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Assessing Levels of Adaptive Functioning: The Role Functioning Scale

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ABSTRACT: This paper reports data on reliability and validity of the Role Functioning Scale (RFS) a measure of level of functioning of adults in four domains. Psychometric properties were tested on an inner city sample of 112 psychiatrically disturbed and well, predominantly African-American, low-income mothers of young children. The RFS has good interitem, test-retest, and interrater reliability. The four scales and global RFS Index discriminated accurately between well and disturbed subjects. The Global RFS Index was significantly correlated with self-esteem and degree of disturbance. Individual scales demonstrated predicted relationships with quality of child-rearing and other independent behavioral indices. Results are discussed in terms of the unique information provided by the RFS and its potential contribution to treatment planning.

For purposes of both treatment planning and program evaluation, it is important to be able to take into account the patient's level of functioning in daily life. Most mental health services have established

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procedures for obtaining diagnosis, mental status, and relevant history information. However, the patient's adjustment to his or her role in the community is typically less systematically examined. The purpose of this paper is to describe one such measure, to report reliability and validity data, and to compare its properties with those of a more general measure of severity of disturbance.

A global rating scale is well suited for measuring level of functioning (Newman, 1980). A global scale integrates ratings of different patient characteristics resulting in a single multidimensional measure. Global ratings are easy to make and can be useful for service planning and evaluation research (Krowinski & Fitt, 1980; Mintz, Luborsky & Christoph, 1979; Newman, 1980). The advantages of a global rating of overall impairment associated with psychiatric disturbance are highlighted by Luborsky's introduction of the Health Sickness Rating Scale (HSRS) (Luborsky, 1962; Luborsky & Bachrach, 1974), later revised as the Global Assessment Scale (GAS) (Endicott, Spitzer, Fleiss, & Cohen, 1976).

A compliment to the GAS would be a measure of the individual's functioning in his or her natural environment. Specifically, a simple measure is needed for adult psychiatric patients which would assess their functioning in each of the several domains in which most adults operate, e.g., personal self-care, cognitive/affective functioning, social/familial relationships, and vocational/educational functioning. An individual with a reasonable level of role functioning should be able to maintain intimate relationships (including marriage, parenting, and friendship), productivity, self-esteem, and integration into the community.

It was expected that independent evaluations of severity of psychiatric disorder, degree of experienced distress, and role functioning would yield different types of information. While there may be close relationships among these factors, the relationships have not been well understood. Specifically, the independent evaluation of level of role functioning would help identify how some persons can function reasonably well in their environment even though they have an active diagnosis of schizophrenia and are under a great deal of personal distress, whereas others may function poorly in the absence of diagnosis or distress.

The Role Functioning Scale (RFS) was found to be particularly suited to this type of assessment. It was originally devised as an instrument for program evaluation in state mental health in Georgia (McPheeters,

1984; Newman, 1980). In a comparison with other adjustment measures relative to the NIMH criteria for mental health treatment outcome measures (NIMH, 1986), the RFS emerged as the top ranked scale on six of the twelve criteria and received the second highest ranking on four of the remaining criteria (Green & Gracely, 1987). Green and Gracely (1987) concluded that the RFS was the preferred scale in reference to the NIMH task force's priorities and was judged as particularly outstanding in psychometric criteria and more relevant to chronically mentally ill patients than the other scales. Although extensively utilized, evaluation of the psychometric properties of the RFS has not been conducted (Green & Gracely, 1987; Stribling, 1983). This paper will describe the RFS and provide reliability and validity data on one sample.

It was hypothesized that, first, RFS is a reliable, stable measure of a patient's level of functioning, regardless of diagnosis. Second, it was hypothesized that RFS scores will discriminate between psychiatrically disturbed and well subjects. Third, it was hypothesized that RFS scores will be related to scores on measures of level of disturbance, self-esteem, and specific role performance.

METHOD

Subjects

The women in the study were primarily African-American (93%), urban, low-income (70% in Hollingshead's lowest Category V), primarily single parents (75%), all of whom had at least one child under five years old. Included in the sample were 1) 79 women who were receiving outpatient treatment and/or had been hospitalized within the previous six months for either schizophrenia or severe depression, and 2) 33 women who had no history of psychiatric disturbance who were comparable on demographic factors. The disturbed women would probably be comparable to other samples of inner city, community mental health center patients.

Eligibility for the disturbed group was determined by a psychiatrist-assigned current diagnosis of schizophrenia or mood disorder based on an unstructured diagnostic interview guided by DSM-III criteria. Two experienced psychologists independently and blindly reviewed 30 randomly selected case records and confirmed the diagnosis in 83% of the cases. In all of the remaining cases, at least one of the psychologists confirmed the original diagnosis. Women were eliminated from the sample if there was any evidence of current or past alcohol or drug abuse. The well women were recruited from well-baby clinics in the same neighborhoods as the mental health centers. Screening determined that they had no history of having experienced or sought treatment for psychiatric disturbance, drug or alcohol abuse. Smaller subgroups of the sample were used for each analysis, depending on the availability of data on the measures needed for each statistical test.

Measures

The Role Functioning Scale. The RFS is comprised of four single rating scales for evaluating the functioning of individuals in specified areas of everyday life (see Table 1). The four role functions assessed are: (1) *Working: productivity* (RFS1), (2) *Independent living and self care* (RFS2), (3) *Immediate social network relationships* (RFS3), and (4) *Extended social network relationships* (RFS4).

The values on each of the four scales range from one, which represents a very minimal level of role functioning, to seven, the hypothetically optimal level of role functioning. Each of the seven points on the scales is accompanied by a behaviorally defined description.

Trained interviewers can complete the scale in a few minutes following a standard intake interview. The evaluation focuses on the patient's functioning during a specified time period, in this case the week prior to the evaluation. The four role scores totalled represent a Global Role Functioning Index with scores ranging from 4 to 28.

Global Personal Distress Scale.[1] The Global Personal Distress Scale is an estimate of a patient's subjective feelings of "pain" or personal dissatisfaction with himself or herself. This quality was hypothesized to be independent of the level of role functioning, yet an important factor for use in evaluating the effectiveness of mental health programs. For example, one can maintain a clean, adequately functioning home, yet suffer from considerable depression. Ratings range from 1 (constant and pervasive awareness of painful symptoms) to 7 (no apparent or reported personal distress).

Global Assessment Scale (GAS; Endicott et al., 1976). The GAS is a single rating scale used to measure the impairment associated with emotional disturbance. Scores range from 0 to 10 (needs constant supervision for severe dysfunction) to 90 to 100 (no symptoms, superior functioning), with behavioral descriptions for each 10-point interval. The GAS is widely used and has been reported to have good reliability and validity, including correlations with measures of overall severity of illness and relationship to rehospitalization (Endicott et al., 1976). Interrater reliability on a randomly selected 20% of the present sample was .87 for the 10-point interval.

Home Observation for Measurement of the Environment (HOME Inventory, Bradley & Caldwell, 1978). The quality of child rearing environment provided by the mother was measured with the HOME Inventory. Two versions of the instrument were used, one for birth to three year olds (45 items) and one for older children (55 items). The total scale scores were used here, with higher scores indicating better quality childrearing. Previous reports indicated interrater reliability at .90, internal consistency for the total scale at .88, and correlations with various cognitive measures as high as .72 (Bradley & Caldwell, 1978; Elardo, Bradley, & Caldwell, 1977). In the present study, interrater reliability, checked on a randomly selected 25% of the sample, was .87 for the total scale.

Self-Esteem (Rosenberg Self-Esteem Scale; Rosenberg & Pearlin, 1978). The Self-Esteem Scale consists of ten items to which respondents indicate the extent to which

[1]The Global Personal Distress Scale was originally included as part of the Role Functioning Scale.

they agree or disagree. Answers are grouped into six subscales, with final scores ranging from zero to six. High scores indicate low self-esteem. Adequate test-retest reliability ($r = .85$ for two weeks) and convergent, discriminant, and predictive validity have been established (Robinson & Shaver, 1973; Silbert & Tippet, 1965).

Behavioral Indices. In order to test the validity of the individual subscales of the RFS, some independent measures of behavior were obtained. A "significant other," usually a spouse or mate, mother, or sibling, was identified by each subject. A social worker, blind to other information on the subject, interviewed the significant other and obtained information on the subject's work history, educational status, marital relationship history, quality of care as a homemaker, household status (i.e., who the subject lived with and frequency of changes), and police contacts. Information on social services received by the woman was obtained, with consent, from county social service agencies.

Procedure

Four bachelors or masters level social workers, blind to the diagnostic status of the women, evaluated the women on each of the interview and observation based measures (RFS, GAS, and HOME), administered the Self-Esteem Scale, and obtained consent to obtain information from independent sources. The questionnaires were orally administered to avoid any problem with poor reading ability. All measures were completed in the subjects' homes in two to three sessions. A randomly selected subset of the women ($N = 32$) were interviewed again one year later and the RFS was completed again. The interviewer was blind to both the previous data on the family and the diagnostic status of the woman.

RESULTS

Reliability

Interitem Reliability. The interitem reliability of the four Role Functioning Scales was computed on all 112 subjects to test whether these scores covaried together within subjects and between scales in producing the Global Role Functioning Index score. The results show that this is, in fact, what happens [between measures $F(3,333) = 13.01, p < .001$; Cronbach's alpha = 0.918]. That is, differences in scores between subscales and within subjects are similar in pattern across all scales for all subjects. Similar patterns of changes in subscale scores are seen across subjects for each Global Role Functioning Index score. These results indicate that each scale score is composed of the same general factors across subjects based on the final score computed.

Test-Retest Reliability. Test-retest reliability was determined by comparing scores on the RFS administered twice to a randomly selected subsample of 32 women with a one-year interval between the repeated

TABLE 1
Role Functioning Scale

Score:	**Working Productivity** Rate the client primarily in the most appropriate expected role (*i.e.* homemaker, student, wage earner).	**Independent Living, Self Care** (Management of household, eating, sleeping, hygiene care)	**Immediate Social Network Relationships** (Close friends, Spouse, Family)	**Extended Social Network Relationships** (Neighborhood, community church, clubs, agencies, recreational activities).
1	Productivity severely limited; often unable to work or adapt to school or homemaking; virtually no skills or attempts to be productive.	Lacking self-care skills approaching life endangering threat; often involves multiple and lengthy hospital services; not physically able to participate in running a household.	Severely deviant behaviors within immediate social networkds (*i.e.* often with imminent physical aggression or abuse to others or severely withdrawn from clsoe friends, spouse, family; often rejected by immediate social network).	Severely deviant behaviors within extended social networks (*i.e.* overtly disruptive, often leading to rejection by extended social networks).
2	Occasional attempts at productivity unsuccessfully; productive only with constant supervision in sheltered work, home or special classes.	Marked limitations in self-care/independent living; often involving constant supervision in or out of protective environment (*e.g.* frequent utilization of crisis services).	Marked limitations in immediate interpersonal relationships (*e.g.* excessive dependency or destructive communication or behaviors).	Often totally isolated from extended social networks, refusing community involvement or belligerent to helpers, neighbors, etc.
3	Limited productivity; often with restricted skills/abilities for homemaking, school, independent employment (*e.g.* requires highly structured routine).	Limited self-care/independent living skills; often relying on mental/physical health care; limited participation in running household.	Limited interpersonally; often no significant participation/ communication with immediate social network.	Limited range of successful and appropriate interactions in extended social networks (*i.e.* often restricts community involvement to minimal survival level interactions).

4	Marginal productivity (*e.g.* productive in sheltered work or minimally productive in independent work; fluctuates at home, in school; frequent job changes.)	Marginally self sufficient; often uses REGULAR assistance to maintain self-care/independent functioning; minimally participates in running household.	Marginal functioning with immediate social network (*i.e.* relationships are often minimal and fluctuate in quality).	Marginally effective interactions; often in a structured environment; may receive multiple public system support in accord with multiple needs.
5	Moderately functional in independent employment, at home or in school. (Consider very spotty work history or fluctuations in home, in school with extended periods of success).	Moderately self-sufficient; *i.e.* living independently with ROUTINE assistance (*e.g.* home visits by nurses, other helping persons, in private or self-help residences).	Moderately affective continuing and close relationship with at least one other person.	Moderately affective and independent in community interactions; may receive some public support in accord with need.
6	Adequate functioning in independent employment, home or school; often not applying all available skills/ abilities.	Adequate independent living & self-care with MINIMAL support (*e.g.* some transportation, shopping assistance with neighbors, friends, other helping persons).	Adequate personal relationship with one or more immediate member of social network (*e.g.* friend or family).	Adequately interacts in neighborhood or with at least one community or other organization or recreational activity.
7	Optimally performs homemaking, school tasks or employment-related functions with ease and efficiency.	Optimal care of health/ hygiene; independently manages to meet personal needs and household tasks.	Positive relationships with spouse or family and friends; assertively contributes to these relationships.	Positively interacts in community; church or clubs, recreational activities, hobbies or personal interests, often with other participants.

administration. Intraclass correlation coefficients (Winer, 1971) were computed for each subscale score. Correlations for the four scale scores and the Global RFS index ranged from .85 to .92. The correlation for GAS was .94. In contrast, the test-retest correlation for the Global Personal Distress Scale was .68.

Interrater Reliability. RFS and Global Personal Distress scores from a second rater were available for 52 subjects. The second rater scored the RFS from reading case notes and from having observed the mother while interviews were being conducted. The correlations ranged from .64 to .82 for the four RFS Scale scores and the Global RFS Index and was .21 for Global Personal Distress.

Validity

Criterion-Group Validity. Psychiatric patients were predicted to score lower than well controls. Scores from the Global RFS Index for well women versus depressed or schizophrenic women ($N = 112$) were submitted to a one-way analysis of variance. The results show that the well women scored significantly higher than those with disorders [$F(1,110) = 58.44$, $p < .001$].

In addition, a discriminant function analysis using the four RFS Scale scores as predictors and diagnostic status (well or disturbed) as outcomes (assuming equal numbers in the two groups) showed an average prediction accuracy of 78.8% (72.8% for disturbed; 93.1% for well) (see Table 2). A discriminant analysis of the Global RFS Index alone on the same outcomes yielded an average hit rate of 77.9% (73.2% for disturbed, 89.7% for well) (see Table 3). Comparing the two sets of results suggests that the simple sum of the RFS, the Global RFS Index, is about the same as the best weighted sum in predicting diagnostic status. A further comparison is provided by a separate discriminant analysis of GAS alone on the same outcomes. GAS yielded an average hit rate of 70.3% (63.3% for disturbed and 87.5% for well) (See Table 3). Cross-validation analysis using randomly selected subsets of subjects produced the same results, thereby reducing the likelihood of these results being due to chance. The accuracy of these scales as predictors supports the validity of Role Functioning scores in distinguishing among the criteria for well or disturbed groups.

Further criterion group validity was demonstrated by examining the breakdown of scores on each of the four Role Functioning Scale Scores for each diagnostic category. For this purpose, RFS scores were clus-

TABLE 2
Discriminant Analysis of Well vs. Disturbed Mothers Using RFS1-RFS4 as Predictors

Variable	*Discriminant Function Coefficient*
RFS 1 Working	.03
RFS 2 Independent Living	.49
RFS 3 Immediate Social Network	.37
RFS 4 Extended Social Network	.33

Results for the Discriminant Function

Function	*Eigenvalue*	*Canonical Correlation*	*Chi-Squared*	*p*
1	.425	.546	37.51	.001

Classification Results

		Predicted Group	
Actual Group	*No. of Cases*	*Disturbed*	*Well*
Disturbed	79	58 (72.8%)	21 (27.2%)
Well	33	2 (6.9%)	31 (93.1%)

tered as less than or equal to 3 (severely to moderately limited), 4 to 5 (marginal to moderate functioning), and 6 to 7 (adequate to optimal functioning). All of the scales discriminated well across subject groups, with the limited functioning range having higher percentages of schizophrenics than depressed patients and no well control women. Also noted was that more schizophrenics and depressives functioned adequately in the Independent Living domain and Immediate Social Network than in the other two domains.

Construct Validity. The RFS and, specifically, the Global Role Functioning Index are supposed to be indicative of general level of functioning. Furthermore, general level of functioning is hypothesized to be related to the constructs of level of disturbance and self-esteem. In particular, Global RFS Index scores should be significantly related to less severe disturbance on GAS scores and higher self-esteem. Correlational analyses of the data ($N = 112$) support these hypotheses. As the

TABLE 3
Discriminant Analysis of Well vs. Disturbed Mothers Using RFS5 and GAS as Predictors

Results for Discriminant Function

	Eigenvalue	*Canonical Correlation*	*Chi-Squared*	*p*
Global RFS Index	.349	.509	32.50	.001
GAS	.269	.461	25.86	.001

Classification Results for Global RFS Index

		Predicted Group	
Actual Group	*No. of Cases*	*Disturbed*	*Well*
Disturbed	79	58 (63.3%)	21 (36.7%)
Well	33	3 (12.5%)	30 (87.5%)

Classification Results for GAS

		Predicted Group	
Actual Group	*No. of Cases*	*Disturbed*	*Well*
Disturbed	79	51 (63.3%)	28 (36.7%)
Well	33	2 (12.5%)	31 (87.5%)

Global RFS Index scores increase, there are corresponding increases in higher self-esteem ($r = .40$, $p < .001$), and a decrease in severity of disturbance ($r = .84$, $p < .001$).

Of special interest in the present study was the parenting ability of the women, as measured with the HOME (Bradley & Caldwell, 1978). In order to test the relationship between HOME (Infant and Child Scales) and RFS scores, scores on the two measures were correlated. The RFS Scale, Immediate Social Network Relationships, was significantly correlated with both the Infant HOME Inventory Score ($r = .50$) and the Child HOME Inventory ($r = .69$); all but one of the correlations with other RFS scales were also significant, ranging from .28 to .59.

Construct validity of the RFS was further tested by comparing scores on the separate scales with independent measures of the behaviors the scales were intended to measure. Information indicating actual func-

tioning in several areas of life was compared to three of the RFS scale scores. (No independent sources of information were available for Extended Social Network Relationship). For Working: Productivity, scores were compared to data on whether or not the individual either: (1) had paid employment, (2) was enrolled as a student, or (3) was maintaining a home with primary responsibility for homemaking. For Independent Living, Self Care, scores were compared to data on whether or not the individual either: (1) lived in her own household (i.e., not with parents or other extended family), or (2) received regular assistance from a visiting nurse or other social service provider to assist with daily routines. For Immediate Social Network Relationships, scores were compared to data on whether or not the individual either: (1) had been reported to Protective Services for abuse or neglect; (2) had police contacts due to physical aggression with a friend or family member; or (3) had more than one change in marital/mate relationship status. In each case, women who met criteria for at least one of the indices, relative to those who met none of the criteria, scored significantly higher on the relevant RFS scale.

DISCUSSION

The findings reported here provide preliminary psychometric data in support of the usefulness of the Role Functioning Scale in assessing the levels of an individual's functioning in his or her natural environment. The measure was found to have very high internal consistency and the subscales and total score have adequate test-retest reliability. In fact, scores were remarkably stable over a one year time period, the stability comparable to that of the more established GAS. In addition, scores derived from this measure were found to be significantly related to a number of relevant dependent variables. Schizophrenic and depressed women scored lower than well women. Lower scores also corresponded with more severe global impairment (GAS) and lower self-esteem. The scales showed the expected relationships to independent measures of the target behaviors.

As expected, scores on the Role Functioning Scale were highly interrelated with diagnostic status and global impairment. Nonetheless, the Scale performs slightly better than the GAS and provides unique information. The subscale scores provide information on the relative level of functioning in each of four distinct areas of life. This more precise assessment suggests which particular aspects of an individual's overall

situation may need the most immediate attention in treatment. The RFS thus lends itself to treatment planning by the clinician and offers specific information not available with the GAS. For example, many of the emotionally disturbed women functioned well in the independent living domain (29% of the schizophrenics and 68% of the depressives). This finding reflects the fact that most disturbed women manage to maintain a household, even in an era of brief hospitalizations and scarce community resources.

The present study supports the predicted distinction between personal distress and other aspects of role functioning. Personal distress was found to be less stable over time and less reliably measured.

Finally, although the present group of disturbed women is probably typical of female psychiatric patients at urban, community mental health centers, future studies with the Role Functioning Scale need to test its psychometric properties on a broader variety of samples, including men and middle SES patients. Also needed is more information on the validity of each of the subscales. The usefulness of the measure will be demonstrated by the extent to which it helps clinicians in treatment planning, predicts relevant aspects of functioning in community living activities and is a sensitive measure of change.

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