

Examining the Clinical Utility of the Moreno Social Atom Projective Test

JAY EDWARDS

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 theory-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 network] 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 rela-

tionships, 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 community. 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 accepted, 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 instruments, 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-driven 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 restrictions. They all lack theoretical substantiation and empirical foundation (cited in Engelhardt, Feldkamp, & 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 sociometry, invented the Social Atom Test to examine an individual's social networks. A pioneer in the field of psychosocial psychotherapy, Moreno believed man was basically a social being, and he remained at odds with his contemporary, 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 psychodrama. Moreno considered the social atom "to be a structure of interpersonal relationships where the development of personality takes place" (Engelhardt 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 Engelhardt 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; Kulenkampff, 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. Zeintliger (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 relationships), 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 constructs, 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 atheoretical and nongeneralizable (Pfungstmann 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, reciprocity, 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 scoring, 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 subjects 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, multidimensional, self-report inventory designed to screen for symptoms of psychopathology. 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 Psychoticism. 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 assistant 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). Although 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 (6×7) analyses. With the Bonferroni adjustment, the level of significance is reduced to .05 divided

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						
<i>M</i>	13.5	0.11	0.59	0.32	0.08	0.55
<i>SD</i>	8.30	0.11	0.24	0.28	0.10	0.14
School						
SFSU (80)						
<i>M</i>	13.1	0.10	0.59	0.32	0.08	0.55
<i>SD</i>	8.34	0.11	0.25	0.28	0.11	0.15
St. M. (20)						
<i>M</i>	15.0	0.12	0.61	0.30	0.04	0.56
<i>SD</i>	8.18	0.12	0.19	0.27	0.07	0.12
Difference						
<i>t</i>	-0.92	-0.69	-0.44	0.34	1.51	-0.39
Sex						
M (14)						
<i>M</i>	13.5	0.05	0.48	0.44	0.10	0.55
<i>SD</i>	10.23	0.06	0.28	0.33	0.15	0.20
F (86)						
<i>M</i>	13.5	0.11	0.61	0.30	0.07	0.55
<i>SD</i>	8.02	0.11	0.22	0.26	0.10	0.13
Difference						
<i>t</i>	0.01	-2.12*	-1.89	1.76	0.79	-0.04

Race/ethnicity									
Cauc. (68)									
<i>M</i>	14.0	0.10	0.58	0.28	0.07	0.55			
<i>SD</i>	8.42	0.10	0.24	0.28	0.10	0.15			
Other (32)									
<i>M</i>	12.36	0.12	0.62	0.40	0.08	0.55			
<i>SD</i>	8.06	0.12	0.23	0.26	0.11	0.12			
Difference									
<i>t</i>	0.93	-0.87	-0.79	-2.05*	-0.35	0.34			
Birthplace									
USA (90)									
<i>M</i>	13.9	0.11	0.60	0.31	0.08	0.55			
<i>SD</i>	8.40	0.11	0.23	0.28	0.10	0.14			
Other (10)									
<i>M</i>	9.5	0.09	0.51	0.38	0.06	0.55			
<i>SD</i>	6.40	0.09	0.27	0.28	0.10	0.18			
Difference									
<i>t</i>	1.61	0.35	1.15	-0.66	0.35	-0.54			
Parents' birthplace									
USA (67)									
<i>M</i>	13.13	0.11	0.59	0.31	0.07	0.55			
<i>SD</i>	7.25	0.12	0.22	0.28	0.10	0.14			
Other (33)									
<i>M</i>	14.18	0.09	0.61	0.34	0.08	0.55			
<i>SD</i>	10.21	0.10	0.27	0.27	0.11	0.14			
Difference									
<i>t</i>	-0.59	1.10	-0.46	-0.44	-0.20	0.28			
Marital status									
Single (47)									
<i>M</i>	11.48	0.12	0.51	0.32	0.06	0.58			
<i>SD</i>	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)							
<i>M</i>	15.79	0.10	0.72	0.39	0.08	0.52	
<i>SD</i>	10.32	0.11	0.21	0.32	0.10	0.13	
Significant other (8)							
<i>M</i>	11.06	0.08	0.56	0.30	0.10	0.51	
<i>SD</i>	5.67	0.09	0.24	0.20	0.18	0.10	
Divorced (10)							
<i>M</i>	16.75	0.09	0.55	0.13	0.12	0.57	
<i>SD</i>	9.24	0.10	0.25	0.10	0.11	0.11	
<i>F</i> test (3, 96)	2.68*	0.56	6.56***	2.35	1.43	1.19	

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

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.

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 ($r = -.222$; $df = 98$; $p < .05$) 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 subscales (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 SCL-90-R.

Near-perfect interrater reliability was demonstrated for each of the six MSAPT scores. The least correlated were the deceased and gender scores ($r > .99$, $df = 98$).

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

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 <i>F</i> s						
	<i>F</i> (7, 92)	<i>R</i> 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.

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 contributor. 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 analyses. 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 for-

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

Criterion	Overall		Univariate partial <i>F</i> s						
	<i>F</i> (6, 93)	<i>R</i> 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.

mat. 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 unscorable 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, brother, 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 version. 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 predic-

tor 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 findings. 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 nonclinical, 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. Similarly, 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 data base demographically.

A second limitation of this study was the setting in which the data were collected. 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 ("). 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 other, 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 acceptance 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.

REFERENCES

- Allen, S. E. (1978). *Exploration of the social atom*. Unpublished manuscript.
- Anastasi, A. (1988). *Psychological testing* (6th ed.). New York: Macmillan.
- Barrera, M. (1986). Distinctions between social support concepts, measures, and models. *American Journal of Community Psychology, 14*, 413–445.
- Bateson, G. (1972). *Steps to an ecology of mind*. San Francisco: Chandler.
- Buchanan, D. (1984). Moreno's social atom: A diagnostic and treatment tool for exploring interpersonal relationships. *The Arts in Psychotherapy, 2*, 154–164.
- Coyne, J. C., & Downey, G. (1991). Social factors and psychopathology: stress, social support, and coping processes. *Annual Review of Psychology, 42*, 401–425.
- Dahlem, N. W., Zimet, G. D., & Walker, R. R. (1991). The Multidimensional Scale of Perceived Social Support: A confirmation study. *Journal of Clinical Psychology, 47*, 756–760.
- Derogatis, L. R. (1983). *SCL-90-R administration, scoring, & procedures manual II*. Towson, MD: The author.
- DiMatteo, M. R., & Hays, R. B. (1981). Social support and serious illness. In B. H. Gottlieb (Ed.), *Social networks and social support* (pp. 117–148). London: Sage.
- Durkheim, E. (1951). *Suicide: A study in sociology*. Glencoe, IL: The Free Press.
- Englehardt, A., Feldkamp, F., & Sader, M. (1989). The social atom: An environmental support system. *International Journal of Small Group Research, 5*(1), 47–63.
- Finch, J. F., Okun, M. A., Barrera, M., Zautra, A. J., & Reich, J. W. (1989). Positive and negative social ties among older adults: measurement models and the prediction of psychological distress and well-being. *American Journal of Community Psychology, 17*, 585–605.
- Fiore, J., Becker, J., & Coppel, D. (1983). Social network interactions: A buffer or a stress? *American Journal of Community Psychology, 11*, 423–439.
- Fisher, J. D., & Nadler, A. (1976). Effects of donor resources on recipient self-esteem and self-help. *Journal of Experimental Social Psychology, 12*, 139–150.
- Hale, A. (1981). *Conducting clinical sociometric explorations: A manual for psychodramatists and sociometrists* (1st ed.). Roanoke, VA: Royal.
- Heller, K., Swindle, R., & Dusenbury, L. (1986). Component social support processes: Comments and integration. *Journal of Consulting and Clinical Psychology, 54*, 466–470.
- Hirsch, B. J. (1981). Social networks and the coping process: Creating personal communities. In B. H. Gottlieb (Ed.), *Social networks and social support*. Beverly Hills: Sage.
- Hollander, S. (1974). Social atom: An alternative to imprisonment. *Group Psychotherapy and Psychodrama, 27*, 173–183.
- Kazarian, S. S., & McCabe, S. B. (1991). Dimensions of social support in the MSPSS: factorial structure, reliability, and theoretical implications. *American Journal of Community Psychology, 19*, 150–160.
- Kerlinger, F. N. (1973). *Foundations of behavioral research*. New York: Holt, Rinehart and Winston.
- Kulenkampff, M. (1982). *The social network inventory*. Hamburg, Germany: The Author.

- Kumar, V. K., & Treadwell, T. W. (1985). *Practical sociometry for psychodramatists*. West Chester, PA: The Authors.
- Maslow, A. H. (1968). *Toward a psychology of being* (2nd ed.). Princeton: Van Nostrand.
- Moreno, J. L. (1936). Organization of the social atom. *Sociometric Review*, 10–13.
- Moreno, J. L. (1939). *Psychodramatic shock therapy: A sociometric approach to the problem of mental disorders*. (Psychodrama monograph No. 5). Beacon, NY: Beacon House.
- Moreno, J. L. (1940). Psychodramatic treatment of marriage problems. *Sociometry*, 3, 1–23.
- Moreno, J. L. (1951). *Sociometry, experimental method and the science of society*. Ambler, PA: Beacon House.
- Moreno, J. L. (1953). *Who shall survive? Foundations of sociometry, group psychotherapy and psychodrama*. Beacon, NY: Beacon House.
- Moreno, J. L. (1967). *The Psychodrama of Sigmund Freud*. Beacon, NY: Beacon House.
- Nemiah, J. C. (1988). Research on social supports and mental illness. *American Journal of Psychiatry*, 145(10), 1270–72.
- Okun, M. A., Melichar, J. F., & Hill, M. D. (1990). Negative daily events, positive and negative social ties, and psychological distress among older adults. *The Gerontologist*, 30, 193–199.
- Pattison, E. M., & Pattison, M. L. (1981). Analysis of a schizophrenic psychosocial network. *Schizophrenia Bulletin*, 7, 135–142.
- Rook, K. S. (1987). Reciprocity of social exchange and social satisfaction among older women. *Journal of Personality and Social Psychology*, 52, 145–154.
- Rook, K. S. (1984). The negative side of social interaction: Impact on psychological well-being. *Journal of Personality and Social Psychology*, 46, 1097–1108.
- Ruehlman, L. S., & Wolchik, S. A. (1988). Personal goals and interpersonal support and hindrance as factors in psychological distress and well-being. *Journal of Personality and Social Psychology*, 55, 293–301.
- Sandler, I. N., & Barrera, M. (1984). Toward a multidimensional approach to assessing the effects of social support. *American Journal of Community Psychology*, 12, 37–52.
- Sprecher, S. (1986). The relationship between inequity and emotions in close relationships. *Social Psychology Quarterly*, 49, 309–321.
- Stokes, J. P. (1983). Predicting satisfaction with social support from social network structure. *American Journal of Community Psychology*, 11, 41–152.
- Strung, D. L., & Hyman, M. M. (1981). Social networks of alcoholics. *Journal of Studies on Alcohol*, 42, 855–884.
- Taylor, J. A. (1977). *Investigative studies of the social atom*. Unpublished manuscript.
- Taylor, J. A. (1984). The diagnostic use of the social atom. *Journal of Group Psychotherapy, Psychodrama, and Sociometry*, 37(2), 67–84.
- Thoits, P. A. (1985). Social support and psychological well-being: Theoretical possibilities. In I. G. Sarason & B. R. Sarason (Eds.), *Social support: Theory, research, and applications*. The Netherlands: Martinus Nijhoff.
- Treadwell, T., Stein, S., & Leach, E. (1989). The social atom test-revised. *International Journal of Small Group Research*, 5(1), 65–88.
- Vander May, J. (1975). A perceptual social atom sociogram. *Group Psychotherapy and Psychodrama*, 28, 129–132.
- Van Tilburg, T., Van Sonderen, E., & Ormel, J. (1991). The measurement of reciproc-

- ity in ego-centered networks of personal relationships: A comparison of various indices. *Social Psychology Quarterly*, 54, 54–66.
- Vaux, A. (1988). *Social support: Theory, research, and intervention*. New York: Praeger.
- Vaux, A. (1992). Assessment of social support. In H. O. F. Veiel and U. Baumann (Eds.), *The meaning and measurement of social support*. New York: Hemisphere.
- Veiel, H. O. F., Brill, G., Hafner, H., & Weiz, R. (1988). The social supports of suicide attemptors: The different roles of family and friends. *American Journal of Community Psychology*, 16, 839–861.
- Westermeyer, J., & Neider, J. (1988). Social networks and psychopathology among substance abusers. *American Journal of Psychiatry*, 145, 1265–1269.
- Williams, A. (1989). *The passionate technique: Strategic psychodrama with individuals, families, and groups*. New York: Routledge.
- Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment*, 52(1), 30–41.
- Zimet, G. D., Powell, S. S., Farley, G. K., Werkman, S., & Berkoff, K. A. (1990). Psychometric characteristics of the multidimensional scale of perceived social support. *Journal of Personality Assessment*, 55(3 & 4), 610–617.

APPENDIX

MORENO SOCIAL ATOM PROJECTIVE TEST

Directions for Administration

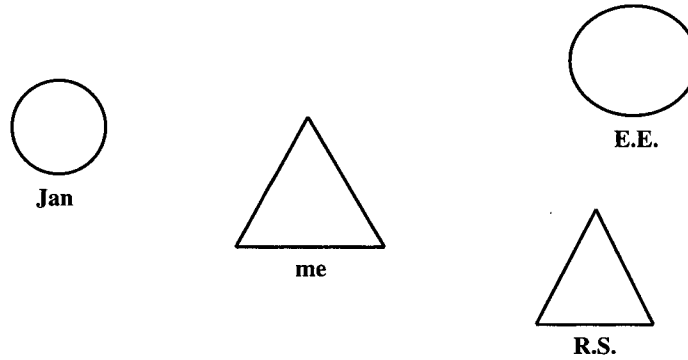
Think of the people with whom you now have an important or significant relationship. These people may be family, friends, or people you know through work or other organizations. Acquaintances should not be included because they are not significant relationships. Think of who plays a large role in your life. Don't forget to mention also those people who are important to you, but with whom you have a difficult or conflictual relationship. If you have important relationships with people who have died or who, for one reason or another, cannot be in contact with you, you should include them as well. You may include as many or as few people as you like.

Follow the directions step by step and please read each step completely before responding to the directions. You may return to earlier steps if you would like to provide additional information. Please write and draw clearly.

STEP 1 On the following blank piece of paper, choose a spot and draw a symbol representing yourself, a triangle (Δ) if you are a male and a circle (\circ) if you are a female. Label the symbol "me". Using the same symbols, triangle for males and circles for females, represent each of the individuals who play an important role in your life. Place the symbols as close to or as far away from your own symbol as you feel the relationship merits. Please label each symbol with initials or a first name so it can be easily identified by you. Sym-

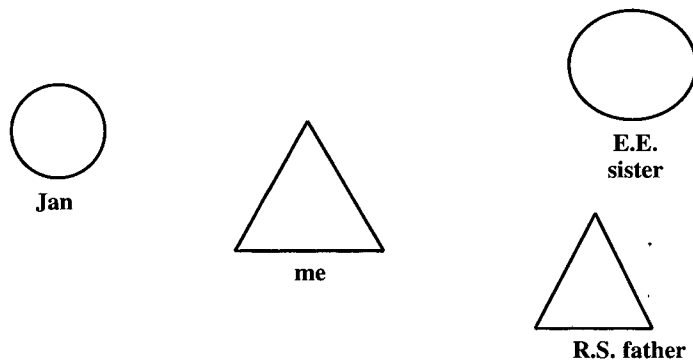
bolts representing deceased individuals should be marked "deceased," and drawn as follows (⊖, ⊙).

Example:



STEP 2 Using the same diagram, label all family members by writing their relation to you, for example, father, mother, brother, sister, aunt, uncle, cousin, father-in-law, and so forth.

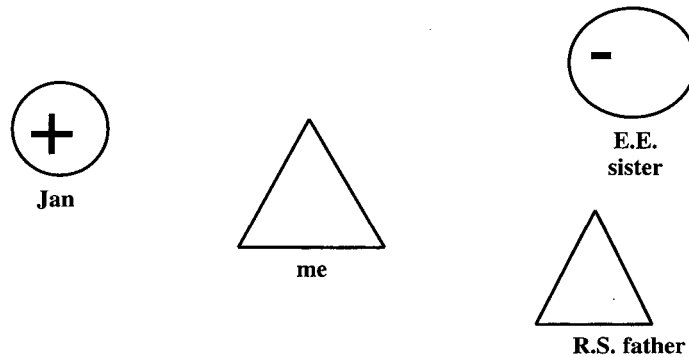
Example:



STEP 3 Continue to use the same diagram. Think of the impact each relationship has on you at this time. Consider the amount of personal energy required to maintain each individual relationship. If you feel the relationship has a positive impact on you, for example, is energizing, rejuvenating, stimulating, or involves somebody you look forward to spending time with, then mark the corresponding symbol with a plus sign (+). If you feel the relationship has a negative impact on you because it is physically draining, conflict-

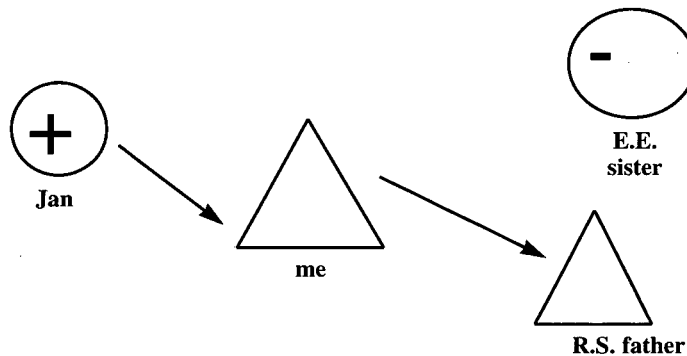
ual, or if the person in the relationship is somebody you do not wish to spend time with, then mark the corresponding symbol with a minus sign (-). If the relationship is neutral at this time, then leave the corresponding symbol unmarked.

Example:



STEP 4 Continue to use the same diagram. Most relationships are a matter of give and take. This trade-off can be in the form of emotional support, friendship, material goods, or favors, among other things. At times these trade-offs can become imbalanced. If you feel, at this point in time, that you give more to a relationship than you receive from it, draw an arrow from your symbol to the other symbol or symbols. If you feel you receive more from a relationship than you give, draw an arrow from that person's symbol to yours. Do this for each relationship you feel is imbalanced. Do not draw an arrow between your symbol and another's symbol if you feel the current relationship is balanced equally between give and take.

Example:



JAY EDWARDS is a clinical psychologist specializing in developmental and pediatric neuropsychology. He provides group therapy for children with a wide range of developmental disabilities.

Date of submission:
December 28, 1995

Date of final acceptance:
October 9, 1996

Address:

Jay Edwards
Emanuel Medical Office Bldg.
501 N. Graham, Suite 365
Portland, OR 97227