 2: Depression	60	12	-48	-19	20	11	69
Hospital Rating 3: Self-Esteem	-13	-17	80	14	13	-05	72
Family Rating 1: Locus of Control	-11	-05	20	-17	65	33	62
Family Rating 2: Depression	30	04	-61	03	-16	-09	50
Family Rating 3: Self-Esteem	13	18	36	-15	59	-28	63
Self-Rating of Helplessness	84	04	-10	19	-09	-01	76
Eigenvalue	3.78	2.05	1.60	1.35	1.16	1.11	
% Variance Accounted for	23.6	12.8	10.0	8.4	7.2	6.9	

Note. This table presents the varimax rotated solution. Total variance accounted for = 69.0%. Loadings of variables considered in interpreting

each principal component appear in italics. Decimals have been omitted from all reported factor loadings and communalities. PC1 = depression; PC2 = concept formation task problem-solving performance; PC3 = significant others' impressions of the participant's mood; PC4 = concept formation task expectancy shifts; PC5 = generalized locus of control; PC6 = health locus of control.

concept formation task problem-solving performance; PC3 was significant others' impressions of the participant's mood; PC4 was expectancy shifts (concept formation task); PC5 was generalized locus of control; and PC6 was health locus of control.

Findings: Helplessness and Depression in ESRD

The six helplessness and depression PCs were analysed via a series of regression analyses as earlier outlined. Quantitative experimental factors (e.g., perceived control over dialysis scores) were entered directly into the design and the results have been reported in terms of their associated partial correlations. Qualitative factors (e.g., objective control was operationally defined in terms of type of dialysis or posttransplant patient status) were represented by effects-coded variables; and interactions were represented by the partialed products of earlier entered factors. These results have been reported in terms of the F ratios derived from their associated increments in R^2. Unless otherwise indicated, all statistical tests are one-tailed. Two sets of analyses were conducted; one corresponding to each of the two families of hypotheses (i.e., dialysis-specific and dialysis and posttransplant combined; cf. Figure 1).

Covariate selection. Any demographic or medical variable which correlated significantly with two or more PCs was included as a covariate. This criterion identified five covariates: age (in years), number of previous (unsuccessful) transplants, physical status (rated by attending staff), an index of socioecnomic status (which combined occupation and education); and intelligence (estimated by the combination of the Information and Picture Completion subtests of the WAIS and the Wechsler Memory Scale Visual Reproduction subtest, which taps memory for designs and was included in an attempt to control for the potentially confounding effects of differential

levels on this ability on concept formation task performance). Their relationships with the six PCs are reported in Table 4.

Dialysis and posttransplant combined. In overview, the results did not support the reformulated learned helplessness theory of depression. Only two of the six PCs--depression (PC1) and generalized locus of control (PC5)--were significantly associated with the experimental factors and the pattern of results even within these two proved inconsistent with the theory. Only perceived control over eight nondialysis life dimensions was significantly related to the depression PC and the locus of control PC correlated more consistently with the stability of causal attributions rather than their internality.

The hierarchical analysis revealed that only perceived control over eight nondialysis life dimensions contributed significantly to depression (PC1), partial $r(60) = -.51$, $p < .001$ (Table 5). Lower levels of perceived control were associated with greater depression as indicated by participants' scores on the following measures: BDI, partial $r(60) = -.32$, $p < .001$; SEI, partial $r(60) = .28$, $p < .02$; concept formation task final expectancy of success, partial $r(60) = .35$, $p < .005$; and self-ratings of helplessness, partial $r(60) = -.52$, $p < .001$. Curiously, the depression PC scores failed to correlate significantly with attributional style, yet the individual analysis of participants' BDI scores revealed a significant association in the expected direction. Greater depression as measured by the BDI was associated with a bias to attribute negative outcomes more than positive ones to causes which were internal, partial $r(59) = -.23$, $p < .04$; stable, partial $r(59) = -.24$, $p < .03$; and global, partial $r(59) = -.31$, $p < .01$. The hierarchical analysis for the generalized locus of control PC identified attributional style[1] as the sole significant contributor, $F(3,57) = 5.70$, $p < .01$, but the relationship observed did not conform to the helplessness theory. The individual variables which loaded on this PC correlated more consistently with a bias to

Table 4

Product-Moment Correlations:

Covariates with Six Principal Components

Variable	Principal Components					
	1	2	3	4	5	6
Age	28	29				
Previous Transplants	31					-22
Physical Status	-31		23			
Socioeconomic Status Index		-23		25		-37
Intelligence		-39	34			-22

Note. Only significant ($p < .05$) coefficients have been included. Decimal points have been omitted. $N = 70$. PC1 = depression; PC2 = concept formation task problem-solving performance; PC3 = significant others' impressions of the participant's mood; PC4 = concept formation task expectancy shifts; PC5 = generalized locus of control; PC6 = health locus of control.

Table 5

Hierarchical and Simultaneous Regressions of Experimental Factors on Six Principal Components: Dialysis and Posttransplant Combined

Experimental Factor	Principal Components					
	1	2	3	4	5	6
Covariates[a] $F(5,64)$	4.16*	5.13*	4.87*	<1.0	1.08	2.23
Type of Dialysis vs. Posttransplant Patient Status $F(3,61)$	<1.0	1.14	1.77	1.39	3.61*	2.64
Perceived Control over Eight Nondialysis Life Dimensions (A) partial $r(60)$	-.51**	.01	-.18	-.01	.19	-.25*
Attributional Style (B) $F(3,57)$	<1.0	<1.0	<1.0	2.32	5.70*	<1.0
Expectancies (A X B) $F(3,54)$	<1.0	1.67	1.64	<1.0	<1.0	<1.0
Set[b] R^2 Change	.24	.11	.16	.18	.35	.20
Set $F(10,54)$	2.46*	<1.0	1.57	1.21	3.32*	1.60

Note. Results for quantitative experimental factors have been reported in terms of partial correlations. Results for qualitative factors and factors represented by sets of variables have been reported in terms of the F ratios derived from their associated increments in R^2. All statistical tests are one-tailed.

PC1 = depression; PC2 = problem-solving performance; PC3 = significant others' impressions of the participant's mood; PC4 = expectancy shifts; PC5 = generalized locus of control; PC6 = health locus of control.

[a]Covariates included age, nonrenal physical status, number of previous transplant failures, socioeconomic status, and intelligence.

[b]These are the results for the set of four experimental factors considered simultaneously.

*$p < .05$

**$p < .01$

attribute negative outcomes more than positive ones to stable causes (I-E: partial $r(59) = -.34$, $p < .003$; family locus of control ratings: partial $r(59) = .28$, $p < .014$; family self-esteem ratings: partial $r(59) = .01$, ns) rather than to internal ones (I-E: partial $r(59) = -.20$, $p < .06$; family locus of control ratings: partial $r(59) = .12$, ns; family self-esteem ratings: partial $r(59) = .35$, $p < .003$).

Similar results emerged from the simultaneous regression analyses. Significant multiple correlations resulted only for the depression PC, $F(10,54) = 2.46$, $p < .05$, and the generalized locus of control PC, $F(10,54) = 3.32$, $p < .01$. Significance tests of the Bs derived in the simultaneous regression equations also confirmed the results of the hierarchical analyses.

Dialysis-specific hypotheses.[2] None of the dialysis-specific factors--i.e., Type of Dialysis, Perceived Control over Dialysis, Attributions for Control over Dialysis, or Expectancies for Future Control over Dialysis--were significantly related to any of the six PCs (Table 6). Interestingly, perceived control over dialysis did not correlate significantly with perceived control over eight nondialysis life dimensions, $r(43) = .17$.

Perceived stability of present patient status. Perceived stability of current patient status--i.e., probability of transplant in the case of dialysis and stability of present kidney function in transplantation--was unrelated to helplessness and depression. In the dialysis and posttransplant patients combined analyses (Table 7) neither the perceived stability of current patient status nor its interaction with dialysis vs. posttransplant patient status correlated significantly with any of the six PCs. Similarly in the dialysis-specific analyses (Table 8) none of the staff- or self-rated probabilities of transplant nor the interaction of the latter with attributions for control over dialysis were related to helplessness and depression

Table 6

Hierarchical and Simultaneous Regressions of Experimental Factors on Six Principal Components: Dialysis-Specific

Experimental Factor	Principal Components					
	1	2	3	4	5	6
Covariates[a] $F(4,40)$	2.08	2.79*	4.72*	1.30	< 1.0	2.30
Type of Dialysis $F(2,38)$	< 1.0	< 1.0	2.00	1.86	< 1.0	4.65*
Perceived Control over Dialysis (A) Partial $r(37)$	.09	-.04	.02	.18	.23	.00
Attribution for Control over Dialysis (B) $F(3,34)$	< 1.0	< 1.0	1.35	1.33	1.74	2.15
Expectancy (A X B) $F(3,31)$	< 1.0	1.27	< 1.0	2.82	< 1.0	< 1.0
Set[b] R^2 Change	.11	.13	.14	.34	.20	.27
Set $F(9,31)$	< 1.0	< 1.0	< 1.0	2.09	< 1.0	1.77

Note. Results for quantitative experimental factors have been reported in terms of partial correlations. Results for qualitative factors and factors represented by sets of variables have been reported in terms of the F ratios derived from their associated increments in R^2. All statistical tests are one-tailed.

PC1 = depression; PC2 = problem-solving performance; PC3 = significant others' impressions of the participant's mood; PC4 = expectancy shifts; PC5 = generalized locus of control; PC6 = health locus of control.

[a]Covariates included nonrenal physical status, number of previous transplant failures, socioeconomic status, and intelligence.

[b]These are the results for the set of four experimental factors considered simultaneously.

*$p < .05$

Table 7

Hierarchical and Simultaneous Regressions of Perceived Stability of Patient Status Factors on Six Principal Components: Dialysis and Posttransplant Combined

Experimental Factor	Principal Components					
	1	2	3	4	5	6
Perceived Stability of Present Patient Status (A) partial $r(53)$	.08	-.33*	-.21	.00	.12	-.12
A X Type of Dialysis vs. Posttransplant Patient Status $F(3,50)$	2.63	< 1.0	1.17	< 1.0	1.40	2.06
Set[a] R^2 Change	.07	.08	.06	.04	.05	.08
Set $F(4,50)$	2.08	1.90	1.50	< 1.0	1.23	1.78

Note. Results for quantitative experimental factors have been reported in terms of partial correlations. Results for the set of two factors considered simultaneously have been reported in terms of the F ratios derived from their associated increments in R^2. All statistical tests are one-tailed. PC1 = depression; PC2 = problem-solving performance; PC3 = significant others' impressions of the particpant's mood; PC4 = expectancy shifts; PC5 = generalized locus of control; PC6 = health locus of control.

[a]These are the results for the set of two experimental factors considered simultaneously.

*$p < .05$

Table 8

Hierarchical and Simultaneous Regressions of Probability of Transplant Factors on Six Principal Components: Dialysis-Specific

Experimental Factor	Principal Components					
	1	2	3	4	5	6
Physician-Rated Probability of Transplant partial $r(30)$	-.21	-.06	-.11	-.06	.10	-.02
Perceived Probability of Transplant (A) partial $r(29)$	-.11	.21	.01	.06	-.09	.28
A X Attribution for Control over Dialysis $F(3,26)$	< 1.0	1.48	< 1.0	2.44	1.09	1.31
Set[a] R^2 Change	.10	.12	.06	.12	.10	.11
Set $F(5,26)$	< 1.0	1.17	< 1.0	1.50	< 1.0	1.31

Note. Results for quantitative experimental factors have been reported in terms of partial correlations. Results for factors represented by sets of variables have been reported in terms of the F ratios derived from their associated increments in R^2. All statistical tests are one-tailed. PC1 = depression; PC2 = problem-solving performance; PC3 = significant others' impressions of the participant's mood; PC4 = expectancy shifts; PC5 = generalized locus of control; PC6 = health locus of control.

[a]These are the results for the set of three experimental factors considered simultaneously.

as represented by these PCs. These results were similar whether obtained via a simultaneous or hierarchical strategy.

Helplessness, Locus of Control, and Depression

The dialysis and posttransplant combined analyses revealed that the experience of uncontrollability (i.e., low levels of perceived control over eight nondialysis life dimensions) was significantly related to increased depression. A similar pattern of correlations was also observed between the variables which loaded on the depression PC (PC1) and external locus of control as measured by the HLC and I-E scales. External health locus of control, for example, was significantly correlated with scores on the BDI, $r(68) = .30$, $p < .006$; self-ratings of helplessness, $r(68) = .26$, $p < .015$; hospital depression ratings, $r(68) = .20$, $p < .05$; and concept formation task final expectancies of success, $r(68) = -.23$, $p < .025$. Similarly, externality on Rotter's (1966) locus of control scale was significantly associated with scores on the BDI, $r(68) = .25$, $p < .02$, and SEI, $r(68) = -.32$, $p < .004$. Finally, low levels of perceived control over eight nondialysis life dimensions were significantly related to externality on both the I-E, partial r (60) $= -.25$, $p < .025$, and health, partial $r(60) = -.37$, $p < .002$, locus of control scales. Thus, lower levels of perceived control over eight nondialysis life dimensions, external locus of control, and increased depression all intercorrelated significantly.

Discussion

The factors identified by the Abramson et al. model--objective control (i.e., staff-hospital vs. self-hospital vs. home dialysis vs. posttransplant patient status), perceived control (over dialysis and eight nondialysis life dimensions) attributional style, and expectancies of future control (over dialysis and the eight nondialysis life dimensions)--failed to account for

helplessness and depression in a patient population for whom personal control over a number of important life dimensions has been dramatically reduced and who have differing amounts of control over their life-maintaining treatments. No clear support for the reformulated model emerged from either family of hypotheses--i.e., neither dialysis and posttransplant combined nor dialysis-specific. In addition, new hypotheses about factors specific to ESRD (e.g., objective and perceived probabilities of transplant), which were derived from the Abramson et al. model, also failed to receive support. Paradoxically, the study's strongest positive finding might be interpreted as supportive of the original learned helplessness theory of depression (Seligman, 1975): perceived control over eight nondialysis life dimensions was inversely related to depression (i.e., lower levels of perceived control were associated with greater depression).

Measurement of Helplessness and Depression

Interesting implications regarding the measurement of helplessness and depression may also be drawn from these results. The raw data package included verbal reports, behavioral tasks, ratings by significant others, and psychometric results. In all, 16 separate measures were taken for each participant and served as an important check against overgeneralizing from a single measure. This appears to have been particularly important in testing the relationship between depression and attributional style. Whereas participants' BDI scores did correlate significantly with attributional style as postulated by Abramson et al., this pattern was not replicated in any of the four other measures which loaded on the depression factor (PC1)--i.e., self-esteem, hospital depression ratings, helplessness self-ratings, or concept formation task final expectancies of success. While the BDI is a standard self-report measure of depression, there are at least three considerations

which suggest that it would be premature to conclude that its association with attributional style provides strong support for the reformulated helplessness theory. First, it may be that attributional style is associated with depression only when the latter is measured by the BDI. Seligman et al. (1979), for example, also found a consistent pattern of correlations between attributional style (using the same questionnaire as that used here) and BDI scores; however, when depression was indicated by scores on the Multiple Affect Adjective Check List (Zuckerman & Lubin, 1965), only two of the six predicted coefficients reached significance. Similarly, Golin, Sweeney, and Shaeffer (1981) reported a theoretically consistent pattern of correlations between college students' BDI scores and their Attributional Style Questionnaire responses. The coefficients obtained were smaller in magnitude, however, than those observed both by Seligman et al. (1979) and in the present study. Golin et al. also applied a cross-lagged panel correlation analysis (Kenny, 1979) to these data but observed that only three of the six cross-lagged correlation differentials predicted by the Abramson et al. model were significant (these concerned the globality of negative outcomes and the stability of both positive and negative ones). Moreover, Pasahow (1980) reported that a correlational analysis revealed no relationship between BDI scores and participants' attribution ratings (measured in the same fashion as by the Semmel et al. Attributional Style Questionnaire) for their performance on a helplessness pre-treatment task although the latter successfully induced the performance deficits characteristic of learned helplessness in a subsequent anagrams task. Second, and perhaps more basic, is the fact that very little is known about the validity and other psychometric properties of the Attributional Style Questionnaire. Finally, contrary to the Abramson et al. reformulation, the present data revealed that

attributional style--and more specifically, internality--was not significantly related to self-esteem. In sum, there would seem to be no strong support for the relationship between depression and attributional style.

Interestingly, the six PCs which were extracted corresponded to three independent categories: a) depression, including self-report (PC1) and ratings by significant others (PC3); b) locus of control, including generalized (PC5) and health (PC6); and c) concept formation task, including problem-solving performance (PC2) and expectancy shifts (PC4). Typically, expectancy shifts and problem-solving performance have been employed to reflect the cognitive deficit characteristic of learned helplessness and depression (Gregory, Chartier, & Wright, 1979; Seligman, 1978). These measures would thus be expected to correlate significantly with the other measures which were collected of locus of control, depression, and subjective feelings of helplessness but they did not. Moreover, appropriate and inappropirate expectancy shifts correlated positively with each other. Finally, none of participants' causal attributions to skill, effort, task difficulty, or luck were significantly related to their concept formation task performance as has been assumed by both the locus of control (Seligman, 1978) and causal stability perspectives (Weiner, Nierenberg, & Goldstein, 1976). These results are consistent with recent research which has questioned the validity of expectancy shifts and problem-solving performance as universal indices of helplessness and depression (McNitt & Thornton, 1978; O'Leary, Donovan, Krueger, & Cysewski, 1978; Smolen, 1978; Weiner et al., 1976; Willis & Blaney, 1978; Wollert, 1979).

What, then do these variables represent? In the case of problem-solving performance (PC2), participants who were more intelligent, higher in socioeconomic status, and younger in age were more successful in this task

(cf. Table 4). Thus, concept formation task problem-solving performance in a noncollege population may reflect general intellectual and educational levels rather than the associative deficit resulting from an expectancy of response-outcome independence. In the case of expectancy shifts, the same individuals who displayed relatively large appropriate shifts also exhibited a greater number of inappropriate shifts. These measures may simply reflect the participant's motivation to solve problems, with more highly motivated individuals generally exhibiting greater shifts--appropriate and inappropriate. No other study appears to have examined both appropriate and inappropriate expectancy shifts concurrently. Future research can make a valuable contribution by developing valid and more direct indices of helplessness which reflect more than simply depression and/or locus of control.

Prevalence of Depression in ESRD

Depression does not appear to represent an unavoidable psychological reaction to ESRD. In fact, very few participants could be classified as clinically depressed (M BDI = 7.9, SD = 5.6, range = 0-25) although this is most likely an underestimate since the selection criteria included only patients who were in good nonrenal health and who were already established within a treatment modality. Higher levels of depression are probably prevalent among a number of subpopulations: e.g., patients in very poor health or suffering complications, patients experiencing traumatic transitions such as those which occur just prior to the onset of maintenance dialysis or during the rejection of a transplanted kidney. Nevertheless, the fact that only mild depressions were reported by participants threatens neither the internal nor external validity of the study since the helplessness theory maintains that the same flow of events is responsible for depression uniformly across the continuum of severity. In addition, the vast majority of human

helplessness studies performed to date have employed individuals whose self-reported depressions were equivalent to the levels observed in the present ESRD sample. One minor limitation of the present study might be the absence of "direct" estimates of participants' expectancies of future control (e.g., using the same 7-point scale as was used to measure their perceived control over dialysis and eight nondialysis life dimensions) as opposed to the Perceived Control X Causal Attributions interaction term which was employed. This issue will be addressed in Study 2.

In attempting to account for the development of depression in this population previous research and clinical observations have focussed on the helplessness and hopelessness implicit in ESRD and life on maintenance dialysis. However, this work has generally failed to take into account a variety of potentially confounding influences which were controlled in the present study (e.g., age, intelligence, socioeconomic status, general health, transplantation history). The present results (cf. Table 4) indicate that variability among patients along several of these dimensions may be important in the development of depression in this population. Moreover, the fact that dialysis and posttransplant patients reported equivalent amounts of perceived control over eight nondialysis life dimensions would appear to suggest that control over dialysis contributes little to patients' perceived control over life in general, despite the life-maintaining role played by this treatment and its centrality in their daily lives. It may be that patients isolate or exclude from their perceptions of life in general those experiences which occur while they are on dialysis. Consistent with this interpretation were the findings that a) perceived control over dialysis did not correlate significantly with perceived control over eight nondialysis life dimensions, and

b) perceived control over eight nondialysis life dimensions--but not control over dialysis per se--was significantly correlated with both depression and locus of control (generalized and health).

It might further be speculated that ESRD patients actually exclude a variety of illness-related experiences from their overall experiences of life in an attempt to cope with the psychological threats posed by this chronic and life-threatening disorder. This issue has broad implications for the study of cognitive mediators of stress (Averill, 1973) and will be explored in Study 2 from the perspectives of psychological differentiation and coping theories. Before progressing to these new data, however, it would seem appropriate first to examine briefly the interrelationships among helplessness, locus of control, and depression evident in the present data.

Helplessness, Locus of Control, and Depression

Consistent with previous research (e.g., Abramowitz, 1969; Calhoun, Cheney, & Dawes, 1974; Hiroto, 1974; Lefcourt, Hogg, Struthers, & Holmes, 1975; Pittman & Pittman, 1979; Prociuk, Breen, & Lussier, 1976), both the experience of uncontrollability (i.e., low levels of perceived control over eight nondialysis life dimensions) and an external locus of control were associated with increased depression. While the expectancy of response-outcome independence (i.e., external locus of control) may account in part for the significant correlation between perceived control and depression, the relatively low magnitude of these correlations would suggest that a more complete explanation is required. Bandura's (1977a) distinction between efficacy and response-outcome expectancies, for example, may provide additional explanatory power. Bandura defined an outcome expectancy as an individual's estimate of the extent to which a given behavior is capable of producing certain outcomes. This would appear to be the same as helplessness theory's expectancy

of response-outcome contingency or controllability as well as Rotter's (1966) construct of internl-external locus of control. An efficacy expectancy, on the other hand, was defined as the conviction that one can successfully execute the behavior required to produce a given outcome. Thus, depression may also be the consequence of low efficacy expectancies which are formulated on the basis of an ongoing evaluation of one's current strengths and weaknesses. Within the present findings, for example, older patients who had experienced a higher number of transplant failures and who were in poorer nonrenal general health were more likely to be depressed. The present data actually permit a preliminary test of this hypothesis and so this will be explored briefly before proceeding to Study 2.

COGNITIVE DETERMINANTS OF HELPLESSNESS AND DEPRESSION: A SOCIAL LEARNING THEORY REINTERPRETATION

Although Study 1 failed to support the Abramson et al. (1978) attributional reformulation, the fact that the perception of limited control over important life dimensions was associated with both increased depression and an external locus of control is consistent with the central premise of helplessness theory. As indicated, however, these findings are also consistent with a large body of research and theory regarding Rotter's (1966) locus of control construct. Both perspectives have proposed that the cognition of uncontrollability is associated with increased feelings of helplessness and depression. Moreover, both perspectives have maintained that this belief evolves from one's objective learning history (i.e., direct experience; cf. Abramson et al., 1978; Rotter, Chance, & Phares, 1972; Zuroff, 1980). But the cognition of uncontrollability need not derive exclusively from direct experience. Indeed, Bandura's (1977b) social learning theory posits that both direct and vicarious experience are important in the evolution of human behavior and affect. It is the information value of such experiences which is considered to be the "active ingredient"--by informing individuals of "what they must do to gain beneficial outcomes and to avoid punishing ones" (Bandura, 1977b, p. 18). The experience of uncontrollability in helplessness and depression might thus be interpreted within the social learning theory perspective as a personal conviction that one is incapable of gaining important beneficial outcomes or of avoiding important negative ones. Any experience which contributes--directly or vicariously--to such a belief would be predicted also to contribute to increased feelings of helplessness and depression.

Recent laboratory studies by Brown (1980), Brown and Inouye (1978), and De Villis, De Villis, and McCauley (1978) have, in fact, demonstrated the

vicarious induction of typical learned helplessness problem-solving deficits. In each of these studies, participants who received a pretreatment in which they observed a model who was similar to themselves fail at a standard task (e.g., anagrams, hand shuttle task) which the participant was subsequently to perform evidenced reduced persistence, fewer correct solutions, and lower expectancies of success than did individuals who a) observed the model succeed, b) observed a model who received no feedback about his performance, or c) observed no model at all. Moreover, Langer and Benevento (1978) have demonstrated the induction of a helpless effect with no prior exposure to uncontrollability. Relative to individuals who received a superior label ("boss"), those who were given an inferior label ("assistant", "worker") showed a significant performance decrement by attempting to solve fewer problems on a task (word hunt, mathematical problems) with which they had had prior success. Demonstrations of the vicarious induction of helplessness have been interpreted as evidence that both efficacy and outcome beliefs contribute importantly to the cognition of uncontrollability and its associated feelings of helplessness and depression (Bandura, 1980; Brown, 1980; Brown & Inouye, 1978). More direct evidence that efficacy beliefs contribute to helplessness deficits was provided by the Brown and Inouye (1978) study. Problem-solving persistence (i.e., the number of seconds for which a participant continued in his attempt to solve an insoluble anagram) correlated positively and significantly with expectancies of success (efficacy). Moreover, the magnitude of these correlations increased reliably as the experiment proceeded--i.e., as the participants gained experience in performing the anagrams task.

Although both efficacy and outcome beliefs are considered to be important to adaptive coping and the sense of psychological well-being, the situation in which one holds weak efficacy but strong outcome expectancies--

e.g., a firm belief that an important life event is controllable but a weak belief in one's personal ability and/or skill to exert such control--was identified as particularly likely to induce negative mood states such as helplessness, depression, and low self-esteem (Bandura, 1978a). In this situation, Bandura suggested, negative moods are induced as a result of the individual's negative self-evaluation which, in turn, occurs via social comparison in response to the joint experience of weak efficacy and strong outcome beliefs. Bandura further posited that no other combination of efficacy and outcome expectancies is capable of inducing these effects: e.g., the joint experience of weak efficacy and weak outcome expectancies was hypothesized as most likely to induce the relatively neutral feelings of indifference and resignation. Thus, an Efficacy X Outcome interaction was predicted.

From a social learning theory perspective, both the locus of control and helplessness literatures have indicated that weak outcome expectancies are solely responsible for increased feelings of helplessness and depression. Social learning theory, on the other hand, has maintained that both outcome and efficacy beliefs contribute importantly to the induction of these negative mood states. It was reasoned that the I-E and HLC locus of control measures collected in Study 1 might provide indices of participants' outcome expectancies regarding life in general and health, respectively, whereas perceived control scores might be reinterpreted as indicants of their perceived self-efficacy. Two families of hypotheses were derived: one regarding life in general and a second regarding health. In each case the prediction was that the joint experience of weak efficacy and strong outcome expectancies would be associated with higher levels of helplessness and depression and lower levels of self-esteem than all other factorial combinations of these two factors (i.e., an Efficacy X Outcome interaction).

Materials

Rotter (1966) I-E locus of control and Wallston et al. (1976) HLC scores were employed to indicate outcome expectancies regarding life in general and health, respectively. Both of these scales are scored in the external direction and so stronger outcome expectancies are reflected by lower scores. Participants' self-ratings of perceived control regarding the life dimensions of work, recreation, social relations, psychological need satisfaction, material need satisfaction, and community and civic activities were summed to indicate perceived self-efficacy regarding life in general. Similar self-ratings regarding diet and "how well you feel physically" were summed to indicate self-efficacy regarding health. The Efficacy X Outcome interaction was represented by the partialed products of these measures (i.e., I-E X Self-Efficacy for life in general; HLC X Self-Efficacy for health). Depression and self-esteem were indicated by the BDI (Beck, 1967) and SEI (Coopersmith, 1967). The self-ratings of helplessness constructed in Study 1 were also included.

Results

Once again, an hierarchical multiple regression data analytic strategy was employed and the order in which experimental factors were entered into the regression equation was established a priori. Relevant background variables--i.e., age, general nonrenal health, and number of previous transplant failures--were controlled statistically by entering them initially after which outcome (i.e., locus of control scores), efficacy (i.e., perceived control socres), and the interaction term (i.e., the Efficacy X Outcome partialed products) were each entered in a forward stepwise fashion (Cohen & Cohen, 1975).

Consistent with the social learning theory reinterpretation, the efficacy and outcome measures each contributed significantly and uniquely to the three

dependent variables. Weak efficacy and weak outcome expectancies were associated with greater subjective feelings of helplessness, increased depression, and low self-esteem. Thus, with regard to life in general, perceived control (efficacy) scores were significantly related to participants' scores on the BDI, partial $r(64) = -.34$, $p < .002$; SEI, partial $r(64) = .22$, $p < .036$; and self-ratings of helplessness, partial $r(64) = -.52$, $p < .0005$. Participants' I-E (outcome) scores correlated significantly with their scores on the BDI partial $r(65) = .26$, $p < .017$, and SEI, partial $r(65) = -.31$, $p < .005$. In the case of health, only participants' self-ratings of helplessness correlated significantly with perceived control (efficacy) scores, $r(64) = -.24$, $p < .028$. HLC (outcome) scores were significantly associated with scores on the BDI, partial $r(65) = .25$, $p < .02$, and self-ratings of helplessness, partial $r(65) = .20$, $p < .05$.

The results failed to support Bandura's (1978a) prediction, however, regarding the Efficacy X Outcome interaction effect on the negative moods of helplessness, depression, and low self-esteem. None of the six predicted interaction terms (i.e., 2 families of hypotheses X 3 dependent variables) was significant.

Discussion

As predicted by both the helplessness and locus of control perspectives, weak outcome expectancies were associated with increased depression and low self-esteem. However, the social learning theory construct of self-efficacy added significant explanatory power. Lower levels of perceived self-efficacy regarding a variety of life dimensions were associated with greater subjective feelings of helplessness, increased depression, and lower self-esteem. Moreover, consistent with the social learning theory reinterpretation, efficacy and outcome cognitions each contributed independently to these

negative mood states.

The results did not support Bandura's (1978a) hypothesis that weak efficacy and strong outcome expectancies interact to induce the negative mood states of helplessness, depression, and low self-esteem, however. The predicted Efficacy X Outcome interaction effect was uniformly nonsignificant across the six specific tests which were performed. Yet, rather than refuting Bandura's (1978a) analysis in its entirety, these results might best be interpreted as calling for a revision: the data are consistent with an additive rather than nonadditive model of the relationship between efficacy and outcome expectancies as they relate to helplessness, depression, and low self-esteem. This, in turn, would suggest that the contribution to depression made by the individual's harsh self-evaluation (i.e., the mechanism by means of which Bandura postulated that the Efficacy X Outcome interaction induces negative moods) may also represent an independent depressogenic factor. It may also be, however, that these determinants become independent of each other only after they have evolved through an initial developmental phase of reciprocal interaction and determinism (Bandura, 1978b, 1981; Gong-Guy & Hammen, 1980), an hypothesis which can be tested adequately only via a longitudinal research design using Bandura's microanalysis technique (1980).

The data also offer support for Bandura's (1977a, 1978a) claim that efficacy expectancies are more important than are outcome expectancies in determining the degree to which an individual will persist in his efforts to cope. Whereas only health-specific outcome expectancies (i.e., HLC scores) were significantly related to subjective feelings of helplessness, both self-efficacy (i.e., perceived control) measures correlated significantly and in the expected direction with feelings of helplessness.

Finally, in addition to supporting the validity of the efficacy vs. outcome distinction (Bandura, 1977a), these results are consistent with the hypothesis that the significant negative correlation observed in Study 1 between perceived control and depression derives from both efficacy and outcome beliefs. Further research into the psychological meaning of perceived control over important life dimensions would therefore appear to be indicated: e.g., does this factor actually reflect response-outcome expectancies, perceived self-efficacy, or does it reflect some other construct such as quality of life, rate of reinforcement, pessimism, or a combination of some or all of these? Is it a cause, effect, or independent concomitant of depression?

Psychological sources of perceived control were explored in Study 2 as part of a larger investigation of cognitive stress mediation from the perspectives of psychological differentiation and coping theories. The focus of the research was shifted, however, to include normal positive and negative moods since Study 1 indicated that the prevalence of clinical depression is relatively low in ESRD. Once again, information was also collected regarding a wide range of medical and demographic background variables and their contributions to patients' emotional states were explored. Also as in Study 1, an hierarchical multiple regression/correlation design was adopted in order to assess the explanatory power of the psychological factors regarding mood in an ESRD patient population over and above that afforded by relevant background information.

STUDY 2: POSITIVE AND NEGATIVE MOOD IN END-STAGE RENAL DISEASE

Several of the findings reported in Study 1 were consistent with an hypothesis that ESRD patients may isolate or exclude illness-related experiences from their overall experiences of life. Low levels of perceived control over eight nonillness life dimensions (e.g., work, recreation, social relations), for example, were significantly associated with increased feelings of helplessness and depression, external generalized locus of control, and external health locus of control. Yet patients' perceived control over their treatment (hemodialysis) was not. Moreover, perceived control over dialysis did not correlate significantly with perceived control over nonillness life dimensions. Patients may construe their situations as if they have two lives--an illness-specific life and a nonillness one--as a means of coping with the psychological threats imposed by this chronic life-threatening disorder.

As indicated, the question of whether individuals isolate illness-related experiences from their overall experiences of life has broader implications for the study of cognitive mediators of stress. Particularly relevant to this issue is the construct of psychological differentiation which relates to the degree to which experience is analysed and structured and is measured in terms of the number of semantic categories or dimensions typically used to evaluate one's experience (Kagan & Kogan, 1970; Langer, 1970; Witkin, Goodenough, & Oltman, 1979). Postulated as a stable individual differences variable, increasing differentiation is associated with greater self-nonself segregation, specialization of psychological functions, and discreteness of experiences (i.e., a general tendency toward "keeping things separate"; Witkin et al., 1979). Thus, relative to ESRD patients characterized by low

levels of psychological differentiation, more highly differentiated patients would be expected to distinguish more clearly between illness-related and nonillness life domains. But the relationship between psychological differentiation and coping is not a simple one. Whereas one's relative degree of differentiation has direct implications for the diversity of experience, it has no direct bearing on the effectiveness of coping or adjustment (Haan, 1977; Loevinger, 1976; Witkin, 1965). The interaction of psychological differentiation with relevant situational factors, however, may have important implications for psychological well-being given the widely endorsed view that both coping and its effectiveness are the products of a Person X Situation interaction (Averill, 1973; Baum, Fisher, & Solomon, 1981; Haan, 1977; Pearlin & Schooler, 1978).

A potentially critical situational factor relevant to chronic patient populations, in general, and to ESRD patients, in particular, is the intrusiveness of the illness and its treatment: i.e., the degree to which an illness and/or its treatment interfere with the patient's daily life. While a number of researchers have speculated about the importance of this factor in discussing the emotional impact of chronic and life-threatning illnesses, none appear to have explored its contribution empirically. In the case of patients' emotional reactions to ESRD, for example, researchers and clinicians have frequently speculated about the negative emotional impact of such intrusive illness-specific factors as patients' dependencies on medical technology and personnel, the large amount of time required for treatment, economic burdens, travel limitations, and stringent dietary and fluid-intake restrictions (Czaczkes & Kaplan De-Nour, 1978; Ford & Castelnuovo-Tedesco, 1977; Levy, 1978; Reichsman & McKegney, 1978). However, none appear actually to have attempted to measure the emotional impact of these important stressors directly.

Rather, investigators seem to have focussed simply on the prevalence of negative mood states and, upon observing elevated levels, have reasoned backwards that these are due to the intrusive ESRD-specific factors.

All other factors being equal, the intrusiveness of an illness and/or its treatment is hypothesized to exert a negative emotional impact since increasing intrusiveness limits one's opportunities to engage in valued activities. In the case of ESRD and the treatments currently employed in its management, a naturally occurring "objective" continuum of intrusiveness might include (in descending order of intrusiveness): a) hospital hemodialysis (with staff-hospital dialysis possibly more intrusive than self-hospital), b) home hemodialysis, c) continuous ambulatory peritoneal dialysis (CAPD), and d) successful renal transplantation. An individual's perceived degree of intrusiveness, however, may vary widely from this "objective" continuum and so both factors should be evaluated. Nonetheless, these are predicted to covary and actual and perceived intrusiveness are both predicted to reduce patients' positive and increase negative affect. Moreover, one's degree of psychological differentiation is predicted to interact with the intrusiveness--actual or perceived--of ESRD and its treatment in determining mood: i.e., increased differentiation is hypothesized to mitigate the negative emotional impact of intrusiveness. It is unlikely that ESRD and/or its treatment would continue to interfere at a uniformly high level across dimensions of life experience as the number of dimensions increases. Thus, ESRD patients characterized by relatively low levels of psychological differentiation whose illness and/or its treatment are highly intrusive are expected to display the lowest levels of positive and highest levels of negative mood. Relatively highly differentiated patients for whom ESRD and/or its treatment are relatively nonintrusive are hypothesized to express the highest levels of positive and lowest levels of

negative mood. Individuals falling between these two extremes are predicted to display intermediate levels. Moreover, the degree to which one's illness and/or its treatment limit opportunities to engage in valued activities is hypothesized to be an important determinant of perceived control over life in general. Thus, the major finding of Study 1--a strong negative correlation between perceived control over eight nonillness life dimensions and depression--may actually be explained in terms of psychological differentiation, intrusiveness, and their interaction.

Finally, Study 2 presented an opportunity to replicate and extend some of the findings of Study 1 regarding the relative contributions made by illness-related and nonillness life experiences to positive and negative mood. Thus, three families of hypotheses guided Study 2. These focussed on: a) the impact of psychological differentiation, the actual and perceived intrusiveness of ESRD and/or its treatment, and their interactions (i.e., the Differentiation X Intrusiveness model) upon patients' positive and negative affective states; b) the impact of the Differentiation X Intrusiveness model upon ESRD patients' perceived control over nonillness life dimensions and the possibility that this model may explain the negative correlation between perceived control over nonillness life dimensions and depression; and c) the hypothesis that patients may isolate or exclude illness-related from nonillness life experience as a means of coping with the psychological threats imposed by ESRD and its treatment.

Method

Subjects

Dialysis and posttransplant patients from three local hospitals participated. Three background variables were identified in Study 1 as relevant

to negative mood states in the ESRD population: age, general nonrenal health, and number of previous transplant failures. Consequently participants were sampled so as to insure the widest possible distribution of these variables. Participants ranged a) from 19-68 years of age, b) from 0-2 previous transplant failures, and c) from very poor to very good general nonrenal health. Finally, only patients who were well established within their particular treatment modality were included. In the case of hemodialysis and CAPD patients, this criterion included only individuals for whom the initiation of treatment and/or related training had been completed within no less than three months.[3] For posttransplant patients, this criterion included only individuals whose transplants had been performed within no less than one year. Given these constraints, a sample of 35 hemodialysis (including 14 staff-hospital, 12 self-hospital, and 9 home dialysis), 10 CAPD, and 25 posttransplant patients consented to participate ($N = 70$). Nine patients (11.0%) declined to participate; however, they were not disproportionately distributed across the various patient groups, $\chi^2(4) < 1$, $p > .05$. Relevant demographic and medical descriptive statistics are presented in Table 9.

Experimental Factors

Experimental factors were operationally defined as follows:

1. Demographic and medical status. The following were obtained for each participant: age, sex, marital status, Social Network Index (Berkman & Syme, 1979), education, occupation, annual family income, religious affiliation, primary renal disease, sudden vs. insidious onset of renal failure, family history of renal disease, number of previous transplant failures, medications, number of dialyses and number of hours of dialysis per week (hemodialysis patients only), number of years and/or months on dialysis (hemodialysis and CAPD patients only), and number of years posttransplant (posttransplant patients

Table 9

Demographic and Medical Descriptive Statistics

Variable	Hemodialysis			CAPD	Post-transplant	Total Sample
	Staff-Hospital (n = 14)	Self-Hospital (n = 12)	Home (n = 9)	(n = 10)	(n = 25)	(N = 70)
Sex[a] = Female (n)	6	5	5	5	8	29
Male (n)	8	7	4	5	17	41
Age[b] (M)	43.9	36.5	43.4	56.2	36.2	41.6
SES Index[c] (M)	12.0	10.9	12.8	9.1	10.7	11.0
Defensiveness[d] (M)	17.0	15.8	17.1	16.8	12.5	15.2
Organ Dysfunction Scale[e] (M)	3.9	2.8	2.3	2.2	0.7	2.1
Previous Transplant Failures[f] (M)	0.6	0.3	0.0	0.0	0.2	0.2
Years on Dialysis[g] (M)	5.0	2.2	3.4	1.7	-	3.2
Years Post-transplant (M)	-	-	-	-	6.0	6.0
Present Kidney Function[h] (M)	-	-	-	-	1.4	1.4

Note. CAPD = Continuous Ambulatory Peritoneal Dialysis.

[a] $\chi^2(4) = 1.97$, $p > .05$.

[b] $F(4,65) = 5.31$, $p < .001$.

[c] Socioeconomic status (SES) was reflected by a composite score which combined indices of educational, occupational, and family income levels (range = 0-20). $F(4,65) = 2.55$, $p < .05$.

[d] Defensiveness was assessed via the K scale of the MMPI. $F(4,65) = 3.27$, $p < .017$.

[e]This scale assessed general nonrenal physical status. Higher scores reflect poorer health. $F(4,65) = 8.23$, $p < .0001$.

[f]$F(4,65) = 2.76$, $p < .035$.

[g]$F(3,41) = 6.98$, $p < .001$.

[h]Current level of transplanted kidney function was rated by attending staff along a 5-point scale, ranging from 1 = normal, to 5 = severe chronic rejection. Lower ratings, therefore, reflect healthier levels of function.

only). It was suspected that the global 5-point physician rating of nonrenal health (very poor to very good) which had been employed in Study 1 might confound behavioral functional indices of health (which might also be influenced by mood) with strictly medical indices (i.e., "organ dysfunction"). A medically more detailed Organ Dysfunction Scale was thus constructed and employed to indicate participants' general nonrenal health status. The MMPI K scale was also administered as a measure of defensiveness (Dahlstrom, Welsh, & Dahlstrom, 1972).

2. Differentiation of life experience was assessed by a standard card sort method (Glixman, 1965; Kagan & Kogan, 1970; Scott, 1962). Participants were presented with a deck of 12 7.5 cm X 6.25 cm cards on each of which was printed one of the following aspects of life, identified as important to perceived quality of life (e.g., Andrews & Withey, 1976; Atkinson, Blishen, Ovenstern, & Stevenson, 1977; Campbell, Converse, & Rodgers, 1976; Flanagan, 1978; Michalos, in press): work, financial security and material need satisfaction, recreation, family and marital relations, other social relations, sex, self-expression, religious expression, community and civic activities, health, diet, and "your illness and its treatment". Participants were instructed "simply to put together into groups those aspects of life which seem to you to belong together" (the instructions reported by Glixman, 1965, were administered). The reciprocal of the number of groups of cards generated was employed as an index of differentiation. Lower scores thus represent greater differentiation.

3. Intrusiveness. Separate measures of "objective" and perceived intrusiveness of ESRD and/or its treatment were obtained. Objective intrusiveness was defined in terms of the participant's treatment modality. In decreasing order of intrusiveness, this included: staff-hospital, self-hospital, and

home hemodialysis; CAPD; and posttransplant patients. Hospital staff and significant others (e.g., family member, close friend or relative) also provided ratings of the degree to which the participant's "illness and/or its treatment interfere with other aspects of his/her life" along a 7-point scale (ranging from not very much to very much). Perceived intrusiveness regarding 11 aspects of life (the same 11 aspects of life--excluding "your illness and/or its treatment"--which had been included in the differentiation measure) was assessed by self-report. Patients were requested to rate "How much does your illness and/or its treatment interfere with each of these [11] aspects of your life?" along 7-point scales (ranging from not very much to very much). These were summed to provide an overall perceived intrusiveness score.

4. Perceived control was also obtained regarding the 12 aspects of life which were included in the differentiation measure. Patients were asked to rate "How much control do you have over each of these [12] aspects of your life?" along 7-point scales (ranging from little control to a lot of control). They were also asked to rate each of these aspects of life with regard to expected control "in one year from now" (same 7-point scale) and to rate "How important to you are each of these aspects?" (7-point scale ranging from not very important to very important). Two separate summary scores were then constructed, first, by multiplying each of a) perceived (current) and b) expected control scores times their associated importance ratings and, second, by summing them to create separate overall perceived (current) and expected control scores. Hemodialysis and CAPD patients were also asked to rate "the dialysis itself" along the same three dimensions of perceived (current) and expected control, and importance.

Dependent Measures.

A series of 19 variables was selected to measure positive and negative

mood, overall life happiness, self-esteem, depression, and somatic symptoms of distress. These included a variety of self-report measures as well as a separate series of ratings by hospital staff and significant others. Similar measures have been employed previously as indicants of the sense of psychological well-being (e.g., Andrews & Withey, 1976; Bradburn, 1969; Campell et al., 1976; Costa & McCrae, 1980).

1. Self-report measures of affect included the short form of the Beck Depression Inventory (BDI:SF; Beck & Beck, 1972); the Rosenberg (1965) self-esteem scale (RSE); the Bradburn (1969) Affect Balance Schedule (ABS) which includes separate positive (ABS-P) and negative (ABS-N) affect scores; the depression (D) and vigor (V) subscales of the Profile of Mood States (POMS: McNair, Lorr, & Droppleman, 1971; POMS-D assesses negative mood whereas POMS-V measures positive mood); and the Atkinson (1978) 11-point rating of life happiness (ALH; ranging from very unhappy to very happy). Participants also completed a specially constructed checklist of somatic distress symptoms which included all of the somatic items from three widely used psychiatric self-rating scales (Derogatis, Lipman, & Covi, 1976; Kellner & Sheffield, 1973; Langner, 1962).

2. Affect ratings by hospital staff and significant others were also obtained. Staff and significant others each provided indices of participants' positive and negative mood and somatic distress symptoms by completing the POMS-V, POMS-D, and somatic distress symptoms checklist. Hospital staff also completed the Hamilton (1967) Psychiatric Rating Scale for Depression (HAM-D) regarding each participant. In addition, staff and significant others each rated the participant's self-esteem (7-point scale ranging from very low to very high) and overall life happiness (5-point scale ranging from very unhappy to very

happy). All of the materials employed in Study 2 are presented in Appendix B.

Experimenter-Interviewers

There were two experimenter-interviewers to assess the possibility of experimenter-bias since data were obtained via interview (Rosenthal & Rubin, 1978). A research associate conducted 15 assessments. The writer conducted the remaining 55.

Procedure

A standardized interview assessment procedure was again employed and hemodialysis patients were again interviewed while undergoing dialysis. Assessments were completed in one session which required approximately 45 minutes. In the case of persons consenting to participate, needed demographic and medical information was first collected after which the assessment was initiated. All measures were administered verbally by the interviewer and in a random sequence. Ratings by hospital staff and significant others were obtained after the assessment interview with the patient had been completed.

Results

The data analysis strategy was, first, to perform preliminary validity checks; second, to reduce via principal-components analysis the 19 separate measures of positive and negative mood to a smaller, more tractable number of factors; third, to select a subset of demographic and medical variables whose potentially confounding effects could be controlled statistically; fourth, to test the Differentiation X Intrusiveness hypotheses regarding mood and perceived control over 11 nonillness life dimensions; and fifth, to replicate and extend the findings of Study 1 regarding perceived control over illness-related and nonillness life dimensions, mode of treatment, and positive and negative affect. An additional series of analyses was performed to verify the uniformity of these results across the 19 individual measures.

A series of checks was performed to assess the validity of the operational definitions of intrusiveness and to assess potential experimenter expectancy effects or bias due to the facts that patients were sampled from three different hospitals and were taking a variety of medications.

First, with regard to the objective intrusiveness continuum (i.e., the mode of treatment variable), renal transplantation was construed as significantly less intrusive than all four forms of dialysis combined. As anticipated, the perceived intrusiveness ratings of transplantation provided by hospital staff (M = 2.4), significant others (M = 3.4), and patients themselves (M = 27.7) all were signficantly lower than the corresponding ratings regarding the four forms of dialysis collectively (Ms = 4.1, 4.5, 33.3, respectively), one-tailed $ts(68)$ = 3.87, 2.19, 1.92, all $ps < .05$. Surprisingly, however, the 95% confidence intervals revealed no significant difference among the four modes of dialysis along any of these dimensions.

Second, the validity of participants' perceived intrusiveness ratings was supported by a series of significant correlations with related measures. Greater perceived intrusiveness was associated with a) lower perceived control over ESRD and its treatment, $r(68) = -.25$, $p < .02$; b) lower perceived control over dialysis, specifically, $r(43) = -.41$, $p < .002$; and c) higher ratings of intrusiveness by hospital staff, $r(68) = .36$, $p < .001$, and significant others, $r(68) = .26$, $p < .02$. Further, participants' perceived intrusiveness ratings were statistically independent of defensiveness as indicated by the MMPI K scale, $r(68) = .06$, $p > .05$.

Finally, no consistent pattern of relationships emerged among the 19 dependent measures due to differences in the interviewer who collected the data, the hospital at which the patient received treatment, or the type of medications prescribed. Moreover, the inclusion of the latter three factors

in the initial covariate predictor set had no effect on the statistical results obtained and so they have been omitted from the analyses reported below.

Data Reduction via Principal-Components Analysis

Statistics descriptive of the 19 separate measures of positive and negative affect are presented in Table 10 and the varimax rotated final solution of a principal-components analysis applied to these data appears in Table 11. Six principal-components (PCs) were extracted, collectively accounting for 75.9% of the variance in the raw data set. Variables whose squared loadings equaled or exceeded 50% of the corresponding communalities were viewed as important in interpreting and labeling the final solution. The first principal component to be extracted, PC1, was labeled self-reported negative mood; PC2 was termed hospital rating of positive mood; PC3 was hospital rating of negative mood; PC4 was family rating of positive mood; PC5 was self-reported positive mood; and PC6 was family rating of negative mood.

A multitrait-multimethod analysis of the convergent and discriminant validity (Campbell & Fiske, 1959) of these measures was also conducted given the emergence of separate positive and negative mood PCs for each of the three methods of measurement (i.e., self-report vs. hospital rating vs. family rating). The analysis was applied to the six variables for which measures were obtained via all three methods--i.e., positive and negative mood, self-esteem, overall life happiness, somatic distress symptoms, and depression (family ratings of depression were inadvertently omitted). The results (Table 12) indicated evidence of moderate convergent validity insofar as the correlations between different measures of the same variable (i.e., the monotrait-heteromethod correlations; e.g., the correlation between BDI:SF and HAM-D) were statistically significant and psychologically meaningful (all

Table 10

Descriptive Statistics: 19 Measures of Affect

Variable	M	SD	Minimum Observed Value	Maximum Observed Value
Beck Depression Inventory: Short Form[a]	3.5	2.9	0	11
Self-Esteem Scale	8.8	1.5	3	10
ABS-Negative Mood	1.4	1.6	0	5
ABS-Positive Mood	3.0	1.4	0	5
POMS-Depression	7.2	10.5	0	47
POMS-Vigor	15.1	6.9	0	28
Life Happiness	7.8	1.9	3	11
Somatic Distress Symptoms	7.3	6.9	0	33
Hamilton-Depression	6.6	6.9	0	29
Hospital Rating 1: Self-Esteem	5.0	1.5	1	7
Hospital Rating 2: POMS-Depression	7.7	9.7	0	39
Hospital Rating 3: POMS-Vigor	14.5	7.0	1	29
Hospital Rating 4: Life Happiness	3.0	0.9	1	5
Hospital Rating 5: Somatic Distress Symptoms	5.1	7.1	0	28
Family Rating 1: Self-Esteem	5.5	1.4	1	7
Family Rating 2: POMS-Depression	7.5	8.9	0	43
Family Rating 3: POMS-Vigor	13.7	5.9	0	25
Family Rating 4: Life Happiness	3.4	0.9	1	5
Family Rating 5: Somatic Distress Symptoms	8.1	7.5	0	32

Note. ABS= Affect Balance Schedule; POMS= Profile of Mood States.

[a]According to Beck & Beck (1972), scores of 0-4= nondepressed; 5-7= mild depression; 8-15= moderate depression; 16+= severe depression.

Table 11

Principal-Components Analysis of 19 Measures of Affect

Variables	Principal Components						h^2
	1	2	3	4	5	6	
Beck Depression Inventory: Short Form	60	-27	15	-20	-42	14	70
Self-Esteem Scale	-46	12	-40	14	44	26	67
ABS-Negative Mood	77	-18	08	-27	14	09	73
ABS-Positive Mood	05	07	-21	13	78	02	67
POMS-Depression	80	-15	15	-07	03	24	75
POMS-Vigor	-19	12	-04	05	77	-34	77
Life Happiness	-68	06	03	21	37	-02	65
Somatic Distress Symptoms	58	07	32	-01	-08	55	75
Hamilton-Depression	19	-24	84	10	-12	18	86
Hospital Rating1: Self-Esteem	-08	92	-09	05	07	06	87
Hospital Rating 2: POMS-Depression	14	-53	70	-13	-05	10	82
Hospital Rating 3: POMS-Vigor	-13	85	-07	06	18	-09	79
Hospital Rating 4: Life Happiness	-21	72	-35	11	-04	-21	74
Hospital Rating 5: Somatic Distress Symptoms	05	-02	87	-14	-17	17	84
Family Rating 1: Self-Esteem	-22	12	07	89	02	-10	88
Family Rating 2: POMS-Depression	22	-14	14	-50	-04	64	75
Family Rating 3: POMS-Vigor	-06	-02	-01	53	47	-39	66
Family Rating 4: Life Happiness	-25	07	-24	76	27	-13	80
Family Rating 5: Somatic Distress Symptoms	13	-13	21	-15	-17	78	74
Eigenvalue	6.83	2.26	1.62	1.49	1.28	0.94	
% Variance Accounted For	36.0	11.9	8.5	7.9	6.7	4.9	

Note. This table presents the varimax rotated solution. Total variance accounted for = 75.9%. Loadings of variables considered in interpreting each principal component appear in italics. Decimals have been omitted from all reported factor loadings and communalities. PC1 = self-reported negative mood; PC2 = hospital rating of positive mood; PC3 = hospital rating of negative mood; PC4 = family rating of positive mood; PC5 = self-reported positive mood; PC6 = family rating of negative mood. ABS = Affect Balance Schedule; POMS= Profile of Mood States.

Table 12

Multitrait-Multimethod Matrix

Self-Report	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Beck Depression																	
2. Self-Esteem	-55*																
3. POMS-Depression	52*	-34*															
4. POMS-Vigor	-50*	36*	-23*														
5. Life Happiness	-50*	39*	-46*	36*													
6. Somatic Distress Symptoms	50*	-23*	54*	-31*	-48*												
Hospital Staff Rating																	
7. Hamilton-Depression	33*	-43*	32*	-27*	-19	46*											
8. Self-Esteem	-35*	22*	-16	13	18	-05	-30*										
9. POMS-Depression	43*	-35*	39*	-22*	-14	30*	72*	-54*									
10. POMS-Vigor	-43*	25*	-26*	26*	20*	-13	-31*	74*	-51*								
11. Life Happiness	-30*	29*	-36*	26*	25*	-29*	-56*	65*	-62*	57*							
12. Somatic Distress Symptoms	30*	-35*	22*	-23*	-13	43*	71*	-14	63*	-19	-33*						
Family Ratings																	
13. Self-Esteem	-35*	21*	-32*	14	38*	-19	06	18	19	17	22*	-10					
14. POMS-Depression	43*	-17	42*	-36*	-25*	47*	22*	-10	35*	-22*	-41*	31*	-56*				
15. POMS-Vigor	-35*	18	-17	30*	34*	-32*	-17	05	-15	16	11	-22*	46*	-38*			
16. Life Happiness	-50*	38*	-27*	40*	43*	-38*	-28*	14	-31*	26*	30*	-37*	65*	61*	58*		
17. Somatic Distress Symptoms	36*	-21*	34*	-37*	-21*	48*	36*	-15	31*	-24*	-30*	37*	-28*	-52*	-42*	-33*	

Note. POMS = Profile of Mood States

*$p < .05$

but two of these 18 coefficients were significant at the .05 level and ranged from +.21 to +.50). However, little evidence emerged in support of the discriminant validity of the measures. The monotrait-heteromethod correlations, for example, frequently failed to exceed the correlations between two different variables which had been measured via different methods (i.e., heterotrait-heteromethod correlations; e.g., the correlation between BDI:SF and hospital ratings of self-esteem). Moreover, the monotrait-heteromethod correlations also frequently failed to exceed the correlations between two different variables which had been measured via the same method (i.e., heterotrait-monomethod correlations; e.g., the correlation between HAM-D and hospital ratings of self-esteem), indicating a substantial component of method variance for several of the measures.

Covariate Selection

Any demographic or medical variable which correlated significantly with two or more PCs was retained as a covariate. This criterion identified four covariates: age, general nonrenal health status, defensiveness (indicated by the MMPI K scale), and an index of socioeconomic status (which combined education, occupation, and family income levels). Their relationships with the six PCs are reported in Table 13.

Findings: Psychological Differentiation X the Intrusiveness of ESRD and/or its Treatment

The six positive and negative affect PCs and participants' scores regarding their perceived control over 11 nonillness life dimensions each were analysed via a separate hierarchical multiple regression/correlation analysis (Cohen & Cohen, 1975). Covariate variables were entered first into the regression equation. Experimental variables were subsequently entered in the following order: a) psychological differentiation, b) mode of treat-

Table 13

Product-Moment Correlations:

Covariates with Six Principal Components

Variable	Principal Components					
	1	2	3	4	5	6
Age	-31			25	-29	
Organ Dysfunction Scale			44		-30	24
Defensiveness	-40					28
SES Index		21				33

Note. Only significant ($p < .05$) coefficients have been included. Decimal points have been omitted. $N = 70$. PC1 = self-reported negative mood; PC2 = hospital rating of positive mood; PC3 = hospital rating of negative mood; PC4 = family rating of positive mood; PC5 = self-reported positive mood; PC6 = family rating of negative mood.

ment; c) perceived intrusiveness; d) the Differentiation X Perceived Intrusiveness interaction; and finally, e) the Differentiation X Mode of Treatment interaction. Quantitative experimental variables (e.g., perceived intrusiveness scores) were entered directly into the equation; qualitative variables (e.g., mode of treatment) were represented by effects-coded variables; and interactions were represented by the partialed products of earlier entered variables. Results for quantitative experimental variables have been reported in terms of their associated partial correlations. Results for qualitative variables and sets of variables (e.g., the four covariates) have been reported in terms of the F ratios derived from their associated increments in R^2. Unless otherwise indicated, all statistical tests, with the exception of those regarding psychological differentiation, are one-tailed.

Positive and negative affect. As predicted, greater perceived intrusiveness of ESRD and/or its treatment was associated with decreased positive and increased negative mood (Table 14). Also as expected, psychological differentiation failed to correlate with participants' affective states. Contrary to prediction, however, the mode of treatment variable and the two interaction terms did not contribute to participants' moods.

The hierarchical regression analysis revealed that increased perceived intrusiveness was associated with increased self-reported negative mood (PC1), decreased self-reported positive mood (PC5), and lower hospital ratings of positive mood (PC2). The corresponding analyses of the individual variables loading on these three PCs provide a more detailed indication of these relationships (Table 15).

Perceived control over 11 nonillness life dimensions. As predicted, the results indicated that perceived control over 11 nonillness life dimensions was inversely related to the perceived intrusiveness of ESRD and/or its

Table 14

Hierarchical Regressions of Psychological Differentiation X Intrusiveness Experimental Factors on Six Principal Components

Experimental Factors	Principal Components					
	1	2	3	4	5	6
Covariates[a] $F(4,65)$	4.79**	1.10	4.63**	1.28	2.80*	3.99**
Psychological Differentiation (A) partial $r(64)$	.17	.00	.01	.26*	-.03	.02
Mode of Treatment (B) $F(4,60)$	1.64	< 1.0	< 1.0	4.45*	< 1.0	< 1.0
Perceived Intrusiveness (C) partial $r(59)$	.37**	-.21*	.14	.00	-.23*	.04
A X C partial $r(58)$	-.24	.16	-.07	-.17	-.14	-.04
A X B $F(4,54)$	< 1.0	1.17	1.30	< 1.0	< 1.0	2.24

Note. Results for quantitative experimental factors have been reported in terms of partial correlations. Results for qualitative factors and factors represented by sets of factors have been reported in terms of the F ratios derived from their associated increments in R^2. All statistical tests with the exception of those regarding Psychological Differentiation are one-tailed. PC1 = self-reported negative mood; PC2 = hospital rating of positive mood; PC3 = hospital rating of negative mood; PC4 = family rating of positive mood;

PC5 = self-reported positive mood; $PC6_b$ = family rating of negative mood.

[a]Covariates included age, nonrenal physical status, defensiveness, and socioeconomic status.

*$p < .05$

**$p < .01$

Table 15

Partial Correlations Between Perceived Intrusiveness of ESRD and/or Its Treatment and Variables Loading on Three Principal Components

Variable	Perceived Intrusiveness partial $r(59)$[a]
ABS-Negative Mood (PC1)	24*
POMS-Depression (PC1)	37***
Beck Depression Inventory: Short Form (PC1)	57***
Somatic Distress Symptoms (PC1)	32***
Life Happiness (PC1)	-27**
Self-Esteem (PC1)	-11
ABS-Positive Mood (PC5)	-25**
POMS-Vigor (PC5)	-24*
Hospital Rating 1: Self-Esteem (PC2)	-25**
Hospital Rating 3: POMS-Vigor (PC2)	-27**
Hospital Rating 4: Life Happiness (PC2)	-25**

Note. Decimals have been omitted. Principal components on which variables loaded have been indicated in parentheses. PC1 = self-reported negative mood; PC2 = hospital rating of positive mood; PC5 = self-reported positive mood. ABS = Affect Balance Schedule; POMS= Profile of Mood States.

[a]Age, nonrenal physical status, defensiveness, socioeconomic status, psychological differentiation, and mode of treatment have been partialed out.

*$p < .05$

**$p < .025$

***$p < .01$

treatment, partial $r(59) = -.32$, $p < .006$, but unrelated to psychological differentiation, partial $r(64) = -.04$, $p > .05$. Also as observed in the preceding analysis, however, no evidence emerged in support of predictions regarding mode of treatment and the two interactions.

The possibility that the perceived intrusiveness of ESRD and/or its treatment may contribute to the relationship that was observed in Study 1 between depression and perceived control over nonillness life dimensions was explored via an analysis of partial variance (Cohen & Cohen, 1975; Glass & Stanley, 1970). Participants' perceived control scores were correlated with each of the six PCs after controlling statistically for (i.e., partialing out) their perceived intrusiveness scores and the four covariates. The strategy in performing these analyses was to assess the degree of association between affective states and perceived control over 11 nonillness life dimensions both before and after taking into account the influences of perceived intrusiveness. If a lower order but not its corresponding higher order partial correlation were significant, then it might be argued that the relationship reflected in the former is accounted for largely by the variable whose contribution has been removed statistically in the latter.

As expected, perceived control over 11 nonillness life dimensions was significantly related to both self-reported negative (PC1), $r(64) = -.36$, and positive mood (PC5), $r(64) = .31$, both $ps < .005$, after controlling for the four covariates, indicating that lower levels of perceived control were associated with both higher levels of negative and lower levels of positive mood. Moreover, these relationships remained significant after perceived intrusiveness had been partialed out in addition, partial $r(63)s = -.28$ and .25, respectively, both $ps < .02$. Corresponding analyses of the individual variables which loaded on these PCs yielded a consistent pattern of results

(Table 16). Hospital staff (PCs 2 and 3) and family ratings (PCs 4 and 6) were unrelated to participants' perceived control over 11 nonillness life dimensions, however.

Do ESRD Patients Isolate Illness-Related From Nonillness Life Experience?

The hypothesis that ESRD patients may isolate illness-related from nonillness life experience was explored by applying a multidimensional scaling analysis developed for nominal scale data (Takane, 1980) to the results of the card sort task regarding 12 aspects of life. While the number of groupings generated by participants ranged from 1 to 9 ($M = 4.3$), only one dimension was required to represent the 12 aspects of life, $\chi^2(242) = 491.49$, $p < .0001$. As indicated in Table 17, three identifiable clusters of life experience emerged, corresponding to health, personal life, and social life.

Differential contributions of perceived control to mood as a function of these three clusters of life experience were subsequently explored via analyses of partial variance. Separate perceived control and intrusiveness scores were generated for each of the three clusters by summing the corresponding ratings (in the case of the health cluster, the corresponding perceived intrusiveness score included only participants' ratings regarding health and diet). The results are reported in Table 18 where it can be seen that each of the three perceived control scores contributed significantly to self-reported mood both before and after controlling statistically for perceived intrusiveness. In each case, low levels of perceived control were associated with decreased positive and increased negative mood.

Replication of Additional Study 1 Findings Regarding Perceived Control

Finally, the perceived control data collected in the present study afforded an opportunity to replicate some additional findings of Study 1

Table 16

Analysis of Partial Variance: Perceived Control over 11 Nonillness Life Dimensions and Positive and Negative Affect

Variable	partial $r(64)^a$	partial $r(63)^b$
PC1	-36***	-28**
ABS-Negative Mood (PC1)	-28**	-22*
POMS-Depression (PC1)	-35***	-26**
Beck Depression Inventory: Short Form (PC1)	-49***	-39***
Somatic Distress Symptoms (PC1)	-24*	-14
Life Happiness (PC1)	43***	38**
Self-Esteem (PC1)	18	14
PC5	31***	25**
ABS-Positive Mood (PC5)	33***	28**
POMS-Vigor (PC5)	24**	17

Note. Decimals have been omitted. Principal components on which variables loaded have been indicated in parentheses. PC1 = self-reported negative mood; PC5 = self-reported positive mood; ABS = Affect Balance Schedule; POMS = Profile of Mood States.

[a]The four covariates--age, nonrenal physical status, defensiveness, and socioeconomic status--have been partialed out.

[b]Perceived intrusiveness and the four covariates have been partialed out.

*$p < .05$

**$p < .025$

***$p < .01$

Table 17

Multidimensional Scaling Analysis of 12 Aspects of Life Derived From Card Sort Task Data

Cluster	Aspect of Life	Scale Values
1. Health		
	Health	.45
	Diet	.45
	ESRD and its treatment	.46
2. Personal Life		
	Family and marital relations	-.04
	Sex	-.09
	Self-expression	-.07
	Work	-.01
	Financial security	.05
3. Social Life		
	Community and civic activities	-.38
	Recreation	-.28
	Nonfamily social relations	-.28
	Religious expression	-.27

Eigenvalue = 0.70, $\chi^2(242) = 491.49$, $p < .0001$

Table 18

Analysis of Partial Variance: Perceived Control Over Three Clusters of Life Experience and Mood

Variable	Perceived Control Over					
	Health		Personal Life		Community Involvement	
	partial r(64)[a]	partial r(63)[b]	partial r(64)[a]	partial r(63)[b]	partial r(64)[a]	partial r(63)[b]
PC1	-27**	-24*	-39***	-41***	-24*	-20*
ABS-Negative Mood (PC1)	-20*	-17	-31***	-32***	-17	-14
POMS-Depression (PC1)	-28**	-23*	-35***	-37***	-24*	-21*
Beck Depression Inventory: Short Form (PC1)	-39***	-34***	-50***	-45***	-37***	-34***
Somatic Distress Symptoms (PC1)	-14	-09	-17	-15	-27**	-22*
Life Happiness (PC1)	42***	41***	44***	45***	29***	27**
Self-Esteem (PC1)	09	10	26**	26**	08	08
PC5	29***	27**	31***	26**	23*	22*
ABS-Positive Mood (PC5)	22*	19	35***	31***	26**	25**
POMS-Vigor (PC5)	24*	22*	20*	17	22*	-20*

Note. Decimals have been omitted. Principal components on which variables loaded have been indicated in

parentheses. PC1 = self-reported negative mood; PC5 = self-reported positive mood; ABS = Affect Balance Schedule; POMS = Profile of Mood States

[a]The four covariates--age, nonrenal physical status, defensiveness, and socioeconomic status--have been partialed out.

[b]Perceived intrusiveness and the four covariates have been partialed out.

*$p < .05$

**$p < .025$

***$p < .01$

regarding perceived control. First, consistent with the results of Study 1, perceived control over dialysis differed significantly as a function of mode of treatment, $F(3,36) = 7.07$, $p < .001$, with staff-hospital hemodialysis patients ($M = 3.5$) reporting significantly less control over dialysis than self-hospital ($M = 6.2$), home dialysis ($M = 5.6$), or CAPD patients, ($M = 6.2$), as indicated by 95% confidence intervals. No other pairwise or complex comparison of these means was significant, however. Second, and also consistent with Study 1, perceived control over 11 nonillness life dimensions did not differ among hemodialysis, CAPD, and posttransplant patients, $F(4,65) < 1$. Third, perceived control over dialysis failed to correlate significantly with any of the six affect PCs, as was observed in Study 1. Fourth, the data provided strong support for the assumption made in Study 1 that the expectation of future control is closely related to the perception of current control. Participants' perceived (i.e., current) and expected control over 11 nonillness life dimensions were highly correlated, $r(68) = .97$, $p < .001$. Fifth, and in direct contradiction to the observation of Study 1, however, perceived control over dialysis correlated positively and significantly with perceived control over 11 nonillness life dimensions, $r(43) = .52$, $p < .001$, and this correlation remained unchanged despite partialing out the mode of treatment and perceived intrusiveness variables, partial $r(39) = .60$, $p < .001$. However, Study 1 included only ESRD patients in relatively good nonrenal health, whereas the particpants in Study 2 were sampled so as to include the widest possible range along this important dimension. The discrepancy between the two studies might therefore be due to this difference in sampling strategy. In fact, these two perceived control scores failed to correlate significantly when the coefficient was recomputed in the subsample of dialysis patients ($n = 22$) who scored below the median ($Mdn = 2$) on the Organ Dysfunction Scale, $r(20) = .24$, $p > .05$.

Discussion

As predicted, increased perceived intrusiveness of ESRD and/or its treatment was associated with self-reports of increased negative and decreased positive mood, indicating that the extent to which a chronic illness such as ESRD interferes with other, nonillness, life dimensions is an important contributor to patients' feelings of happiness and unhappiness. Interestingly, however, the mode of treatment factor--i.e., the "objective" index of intrusiveness--did not contribute to patients' moods, despite the fact that dialysis and transplantation, at least, were viewed as differentially intrusive by patients, hospital staff, and significant others alike. Thus, it would appear that the objective differences in intrusiveness which characterize these treatment modalities do not contribute importantly to patients' perceptions of intrusiveness. That is, the simple facts that a) one has reached the end stage of renal failure and thus b) requires a more intensive form of medical care--regardless of whether it be hemodialysis, CAPD, or renal transplantation--would appear to contribute importantly to patients' overall perceptions of the intrusiveness of their illness whereas differences among the various treatment modalities, themselves, would appear to contribute only trivially, if at all, to these perceptions.

Consistent with previous research and theory (e.g., Haan, 1977; Loevinger, 1976; Witkin et al., 1979), participants' moods were unrelated to their levels of differentiation. However, the results failed to support the hypothesis that the positive and negative affects experienced by ESRD patients are determined by the interaction of Psychological Differentiation X the Intrusiveness of their illness and/or its treatment.

Positive and Negative Affect in ESRD

A low level of depression characterized the present ESRD sample (e.g.,

BDI:SF M = 3.5, SD = 2.9, range = 0-11; HAM-D M = 6.6, SD = 6.9, range = 0-29). Indeed, participants appeared to report more positive than negative moods (cf. Table 10). While these observations are consistent with the findings of Study 1, they are at variance with the existing clinical literature which has concluded that the prevalence of pathological depression in ESRD patient populations is very high. Unlike the larger literature, however, the present findings have been obtained from a representative ESRD sample and using a battery of objective, standardized, measures. In addition, a number of quasi-experimental controls were included. Collectively, these considerations support the validity of the conclusion that the prevalence of clinical depression is generally low among ESRD patients.

Measurement of affect. The finding that positive and negative mood states were statistically independent of each other is consistent with previous research which has concluded that these affects are more validly represented by two orthogonal unipolar dimensions than by a single bipolar one (e.g., Bradburn, 1969; Costa & McCrae, 1980). Two other findings would appear to be more disconcerting, however: a) separate positive and negative mood PCs emerged for each of the three methods of measurement (i.e., self-report vs. hospital staff ratings vs. family ratings) and b) the multitrait-multimethod matrix indicated that several of these measures were contaminated by a large component of method variance. Interestingly, only the self-report measures yielded a consistent pattern of significant results in Studies 1 and 2, despite the fact that similar collateral data were collected both times. It may be that internal affective states are inaccessible to outside observers--even to those most intimate with a participant--and therefore cannot be assessed reliably via methods other than self-report (Rhem, 1976).

Perceived Control, Perceived Intrusiveness, and Mood

Low levels of perceived control over nonillness life dimensions correlated significantly with increased depression in Study 1 and this finding was replicated and extended in Study 2. Similarly, the perceived intrusiveness of ESRD and/or its treatment was identified as an important determinant of patients' moods. Lower levels of perceived control over 11 nonillness life dimensions and greater perceived intrusiveness each were associated with significantly increased negative and decreased positive moods. Perceived control would appear to relate to beliefs regarding one's abilities to obtain positively valued outcomes as well as to avoid or prevent negatively valued ones (Abramson et al., 1978; Bandura, 1977b). Given the results of Study 1 and its subsequent social learning theory reinterpretation, moreover, such beliefs should derive from the individual's corresponding efficacy and outcome expectancies. Perceived intrusiveness, on the other hand, would seem to reflect the extent to which ESRD--or, in fact, any chronic illness--is perceived by patients to interfere with or disrupt nonillness activities and interests. Patients may believe that a number of illness-induced barriers make it more difficult for them to participate in valued activities or to pursue important interests and, as a result, these may contribute to increased perceived intrusiveness. In ESRD, such barriers might include the threat of death, dependencies on medical machinery and personnel, economic burdens, the large amount of time required for treatment, travel limitations, and dietary and fluid-intake restrictions. Thus, whereas perceived control may reflect the extent to which one feels capable of obtaining positive and avoiding negative outcomes, perceived intrusiveness may represent the individual's estimate of the degree to which this is reduced because of illness-

induced barriers. In the case of hemodialysis, for example, patients often indicated that they perceived themselves as having relatively high degrees of control over nonfamily social relations because it was within their power to select the individuals with whom they wished to socialize and they often decided on the activity to be shared with friends. However, since their treatments were most commonly scheduled on three evenings per week and they typically also wished to reserve one or two evenings per week for family visits, they often indicated that their treatment interfered substantially with this life dimension.

The finding that patients' perceived control and intrusiveness scores correlated negatively and significantly with each other is consistent with this interpretation. But it is also compatible with the competing hypothesis of spuriousness--i.e., that the contributions to mood made by the two perceptions actually derive from a common third variable (Campbell & Stanley, 1963; Kenny, 1979). The hierarchical regression analyses and the analyses of partial variance indicated collectively, however, that each of these two relationships was unique and independent of the other. Moreover, each yielded additional explanatory power regarding mood beyond that provided by relevant medical (general nonrenal health) and demographic variables (age, socioeconomic status) and defensiveness.

Illness-Related Versus Nonillness Life Experience

Finally, the hypothesis that ESRD patients may isolate or exclude illness-related experiences from their overall experiences of life received partial support. The multidimensional scaling analysis identified three separate clusters of life experience--health, personal life, and social life--indicating that patients do seem to perceive illness-related life dimensions as independent of nonillness experience. However, the analyses of partial

variance which subsequently explored the emotional impact of patients' corresponding perceived control and intrusiveness revealed that all three clusters were importantly related to patients' moods. In each case, lower levels of perceived control were associated with increased negative and decreased positive mood after controlling statistically for perceived intrusiveness and the four covariates. Thus, whereas patients discriminated between illness-related and nonillness life dimensions, both types of experience contributed importantly to mood. These findings would appear to disconfirm the hypothesis that illness-related life experiences are minimized as a means of coping with the psychological threats imposed by a chronic illness such as ESRD.

Although derived from data generated by an ESRD patient population, the findings of the present research are easily applicable to a broader range of individuals--e.g., physically disabled, diabetic, or geriatric patient populations, among others--and this will be discussed in greater detail in the next section.

INTEGRATION, CONCLUSIONS, AND IMPLICATIONS

There is a strong consensus that ESRD and its treatment by dialysis and transplantation are highly stressful and that patients typically react with pathologically elevated levels of depression, characterized by intense feelings of helplessness and hopelessness. Yet despite a plethora of hypotheses and published reports, few inferences may be drawn with confidence from the existing literature due to three serious weaknesses: a) no controlled, systematic, survey of the incidence and intensity of the depression experienced by ESRD patient populations appears to have been reported; b) the relationships between depression and relevant medical and demographic background variables appear not to have been explored empirically; and c) the relative importance of psychological as compared to background variables has not yet been assessed. The present thesis addressed itself to these issues.

Depression and Mood in ESRD

Two cross-sectional studies were conducted and indicated a low prevalence of clinical depression in ESRD patient populations. Although this finding is clearly in contradiction to the extant literature, several considerations support its validity and generalizability. For example, a relatively large sample of ESRD patients was included (total N = 140 of whom 37 participated in both of the two studies) and each of the three currently recognized therapy modalities was represented--i.e., maintenance hemodialysis, CAPD, and renal transplantation. Moreover, patients from four separate hospitals participated and were sampled (in Study 2) so as to include the widest possible ranges of relevant medical and demographic characteristics. A multitrait-multimethod measurement approach was adopted and a battery of objective and standardized measures of depression and mood was employed. Finally, the potentially biasing influences of experimenter expectancy effects, mood-

altering medications, and defensive response tendencies were evaluated and controlled statistically where necessary. Thus, it would seem reasonable to assert that helplessness, hopelessness, and depression do not represent the unavoidable psychological sequelae of ESRD as has been claimed. Tremendous improvements have been achieved in the technology and delivery of dialytic and transplantation therapies over the past 20 years (Guttmann, 1979; Manis & Friedman, 1979). As a result, these ways of life may no longer be as stressful or uncertain as they were when the therapies were first introduced. While early observers may have been accurate in reporting widespread and clinically elevated negative mood states, the present research must firmly conclude that this is no longer the case.

Relationships with Medical and Demographic Factors

As indicated, researchers to date appear not to have examined empirically the associations between relevant medical and demographic background variables and mood in ESRD patient populations. The present research offered an initial attempt to reverse this deficit by exploring the importance of several patient characteristics, including age, marital status, social networks, intelligence, education, occupation, annual family income, religious affiliation, general nonrenal health, primary renal disease, sudden vs. insidious onset of renal failure, family history of renal failure, number of previous transplant failures, number of dialyses and number of hours of dialysis per week, number of years on dialysis or posttransplant, and defensiveness. In all, 18 demographic and medical characteristics were explored and yet, surprisingly, only a small number of these contributed significantly to ESRD patients' moods. However, as is apparent in Table 19, the interrelationships even among these few variables and the affect measures did not yield a highly consistent pattern across the two studies.

Table 19

Correlations Between Three Background Variables and Self-Reported Mood in Studies 1 and 2

Variable	Study 1	Study 2			
	Depression (PC1)	Negative Mood (PC1)		Positive Mood (PC5)	
	(Total sample) N=70	(Healthy Subsample) n=33	(Total Sample) N=70	(Healthy Subsample) n=33	(Total Sample) N=70
Age	28*	-48*	-31*	-09	-29*
General Nonrenal Health[a]	-31*	30*	-11	-21	30*
Number of Previous Transplant failures	31*	13	03	09	14

Note. Decimals have been omitted.

[a]Higher values of this variable indicate healthier status. The algebraic signs of correlations between the Organ Dysfunction Scale and the two mood principal components (Study 2) have been reversed, therefore, so that coefficients may be compared more easily across the two studies.

*$p < .05$

Despite the different sampling strategies which characterized the two studies, the patients who participated in Study 1 were similar in age (M = 40.6, SD = 12.6, range = 18-69) and number of previous transplant failures (M = 0.3, SD = 0.6, range = 0-2) to those included in Study 2 (age: M = 41.6, SD = 13.9, range = 19-68; number of previous transplant failures: M = 0.2, SD = 0.5, range = 0-2). The two samples did differ considerably in general nonrenal health, however. Whereas only patients in relatively good nonrenal health were included in Study 1, Study 2 carefully sampled participants to obtain the widest possible range of this important dimension. Yet the discrepancies remained even when these correlations were recomputed among only those Study 2 participants who were comparable to the Study 1 sample in nonrenal health (i.e., the 33 Study 2 participants who scored below the median on the Organ Dysfunction Scale). Thus, these discrepancies cannot be accounted for by the fact that different sampling strategies were employed in Studies 1 and 2.

Other discrepancies emerged as well. For example, patient characteristics which were unrelated to mood in the present studies have been identified as important contributors in previous research: e.g., social networks (Guttmann & Binik, in press; Mueller, 1980) and sex (Amenson & Lewinsohn, 1981; Radloff & Rae, 1979). Paradoxically, the two studies yielded more consistent results in identifying background variables which appear to be unrelated to patients' emotions (e.g., family history of renal failure, sudden vs. insidious onset of renal failure, number of years on dialysis or posttransplant, number of dialyses and number of hours on dialysis per week). It would seem imprudent, therefore, to draw any firm conclusions regarding the relationships between medical and demographic background variables and mood in ESRD patient populations until further data are available.

One serious problem to be overcome is that of obtaining homogeneous research samples since demographic and medical characteristics cannot be experimentally controlled or randomly assigned. The most appropriate defense against this difficulty would appear to be the inclusion of large numbers of participants and, in fact, recent investigations have explored the epidemiology of depression and mood in samples in the range of 1,000-2,500 (e.g., Amenson & Lewinsohn, 1981; Radloff & Rae, 1979). Once a set of mood-relevant characteristics has been identified and replicated in representative ESRD samples, subsequent research must identify their psychological significance. Chronological age, for example, would not be considered as a primary explanatory variable since age-related changes are not due solely to the passage of time. Rather, a more satisfying explanation requires the identification of factors (e.g., stressful life events) which actually influence affect but which also require the passage of time in order to occur (Baltes & Willis, 1977). Thus, while future investigations of the psychosocial impact of ESRD and other chronic life-threatening illnesses must continue to assess and control quasi-experimentally for relationships among dependent variables and sample-relevant background characteristics, no strong conclusions may be drawn regarding these relationships in the larger population until research such as that outlined above has been conducted.

Psychological Contributors to Helplessness, Depression, and Mood in ESRD

Psychological factors contributed importantly to the helplessness, depression, and mood of ESRD patients. Moreover, these contributions were unique and independent of those made by relevant background variables.

Perceived control and learned helplessness. In the first of two studies which focussed on the emotional significance of control, the Abramson et al. (1978) reformulated learned helplessness theory of depression was explored as

a psychological explanation for the development of depression in ESRD. The situation faced by this patient population also provided a natural setting within which this hypothesis could be tested as a theoretical model of depression since personal control over a number of important life dimensions is severely limited in ESRD and patients have differing amounts of control over their life-maintaining treatments. However, the attributional reformulation proposed by Abramson et al. was not supported. Moreover, new hypotheses about factors specific to ESRD (e.g., objective and perceived probabilities of transplant and their interaction with type of dialysis) which were derived from the Abramson et al. reformulation also failed to gain support. Paradoxically, the strongest positive finding of Study 1 is consistent with the original learned helplessness theory of depression (Seligman, 1975): i.e., lower levels of perceived control over eight nondialysis life dimensions correlated significantly with both increased depression and external locus of control (generalized and health). The magnitude of these correlations was modest, however, and this was interpreted as suggesting that other psychological factors in addition to the cognition of response-outcome independence might contribute importantly to the relationship between depression and perceived control.

Perceived self-efficacy and outcome expectancies. This possibility was explored preliminarily by reanalysing some of the data collected in Study 1 in terms of the social learning theory distinction between efficacy and outcome beliefs (Bandura, 1977a). An outcome belief, defined as an individual's estimate of the extent to which a given behavior is capable of producing certain outcomes, was noted to be highly similar to the expectancy of response-outcome contingency postulated by helplessness theory (Abramson et al., 1978; Seligman, 1975) as well as to the construct of internal-external locus of control (Rotter,

1966). An efficacy belief, on the other hand, has been defined as the conviction that one can successfully execute the behavior required to produce a given outcome and it was hypothesized that such beliefs might also contribute importantly both to the cognition of uncontrollability and to its associated negative mood states. The results supported this social learning theory reinterpretation and revealed that efficacy and outcome beliefs each contributed significantly and uniquely to participants' self-reported feelings of helplessness, depression, and low self-esteem. Thus, perceived control over a variety of life dimensions and its contributions to positive and negative mood would appear to derive from both of these important cognitive determinants.

Psychological differentiation, intrusiveness, and perceived control. Additional determinants of the negative correlation between perceived control and depression that was observed in Study 1 were explored in Study 2 which replicated and extended this finding. In Study 2, lower levels of perceived control over a variety of important life dimensions correlated significantly with both increased negative and decreased positive mood. In addition, Study 2 examined the hypothesis that this relationship might be explained in terms of psychological differentiation, the actual and perceived intrusiveness of ESRD and/or its treatment, and their interactions. As anticipated, perceived intrusiveness contributed significantly to both perceived control and affect although, contrary to prediction, actual intrusiveness (operationally defined in terms of treatment modality) and the two Differentiation X Intrusiveness interactions did not. Greater perceived intrusiveness was associated with increased negative and decreased positive mood and with significantly reduced perceived control. Yet, perceived intrusiveness did not account for the relationship between perceived control and affect, indicating that these two cognitive factors represent separate and independent psychological determinants of emotion. Perceived

control would appear to relate to an individual's abilities to achieve or obtain positively valued outcomes and to avoid or prevent negatively valued ones (Abramson et al., 1978; Bandura, 1977b). Perceived intrusiveness on the other hand, may derive from patients' perceptions of a number of illness-induced barriers which can reduce their opportunities to pursue valued activities and interests. Several such barriers relevant to ESRD were identified and included the threat of death, dependencies on medical machinery and personnel, economic burdens, the large amount of time required for treatment, travel limitations, and stringent dietary and fluid-intake restrictions.

Illness-related vs. nonillness experience and control. The possibility that ESRD patients may isolate or exclude illness-related from nonillness life experiences in an attempt to cope with the psychological threats imposed by this chronic and life-threatening disorder was disconfirmed. The results revealed that patients perceived health (an illness-related life dimension), personal life, and social life (two nonillness aspects of life) as separate and independent of each other. Yet, perceived control over each of these clusters of life experience correlated significantly with mood, indicating that the emotional impact of illness-related experience is not minimized or suppressed. Thus, the findings that mode of treatment, probability of transplant, and a variety of medical background variables were unrelated to patients' moods might be interpreted most appropriately as indicating that such ESRD-specific factors simply do not contribute importantly to helplessness, depression, and mood. Rather, it might be hypothesized that these emotional states are determined primarily by a set of factors (e.g., perceived control, perceived intrusiveness) which is relevant generally across the spectrum of medical illnesses. The fact that it was only patients' perceptions of control and intrusiveness--but not the

objective ESRD-specific continua which corresponded to these dimensions--which correlated significantly with patients' mood states is also consistent with this hypothesis. As indicated earlier, perceived control and intrusiveness are psychological forces which are easily applicable to a variety of chronic patient populations in addition to ESRD. It might be more useful, therefore, if future research were to focus on a general model of the emotional impact of illness--i.e., collapsing across a wide range of medical disorders--rather than to continue in a search to identify illness-specific determinants of helplessness, depression, and mood.

Limitations of the Present Research

The conclusions and implications drawn from the present research must be tempered by a consideration of its limitations.

Causal inferences and correlational research. It must be stressed that the two studies employed cross-sectional correlational research designs. Thus, the results cannot provide direct evidence in support of causal hypotheses, despite the fact that a number of quasi-experimental precautions were taken to maximize internal and external validity. These results can only be interpreted in terms of their consistency with such hypotheses, although inconsistent (i.e., negative) findings are admissable as disconfirmatory evidence.

Limitations of the present research also include a number of measurement problems, including the measurement of helplessness, depression, and mood and the validity of newly constructed measures.

Measurement of helplessness and depression. The correlational and principal-components analyses performed in Study 1 indicated that helplessness and depression do not reflect a unitary construct that can be represented equally well by any of a number of previously employed measures, especially in clinical populations. Particularly suspect were the problem-solving performance and

expectancy shift measures. These were derived from the concept formation task and have been assumed to reflect the cognitive deficit characteristic of helplessness and depression (Gregory et al., 1979; Seligman, 1978). However, these measures appeared to reflect ESRD patients' intellectual and educational levels and their motivation to solve problems.

Measurement of mood. Similarly, mixed results emerged when principal-components and multitrait-multimethod analyses were applied to the 19 measures of mood in Study 2. Consistent with previous research (e.g., Bradburn, 1969; Costa & McCrae, 1980), positive and negative mood emerged as independent affective dimensions; however, several of the measures were contaminated by method variance. Moreover, only the self-report measures yielded consistent patterns of significant results in the two studies, despite the fact that collateral data were included in each. While the more subtle nuances of internal affective states may be accessible only via self-report, it would seem reasonable to expect that significant others would be able to discriminate reliably between patients' positive and negative moods. This lack of convergence among the three sources of mood data poses a problem for the interpretation of the results.

A related potential limitation has been identified by Yanagida and Streltzer (1979): estimates of negative mood may be artificially inflated in medical patient samples since measures such as the BDI and HAM-D include several items regarding the somatic symptoms of depression in addition to items which focus more purely on mood. Thus, elevated scores on such measures may be contaminated by physical symptoms which are due to ESRD and not due to depression. In Study 1, poorer physician-rated nonrenal health did, in fact, correlate significantly with increased depression. However, physician ratings are based upon functional indices of health (e.g., activity level) which themselves may be affected by mood. The more medically detailed Organ Dysfunction Scale which was employed

in Study 2 excluded functional health indicators and the results indicated that depression and negative mood were no longer related to nonrenal health. Moreover, Study 2 revealed that patients' scores on scales which focussed exclusively on mood (e.g., ABS-N, POMS-D, ALH), physical symptoms (e.g., somatic symptoms of distress checklist), and on both (e.g., BDI:SF, HAM-D) all intercorrelated positively and significantly. These results do not support the speculation of Yanagida and Streltzer that ESRD-induced physical symptoms artificially inflate estimates of patients' depression. In fact, the results might even be interpreted as suggesting the reverse: i.e., physicians' (functionally based) estimates of nonrenal health would appear to be biased by patients' affective states. Future research might explore longitudinally whether somatic symptoms typically precede or follow the affective and cognitive symptoms of depression in ESRD patient populations. Whereas the former would support the hypothesis of Yanagida and Streltzer, the latter would disconfirm it.

Validity of newly constructed measures. Several important measures (e.g., perceived control and intrusiveness) were newly constructed for this research and so have not been validated previously. Moreover, these measures were obtained via self-report. However, a number of validity checks and statistical controls provided preliminary evidence in support of their construct validity. Perceived control over dialysis, for example, generally differed as expected across the three modes of hemodialysis delivery, although the critical distinction appeared to be staff-care vs. self-care. Furthermore, perceived control over nonillness life dimensions correlated significantly with locus of control, perceived intrusiveness, and mood in a pattern which was consistent with theoretical predictions and with previous research, although it did not differ as a function of type of hemodialysis vs. CAPD or posttransplant patient status. Similarly, hemodialysis patients' perceived probabilities of receiving a transplant were corroborated by

their nephrologists' estimates. Preliminary evidence in support of the validity of the perceived intrusiveness measure included the observations that a) hemodialysis and CAPD patients reported greater intrusiveness than did post-transplant patients; b) perceived intrusiveness correlated negatively with perceived control, as noted above; and c) patients' perceived intrusiveness scores agreed with corresponding ratings provided by hospital staff and significant others. In addition, the contributions made by the perceived control and intrusiveness variables to helplessness, depression, and mood were robust to statistical controls for experimenter expectancy effects and defensive response tendencies. The construct validity of these newly constructed measures remains largely unknown, however, and so this limitation cannot be dismissed.

Selection bias. Although a number of precautions were taken to preclude potential sampling biases, it must be noted that the four hospitals from which patients were selected all were affiliated with university medical schools. It might be argued that the dialysis and transplantation therapies available at such units are generally superior to the same treatments offered at nonteaching hospitals. As a result, the conclusion of the present research that ESRD-specific factors such as mode of treatment or probability of transplant do not contribute to patients' affective states may not be generalizable to nonteaching facilities where standards of care may vary widely due to such parameters. Unfortunately, no data appear to be available at present regarding this important issue.

Implications for Future Research

Finally, potentially important research implications may be drawn from the present studies. As noted earlier, the variety and intensity of medical and psychological threats which characterize ESRD--and, indeed, all chronic illnesses--provide a "living stress laboratory". However, the impossibility of experimental control over illness-relevant dimensions (e.g., presence or absence

of ESRD) requires that investigators adopt a rigorous set of quasi-experimental precautions. These might include a variety of statistical and sampling controls against competing hypotheses due to confounded variables (Campbell & Stanley, 1963; Cohen & Cohen, 1975; Glass & Stanley, 1970) or measuring the latter directly and taking their explanatory contributions into account in evaluating hypothesized relationships among experimental and dependent variables (Cronbach, Gleser, Nanda, & Rajaratnam, 1972; Sidman, 1960; Smith, Glass, & Miller, 1980). Particularly useful will be longitudinal research designs such as time-series (Glass, Wilson, & Gottman, 1975; Johnston, 1972) and path analyses (Kenny, 1979; Kim & Kohout, 1975) or cross-lagged panel correlation approaches (Kenny, 1979), especially when measurement occasions are scheduled so as to span across psychologically meaningful milestones such as the initiation of dialysis or renal transplantation (Campbell & Stanley, 1963; Kenny, 1979; Schaie, 1977). A further important criterion is the inclusion of valid dependent variables which are relevant to the hypotheses under examination and to the particular population employed.

The need for a multivariate approach. A multivariate measurement approach can provide critical checks against overgeneralizing from a single measure, enhancing the validity of findings. Increasingly, researchers in the behavioral sciences are becoming aware of the advantages afforded by multivariate measurement and statistics (e.g., Harris, 1975; Johnston, 1972; Nesselroade, 1977; Neufeld, 1977). These provide a more detailed, and therefore more representative indication of the relationships among experimental and dependent variables since a multifaceted criterion measure is employed. In addition, multivariate techniques provide researchers with considerably more statistical power (Cohen, 1969) than their univariate counterparts since they take into account the interrelationships among the various elements of the criterion variable package.

General determinants of mood in chronic illness. Surprisingly, ESRD-specific factors did not contribute importantly to patients' emotional states. However, two factors which would seem to apply equally well across the spectrum of medical disorders were identified as powerful emotional determinants: perceived control over important life dimensions and the perceived intrusiveness of one's illness and/or its treatment. Future research can contribute importantly to our understanding of the emotional impact of physical infirmity by pursuing these factors further, identifying additional emotional determinants, and exploring the illness-specific and nonillness variables which contribute to their development.

Perceived control and intrusiveness. The emotional significance of perceived control and intrusiveness might be explored, for example, among other chronic patient groups such as cancer, cardiac, diabetic, geriatric, physically disabled, and chronic pain patients, among others, as a preliminary test of the generality of their relevance. Many of the stressors which have been considered to be specific to ESRD may actually be relevant across the wider continuum of severe medical problems and these could be explored as potential determinants of the perceived intrusiveness of illness in general. For example, patients could be requested to rate the degrees to which they actually feel life-threatened, dependent upon medical machinery and personnel, financially stressed by their illness and/or its treatment, restricted in terms of travel, and the extent to which they feel limited by dietary and fluid-intake restrictions. More objective indices also could be included, such as the number of hours per week actually taken up by treatment, severity of restrictions (relative to the patient population as a whole), side effects, number of activities actually given up or otherwise impeded.

Similarly, several of the factors which have been identified in laboratory studies of the "illusion of control" (Langer, 1975)--i.e., the perception of control over uncontrollable outcomes--may contribute to the perception of control over important life dimensions: information, choice, familiarity, active participation, involvement, effort, planning, and the desire for control (Alloy & Abramson, 1979; Langer, 1975, 1976; Langer & Roth, 1975). A self-report questionnaire might be developed, for example, in which the life dimensions identified as major contributors to perceived quality of life (e.g., those included in Study 2) could be explored in terms of respondents' familiarity with a variety of activities relevant to each, the extent to which respondents are involved in these, how actively they participate, the amount of choice and number of decisions they make in this regard, and the extent to which they desire control over each of these aspects of life.

Self-image as a chronic patient. Additional determinants of the emotional impact of illness may derive from vicarious experience. As noted earlier, any information which contributes to the perceptions of control or intrusiveness should also contribute to mood. One such factor might be the self-image as a chronic patient. If established shortly after the onset of ESRD, for example, a strong self-image as a chronic patient might contribute to increased perceived intrusiveness and might also serve to weaken one's efficacy and outcome beliefs regarding a wide range of activities and interests--e.g., via a general demoralization process (Frank, 1974)--which might not otherwise be impeded by one's illness. The Langer and Benevento (1978) study, in which dependence was self-induced via a similar labeling process, lends credence to this hypothesis. However, a strong self-image as a chronic patient might later serve to reduce perceived intrusiveness; e.g., after one has had an opportunity to adjust to the limitations imposed by ESRD and to develop a new set of compatible activities and interests. In ESRD and other chronic patient populations, the self-

image as a chronic patient might be measured via multidimensional scaling techniques using a variety of respondent-generated self-descriptive role labels (e.g., parent, family, work roles) as stimuli and including the chronic patient role as a "target" stimulus. Shorter multivariate distances between the participant's placement of the chronic patient role and the centroid of the remaining stimuli in the final solution might then be interpreted as indicating a stronger self-image as a chronic patient. This score could then be tested as a contributor to mood. Alternatively, a semantic differential approach might be employed in which two stimulus people--the patient as he currently perceives himself and a "typical patient" with the same disease--could be rated along a series of bipolar adjective scales. Shorter multivariate distances between the two profiles again would indicate a stronger self-image as a chronic patient.

Attributional biases. Although the Abramson et al. (1978) attributional reformulation was disconfirmed, there may be other attributional biases which influence patients' moods. Recent research by Janoff-Bulman (1979), for example, has indicated that biases toward characterological as opposed to behavioral self-attributions for negative outcomes do, in fact, contribute significantly to increased depression. Janoff-Bulman reasoned that behavioral self-attributions strengthen one's beliefs that negative outcomes are controllable and hence avoidable in future whereas characterological self-blame implies a deservingness for such developments. Similarly, it might be argued that biases to attribute negative outcomes to one's chronic illness renders such events uncontrollable and so unavoidable. Thus, patients who more frequently employ their illness and/or its treatment as explanatory factors in accounting for negative outcomes ought to experience more intense negative moods than other patients who do not. A measure such as the Semmel et al. (Note 1) Attributional Style Questionnaire which was employed in Study 1 could be developed to assess the extent to which

patients typically attribute everyday events to illness-related causes.

Social climate. Finally, the notion of social climate has been advanced to encompass the network of interpersonal influences which characterize one's social environment (Moos, 1974). Such influences might contribute to all of the factors which have been hypothesized above to determine the emotional impact of illness since the expectancies and values held by significant others exert a strong influence in determining the experience of self (e.g., self-image, feelings of worth) and behavior in general (Bandura, 1980; Gergen, 1971; Hamachek, 1971; Mischel, 1971; Rogers, 1961; Rosenthal & Rubin, 1978). Thus, to the extent that significant others convey to patients that a chronic illness precludes participation in valued activities or reduces the potential for control over important aspects of life, patients may actually experience decreased perceived control, increased perceived intrusiveness, and therefore elevated negative mood states. Measures currently exist to assess the perceived social climate of both treatment and family settings (Moos, 1974) along several relevant dimensions (e.g., nurturance, autonomy, self-development) and so their contributions to the emotional impact of illness can be explored.

Clinical Implications

The relative merits of maintenance dialysis vs. renal transplantation have been debated since their introduction in the early 1960's. Yet, interestingly, arguments have more frequently involved psychological considerations (e.g., the quality of life afforded by each of these treatment alternatives) than medical ones (e.g., relative efficiency of renal function supplementation). It has been widely claimed, for example, that self-care dialysis is superior to staff-care since the patient's added control over treatment in the former is believed to mitigate the negative emotional impact associated with maintenance dialysis. Similarly, successful renal transplantation has often been claimed

to offer patients a higher quality of life as compared to dialysis because of the more limited control over important life dimensions believed to be intrinsic to the latter. Thus, the findings of the present research that the mode of treatment factor--i.e., type of hemodialysis vs. CAPD vs. renal transplantation--contributed neither to patients' affective states nor to their perceived control over important life dimensions, although the treatments did generally differ as expected in perceived intrusiveness, are perhaps the most clinically significant observations of the present thesis. While it may be that patients shift their frames of reference with regard to perceived control, it should be emphasized that successful treatment by dialysis or transplantation can only provide patients with an opportunity to enjoy rich and meaningful lives, it cannot guarantee such results: i.e., adequate medical management is a necessary but not a sufficient condition for a high quality of life.

Biomedical technology has advanced rapidly in the twentieth century with the fortunate result that many individuals who would have died a mere 20 or less years ago are today afforded an opportunity to continue in meaningful, fruitful, lives. However, the psychosocial components of health, illness, and the healing process remain poorly understood. This is particularly critical in ESRD and other chronic life-threatening illnesses where many have expressed doubts about whether the quality of life afforded by sophisticated medical procedures is sufficiently high to justify their continued application. Clearly, this is an area in which psychology can make important contributions and researchers must continue to explore the psychosocial impact of illness. In exploring the validity of a common theoretical analysis across diverse patient populations, future research can make important contributions toward furthering our understanding of the impact of medical illness, in general, upon psychological well-being and, hopefully, toward the amelioration of the dis-ease of disease (Marcuse, 1972).

Footnotes

[1]The attributional style questionnaire was scored as recommended by Seligman (personal communication, Sept. 1, 1979) by subtracting participants' mean scores on items with a negative outcome (n = 6) from their mean scores on positive outcome items (n = 6) for each of the three attributional dimensions. The resulting three-dimensional index reflects the degree to which the individual displays the depressive attributional style identified by Seligman et al. (1979). A second scoring strategy was also assessed. Six attributional scores were derived via the factorial combination of outcome valence (positive or negative) with attributional dimension (internality, stability, globality). However, the inferential results remained unchanged when these six scores were substituted in place of the three difference scores in the regression analyses.

[2]The age variable did not satisfy the covariate selection criterion for these analyses and so it was omitted.

[3]This sampling rule was inadvertently violated in the case of one CAPD patient who had been receiving this form of dialysis for only one month.

Reference Note

1. Semmel, A., Abramson, L.Y., Seligman, M.E.P., & von Baeyer, C. A scale for measuring attributional style. Manuscript in preparation, University of Pennsylvania, 1978.

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APPENDIX A: STUDY 1 MATERIALS

PSYCHOLOGICAL AND SOCIAL FACTORS IN DIALYSIS AND TRANSPLANTATION

Purpose of the Study

Psychological and social factors are known to be important in influencing both the physical and psychological well-being of patients suffering chronic illnesses. The purpose of the present research is to assess the importance of several of these for patients suffering end-stage renal disease. Hopefully, a better understanding of the roles played by such factors in dialysis and transplantation will help to improve the quality of care received by patients in future.

Consent

The purpose of the study as described above has been explained to me by ..... and I understand that my participation will involve a series of meetings with the researchers in which I may be interviewed and requested to perform some paper-and-pencil, psychological, and behavioral tests. My participation also entails granting the researchers permission to consult with my family and the hospital staff.

I understand that anonymity will be preserved and that my answers will at all times be kept in the strictest confidence of the researchers alone. All information will be used solely for research purposes. I also understand that I am under no obligation to participate--that the quality of my care will in no way be jeopardized by my refusal nor enhanced as a result of my consent--and that I am free to withdraw from participating in the study at any time. Knowing these things, I agree to enter the study as a participant.

Date.....

....

Signature of Participant Signature of Witness

PATIENT INFORMATION FILE

Date Recorded.....
Chart No. ....:.....
Hospital: RVH QMVH Other .....

DEMOGRAPHIC

Name ..... Sex: M F
Birthdate ..... (Age = ...)
Marital Status: Sing Mar Sep Wd Div
No. Children ..... No. Children at home .....
Religion ..... Ethnic Background .....
Education ..... Occupation .....
Annual Income ..... Hometown: Mtl Other .....
Language Spoken: Eng Fr Other ..... (Primary = ...)

MEDICAL

Primary Renal Disease .....
Onset of kidney failure: sudden insidious
Date renal disease identified .....
Date of first time creatinine level > 5 .....
Date of fistula creation .....
Date of first dialysis ..... (Length of treatment = ...)
(identification-to-dialysis duration = ...)
Other medical problems .....
.....
No. previous transplant attempts .....
Family history of renal disease: no yes (Relatives = ...)

DIALYSIS

Mode: staff-hospital self-hospital self-home
Hrs. per week ..... Days: mon tue wed thur fri sat sun
Time of day .....
Drugs prescribed:

A. During dialysis (dosage)	B. Otherwise (dosage)
.....	.....
.....	.....
.....	.....
.....	.....

STAFF RATINGS

DATE_____

PATIENT_____

PROBABILITY OF TRANSPLANT

	Very Unlikely	Somewhat Unlikely	About 50:50	Somewhat Likely	Very Likely	Not Sure
A. WITHIN ONE YEAR	1	2	3	4	5	6
B. WITHIN THREE YEARS	1	2	3	4	5	6
C. AT SOME FUTURE TIME	1	2	3	4	5	6

HEALTH RATINGS

Rate this patient's present physical status for intercurrent nonrenal disease for each of the following systems

	Non-Existant	Slight	Moderate	Severe	Very Severe	Not Sure
A. GASTRO-INTESTINAL	1	2	3	4	5	6
B. NEUROLOGICAL	1	2	3	4	5	6
C. CARDIOVASCULAR	1	2	3	4	5	6
D. PULMONARY	1	2	3	4	5	6
E. MUSCULOSKELETAL	1	2	3	4	5	6
F. HEMATOLOGIC	1	2	3	4	5	6
OVERALL GLOBAL HEALTH RATING	1 Very Poor	2	3	4	5 Very Good	6 Not Sure

COMMENTS_____

HOW MUCH CONTROL DO YOU HAVE OVER

1. YOUR DIALYSIS

LITTLE CONTROL	1	2	3	4	5	6	7	A LOT OF CONTROL

a. What is the one major reason for this? _____

b. Is this due to something about you or something about other people or circumstances?

TOTALLY DUE TO OTHER PEOPLE OR CIRCUMSTANCES	1	2	3	4	5	6	7	TOTALLY DUE TO ME

c. When you are on dialysis in the future, will this cause again be present?

WILL NEVER AGAIN BE PRESENT	1	2	3	4	5	6	7	WILL ALWAYS BE PRESENT

d. Is the cause something that just affects being on dialysis or does it also influence other areas of your life?

INFLUENCES JUST THIS PARTICULAR SITUATION	1	2	3	4	5	6	7	INFLUENCES ALL SITUATIONS IN MY LIFE

e. How important is being able to control dialysis?

NOT AT ALL IMPORTANT	1	2	3	4	5	6	7	EXTREMELY IMPORTANT

2. YOUR DIET

LITTLE CONTROL	1	2	3	4	5	6	7	A LOT OF CONTROL

3. HOW WELL YOU FEEL PHYSICALLY

LITTLE CONTROL	1	2	3	4	5	6	7	A LOT OF CONTROL

4. HOW YOU FEEL ABOUT BEING ON DIALYSIS

LITTLE CONTROL	1	2	3	4	5	6	7	A LOT OF CONTROL

a. What is the one major reason for this? _____

b. Is this due to something about you or about other people or circumstances?

TOTALLY DUE TO OTHER PEOPLE OR CIRCUMSTANCES	1	2	3	4	5	6	7	TOTALLY DUE TO ME

c. When you think about being on dialysis, will this cause again be present?

WILL NEVER AGAIN BE PRESENT	1	2	3	4	5	6	7 WILL ALWAYS BE PRESENT

d. Is this cause something that just affects how you feel about being on dialysis or does it also influence other areas of your life?

INFLUENCES JUST THIS PARTICULAR SITUATION	1	2	3	4	5	6	7 INFLUENCES ALL SITUATIONS IN MY LIFE

e. How important is being able to control how you feel about being on dialysis?

NOT AT ALL IMPORTANT	1	2	3	4	5	6	7 EXTREMELY IMPORTANT

5. YOUR WORK

LITTLE CONTROL	1	2	3	4	5	6	7 A LOT OF CONTROL

6. HOW WELL YOUR MATERIAL NEEDS ARE BEING SATISFIED

LITTLE CONTROL	1	2	3	4	5	6	7 A LOT OF CONTROL

a. What is the <u>one</u> <u>major</u> reason for this? _____

b. Is this due to something about you or something about other people or circumstances?

TOTALLY DUE TO OTHER PEOPLE OR CIRCUMSTANCES	1	2	3	4	5	6	7 TOTALLY DUE TO ME

c. In future, will this cause again be present?

WILL NEVER AGAIN BE PRESENT	1	2	3	4	5	6	7 WILL ALWAYS BE PRESENT

d. Is this cause something that just affects how well your material needs are being satisfied or does it influence other areas of your life?

INFLUENCES JUST THIS PARTICULAR SITUATION	1	2	3	4	5	6	7 INFLUENCES ALL SITUATIONS IN MY LIFE

e. How important is being able to control how well your material needs are being satisfied?

NOT AT ALL IMPORTANT	1	2	3	4	5	6	7 EXTREMELY IMPORTANT

7. YOUR RELATIONS WITH OTHER PEOPLE

LITTLE CONTROL	1	2	3	4	5	6	7	A LOT OF CONTROL

8. COMMUNITY AND CIVIC ACTIVITIES

LITTLE CONTROL	1	2	3	4	5	6	7	A LOT OF CONTROL

9. HOW WELL YOUR PERSONAL (PSYCHOLOGICAL) NEEDS ARE BEING SATISFIED?

LITTLE CONTROL	1	2	3	4	5	6	7	A LOT OF CONTROL

a. What is the <u>one</u> <u>major</u> reason for this? _____

b. Is this due to something about you or something about other people or circumstances?

TOTALLY DUE TO OTHER PEOPLE OR CIRCUMSTANCES	1	2	3	4	5	6	7	TOTALLY DUE TO ME

c. In future, will this cause again be present?

WILL NEVER AGAIN BE PRESENT	1	2	3	4	5	6	7	WILL ALWAYS BE PRESENT

d. Is this cause something that just affects how well your personal (psychological) needs are being satisfied or does it influence other areas of your life?

INFLUENCES JUST THIS PARTICULAR SITUATION	1	2	3	4	5	6	7	INFLUENCES ALL SITUATIONS IN MY LIFE

e. How important is being able to control how well your personal (psychological) needs are being satisfied?

NOT AT ALL IMPORTANT	1	2	3	4	5	6	7	EXTREMELY IMPORTANT

10. YOUR RECREATION

LITTLE CONTROL	1	2	3	4	5	6	7	A LOT OF CONTROL

Name _____

Date _____

Phone # _____

DIRECTIONS

Please try to vividly imaging yourself in the situations that follow. If such a situation happened to you, what would you feel would have caused it? While events may have many causes, we want you to pick only one— the *major* cause if this event happened to *you*. Please write this cause in the blank provided after each event. Next we want you to answer some questions about the *cause* and a final question about the *situation*. To summarize, we want you to:

1) Read each situation and vividly imagine it happening to you.

2) Decide what you feel would be the *major* cause of the situation if it happened to you.

3) Write one cause in the blank provided.

4) Answer three questions about the *cause*.

5) Answer one question about the *situation*.

6) Go on to the next situation.

YOU MEET A FRIEND WHO COMPLIMENTS YOU ON YOUR APPEARANCE.

1) Write down the *one* major cause _____

2) Is the cause of your friend's compliment due to something about you or something about the other person or circumstances? (Circle one number)

Totally due to the other person or circumstances	1	2	3	4	5	6	7	Totally due to me

3) In the future when you are with your friends, will this cause again be present? (Circle one number)

Will never again be present	1	2	3	4	5	6	7	Will always be present

4) Is the cause something that just affects interacting with friends or does it also influence other areas of your life? (Circle one number)

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

5) How important would this situation be if it happened to you? (Circle one number)

Not at all important	1	2	3	4	5	6	7	Extremely important

YOU HAVE BEEN LOOKING FOR A JOB UNSUCCESSFULLY FOR SOME TIME.

6) Write down *one* major cause _____

7) Is the cause of your unsuccessful job search due to something about you or something about other people or circumstances? (Circle one number)

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

8) In the future when looking for a job, will this cause again be present? (Circle one number)

Will never again be present	1	2	3	4	5	6	7	Will always be present

9) Is the cause something that just influences looking for a job or does it also influence other areas of your life? (Circle one number)

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

10) How important would this situation be if it happened to you? (Circle one number)

Not at all important	1	2	3	4	5	6	7	Extremely important

YOU BECOME VERY RICH.

11) Write down the *one* major cause _____

12) Is the cause of your becoming rich due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

13) In your financial future, will this cause again be present?

Will never again be present	1	2	3	4	5	6	7	Will always be present

14) Is the cause something that just affects obtaining money or does it also influence other areas of your life?

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

15) How important would this situation be if it happened to you?

Not at all important	1	2	3	4	5	6	7	Extremely important

A FRIEND COMES TO YOU WITH A PROBLEM AND YOU DON'T TRY TO HELP THEM.

16) Write down the *one* major cause _____

17) Is the cause of your not helping your friend due to something about you or something about other people or circumstances? (Circle one number)

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

18) In the future when a friend comes to you with a problem, will this cause again be present? (Circle one number)

Will never again be present	1	2	3	4	5	6	7	Will always be present

19) Is the cause something that just affects what happens when a friend comes to you with a problem or does it also influence other areas of your life? (Circle one number)

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

20) How important would this situation be if it happened to you? (Circle one number)

Not at all important	1	2	3	4	5	6	7	Extremely important

YOU GIVE AN IMPORTANT TALK IN FRONT OF A GROUP AND THE AUDIENCE REACTS NEGATIVELY.

21) Write down the *one* major cause _____

22) Is the cause of the audience reacting negatively due to something about you or something about other people or circumstances? (Circle one number)

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

23) In the future when giving talks, will this cause again be present? (Circle one number)

Will never again be present	1	2	3	4	5	6	7	Will always be present

24) Is this cause something that just influences giving talks or does it also influence other areas of your life? (Circle one number)

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

25) How important would this situation be if it happened to you? (Circle one number)

Not at all important	1	2	3	4	5	6	7	Extremely important

YOU DO A PROJECT WHICH IS HIGHLY PRAISED.

26) Write down the *one* major cause _____

27) Is the cause of being praised due to something about you or something about the other people or circumstances?

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

28) In the future when doing a project, will this cause again be present?

Will never again be present	1	2	3	4	5	6	7	Will always be present

29) Is this cause something that just affects doing projects or does it also influence other areas of your life?

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

30) How important would this situation be if it happened to you?

Not at all important	1	2	3	4	5	6	7	Extremely important

YOU MEET A FRIEND WHO ACTS HOSTILELY TOWARD YOU

31) Write down the *one* major cause _____

32) Is the cause of your friend acting hostile due to something about you or something about other people or circumstances? (Circle one number)

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

33) In the future when interacting with friends, will this cause again be present? (Circle one number)

Will never again be present	1	2	3	4	5	6	7	Will always be present

34) Is the cause something that just influences interacting with friends or does it also influence other areas of your life? (Circle one number)

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

35) How important would this situation be if it happened to you? (Circle one number)

Not at all important	1	2	3	4	5	6	7	Extremely important

YOU CAN'T GET ALL THE WORK DONE THAT OTHERS EXPECT OF YOU.

36) Write down the *one* major cause _____

37) Is the cause of your not getting the work done due to something about you or something about the other people or circumstances? (Circle one number)

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

38) In the future when doing the work that others expect, will this cause be present? (Circle one number)

Will never again be present	1	2	3	4	5	6	7	Will always be present

39) Is the cause something that just affects doing work that others expect of you or does it also influence other areas of your life? (Circle one number)

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

40) How important would this situation be if it happened to you? (Circle one number)

Not at all important	1	2	3	4	5	6	7	Extremely important

YOUR SPOUSE (BOYFRIEND/GIRLFRIEND) HAS BEEN TREATING YOU MORE LOVINGLY.

41) Write down the *one* major cause _____

42) Is the cause of your spouse (boyfriend/girlfriend) treating you more lovingly due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

43) In future interactions with your spouse (boyfriend/girlfriend) will this cause again be present?

Will never again be present	1	2	3	4	5	6	7	Will always be present

44) Is this cause something that just affects how your spouse (boyfriend/girlfriend) treats you or does it also influence other areas of your life?

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

45) How important would this situation be if it happened to you?

Not at all important	1	2	3	4	5	6	7	Extremely important

YOU APPLY FOR A POSITION THAT YOU WANT VERY BADLY (e.g., IMPORTANT JOB, GRADUATE SCHOOL ADMISSION, etc.) AND YOU GET IT.

46) Write down *one* major cause _____

47) Is the cause of your getting the position due to something about you or something about other people or circumstances? (Circle one number)

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

48) In the future when applying for a position, will this cause again be present? (Circle one number)

Will never again be present	1	2	3	4	5	6	7	Will always be present

49) Is the cause something that just influences applying for a position or does it also influence other areas of your life? (Circle one number)

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

50) How important would this situation be if it happened to you? (Circle one number)

Not at all important	1	2	3	4	5	6	7	Extremely important

YOU GO OUT ON A DATE AND IT GOES BADLY.

51) Write down the *one* major cause _____

52) Is the cause of the date going badly due to something about you or something about other people or circumstances? (Circle one number)

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

53) In the future when dating, will this cause again be present? (Circle one number)

Will never again be present	1	2	3	4	5	6	7	Will always be present

54) Is the cause something that just influences dating or does it also influence other areas of your life? (Circle one number)

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

55) How important would this situation be if it happened to you? (Circle one number)

Not at all important	1	2	3	4	5	6	7	Extremely important

YOU GET A RAISE.

56) Write down the *one* major cause _____

57) Is the cause of your getting a raise due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

58) In the future on your job, will this cause again be present?

Will never again be present	1	2	3	4	5	6	7	Will always be present

59) Is this cause something that just affects getting a raise or does it also influence other areas of your life?

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

60) How important would this situation be if it happened to you?

Not at all important	1	2	3	4	5	6	7	Extremely important

BECK SCALE

Name:..... Age:.....

Date:.....

A. 0 I do not feel sad.
1 I feel blue or sad.
2a I am blue or sad all the time and I can't snap out of it
2b I am so sad or unhappy that it is quite painful
3 I am so sad or unhappy that I can't stand it

B. 0 I am not particularly pessimistic or discouraged about the future
1a I feel discouraged about the future
2a I feel I have nothing to look forward to
2b I feel that I won't ever get over my troubles
3 I feel that the future is hopeless and that things cannot improve

C. 0 I do not feel like a failure
1 I feel I have failed more than the average person
2a I feel I have accomplished very little that is worthwhile or that means anything.
2b As I look back on my life all I can see is a lot of failures
3 I feel I am a complete failure as a person (parent, husband, wife)

D. 0 I am not particularly dissatisfied
1a I feel bored most of the time
1b I don't enjoy things the way I used to
2 I don't get satisfaction out of anything any more
3 I am dissatisfied with everything

E. 0 I don't feel particularly guilty
1 I feel bad or unworthy a good part of the time
2a I feel quite guilty
2b I feel bad or unworthy practically all the time now
3 I feel as though I am very bad or worthless

F. 0 I don't feel I am being punished
1 I have a feeling that something bad may happen to me
2 I feel I am being punished or will be punished
3a I feel I deserve to be punished
3b I want to be punished

G. 0 I don't feel disappointed in myself
1a I am disappointed in myself
1b I don't like myself
2 I am disgusted with myself
3 I hate myself

H. 0 I don't feel I am worse than anybody else
2 I am critical of myself for my weaknesses or mistakes
2 I blame myself for my faults
3 I blame myself for everything bad that happens

I. 0 I don't have any thoughts of harming myself
1 I have thoughts of harming myself but I would not carry them out
2a I feel I would be better off dead
2b I feel my family would be better off if I were dead
3a I have definite plans about committing suicide
3b I would kill myself if I could

J. 0 I don't cry any more than usual
1 I cry more now than I used to
2 I feel irritated all the time
3 I used to be able to cry but now I can't cry at all even though I want to

K. 0 I am no more irritated now than I ever am
1 I get annoyed or irritated more easily than I used to
2 I feel irritated all the time
3 I don't get irritated at all at the things that used to irritate me

L. 0 I have not lost interest in other people
1 I am less interested in other people now than I used to be
2 I have lost most of my interest in other people and have little feeling for them
3 I have lost all my interest in other people and don't care about them at all

M. 0 I make decisions about as well as ever
1 I try to put off making decisions
2 I have great difficulty in making decisions
3 I can't make decisions at all any more

N. 0 I don't feel I look any worse than I used to
1 I am worried that I am looking old or unattractive
2 I feel that there are permanent changes in my appearance and they make me look unattractive
3 I feel that I am ugly or repulsive looking

O. 0 I can work about as well as before
1a It takes extra effort to get started at doing something
1b I don't work as well as I used to
2 I have to push myself very hard to do anything
3 I can't do any work at all

P. 0 I can sleep as well as usual
1 I wake up more tired in the morning than I used to
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep
3 I wake up early every day and can't get more than 5 hours sleep

Q. 0 I don't get any more tired than usual
1 I get tired more easily than I used to
2 I get tired from doing anything
3 I get too tired to do anything

R. 0 My appetite is no worse than usual
1 My appetite is not as good as it used to be
2 My appetite is much worse now
3 I have no appetite at all any more

S. 0 I haven't lost much weight, if any, lately
1 I have lost more than 5 pounds
2 I have lost more than 10 pounds
3 I have lost more than 15 pounds

T. 0 I am no more concerned about my health than usual
1 I am concerned about aches and pains OR upset stomach OR constipation
2 I am so concerned with how I feel or what I feel that it's hart to think of much else
3 I am completely absorbed in what I feel

U. 0 I have not noticed any recent change in my interest in sex
1 I am less interested in sex than I used to be
2 I am much less interested in sex now
3 I have lost interest in sex completely

ROTTER SCALE

I more strongly believe that:

1. a. Children get into trouble because their parents punish them too much.
   b. The trouble with most children nowadays is that their parents are too easy with them.
2. a. Many of the unhappy things in people's lives are partly due to bad luck.
   b. People's misfortunes result from the mistakes they make.
3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
   b. There will always be wars, no matter how hard people try to prevent them.
4. a. In the long run people get the respect they deserve in this world.
   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5. a. The idea that teachers are unfair to students is nonsense.
   b. Most students don't realize the extent to which their grades are influence by accidental happenings.
6. a. Without the right breaks one cannot be an effective leader.
   b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. a. No matter how hard you try some people just don't like you.
   b. People who can't get others to like them don't understand how to get along with others.

8. a. Heredity plays the major role in determining one's personality.
   b. It is one's experience in life which determine what they're like.
9. a. I have often found that what is going to happen will happen.
   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10. a. In the case of the well prepared student, there is rarely, if ever, such a thing as an unfair test.
   b. Many times exam questions tend to be so unrelated to course work, that studying really is useless.
11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
   b. Getting a good job depends mainly on being in the right place at the right time.
12. a. The average citizen can have an influence in government decisions.
   b. This world is run by the few people in power, and there is not much the little guy can do about it.
13. a. When I make plans, I am almost certain that I can make them work.
   b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14. a. There are certain people who are just no good.
   b. There is some good in everybody.
15. a. In my case, getting what I want has little or nothing to do with luck.
   b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.

    b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.

    b. By taking an active part in political and social affairs the people can control world events.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.

    b. There really is no such thing as "luck".

19. a. One should always be willing to admit his mistakes.

    b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.

    b. How many friends you have depends upon how nice a person you are.

21. a. In the long run, the bad things that happen to us are balanced by the good ones.

    b. Most misfortunes are the result of lack of ability, ignorance, laziness or all three.

22. a. With enough effort we can wipe out political corruption.

    b. It is difficult for people to have much control over the things politicians do in office.

23. a. Sometimes I can't understand how teachers arrive at the grades they give.

b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.

b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.

b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don't try to be friendly.

b. There's not much use in trying too hard to please people, if they like you, they like you.

27. a. There is too much emphasis on athletics in high school.

b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.

b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. a. Most of the time I can't understand why politicians behave the way they do.

b. In the long run, the people are responsible for bad government on a national as well as on a local level.

WALLSTON SCALE

1. If I take care of myself, I can avoid illness.

1	2	3	4	5	6
STRONGLY DISAGREE					STRONGLY AGREE

2. Whenever I get sick it is because of something I've done or not done.

1	2	3	4	5	6
STRONGLY DISAGREE					STRONGLY AGREE

3. Good health is largely a matter of good fortune.

1	2	3	4	5	6
STRONGLY DISAGREE					STRONGLY AGREE

4. No matter what I do, if I'm going to get sick I will get sick.

1	2	3	4	5	6
STRONGLY DISAGREE					STRONGLY AGREE

5. Most people do not realize the extent to whic their illnesses are controlled by accidental happenings.

1	2	3	4	5	6
STRONGLY DISAGREE					STRONGLY AGREE

6. I can only do what my doctor tells me to do.

1	2	3	4	5	6
STRONGLY DISAGREE					STRONGLY AGREE

7. There are so many strange diseases around that you can never know how or when you might pick one up.

1	2	3	4	5	6
STRONGLY DISAGREE					STRONGLY AGREE

8. When I feel ill I know it is because I have not been getting the proper exercise or eating right.

1	2	3	4	5	6

8. When I feel ill I know it is because I have not been getting the proper exercise or eating right.

1	2	3	4	5	6
STRONGLY DISAGREE					STRONGLY AGREE

9. People who never get sick are just plain lucky.

1	2	3	4	5	6
STRONGLY DISAGREE					STRONGLY AGREE

10. People's ill health results from their own carelessness.

1	2	3	4	5	6
STRONGLY DISAGREE					STRONGLY AGREE

11. I am directly responsible for my own health.

1	2	3	4	5	6
STRONGLY DISAGREE					STRONGLY AGREE

COOPERSMITH SCALE

		LIKE ME	UNLIKE ME
1.	I often wish I were someone else.	1	2
2.	I find it hard to talk in front of a group.	1	2
3.	There are lots of things about myself I'd change if I could.	1	2
4.	I can make up my mind without too much trouble.	1	2
5.	I'm a lot of fun to be with.	1	2
6.	I get upset easily at home.	1	2
7.	It takes me a long time to get used to anything new.	1	2
8.	I'm popular with people my own age.	1	2
9.	My family expects too much of me.	1	2
10.	My family usually considers my feelings.	1	2
11.	I give in very easily.	1	2
12.	It's pretty tough to be me.	1	2
13.	Things are all mixed up in my life.	1	2
14.	Other people usually follow my ideas.	1	2
15.	I have a low opinion of myself.	1	2
16.	There are many times when I'd like to leave home.	1	2
17.	I often feel upset about the work that I do.	1	2
18.	I'm not as nice looking as most people.	1	2
19.	If I have something to say, I usually say it.	1	2
20.	My family understands me.	1	2
21.	Most people are better liked than I am.	1	2
22.	I usually feel as if my family is pushing me.	1	2
23.	I often get discouraged at what I am doing.	1	2
24.	Things usually don't bother me.	1	2
25.	I can't be depended on.	1	2

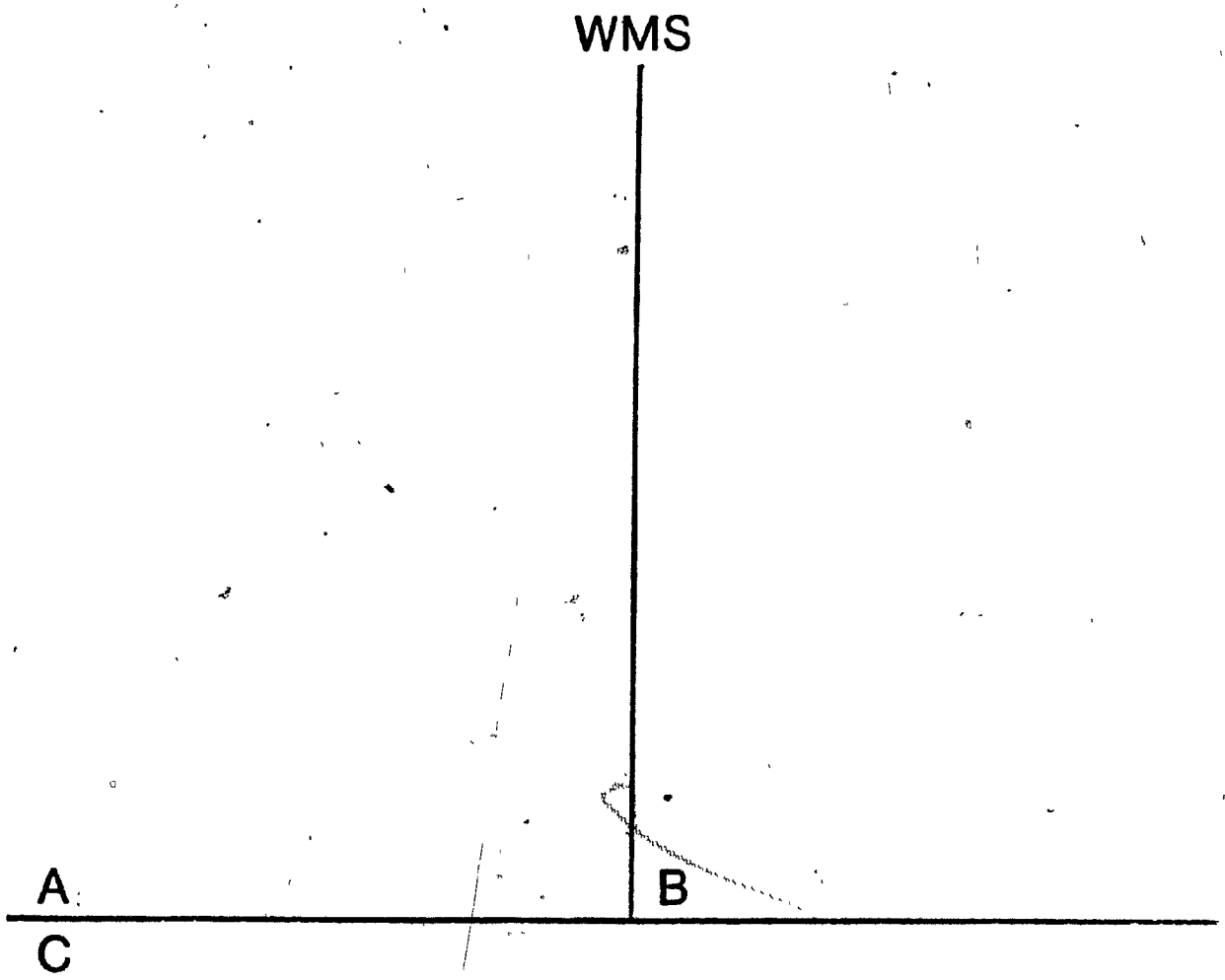
WAIS

1. INFORMATION	SCORE 1 or 0		SCORE 1 or 0		SCORE 1 or 0
1. Flag		11. Height		21. Senators	
2. Ball		12. Italy		22. Genesis	
3. Months		13. Clothes		23. Temperature	
4. Thermometer		14. Washington		24. Iliad	
5. Rubber		15. Hamlet		25. Blood vessels	
6. Presidents		16. Vatican		26. Koran	
7. Longfellow		17. Paris		27. Faust	
8. Weeks		18. Egypt		28. Ethnology	
9. Panama		19. Yeast		29. Apocrypha	
10. Brazil		20. Population			

8. PICTURE COMPLETION	SCORE 1 or 0
1. Knob	
2. Tail	
3. Nose	
4. Handles	
5. Diamond	
6. Water	
7. Nose piece	
8. Peg	
9. Oar lock	
10. Base thread	
11. Stars	
12. Dog tracks	
13. Florida	
14. Stacks	
15. Leg	
16. Arm image	
17. Finger	
18. Shadow	
19. Stirrup	
20. Snow	
21. Eyebrow	

TABLE OF SCALED SCORE EQUIVALENTS*

Scaled Score	RAW SCORE											Scaled Score
	Information	Comprehension	Arithmetic	Similarities	Digit Span	Vocabulary	Digit Symbol	Picture Completion	Block Design	Picture Arrangement	Object Assembly	
19	29	27-28		26	17	79-80	87-90					19
18	28	26		25		76-77	83-86	21		36	44	18
17	27	25	18	24		74-75	79-82		48	35	43	17
16	26	24	17	23	16	71-73	76-78	20	47	34	42	16
15	25	23	16	22	15	67-70	72-75		46	33	41	15
14	23-24	22	15	21	14	63-66	69-71	19	44-45	32	40	14
13	21-22	21	14	19-20		59 62	66-68	18	42-43	30-31	38-39	13
12	19-20	20	13	17-18	13	54-58	62-65	17	39-41	28 29	36-37	12
11	17-18	19	12	15-16	12	47-53	58-61	15-16	35-38	26 27	34-35	11
10	15-16	17-18	11	13-14	11	40-46	52-57	14	31-34	23-25	31-33	10
9	13-14	15-16	10	11-12	10	32 39	47-51	12-13	28-30	20-22	28-30	9
8	11-12	14	9	9-10		26-31	41-46	10-11	25-27	18-19	25-27	8
7	9-10	12-13	7-8	7-8	9	22-25	35-40	8-9	21-24	15-17	22-24	7
6	7-8	10-11	6	5-6	8	18-21	29-34	6-7	17-20	12-14	19-21	6
5	5-6	8-9	5	4		14-17	23-28	5	13-16	9-11	15-18	5
4	4	6-7	4	3	7	11-13	18-22	4	10-12	8	11-14	4
3	3	5	3	2		10	15-17	3	6-9	7	8-10	3
2	2	4	2	1	6	9	13-14	2	3-5	6	5-7	2
1	1	3	1		4-5	8	12	1	2	5	3-4	1
0	0	0-2	0	0	0-3	0-7	0-11	0	0-1	0-4	0-2	0


WMS
A
B
C

INSTRUCTIONS: DISCRIMINATION PROBLEMS

The next task involves a series of discrimination problems. Here is a sample. Notice that there are two drawings and that these differ from each other in four ways. The one on the left, A, contains a male figure whereas the drawing on the right, B, shows females. Also A contains only one figure whereas B has two. The figure in A is smiling while those in B are frowning and A is surrounded by a circle whereas the border for B is a square. To repeat, drawings A and B differ in four ways: sex (male or female), number of figures (one or two), facial expression (smile or frown), and border (circle or square). Also notice that between drawings A and B, each of these eight features has been used--and used only once. That is, A contains four of the features and B includes the complementary four. Finally, none of the features which make up A are present in B and vice versa.

Before we begin each problem, I will select one of the eight features--that is, one of male, female, smile, frown, one, two, circle, or square--without telling you which one it is. Your challenge will be to discover within 12 attempts which feature I have in mind by performing the following task. On each attempt, you will be presented with a page similar to this example. Your task will be to identify the drawing--by saying "A" or "B"--in which you suspect this "mystery feature" is displayed. For example, if you suspected that the mystery feature was that there were two figures in the drawing, you would say "B" because in the example it is drawing B which contains two figures. A shows only one. Or, if you suspected that the mystery feature was the feature male, you would say "A", because drawing A shows a man whereas B shows women.

After you have guessed A or B, I will tell you whether or not the mystery feature appears in the drawing you have identified. An answer of "yes" means that the mystery feature is displayed in the drawing you selected. An answer of "no" means that it occurs in the other (that is, in the drawing you did not pick). Once we have completed an attempt we will go on to the next one and cannot look back at earlier ones. After we have completed all 12 attempts, I will ask you to name the mystery feature and we will continue on to the next problem. In total, there are four problems; each consisting of 12 attempts.

One final aspect. Before you state your guess on each attempt, please rate between zero and ten how confident you are as to whether or not you will be correct or incorrect. As shown on the scale, a zero indicates "certain failure"--that you are 100% sure you'll be wrong. A ten means "certain success" --or that you are 100% sure you'll be right. I'll record all of your answers on this sheet. Do you have any questions? Fine, let's begin.

DISCRIMINATION TASK SCALE

WHAT IS THE MOST PROBABLE OUTCOME OF YOUR NEXT ATTEMPT?

PROBLEM: _____

TRIAL NO.	YES/NO	CERTAIN FAILURE										CERTAIN SUCCESS
I1.	Y/N	0	1	2	3	4	5	6	7	8	9	10
I2.	Y/N	0	1	2	3	4	5	6	7	8	9	10
I3.	Y/N	0	1	2	3	4	5	6	7	8	9	10
.....												
1.	Y/N	0	1	2	3	4	5	6	7	8	9	10
2.	Y/N	0	1	2	3	4	5	6	7	8	9	10
3.	Y/N	0	1	2	3	4	5	6	7	8	9	10
4.	Y/N	0	1	2	3	4	5	6	7	8	9	10
5.	Y/N	0	1	2	3	4	5	6	7	8	9	10
6.	Y/N	0	1	2	3	4	5	6	7	8	9	10
7.	Y/N	0	1	2	3	4	5	6	7	8	9	10
8.	Y/N	0	1	2	3	4	5	6	7	8	9	10
9.	Y/N	0	1	2	3	4	5	6	7	8	9	10
10.	Y/N	0	1	2	3	4	5	6	7	8	9	10
11.	Y/N	0	1	2	3	4	5	6	7	8	9	10
12.	Y/N	0	1	2	3	4	5	6	7	8	9	10

WHAT WAS THE FEATURE I HAD IN MIND? _____ (Y/N)

DISCRIMINATION TASK ATTRIBUTIONS

1. How important were each of the following in determining how well you did on the discrimination task?

   a. your ability or skill

   NOT AT ALL 1 2 3 4 5 6 7 8 9 COMPLETELY RESPONSIBLE

   b. how hard you tried

   NOT AT ALL 1 2 3 4 5 6 7 8 9 COMPLETELY RESPONSIBLE

   c. the level of difficulty of the task

   NOT AT ALL 1 2 3 4 5 6 7 8 9 COMPLETELY RESPONSIBLE

   d. it was just a matter of luck

   NOT AT ALL 1 2 3 4 5 6 7 8 9 COMPLETELY RESPONSIBLE

2. How well do you think you did on this task as compared to most people?

   MUCH WORSE 1 2 3 4 5 6 7 8 9 MUCH BETTER

3. How important do you think each of the following would be in determining how well most people would do on the discrimination problems?

   a. ability/skill

   NOT AT ALL 1 2 3 4 5 6 7 8 9 COMPLETELY RESPONSIBLE

   b. effort

   NOT AT ALL 1 2 3 4 5 6 7 8 9 COMPLETELY RESPONSIBLE

   c. task difficulty

   NOT AT ALL 1 2 3 4 5 6 7 8 9 COMPLETELY RESPONSIBLE

   d. luck

   NOT AT ALL 1 2 3 4 5 6 7 8 9 COMPLETELY RESPONSIBLE

4. To what extent do you think that how well a person performs on a task like these discrimination problems reflects his success in other aspects of life?

   NOT AT ALL 1 2 3 4 5 6 7 8 9 COMPLETELY

DESIGN CHECKS

1. My chances of receiving a transplant within one year from now are

1	2	3	4	5	6	7	8	9
VERY UNLIKELY								VERY LIKELY

2. My chances of receiving a transplant at some future time are

1	2	3	4	5	6	7	8	9
VERY UNLIKELY								VERY LIKELY

3. If I were to get a new kidney, my chances of being cured would be

1	2	3	4	5	6	7	8	9
VERY UNLIKELY								VERY LIKELY

4. I would like to receive a transplant. AGREE / DISAGREE

5. How free or restricted do you feel in doing what you might want to do?

1	2	3	4	5	6	7	8	9
I STILL DO EVERYTHING I WANT TO DO								I CAN NO LONGER DO ANY OF THE THINGS I WANT TO DO

6. How much does this bother you?

1	2	3	4	5	6	7	8	9
NOT AT ALL								IT BOTHERS ME SO MUCH THAT I CAN'T THINK OF ANYTHING ELSE

7. If I couldn't receive dialysis as a treatment for my disease

   a. nothing at all would happen
   b. I might get a little sick
   c. I would get moderately sick
   d. I would get very sick
   e. I would get very sick and might even die
   f. I would get very sick and probably would die
   g. I would get very sick and definitely would die

8. These days I feel like I just can't do anything.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								STRONGLY AGREE

9. These days I feel like I just don't want to do anything.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								STRONGLY AGREE

10. How much of your time is taken up by dialysis and other aspects of your illness?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

11. How much does this bother you?

1	2	3	4	5	6	7	8	9
NOT AT ALL								IT BOTHERS ME SO MUCH THAT I CAN'T THINK OF ANYTHING ELSE

12. What is the greatest proportion of your time to be taken up by dialysis and other aspects of your illness that you could tolerate?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

13. What proportion would you prefer?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

14. The chances that I'll be on dialysis for the rest of my life are

1	2	3	4	5	6	7	8	9
VERY UNLIKELY								VERY LIKELY

15. Which of these statements best describes how you feel?

a. I'll probably be on dialysis for the rest of my life but I don't mind.
b. I'll probably be on dialysis for the rest of my life and I can't bear to think about it.
c. I don't really like dialysis but I will tolerate it until I get a transplant.

DESIGN CHECKS: POSTTRANSPLANT

1. My chances of maintaining my transplant for the upcoming year are

VERY UNLIKELY	1	2	3	4	5	6	7	8	9	VERY LIKELY

2. My chances of maintaining my transplant for the rest of my life are

VERY UNLIKELY	1	2	3	4	5	6	7	8	9	VERY LIKELY

3. Now that you have a new kidney, to what extent do you consider yourself cured?

VERY UNLIKELY	1	2	3	4	5	6	7	8	9	VERY LIKELY

4. How free or restricted do you feel in doing what you might want to do?

	1	2	3	4	5	6	7	8	9	
I STILL DO EVERYTHING I WANT TO DO										I CAN NO LONGER DO ANY OF THE THINGS I WANT TO DO

5. How much does this bother you?

NOT AT ALL	1	2	3	4	5	6	7	8	9	IT BOTHERS ME SO MUCH THAT I CAN'T THINK OF ANYTHING ELSE

6. If I hadn't received a transplant and couldn't receive dialysis as a treatment for my disease

   a. nothing at all would happen
   b. I might get a little sick
   c. I would get moderately sick
   d. I would get very sick
   e. I would get very sick and might even die
   f. I would get very sick and probably would die
   g. I would get very sick and definitely would die

7. These days I feel like I just can't do anything.

STRONGLY DISAGREE	1	2	3	4	5	6	7	8	9	STRONGLY AGREE

8. These days I feel like I just don't want to do anything.

STRONGLY DISAGREE	1	2	3	4	5	6	7	8	9	STRONGLY AGREE

9. When you were on dialysis, how much of your time was taken up by dialysis and other aspects of your illness?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

10. How much did this bother you?

NOT AT ALL 1 2 3 4 5 6 7 8 9 IT BOTHERED ME SO MUCH THAT I COULDN'T THINK OF ANYTHING ELSE

11. The chances that I'll be back on dialysis at some future time are

VERY UNLIKELY 1 2 3 4 5 6 7 8 9 VERY LIKELY

BEHAVIORAL RATING BY..... PHONE NO. .....

PATIENT..... DATE.....

1. If something is upsetting or disturbing (the pt), how likely is s/he to do something about it; i.e., to try to alleviate the problem?

NOT AT ALL 1 2 3 4 5 6 7 8 9 DEFINITELY

2. How much does _____ realize that when s/he is disturbed or upset by some thing or event, that s/he can act to do something to alleviate his/her discomfort; i.e., that s/he can do something to make the situation less of a problem?

NOT AT ALL 1 2 3 4 5 6 7 8 9 DEFINITELY

3. Does _____ seem to believe, in general, that s/he can control the things that happen to him in life?

NOT AT ALL 1 2 3 4 5 6 7 8 9 DEFINITELY

4. How often (i.e., what percentage of the time) does _____ seem to be sad or depressed?

_____%

5. How strong or intense are these feelings of depression?

NOT VERY INTENSE 1 2 3 4 5 6 7 8 9 VERY INTENSE

6. How does _____ feel about himself/herself as a person in general: good and worthy or bad and worthless?

WORTHLESS & BAD 1 2 3 4 5 6 7 8 9 WORTHY & GOOD

7. (a) FOR FAMILY/FRIEND RATER: Think of the most recent occasion on which there was a disagreement (or a potential disagreement) between _____ and yourself (e.g., about which TV program to watch or who should wash the dinner dishes).

What was the occasion? .....

Who got their way? PT YOU(RATER) (circle one)

(b) FOR HOSPITAL RATER: What was the most recent occasion on which the patient tried to manipulate you(i.e., influence your behavior in his/her own preferred direction independent of your own preference)?

.....

Who got their way? THE PATIENT YOU (RATER) (circle one)

8. How often (i.e., what percentage of the time) would you say that _____ tries to influence you to do things his/her way?

_____%

9. When such incidents do occur, how had does _____ try to influence you?

NOT AT ALL 1 2 3 4 5 6 7 8 9 TRIES VERY HARD

10. In your opinion, does _____ believe that s/he can influence or manipulate you--i.e., does s/he believe that s/he can get you to do things his/her way?

NOT AT ALL 1 2 3 4 5 6 7 8 9 DEFINITELY

11. Does _____ generally seem to try and get his/her own way with most people or just with you?

JUST WITH ME 1 2 3 4 5 6 7 8 9 WITH MOST PEOPLE

COMMENTS.....

.....

.....

.....

APPENDIX B: STUDY 2 MATERIALS

PSYCHOLOGICAL AND SOCIAL FACTORS IN DIALYSIS AND TRANSPLANTATION

Purpose of the Study

Psychological and social factors are known to be important in influencing both the physical and psychological well-being of patients suffering chronic illnesses. The purpose of the present research is to assess the importance of several of these for patients suffering end-stage renal disease. Hopefully, a better understanding of the roles played by such factors in dialysis and transplantation will help to improve the quality of care received by patients in future.

Consent

The purpose of the study as described above has been explained to me by ..... and I understand that my participation will involve a series of meetings with the researchers in which I may be interviewed and requested to perform some paper-and-pencil, psychological, and behavioral tests. My participation also entails granting the researchers permission to consult with my family and the hospital staff.

I understand that anonymity will be preserved and that my answers will at all times be kept in the strictest confidence of the researchers alone. All information will be used solely for research purposes. I also understand that I am under no obligation to participate--that the quality of my care will in no way be jeopardized by my refusal nor enhanced as a result of my consent--and that I am free to withdraw from participating in the study at any time. Knowing these things, I agree to enter the study as a participant.

Date.....

....

Signature of Participant Signature of Witness

PATIENT INFORMATION FILE

Date Recorded.....
Chart No. .....
Hospital: RVH QMVH Other .....

DEMOGRAPHIC

Name ..... Sex: M F
Birthdate ..... (Age = ...)
Marital Status: Sing Mar Sep Wd Div
No. Children ..... No. Children at home .....
Religion ..... Ethnic Background .....
Education ..... Occupation .....
Annual Income ..... Hometown: Mtl Other .....
Language Spoken: Eng Fr Other ..... (Primary = ...)

MEDICAL

Primary Renal Disease .....
Onset of kidney failure: sudden insidious
Date renal disease identified .....
Date of first time creatinine level > 5 .....
Date of fistula creation .....
Date of first dialysis ..... (Length of treatment = ...)
(identification-to-dialysis duration = ...)
Other medical problems .....
.....
No. previous transplant attempts .....
Family history of renal disease: no yes (Relatives = ...)

DIALYSIS

Mode: staff-hospital self-hospital self-home
Hrs. per week ..... Days: mon tue wed thur fri sat sun
Time of day .....
Drugs prescribed:

A. During dialysis (dosage)	B. Otherwise (dosage)
.....	.....
.....	.....
.....	.....
.....	.....

ORGAN DYSFUNCTION SCALE

Patient_____ Date_____

Rater_____

HEART FAILURE

0 = not meeting criteria 1, 2, or 3

1 = Definite cardiomegaly on X-ray; cardiomegaly unspecified (equivocal, possible, probable or not specified; or interstitial pulmonary edema on X-ray.

2 = Airspace or unspecified edema on X-ray; > 2+ peripheral edema, with serum albumin ≥ 2.5 gms.

3 = Emergency admission for pulmonary edema; a) paroxysmal nocturnal dyspnoea at least as often as once per week, or b) shortness of breath on minimal exertion (walking to bathroom on same floor, or talking): either a or b with criteria to meet 2, and S.O.B. not also attributed to respiratory problems.

ISCHEMIC HEART DISEASE

0 = not meeting 1, 2, or 3

1 = Definite or probable ischemic changes on cardiogram, or history or evidence of old myocardial infarction.

2 = Angina Pectoris brought on by moderate* or severe* exertion, or brought on by mild* exertion less often than once per day (accept clinical diagnosis of angina if not disputed in chart).

2a = Satisfies criteria for 2 but not for 1.

2b = Satisfies criteria for 2 and for 1.

3 = Angina Pectoris brought on by mild exertion at least as often as once per day.

3a = Satisfies criteria for 3 but not for 1.

3b = Satisfies criteria for 3 and for 1.

PERIPHERAL ISCHEMIA

0 = not meeting 1, 2, or 3.

1 = At least one foot with absent pulses not disputed in chart.

2 = Intermittent claudication (accept clinical diagnosis if not disputed).

2a = Satisfies criteria for 2 but not for 1 (on the same side).

2b = Satisfies criteria for 2 and for 1 (on the same side).

3 = Gangrene, feet ulcers due to ischemia, ischemic pain at rest, or amputation due to ischemia.

RESPIRATORY SYSTEM

0 = not meeting 1, 2, or 3

1a = Chest X-ray showing chronic obstructive lung disease*.

1b = History of chronic bronchitis.

2 = Shortness of breath on moderate* to severe* exertion not attributed to other causes.

2a = Satisfies criteria for 2 but not for 1a.

2b = Satisfies criteria for 2 and for 1a.

3 = Shortness of breath on mild* exertion, or chronically short of breath at rest not attributed to other causes.

3a = Satisfies criteria for 3 but not for 1a.

3b = Satisfies criteria for 3 and for 1a.

BONE DISEASE

0 = not meeting 1, 2, or 3

1 = Radiologic evidence of bone disease but no fractures or pain.

2 = Radiologic evidence of bone disease, with at least one fracture attributed to bone disease or pain due to bone disease.

3 = Radiologic evidence of fractures at $\geq$2 different "sites" (3 ribs would not count, for instance) or severe chronic pain due to bone disease.

ANEMIA

0 = not meeting 1 or 2

1 = Hematocrit < 25 on more than one occasion

2 = Hematocrit < 20 on more than one occasion

LIVER

0 = not meeting 1, 2, or 3

1 = Patient diagnosed as having chronic liver disease or cirrhosis.

2 = As for 1 with prothrombin time ≥15 sec's (if not on coumadin), albumin <3.0, or bilirubin ≥2 mg%.

3 = As for 1 with bilirubin ≥10, ascites, or evidence of hepatic coma or precoma.

G.I.

0 = not meeting 1 or 2

1 = Chronic** diarrhea, anorexia, or vomiting, but not severe

2 = Severe (≥10 bowel movements per day) chronic diarrhea, or chronic anorexia or vomiting leading to ≥10 lbs. weight loss.

PTH

0 = not meeting 1

1 = PTH level ≥300 on at least one occasion and parathyroidectomy not subsequently performed.

SKIN

0 = not meeting 1 or 2

1 = Itching but not said to be severe more than once or severe more than once without excoriation.

2 = Itching said to be severe more than once with excoriation.

PERIPHERAL NERVOUS SYSTEM

0 = No evidence of neuropathy

1 = "Restless legs", mild-moderate burning, tingling, or pain in extremities attributed to neuropathy.

2 = Decreased sensation, severe burning or tingling, or decreased strength in one or more limbs due to neuropathy.

3 = Paralysis of one or more limbs due to neuropathy.

*EXERTION: Walking 1 block on flat ground is mild exertion. Any hill, any further, any faster is moderate or severe exertion

**CHRONIC: Called chronic in chart or known to have lasted $\geq$ 1 month.

N.B. If a patient fits two possible categories for any of the individual systems score the most severe. Also be sure not to use the same symptom (e.g., shortness of breath) to classify a patient for two separate variables. If necessary choose one variable on an arbitrary basis and ignore the symptom already used when socring the second. The total score is arrived at by adding the individual scores for each variable. Maximum possible = 28.

BERKMAN SCALE

(1) Marital Status:

1) Have you ever been married?

( ) yes ( ) no

2) Are you now married, separated, divorced, widowed?

( ) married ( ) separated ( ) divorced ( ) widowed

(2) Friends and Relatives:

1) How many close friends do you have?
(People that you feel at ease with, can talk to about private matters, and can call on for help.)

( ) none ( ) 1 or 2 ( ) 3 to 5 ( ) 6 to 9 ( ) 10 or more

2) How many relatives do you have that you feel close to?

( ) none ( ) 1 or 2 ( ) 3 to 5 ( ) 6 to 9 ( ) 10 or more

3) How many of these friends or relatives do you see at least once a month?

( ) none ( ) 1 or 2 ( ) 3 to 5 ( ) 6 to 9 ( ) 10 or more

(3) & (4)

Church and Group membership:

1) Do you belong to any of these kinds of groups?

	yes	no
a) A social or recreational group?	( )	( )
b) A labour union, commercial group, professional organization?	( )	( )
c) Church group?	( )	( )
d) A group concerned with children? (PTA, Boy Scout)	( )	( )
e) A group concerned with community betterment, charity, or service?	( )	( )
f) Any other group? Describe.	( )	( )

INTRUSIVENESS RATINGS

How much does your illness and/or its treatment interfere with each of the following aspects of your life?

Please use this rating scale in answering:

NOT VERY MUCH 1 2 3 4 5 6 7 VERY MUCH

_____ A. YOUR HEALTH

_____ B. YOUR DIET

_____ C. YOUR WORK

_____ D. FINANCIAL SECURITY & MATERIAL NEED SATISFACTION

_____ E. RECREATION

_____ F. FAMILY & MARITAL RELATIONS

_____ G. OTHER SOCIAL RELATIONS

_____ H. SEX

_____ I. SELF-EXPRESSION

_____ J. RELIGIOUS EXPRESSION

_____ K. RECREATION

_____ L. COMMUNITY & CIVIC ACTIVITIES

CONTROL RATINGS

1. HOW MUCH CONTROL DO YOU HAVE OVER EACH OF THE FOLLOWING ASPECTS OF YOUR LIFE?

2. HOW MUCH CONTROL DO YOU EXPECT TO HAVE IN A YEAR FROM NOW?

Please use this rating scale in answering:

LITTLE CONTROL 1 2 3 4 5 6 7 A LOT OF CONTROL

NOW	1 YEAR	IMPORTANCE	
_____	_____	_____	A. YOUR ILLNESS & ITS TREATMENT
_____	_____	_____	B. YOUR HEALTH
_____	_____	_____	C. YOUR DIET
_____	_____	_____	D. YOUR WORK
_____	_____	_____	E. FINANCIAL SECURITY & MATERIAL NEED SATISFACTION
_____	_____	_____	F. RECREATION
_____	_____	_____	G. FAMILY & MARITAL RELATIONS
_____	_____	_____	H. OTHER SOCIAL RELATIONS
_____	_____	_____	I. SEX
_____	_____	_____	J. SELF-EXPRESSION
_____	_____	_____	K. RELIGIOUS EXPRESSION
_____	_____	_____	L. RECREATION.
_____	_____	_____	M. COMMUNITY & CIVIC ACTIVITIES

3. HOW IMPORTANT TO YOU ARE EACH OF THESE ASPECTS?

Please use this scale in answering:

NOT VERY IMPORTANT 1 2 3 4 5 6 7 VERY IMPORTANT

*Dialysis patients only: How much control do you have over your dialysis?

NOW	1 YEAR	IMPORTANCE
_____	_____	_____

CARD SORTING TASK

Each of these 13 cards has one aspect of life printed on it (e.g. your health, your work, recreation). The instructions are simply to put together into groups the aspects of life which seem to you to belong together. Do it in the way that seems most natural, most logical, and most comfortable to you. There are no truly right or wrong answers, it's your opinion that counts. You may have as many or as few aspects of life in a group as you like, so long as the aspects of life in each group belong together for one particular reason. If, after you have thought about all the aspects of life, a few do not seem to belong with any of the others, you may put these aspects of life into groups by themselves. Please sort all the aspects of life.

_____ A. YOUR HEALTH

_____ B. YOUR DIET

_____ C. YOUR WORK

_____ D. FINANCIAL SECURITY & MATERIAL NEED SATISFACTION

_____ E. RECREATION

_____ F. FAMILY & MARITAL RELATIONS

_____ G. OTHER SOCIAL RELATIONS

_____ H. SEX

_____ I. SELF-EXPRESSION

_____ J. RELIGIOUS EXPRESSION

_____ K. RECREATION

_____ L. COMMUNITY & CIVIC ACTIVITIES

_____ M. YOUR ILLNESS & ITS TREATMENT

K SCALE

		True	False
1.	At periods my mind seems to work more slowly than usual.	T	F
2.	I have sometimes felt that difficulties were piling up so high that I could not overcome them.	T	F
3.	I have often met people who were supposed to be experts who were no better than I.	T	F
4.	I find it hard to set aside a task that I have undertaken, even for a short time.	T	F
5.	I like to let people know where I stand on things.	T	F
6.	At times I feel like swearing.	T	F
7.	At times I am full of energy.	T	F
8.	At times I feel like smashing things.	T	F
9.	I have never felt better in my life than I do now.	T	F
10.	I takes a lot of argument to convince most people of the truth.	T	F
11.	I have periods in which I feel ususually cheerful without any special reason.	T	F
12.	I certainly feel useless at times.	T	F
13.	Criticism or scolding hurts me terribly.	T	F
14.	I think a great many people exaggerate their misfortunes in order to gain the sympathy and help of others.	T	F
15.	Often I can't understand why I have been so cross and grouchy.	T	F
16.	I get mad easily and then get over it soon.	T	F
17.	What others think of me does not bother me.	T	F
18.	I have very few quarrels with members of my family.	T	F
19.	I am against giving money to beggers.	T	F
20.	At times my thoughts have raced ahead faster than I could speak them.	T	F

		True	False
21.	I frequently find myself worrying about something.	T	F
22.	I worry over money and business.	T	F
23.	It makes me impatient to have people ask my advice or otherwise interrupt me when I am working on something important.	T	F
24.	People often disappoint me.	T	F
25.	I often think, "I wish I were a child again.".	T	F
26.	I find it hard to make talk when I meet new people.	T	F
27.	When in a group of people I have trouble thinking of the right things to talk about.	T	F
28.	Most people will use somewhat unfair means to gain profit or an advantage rather than lose it.	T	F
29.	It makes me uncomfortable to put on a stunt at a party even when others are doing the same sort of things.	T	F
30.	I think nearly anyone would tell a lie to keep out of trouble.	T	F

ROSENBERG SCALE

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
	1	2	3	4
A. I feel that I'm a person of worth, at least on an equal basis with others.	1	2	3	4
B. I feel that I have a number of good qualities.	1	2	3	4
C. All in all, I am inclined to feel that I am a failure.	1	2	3	4
D. I am able to do things as well as most other people.	1	2	3	4
E. I feel I do not have much to be proud of.	1	2	3	4
F. I take a positive attitude toward myself.	1	2	3	4
G. On the whole, I am satisfied with myself.	1	2	3	4
H. I wish I could have more respect for myself.	1	2	3	4
I. I certainly feel useless at times.	1	2	3	4
J. At times I think I am no good at all.	1	2	3	4

BRADBURN SCALE

DURING THE PAST WEEK, DID YOU EVER FEEL

	NO	YES
A. PARTICULARLY EXCITED OR INTERESTED IN SOMETHING?	0	1
B. SO RESTLESS THAT YOU COULDN'T SIT LONG IN A CHAIR?	0	1
C. PROUD BECAUSE SOMEONE COMPLIMENTED YOU ON SOMETHING YOU HAD DONE?	0	1
D. VERY LONELY OR REMOTE FROM OTHER PEOPLE?	0	1
E. PLEASED ABOUT HAVING ACCOMPLISHED SOMETHING?	0	1
F. BORED?	0	1
G. ON TOP OF THE WORLD?	0	1
H. DEPRESSED OR VERY UNHAPPY?		
I. THAT THINGS WERE GOING YOUR WAY?	0	1
J. UPSET BECAUSE SOMEONE CRITICIZED YOU?	0	1

CONSIDERING YOUR LIFE AS A WHOLE, WOULD YOU DESCRIBE IT AS VERY UNHAPPY, UNHAPPY, AN EVEN MIXTURE OF UNHAPPINESS AND HAPPINESS, HAPPY, OR VERY HAPPY?

VERY UNHAPPY		UNHAPPY		MIXED		HAPPY		VERY HAPPY
1	2		3	4	5		6	7

POMS SCALE

PLEASE DESCRIBE HOW YOU HAVE BEEN FEELING DURING THE PAST WEEK INCLUDING TODAY.

	NOT AT ALL	A LITTLE	MODERATELY	QUITE A BIT	EXTREMELY
	0	1	2	3	4
UNHAPPY	0	1	2	3	4
SORRY	0	1	2	3	4
LIVELY	0	1	2	3	4
SAD	0	1	2	3	4
BLUE	0	1	2	3	4
ACTIVE	0	1	2	3	4
HOPELESS	0	1	2	3	4
UNWORTHY	0	1	2	3	4
ENERGETIC	0	1	2	3	4
DISCOURAGED	0	1	2	3	4
LONELY	0	1	2	3	4
CHEERFUL	0	1	2	3	4
MISERABLE	0	1	2	3	4
GLOOMY	0	1	2	3	4
ALERT	0	1	2	3	4
DESPERATE	0	1	2	3	4
HELPLESS	0	1	2	3	4
FULL OF PEP	0	1	2	3	4
WORTHLESS	0	1	2	3	4
TERRIFIED	0	1	2	3	4
CAREFREE	0	1	2	3	4
GUILTY	0	1	2	3	4
VIGOROUS	0	1	2	3	4

BECK SCALE

A. 3 I am so sad or unhappy that I can't stand it.
2 I am blue or sad all the time and I can't snap out of it.
1 I feel sad or blue.
0 I do not feel sad.

B. 3 I feel that the future is hopeless and that things cannot improve.
2 I feel I have nothing to look forward to.
1 I feel discouraged about the future.
0 I am not particularly pessimistic or discouraged about the future.

C. 3 I feel I am a complete failure as a person (parent, husband, wife).
2 As I look back on my life, all I can see is a lot of failures.
1 I feel I have failed more than the average person.
0 I do not feel like a failure.

D. 3 I am dissatisfied with everything.
2 I don't get satisfaction out of anything anymore.
1 I don't enjoy things the way I used to.
0 I am not particularly dissatisfied.

E. 3 I feel as though I am very bad or worthless.
2 I feel quite guilty.
1 I feel bad or unworthy a good part of the time.
0 I don't feel particularly guilty.

F. 3 I hate myself.
2 I am disgusted with myself.
1 I am disappointed in myself.
0 I don't feel disappointed in myself.

G. 3 I would kill myself if I had the chance.
2 I have definite plans about committing suicide.
1 I feel I would be better off dead.
0 I don't have any thoughts of harming myself.

H. 3 I have lost all of my interest in other people.
2 I have lost most of my interest in other people and have little feeling for them.
1 I am less interested in other people than I used to be.
0 I have not lost interest in other people.

I. 3 I can't make any decisions at all anymore.
2 I have great difficulty in making decisions.
1 I try to put off making decisions.
0 I make decisions as well as ever.

J. 3 I feel that I am ugly or repulsive-looking.
2 I feel that there are permanent changes in my appearance and they make me look unattractive.
1 I am worried that I am looking old or unattractive.
0 I don't feel that I look any worse than I used to.

K. 3 I can't do any work at all.
2 I have to push myself very hard to do anything.
1 It takes extra effort to get started at doing something.
0 I can work about as well as before.

L. 3 I get too tired to do anything.
2 I get tired from doing anything.
1 I get tired more easily than I used t
0 I don't get any more tired than usual

M. 3 I have no appetite at all anymore.
2 My appetite is much worse now.
1 My appetite is not as good as it used to be.
0 My appetite is no worse than usual.

SDSCL SCALE

DURING THE PAST WEEK INCLUDING TODAY, HOW MUCH WERE YOU BOTHERED BY:	Not At All 0	A Little Bit 1	Mod-erately 2	Quite a Bit 3	Ex-tremely 4
1) HOT OR COLD SPELLS	0	1	2	3	4
2) DIZZINESS OR FAINTNESS	0	1	2	3	4
3) CONSTIPATION OR DIARRHEA	0	1	2	3	4
4) TROUBLE GETTING YOUR BREATH	0	1	2	3	4
5) SLEEP DIFFICULTIES	0	1	2	3	4
6) WEAKNESS	0	1	2	3	4
7) HEART BEATS FAST	0	1	2	3	4
8) NAUSEA OR UPSET STOMACH	0	1	2	3	4
9) PAIN: a) CHEST PAINS	0	1	2	3	4
b) HEADACHES	0	1	2	3	4
c) MUSCLE CRAMPS	0	1	2	3	4
d) OTHER ACHES OR PAINS	0	1	2	3	4
10) NUMBNESS OR TINGLING	0	1	2	3	4
11) HANDS TREMBLE	0	1	2	3	4

Respondent: Participant _____
Hospital Staff _____
Significant Other _____

SIGNIFICANT OTHERS' RATINGS

Patient _____ Phone No. _____

Rater _____ Date _____

1. Is ___(the patient)___ taking his/her medications?

   a. none
   b. a few
   c. most
   d. all

2. How well is he/she complying with his/her diet?

   a. not at all
   b. a little
   c. moderately
   d. quite well
   e. extremely well

3. How well is he/she complying with the fluid restrictions?

   a. not at all
   b. a little
   c. moderately
   d. quite well
   e. extremely well

4. Overall, how would you rate _____'s self-esteem?

   VERY LOW 1 2 3 4 5 6 7 VERY HIGH

5. How much does _____'s illness and/or its treatment interfere with other aspects of his/her life?

   NOT VERY MUCH 1 2 3 4 5 6 7 VERY MUCH

6. Considering _____'s life as a whole, would you describe it as

   a. very unhappy
   b. unhappy
   c. an even mixture of unhappiness and happiness
   d. happy
   e. very happy

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HAMILTON PSYCHIATRIC RATING SCALE FOR DEPRESSION

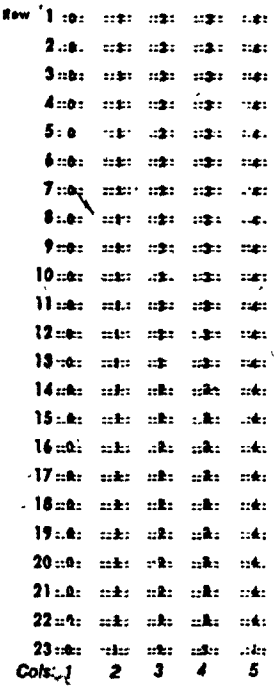
HAM D

INSTRUCTIONS: *Code 01 under Sheet Number on GSS.*

For each item select the one "cue" which best characterizes the patient.

Be sure to record your answers in the appropriate spaces (positions 0 through 4), Columns 1 – 5, on the left half of the General Scoring Sheet.

See *Special Instructions* in Manual for Items 7, 16, 18, and 20.



ROW NO.	Mark each item on left half of scoring sheet on row specified Use marking positions 0 – 4, columns 1 – 5
1	**1. DEPRESSED MOOD** *(Sadness, hopeless, helpless, worthless)* 0 = Absent 1 = These feeling states indicated only on questioning 2 = These feeling states spontaneously reported verbally 3 = Communicates feeling states non verbally – i.e., through facial expression, posture, voice, and tendency to weep 4 = Patient reports VIRTUALLY ONLY these feeling states in his spontaneous verbal and non-verbal communication
2	**2. FEELINGS OF GUILT** 0 = Absent 1 = Self reproach, feels he has let people down 2 = Ideas of guilt or rumination over past errors or sinful deeds 3 = Present illness is a punishment. Delusions of guilt 4 = Hears accusatory or denunciatory voices and/or experiences threatening visual hallucinations
3	**3. SUICIDE** 0 = Absent 1 = Feels life is not worth living 2 = Wishes he were dead or any thoughts of possible death to self 3 = Suicide ideas or gesture 4 = Attempts at suicide *(any serious attempt rates 4)*
4	**4. INSOMNIA EARLY** 0 = No difficulty falling asleep 1 = Complains of occasional difficulty falling asleep – i.e., more than ½ hour 2 = Complains of nightly difficulty falling-asleep
5	**5. INSOMNIA MIDDLE** 0 = No difficulty 1 = Patient complains of being restless and disturbed during the night 2 = Waking during the night – any getting out of bed rates 2 *(except for purposes of voiding)*
6	**6. INSOMNIA LATE** 0 = No difficulty 1 = Waking in early hours of the morning but goes back to sleep 2 = Unable to fall asleep again if he gets out of bed
7	**7. WORK AND ACTIVITIES** 0 = No difficulty 1 = Thoughts and feelings of incapacity, fatigue or weakness related to activities; work or hobbies 2 = Loss of interest in activity; hobbies or work – either directly reported by patient, or indirect in listlessness, indecision and vacillation *(feels he has to push self to work or activities)* 3 = Decrease in actual time spent in activities or decrease in productivity. In hospital, rate 3 if patient does not spend at least three hours a day in activities *(hospital job or hobbies)* exclusive of ward chores 4 = Stopped working because of present illness. In hospital, rate 4 if patient engages in no activities except ward chores, or if patient fails to perform ward chores unassisted

HAMILTON PSYCHIATRIC RATING SCALE FOR DEPRESSION

ROW NO.	Continue marking on left half of scoring sheet on row specified
8	**8. RETARDATION** *(Slowness of thought and speech impaired ability to concentrate, decreased motor activity)* 0 = Normal speech and thought 1 = Slight retardation at interview 2 = Obvious retardation at interview 3 = Interview difficult 4 = Complete stupor
9	**9. AGITATION** 0 = None 1 = Fidgetiness 2 = Playing with hands, hair, etc. 3 = Moving about, can't sit still 4 = Hand wringing, nail biting, hair-pulling, biting of lips
10	**10. ANXIETY PSYCHIC** 0 = No difficulty 1 = Subjective tension and irritability 2 = Worrying about minor matters 3 = Apprehensive attitude apparent in face or speech 4 = Fears expressed without questioning
11	**11. ANXIETY SOMATIC** 0 = Absent 1 = Mild 2 = Moderate 3 = Severe 4 = Incapacitating Physiological concomitants of anxiety, such as Gastro-intestinal – *dry mouth, wind, indigestion, diarrhea, cramps belching* Cardio-vascular – *palpitations, headaches* Respiratory – *hyperventilation, sighing* Urinary frequency Sweating
12	**12. SOMATIC SYMPTOMS GASTROINTESTINAL** 0 = None 1 = Loss of appetite but eating without staff encouragement Heavy feelings in abdomen 2 = Difficulty eating without staff urging Requests or requires laxatives or medication for bowels or medication for G I symptoms
13	**13. SOMATIC SYMPTOMS GENERAL** 0 = None 1 = Heaviness in limbs, back or head Backaches, headache, muscle aches Loss of energy and fatigability 2 = Any clear-cut symptom rates 2
14	**14. GENITAL SYMPTOMS** 0 = Absent 1 = Mild 2 = Severe Symptoms such as: *Loss of libido* *Menstrual disturbances*
15	**15. HYPOCHONDRIASIS** 0 = Not present 1 = Self absorption (bodily) 2 = Preoccupation with health 3 = Frequent complaints, requests for help, etc 4 = Hypochondriacal delusions

ROW NO.	Continue marking on left half of scoring sheet on row specified
16	**16 LOSS OF WEIGHT** *Rate either A or B* A When Rating By History: 0 = No weight loss 1 = Probable weight loss associated with present illness 2 = Definite (according to patient) weight loss 3 = Not assessed
17	B On Weekly Ratings By Ward Psychiatrist, When Actual Weight Changes Are Measured 0 = Less than 1 lb weight loss in week 1 = Greater than 1 lb weight loss in week 2 = Greater than 2 lb weight loss in week 3 = Not assessed
18	**17 INSIGHT** 0 = Acknowledges being depressed and ill 1 = Acknowledges illness but attributes cause to bad food, climate, overwork, virus, need for rest etc 2 = Denies being ill at all
19	**18. DIURNAL VARIATION** A. Note whether symptoms are worse in morning or evening If NO diurnal variation, mark none 0 = No variation 1 = Worse in A M 2 = Worse in P M
20	B When present, mark the severity of the variation Mark "None" if NO variation 0 = None 1 = Mild 2 = Severe
21	**19 DEPERSONALIZATION AND DEREALIZATION** 0 = Absent 1 = Mild 2 = Moderate 3 = Severe 4 = Incapacitating Such as *Feelings of unreality* *Nihilistic ideas*
22	**20. PARANOID SYMPTOMS** 0 = None 1 = Suspicious 2 = Ideas of reference 3 = Delusions of reference and persecution
23	**21. OBSESSIONAL AND COMPULSIVE SYMPTOMS** 0 = Absent 1 = Mild 2 = Severe