Examining the Clinical Utility of the Moreno Social Atom Projective Test

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ABSTRACT. The Moreno Social Atom Projective Test (MSAPT) is an adaptation of an egocentric social network measure first developed by Jacob Moreno in 1936. A the-ory-driven clinical instrument, Moreno's Social Atom Test has not achieved wider acceptance as a diagnostic test, in part because of a lack of empirical data to support its clinical utility. The author conducted this study in order to address the issues of standardization, reliability, validity, and clinical utility of the MSAPT. One hundred nonclinical adult participants were evaluated with a battery of three instruments: the MSAPT, the Multidimensional Scale of Perceived Social Support (MSPSS), and the Symptom Checklist-90-R (SCL-90-R). Multiple regression analyses demonstrated the MSAPT's ability to predict symptomology, using the Global Severity Index, $F(6, 93) = 3.58$, $p < .01$, and each of the nine subscores of the SCL-90-R. The MSAPT conflict score was the major predictor for all SCL-90-R scores; reciprocity and gender scores also achieved significant levels. The MSAPT demonstrated good concurrent validity. The findings of this study indicate that the MSAPT is a valid and reliable clinical instrument. Suggestions for future research are presented; they include applying the MSAPT to clinical populations, establishing the instrument's test-retest reliability, and continuing the development and refinement of the individual variables.

THE IMPORTANCE OF SOCIAL RELATIONSHIPS has been long recognized by social scientists (Bateson, 1972; Durkheim 1951; Maslow, 1968). Moreno (1936) hypothesized that an

individual could be diagnosed by his pattern of interpersonal contacts and social connectedness. He wrote: "When we know more about the processes going on in the social atom [social net-work] of individuals, we may invent means of repairing its disorders. Maybe a new profession will develop in time, the sociatrists who among other matters will treat socio-atomic disorders" (Moreno, 1951, p. 127). Social support research, which seeks empirically to validate the importance of social relationships, suggests that social identities are recognized and supported by being embedded in relationships. By expressing and embedding our social identities in a social network, we make our social network a personal com-munity. In creating and maintaining a particular personal community, we are at least implicitly choosing how we seek to achieve meaningful participation in our culture and society (Hirsch, 1981). Individuals receive relatively stable benefits from high numbers of ties or high levels of regular and sustained contacts with others, a sense of belonging or security, a sense of purpose and behavioral guidance, and, perhaps, a global sense that support is available, should they need it (Thoits, 1985). In short, our social ties, in the aggregate, are a source of psychological sustenance.

If it is true that social bonds help maintain well being and ameliorate psychological turmoil, can strengthening or constructing viable social networks for mentally ill persons help restore them to healthy mental functioning? The need to examine a client's social network as part of the diagnostic process has not gone unnoticed in the field: "We have reached a point where patients" treatment plans should be individualized to include assessments of their social networks and the steps that may be taken in collaboration with community resources to address observed deficiencies" (Nemiah, 1988).

Given that the theoretical and practical implications of employing social networks as a diagnostic and treatment intervention have been widely accept-ed, it is surprising that more steps have not been taken to develop a valid and reliable clinical instrument. There is no shortage of research that uses objective measures to provide descriptive statistics, especially in the field of social support research (see Vaux, 1992, for a comprehensive review). Those instru-ments, however, have been developed primarily to serve as research tools and focus on the variables in question rather than the development of a comprehensive clinical instrument, thus limiting their clinical usefulness. That deficit has been roundly criticized and has been attributed to the lack of theory-dri-ven research in the field of social network research (Barrera, 1986; Heller, Swindle, & Dusenbury, 1986). Similarly, after a comprehensive review of 32 investigative methods, Pfingstmann and Baumann (1987) stated:

> The overview shows that there is no method of collecting data about social networks [respectively social support], which can be recommended without restric-tions. They all lack theoretical substantiation and empirical foundation (cited in Engelhardt, Feldkampf, & Sader, 1989, p. 53-54).

A review of the field of social network research and intervention suggests an understanding of the importance of social network intervention in clinical practice and points to a need for the development of a clinically useful, ego-centric, social network measure. Since its inception in 1936, the Social Atom Test, as it was originally called by Moreno, has been widely used within the psychodrama community in the treatment of individuals and families. Jacob L. Moreno, the developer of group psychotherapy, psychodrama, and sociom-etry, invented the Social Atom Test to examine an individual's social net-works. A pioneer in the field of psychosocial psychotherapy, Moreno believed man was basically a social being, and he remained

at odds with his contem-porary, Sigmund Freud, in the belief that psychotherapy is best accomplished in a setting that examines an individual's interactions with his social environment (Moreno, 1967).

The concept of the social atom is important throughout the field of psy-chodrama. Moreno considered the social atom "to be a structure of interpersonal relationships where the development of personality takes place" (Engel-hardt et al., 1989, p. 49). Through examination of what he termed pathological atoms, Moreno (1940) drew the conclusion that structural patterns of mentally ill persons differ from those of mentally healthy persons. Moreno took the view that the social atom is the general starting point in psychotherapy. In his opinion, the objective of psychodramatic therapy is the "restitution of damaged or dysfunctional social atoms" (Petzold, 1982, p. 162, cited in Engel-hardt et al., 1989).

Whereas the social atom instrument has been used extensively within the psychodrama community, its application outside of that community has been limited, primarily because of two factors. First, it lacks standardized instructions for administration and scoring. Within the psychodrama community, as within other theoretically oriented communities, much of the knowledge and nuance of clinical practice is passed down by word of mouth and by the demonstration of clinical technique. As the theories of Moreno have been passed from one "generation" to the next, the methods have been modified, improved upon, and adapted to fit specific clinical needs. Thus, the social atom has many renditions (Hale, 1981; Hollander, 1974; Kulenkampff, 1982; Kumar & Treadwell, 1985; Moreno, 1936; Taylor, 1977; Treadwell, Stein, & Leach, 1989; Vander May, 1975), none of which has been accepted as the standard because of the lack of proven generalizability. Second, the social atom theory lacks the research findings to support the social atom test as a valid clinical tool (Engelhardt et al., 1989; Treadwell et al.,

1989). Although Moreno was able to demonstrate the clinical usefulness of the social atom in his work-(Moreno, 1939; 1940; 1953), he never published research to confirm his hypotheses. Some attempts have been made to develop norms and standards (Allen, 1978; Kulenkampf, 1982; Taylor, 1977; Treadwell, et al., 1989); but the psychodrama community, as a whole, has been more interested in furthering clinical expertise than in validating theory through research. As a result, there exist many forms of an instrument widely believed to have significant clinical value but without evidence to demonstrate its value to the mental health community at large.

The first step toward the development of a well-standardized clinical tool is to determine and define its constructs. Moreno described several constructs, both explicitly and implicitly, that could be seen as determinants of a healthy social atom: size as it relates to an individual's connection to other social atoms and thus determines his or her status in the community; reciprocity, which can be balanced or imbalanced; tele, which can be positive or negative; and sociostasis. Zeintlinger (1981) and Leutz (1974), in articles published in German (cited by Engelhardt et al., 1989), have also attempted to fill Moreno's theoretical suppositions with concrete determinants. They suggest the social atoms of mentally disturbed individuals differ from those of normals in terms of quantity, quality (proportion of positive and negative rela-tionships), nearness and distance, density, and connection to other atoms. In 1980, another German researcher, Petzold (cited by Engelhardt et al., 1989), set forth the following criteria for a social atom to be considered "positive" (healthy]:

1. Positive relations must far outweigh negative ones.
2. Single elements of the social atom must be highly interconnected (density).
3. The distribution of nearness and distance must be balanced
4. The social atoms... should be interconnected with other social atoms. (p. 51)

Thus, Petzold laid the foundation for the measurement of social atom con-structs, offering conflict, density, and a sense of balance between closeness and distance.

In an attempt to connect social atom research with the broader field of social support and social network research, I have included a review of the literature outside that of the psychodrama community. Although social network studies have been criticized as theoretical and nongeneralizable (Pfingst-mann and Baumann, 1987, cited in Engelhardt et al., 1989), it is useful to examine their findings in order to determine which factors seem to be most related to positive mental health. The factors of size (Pattison & Pattison,
1981; Stokes, 1983; Strung & Hyman, 1981; Vaux, 1988; Veiel, Brill, Hafner, & Weiz, 1988; Westermeyer & Neider, 1988); conflict (Finch, Okun, Barrera, Zautra, & Reich, 1989; Fiore, Becker, & Coppel, 1983; Okun, Melichar, & Hill, 1990: Rook, 1984; Ruelhman & Wolchik, 1988; Sandler & Barrera, 1984), reciprocity (DiMatteo & Hayes, 1981; Fisher & Nadler, 1976; Rook, 1987; Sprecher, 1986: Van Tiburg, Van Sonderen, & Ormel, 1991), and kin vs. kith (Coyne & Downey, 1991; Pattison & Pattison, 1981; Stokes, 1983; Veiel et al., 1988) have been shown to be consistently correlated with some aspects of mental health.

Moreno (1951) and other psychodramatists have also included size, reci-procity, family relationships, and conflict (tele) as important factors in one's social atom. Because these are similarly supported by social network research outside of psychodrama and are more easily measured than some other projective factors, they have been chosen as the central factors for this study.

Method

My objectives in the study were to standardize the administration and scor-ing, establish initial norms, validate for clinical usefulness, and demonstrate concurrent validity for an egocentric social network measure entitled the Moreno Social Atom Projective Test (MSAPT). Based upon a review of the literature regarding the evolution of the social atom instrument, I developed a standardized set of directions for the administration of the test, and they can be found in the appendix. To achieve the goal of establishing the MSAPT's clinical usefulness, I developed the four factors of the MSAPT–Size, Conflict, Reciprocity, and Family, using Moreno's theories on social networks and a review of related social network research. The variables were correlated with subject's scores on the Symptom Checklist 90-Revised (SCL-90-R). I used the Multidimensional Scale of Perceived Social Support (MSPSS) to provide concurrent validity data for the MSAPT.

Sample

Data were collected from 113 graduate students in special education at San Francisco State University and Saint Mary's College. Examination of the data yielded 100 usable batteries. Thirteen batteries were excluded because of missing data on the SCL-90-R (more than 18 skipped responses voids a test), nonscorable MSAPT, or one or more of the instruments being skipped by the respondent. Percentiles computed for the demographic variables showed the sample to be predominantly students from San Francisco State University (80%), female (86%), Caucasian (68%), born in the United States (90%), both parents born in the United States (mother—74%, father—77%), and single (47%). The mean and standard deviation were computed for age (M = 35.9 years, SD = 10.6) and years of graduate school (M = 1.72, SD = 1.34).

Instruments

Multidimensional Scale of Perceived Social Support (MSPSS). The MSPSS was designed to be a quick, easily administered, self-report inventory for the measurement of perceived satisfaction of social support. The MSPSS includes 12 items that divide into three factor groups (family, friends, and significant others): however, because it has a total score, it is designed to be used as an overall measure of perceived satisfaction. The participants were asked to respond to each question, using a 7-point rating scale ranging from very strongly disagree to very strongly agree. Research has demonstrated good internal (.88) and test-retest reliability (.85) (Dahlem, Zimet, & Walker, 1991; Zimet, Dahlem, Zimet, & Farley, 1988); good internal reliability across sub-jeets and strong factorial validity confirming the three-subscale structure (Dahlem, et al, 1991; Zimet, Powell, Farley, Werkman, & Berkhoff, 1990); and strong concurrent validity, construct validity, and differential validity (Kazarian & McCabe, 1991). Sample populations have included undergraduate college students, inpatient adolescent psychiatric, pregnant women, pediatric residents, and nonclinical adolescents (Dahlem et al., 1991; Kazarian & McCabe, 1991; Zimet et al., 1988; 1990).

Symptom Checklist-Revised (SCL-90-R). The SCL-90-R is a brief, multidi-mensional, self-report inventory designed to screen for symptoms of psy-chopathology. It consists of 90 items and has a 0 to 4 rating scale. It may be administered to participants aged 13 years and older and requires a sixth-grade reading level. Testing time is 12 to 15 min. Normative data are available for nonpatient normal adults, among other populations. The SCL-90-R provides three global indices of distress: Global Severity Index, Positive Symptom Distress Index, and Positive

Symptom Total, as well as nine dimensional scales: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psy-choticism. Research conducted on the SCL-90-R has demonstrated good internal consistency for the nine subscales, ranging from 77 for Psychoticism to.90 for Depression. Test-retest reliability scores range from 82 to .90. A comprehensive review of the numerous validity studies conducted with the SCL-90-R is included in the scoring manual (Derogatis, 1983).

Moreno Social Atom Projective Test (MSAPT). The MSAPT directions were standardized for this study and are included in Appendix A. Although there were an unlimited number of social network variables that might have been explored by using this version of Moreno's instrument, four were involved in the hypotheses:

Size was computed as the total number of network members, living and dead, included in the MSAPT diagram. All symbols, male and female, were counted and totaled to achieve the score.

Conflict was tabulated as the percentage of relationships in the social network that were designated as conflictual by the respondent (-). The percentage was calculated as # conflictual relationships/total # network members.

Reciprocity referred to the percentage of all the relationships represented in the MSAPT as imbalanced or one-way relationships and was denoted by the arrows that the subjects drew to or from network members. Imbalances toward and away from the subject were included in a single score.

Family referred to the ratio of family members, as identified by the subject's labeling network member symbols, to all other network members.

I added two additional scores during the scoring process, and these were included in the data analyses:

Deceased was tabulated by dividing the number of deceased symbols in the diagram by the total size score.

Gender was tabulated by dividing the total number of female symbols (O) by the size score.

A research assistánt and I calculated each of the above scores to provide data on interrater reliability.

Demographics

In Table 1, I have charted the relationships of the demographics (school, sex, race, birthplace, and marital status) to scores on the MSAPT. Those were analyzed by t tests and analysis of variance (ANOVA; marital status). ithough no pattern of relationships emerged, there were a few significant results. The women showed significantly higher conflict scores than the men (t= -2.12; df = 98; $p < .05$), and Caucasians showed significantly lower reciprocity scores than "others" (t = -2.05; df = 98; $p < .05$). Marital status was significantly related to the size of the social atom and to the proportion of family in the social atom. Multiple comparison tests showed that married respondents had significantly larger social atoms than single respondents (Fisher protected least significant difference [LSD] = 3.589; $p < .05$) and had significantly larger proportions of family in their atoms than either single (Fisher

LSD = 097; $p < .05$) or divorced respondents (Fisher LSD = 155; $p < .05$). The variable "parent's birthplace" referred to the respondent reporting at least one parent born outside the United States.

We used Pearson correlations to examine the relationships between MSAPT scores and both age and number of years of graduate school. We found no relationship between MSAPT scores and years of graduate school, with all six correlations falling near zero ($-.10 < r < .10$). The "age" variable was significantly related to the proportion of family in the social atom (r =238; df = 98; $p < .05$), and to the proportion of deceased persons in the social atom (r = .239; df = 98; $p < .05$).

The analysis of the relationship between the seven demographic characteristics and the six MSAPT scores involved a total of 42 (6 x 7) analyses. With the Bonferroni adjustment, the level of significance is reduced to .05 divided by 42 = 0012. When I used this adjusted criterion, only one effect, the relationship between marital status and proportion of family in the social atom, remained statistically significant.

TABLE 1
Moreno Social Atom Projective Test (MSAPT) Scores, by School, Sex, Race/Ethnicity, Birthplace, and Marital Status

Variable	MSAPT score					
	Size	Conflict	Family	Reciprocity	Deceased	Gender
Overall						
M	13.5	0.11	0.59	0.32	0.08	0.55
SD	8.30	0.11	0.24	0.28	0.10	0.14
School						
SFSU (80)						
M	13.1	0.10	0.59	0.32	0.08	0.55
SD	8.34	0.11	0.25	0.28	0.11	0.15
St. M. (20)						
M	15.0	0.12	0.61	0.30	0.04	0.56
SD	8.18	0.12	0.19	0.27	0.07	0.12
Difference						
t	–0.92	–0.69	–0.44	0.34	1.51	–0.39
Sex						
M (14)						
M	13.5	0.05	0.48	0.44	0.10	0.55
SD	10.23	0.06	0.28	0.33	0.15	0.20
F (86)						
M	13.5	0.11	0.61	0.30	0.07	0.55
SD	8.02	0.11	0.22	0.26	0.10	0.13
Difference						
t	0.01	–2.12*	–1.89	1.76	0.79	–0.04
Race/ethnicity						
Cauc. (68)						
M	14.0	0.10	0.58	0.28	0.07	0.55
SD	8.42	0.10	0.24	0.28	0.10	0.15
Other (32)						
M	12.36	0.12	0.62	0.40	0.08	0.55
SD	8.06	0.12	0.23	0.26	0.11	0.12
Difference						
t	0.93	–0.87	–0.79	–2.05*	–0.35	0.34
Birthplace						
USA (90)						
M	13.9	0.11	0.60	0.31	0.08	0.55
SD	8.40	0.11	0.23	0.28	0.10	0.14
Other (10)						
M	9.5	0.09	0.51	0.38	0.06	0.55
SD	6.40	0.09	0.27	0.28	0.10	0.18
Difference						
t	1.61	0.35	1.15	–0.66	0.35	–0.54
Parents' birthplace						
USA (67)						
M	13.13	0.11	0.59	0.31	0.07	0.55
SD	7.25	0.12	0.22	0.28	0.10	0.14
Other (33)						
M	14.18	0.09	0.61	0.34	0.08	0.55
SD	10.21	0.10	0.27	0.27	0.11	0.14
Difference						
t	–0.59	1.10	–0.46	–0.44	–0.20	0.28
Marital status						
Single (47)						
M	11.48	0.12	0.51	0.32	0.06	0.58
SD	6.05	0.12	0.22	0.27	0.09	0.16

(table continues)

TABLE 1—*continued*

Variable	MSAPT score					
	Size	Conflict	Family	Reciprocity	Deceased	Gender
Married (35)						
M	15.79	0.10	0.72	0.39	0.08	0.52
SD	10.32	0.11	0.21	0.32	0.10	0.13
Significant other (8)						
M	11.06	0.08	0.56	0.30	0.10	0.51
SD	5.67	0.09	0.24	0.20	0.18	0.10
Divorced (10)						
M	16.75	0.09	0.55	0.13	0.12	0.57
SD	9.24	0.10	0.25	0.10	0.11	0.11
F test (3, 96)	2.68*	0.56	6.56***	2.35	1.43	1.19

*$p < .05$; **$p < .01$; ***$p < .001$.

TABLE 2
Summary of Multiple Regression Analyses of SCL-90-R Scales on Moreno Social Atom Projective Test Scores and Multidimensional Scale of Perceived Social Support–Total Score (MSPSS)

Criterion	Overall		Univariate partial *F*s						
	F(7, 92)	R^2	MSPSS	Size	Conflict	Family	Reciprocity	Deceased	Gender
GSI	3.51**	.211	2.73	0.03	8.67**	0.56	1.37	0.00	1.93
SOM	3.67**	.218	5.20*	0.03	5.00*	1.81	0.00	0.04	3.82*
OC	2.04	.134	0.01	0.10	6.01*	0.36	1.73	1.14	0.74
INT	2.33*	.150	2.55	0.25	3.40	0.01	2.24	0.00	1.78
DEP	2.28*	.148	1.51	0.07	8.32**	0.30	1.33	0.06	0.04
ANX	3.06**	.189	1.61	0.03	10.40**	0.56	0.36	0.49	1.50
HOS	2.46*	.158	0.72	0.91	6.92**	0.00	0.04	0.10	4.36*
PHOB	2.27*	.147	0.08	0.50	5.23*	0.16	1.18	0.01	2.85
PAR	2.68*	.170	3.71	0.14	4.11*	0.04	2.83	0.00	0.81
PSY	3.23**	.197	7.59**	0.01	3.69	0.40	0.75	0.00	1.26

Note. Abbreviations: GSI = Global Severity Index; SOM = Somatization; OC = Obsessive–Compulsive; INT = Internality; DEP = Depression; ANX = Anxiety; HOS = Hostility; PHOB = Phobia; PAR = Paranoia; PSY = Psychoticism.
*$p < .05$; **$p < .01$.

TABLE 3
Summary of Multiple Regression Analyses of SCL-90-R Scales on Moreno Social Atom Projective Test Scores

	Overall		Univariate partial *F*s					
Criterion	$F(6, 93)$	R^2	Size	Conflict	Family	Reciprocity	Deceased	Gender
GSI	3.58**	.188	0.03	10.89***	0.63	2.50	0.14	1.96
SOM	3.27**	.174	0.03	7.16**	1.92	0.27	0.47	3.76
OC	2.41*	.134	0.10	6.25**	0.37	1.80	1.17	0.74
INT	2.25*	.127	0.25	4.75*	0.02	3.61	0.12	1.81
DEP	2.39*	.134	0.07	10.10**	0.34	2.17	0.00	0.04
ANX	3.29**	.175	0.02	12.46***	0.61	0.84	0.19	1.50
HOS	2.76*	.151	0.92	8.15**	0.00	0.17	0.02	4.43*
PHOB	2.65*	.146	0.50	5.76*	0.17	1.41	0.00	2.89
PAR	2.44*	.136	0.14	5.83*	0.06	4.65*	0.20	0.84
PSY	2.34*	.131	0.01	5.87*	0.47	2.23	0.38	1.26

Note. Abbreviations: GSI = Global Severity Index; SOM = Somatization; OC = Obsessive–Compulsive; INT = Internality; DEP = Depression; ANX = Anxiety; HOS = Hostility; PHOB = Phobia; PAR = Paranoia; PSY = Psychoticism.
*$p < .05$; **$p < .01$; ***$p < .001$.

Results

Primary Analyses

Using Pearson correlations, I examined the relationship between the MSAPT and the MSPSS. Six MSAPT scores (size, conflict, family, reciprocity, deceased, and gender) were correlated with each of the three subscale scores (significant other, friends, and family) and the total score for the MSPSS. The conflict score was significantly related to both the significant other score (r = -213; df = 98; $p < .05$) and the total score (r = -211; df = 98; $p < .05$) of the MSPSS. The reciprocity score was significantly related to both the friends score (r = -313; df = 98; $p < .01$) and the total score (r = -254; df = 98; $p < .05$) of the MSPSS. We found other significant relationships between the family score of the MSAPT and the friends score of the MSPSS (r =- 257; df = 98; $p < .05$) and between the deceased score of the MSAPT and both the

family score (r = -263; df = 98; $p < .01$) and the total score (r =1.222; df = 98; $p < .05$) of the MSPSS.

I used Pearson correlations to examine the relationship between the proportion of conflictual relationships, as measured by the conflict score of the MSAPT, and the level of distress, as measured by the Global Severity Index (GSI) of the SCL-90-R. The conflict score was significantly related to the GSI (r = 349; df = 98; $p < .001$) and to each of the nine subscale scores.

The relationship between the proportion of nonreciprocal relationships, as measured by the reciprocity score of the MSAPT, and level of distress, as measured by the GSI, was examined, using Pearson correlations. The reciprocity score was significantly related to the GSI (r = .201; df = 98; $p < .05$) as well as to the Interpersonal Sensitivity (INT) score (r = 214; df = 98; $p <.05$) and the Paranoid Ideation (PAR) score (r = 241; df = 98; $p < .05$). Other significant relationships were found between family (MSAPT) and Somatization (r = 198; df = 98; $p < .05$), and between gender (MSAPT) and GSI (r =-243; df = 98; $p < .05$) as well as Somatization (r =-300; df = 98; $p < .01$), Interpersonal Sensitivity (r = -205; df = 98; $p < .05$), Anxiety (r = -217; df = 98; $p < .05$), Phobic Anxiety (r = -253; df = 98; $p < .05$), and Psychoticism (r =-207; df = 98; $p < .05$).

There were no significant relationships found during an analysis of the relationship between size of social network, as measured by the MSAPT size score, and level of distress, as measured by the GSI. This was a two-tailed exploration based upon the assumption that especially large or small personal networks might contribute to distress.

The hypothesis that respondents with imbalances in the proportion of kin versus kith in their social atom, as measured by the MSAPT family scores in the top third or bottom third of

the sample, will show greater levels of distress, as measured by the GSI, than respondents with family scores in the middle third of the sample was not substantiated. The only significant relationship was with the Social Support From Friends subscale of the MSPSS, $F(2, 97) = 3.01$; $p < .05$). Multiple comparison tests show that this is because the respondents with small proportions of family in their social atom perceive significantly greater support from their friends than those with large proportions of family in their social atoms (Fisher PLSD = 668; $p < .05$).

Secondary Analyses

Using a Pearson correlation, I found significant relationships between the MSPSS total score and the GSI of the SCL-90-R ($r = -276$; $df = 98$; $p < .01$).
In addition, I found significant relationships between each of the MSPSS sub-scales (significant other, friends, and family) and the GSI, as well as between the MSPSS total score and the Somatization, Interpersonal Sensitivity, Depression, Anxiety, Paranoid Ideation, and Psychoticism subscales of the SeL-90-R.

Near-perfect interrater reliability was demonstrated for each of the six MSAPT scores. The least correlated were the deceased and gender scores ($r > 99$, $df = 96$).

I conducted several post hoc analyses to clarify the results. First, I noted that age, marital status, and perceived social support were significantly correlated with some of the MSAPT scores. I used Pearson correlation coefficients to compare age and marital status (broken down into single vs. married) against the SCL-90-R scores. Neither age nor marital status correlated significantly with any of the scales of the SCL-90-R. All of these correlation coefficients were between -.175 and +.161, well under the critical value of r = .2172 needed for statistical

significance at the 5% level. Thus, age and marital status were eliminated as potentially confounding variables.

A Pearson correlation showed that perceived social support, as measured by the MSPSS, was significantly correlated with several of the SCL-90-R scores reported above. Therefore, I included the MSPSS total score as a covariate in the following multiple regression analyses. I also conducted a series of multiple regression analyses to determine the patterns of relationships of the MSAPT scores with the SCL-90-R scales. Each of the SCL-90-R scales was regressed on the six MSAPT scores plus the MSPSS total score. Table 2 contains the results of these analyses.

For the Global Severity Index (GSI, the multiple regression analysis yielded a statistically significant overall result, $F(7, 92) = 3.51$; $p < .01$), with the MSAPT scores and MSPSS scores accounting for more than 20% of the variability in GSI score. From an examination of the individual contributions of the predictor variables, I recognized that the conflict score was the major contributor to this effect. It was the only predictor variable to show a significant contribution over and above the combined contributions of the other six predictor variables, partial $F(1, 92) = 8.67$; $p < .01$.

For the subscales of the SCL-90-R, there was a similar pattern of results. The MSAPT scores proved to be significantly predictive of all the SCL-90-R subscales except Obsessive-Compulsive, for which there was a significant trend toward significance, $F(7, 92) = 2.04$; $p = .0582$, and Psychoticism, for which perceived social support was the only independently significant con-tributor. The conflict score was the major predictor for most of the subscales of the SCL-90-R, with the ratio of women to men (MSAPT Gender score) in the social atom contributing significantly to the prediction of the Somatization and Hostility subscales.

A second series of multiple regression analyses was conducted to determine the patterns of relationships of the MSAPT scores with the SCL-90-R scores without the MSPSS total score. In Table 3, we show the results of these analy-ses. For the GSI, the multiple regression analysis yielded a statistically significant result, $F(6, 93) = 3.58$; $p < .01$, with the MSAPT scores accounting for nearly 19% of the variability of the GSI score. From an examination of the individual contributions of the predictor variables, I determined that the conflict score was the major contributor to this effect. I noticed slight increases in each of the six predictor variables, with the conflict score showing the only significant contribution over and above the combined contributions of the other five variables, partial $F(1, 93) = 10.89$; $p < .001$).

For the subscales of the SCL-90-R, the MSAPT scores proved to be significantly predictive of all the SCL-90-R subscales. The conflict score was the major predictor for all of the subscale scores, with the reciprocity score contributing significantly to the paranoid ideation score and the gender score contributing significantly to the Hostility score.

Discussion

Standardization of the MSAPT

Two of the main roadblocks to broader acceptance of Moreno's social atom have been its lack of standardization, with nearly as many different versions as publications (Hale, 1981; Hollander, 1974; Kulenkampff, 1982; Moreno, 1936; Taylor, 1977; Treadwell et al., 1989), and the lack of research using it (Taylor, 1984). Treadwell et al. (1989) attributed the lack of research findings. in part, to the difficulty scoring the social atom in its original projective format. For the study reported here, over 95% of the participants were able to complete the MSAPT successfully. A review of the five MSAPT drawings that were unscoreable revealed two problems. There was

some confusion with the number of diagrams to be completed, with 3 respondents completing four drawings, one for each step in the directions, rather than one. Two participants drew arrows at either end of the reciprocity symbol, rather than at one end as directed. These problems can be avoided in the future with clearer directions. Respondents were asked in Step 2 (see appendix) to label all family members by writing their relation to the participant; for example, father, mother, broth-er, sister, aunt, uncle, cousin, father-in-law, and so forth. Nine respondents listed only family members in their social atom. Although it is possible that social networks can contain only family members, it seems likely that some of these scores were brought about by a misreading of the instructions. I was unable to discern which respondents had failed to include friends versus which respondents had only family in their social networks. I believe that increased interaction between the examiner and the client, as would be typical in a clinical setting, would have prevented this confusion. Interrater reliability of over 99% demonstrates the success of the scoring established for the MSAPT and addresses Treadwell's concerns about scoring the projective ver-sion. The refined version of the MSAPT is one that has been successfully standardized in terms of administration and scoring.

The Development of Normative Data

Anastasi (1988) spoke of the lack of sufficient normative data as "another conspicuous deficiency common to many projective instruments" (p. 614). This study addressed that common criticism by developing variables that could be easily measured and analyzed. In Table 1, I list the mean scores for each of the six MSAPT scores tabulated in this study. Granted this is a modest beginning; it is, however, the only known study that attempts to develop norms with a projective version of Moreno's test. The size score (M = 13.5,

SD = 8.30) confirmed the belief that nonclinical participants have between 5 and 25 members in their social atom. That belief had been part of the body of anecdotal knowledge about the social atom, yet never substantiated statistically (Taylor, 1984). The other five variables were developed for this study and are extrapolated from Moreno's theories and social network research, independent from his theories.

Concurrent Validity

Concurrent validity, a type of criterion-related validity that is different because the data for the criterion are collected at the same time as the predictor variable, demonstrates a test's ability to measure some criteria that a second instrument is believed to measure (Kerlinger, 1973). The goal of the procedure is not to produce a measure that is only able to replicate another's find-ings. Whereas the Pearson correlations demonstrated the MSAPT's high correlation with the MSPSS, thus establishing concurrent validity, the regression analyses showed that the MSAPT provided clinical information in addition to what the MSPSS contributed to the clinical picture of a client.

Clinical Usefulness of the MSAPT

The current version of the MSAPT has administration and scoring protocols for six variables; size, conflict, reciprocity, family, deceased, and gender.

Statistical analyses showed that the MSAPT was able to account for approximately 13% to 19% of the variability of the GSI and each of the nine subscale scores of the SCL-90-R, with the conflict, reciprocity, and gender scores attaining levels of significance. An examination of the SCL-90-R subscores showed the MSAPT was most predictive of the symptoms of Anxiety,

Depression, Somaticism, Obsessive-Compulsive Behavior, and Hostility. Although the size and family scores were not predictive of symptomology in this study, it is possible that they would be more clinically useful with a patient population and should not be excluded from the MSAPT without further study.

Limitations of the Study

The clustering of scores in the sample did not allow for a sufficient number of extreme scores, large or small, to be grouped and analyzed. That may have been caused by the type of subjects chosen for this study. Although the goal of establishing initial norms was achieved, a clinical, rather than a nonclini-cal, population may have provided more extreme scores. As a result, the importance of the size and reciprocity scores of the MSAPT remains unclear, which leads to the issue of generalizability. The findings in the current study
-are important and can be useful for clinicians working with clients whose presenting problems are typical of adult graduate students, for example, anxiety, depression, and so forth. However, these findings cannot be generalized to more severe clinical populations without further research. Whereas demographic variables had no significant effect on MSAPT scores in this study, a more thorough examination of differences between racial or ethnic groups is needed before the MSAPT can be viewed as a bias-free instrument. Similar-ly, the sample for this research was predominantly Caucasian and female and consisted entirely of graduate students, Such a sample is not representative of the population at large and should not be construed as such. Future researchers should strive to use samples that will broaden the database demographically.

A second limitation of this study was the setting in which the data were col-lected. The social atom has traditionally been an instrument used in clinical settings and administered

verbally to individuals and small clinical groups by the clinician (Hale, 1981). The MSAPT was designed to be self-administered so that data could be collected in a group setting. I was available to answer questions during test administration, but it is unlikely that these interactions approximated the interchange that would take place between a therapist and client. It seems likely that a clinical setting would only enhance the quality of information collected with the MSAPT, and research is needed to confirm this hypothesis. Similarly, clinicians may find that they prefer to administer the test to their clients, or the clinical population being served may need the test to be administered to them, as would be the case with clients who are visually impaired, illiterate, or physically disabled. The robustness of this instrument should overcome such confounds, but the research is needed to bear this out.

Direction for Future Research

The next step in understanding the predictive value of the MSAPT is the establishment of cross-validity by researchers conducting investigations with clinical samples and nonclinical samples that are more representative of the population at large. As I stated previously, this may help clarify the importance of the size and reciprocity variables and continue the development of patterns of MSAPT variable interaction associated with symptomology and pathology.

Further study is needed to understand the apparent overlap between the conflict and reciprocity variables. This may be as simple as re-evaluating the current MSAPT diagrams to see if the same network relationships have been designated as both conflictual (-), and nonreciprocal (P. It may, however, require that the current reciprocity score be restated as two subscores, representing nonreciprocation in both directions, to see if one correlates more significantly than the other when compared with the conflict score. It may be useful to divide the conflict score into

three levels, as is the case with the MSPSS, using significant others, friends, and family (Zimet et al., 1988).

I designed the current study to examine the variables of the MSAPT that are most quantifiable and thus lend themselves to statistical analyses. Future researchers may wish to extend the pool of variables to include more projective measures such as those outlined by Taylor (1984) placement of self symbol, overlap of symbols, and distance between symbols. Further examination of the deceased and gender variables would determine their clinical usefulness. The deceased variable might become a significant determinant with a psychotic population. It would also be interesting to see if the gender score is more clinically significant when the gender of the participant is the same as the gender that predominates the social atom.

While scoring the MSAPT diagrams, I noted several unusual responses that may suggest the need for a special score category. These responses included the labeling of a dog, God, and the generic labels "friends" and "students." Group affiliations had been included in past social atom versions and may point toward useful clinical data (Hale, 1981). Moreover, some drawings were segregated by gender, whereas others had some confusion with the gender symbols, such as labeling father with a circle.

The MSAPT should also prove to be as useful a "barometer of progress in therapy" as the earlier versions were thought to be (Buchanan, 1984, p. 163). Future researchers should employ the MSAPT in a repeated measures design to examine that hypothesis.

Although establishing test-retest reliability has proved to be difficult for projective measures (Anastasi, 1988), it is a necessary next step for MSAPT researchers. Even though the current study showed the MSAPT to have some level of concurrent validity, replication of these findings is needed. Concurrent validity should be re-established by using instruments, such as

MMPI-2 and Rorschach, that are able to describe the level of psychological distress more thoroughly.

Conclusion

Moreno (1940) theorized that social atoms of mentally healthy persons differed structurally from those of unhealthy persons. He believed that the starting point for therapy was an examination of the social network in order to identify damaged or dysfunctional social atoms and develop treatment plans based on their repair (Petzold, 1982, cited in Engelhardt et al., 1989). Moreno's social atom theory has remained largely untested and, as a result, unsubstantiated. Although this has not been a deterrent to those within the psychodrama community, it has prevented the social atom from gaining the respect it deserves from the mental health community at large. With this study, I have presented significant steps toward the standardization of the social atom that will, I hope, lead to a broader acceptänce of the MSAPT, the version of the Moreno social atom developed for this study, as a clinically useful diagnostic tool and a guide to clinical intervention.

From this study, I have concluded that the MSAPT is an easily self-administered, reliably scored, clinically significant instrument. It has the potential to be used as a diagnostic tool and a guide to treatment progress. Despite not being designed as a research tool, MSAPT may also be used as such. Demographic variables, including race/ethnicity, appear to have little impact on MSAPT scores, which suggests it is appropriate for use with a broad range of populations. I hope that future research will continue to extend knowledge about the generalizability of the MSAPT to clinical and nonclinical populations and thereby extend the norms initiated in this study

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