Multivariate Behavioral Research, 1979, 14, 443-462

THE STRUCTURE OF SELF-REPORTED DIFFICULTY IN ASSERTIVENESS: AN APPLICATION OF THREE-MODE COMMON FACTOR ANALYSIS

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ABSTRACT

The Difficulty in Assertiveness Inventory (DAI) was developed, based on a two-facet model of assertiveness for item specification—referents (interpersonal contexts or partners) x response classes (types of assertive behavior). Data from two samples of female university students were subjected to three-mode factor analysis. Two referent, two response class, and five individual differences factors were extracted. The proportion of variance accounted for by each factor matched across solutions. The patterns of factor loadings indicated that the two referent factors (distant and close), the two response class factors (positive and negative), and four of the five individual differences factors (labeled Assertiveness A, B, C, and D) were stable across subject samples. Solutions for the individual differences factor matrix and the counter-rotated and transformed core matrix were reciprocally beneficial to interpretation of the structure of the data. Correlations of DAI subscales with the Marlowe-Crowne Social Desirability Scale were not significantly different from zero. The potential uses of the instrument in applied research and in the clinical setting were discussed.

Assertive behavior involves the direct expression of feelings, preferences, needs, or opinions, enabling a person to stand up for his rights without undue anxiety and without destroying the rights of others (Alberti & Emmons, 1974; Hollandsworth, Galassi, & Gay, 1977). Considerable literature has been devoted to clinical and case study reports of assertiveness; however, systematic research has been slow to emerge, and reliable and objective measures of assertive behavior have proved difficult to obtain, in spite of the adoption of self-report, behavioral, and physiological measurement strategies (McFall & Marston, 1970).

Behavioral and physiological assessments are costly in terms of equipment and time constraints. The self-report inventory, a comparatively economical method of data gathering, provides a convenient starting point for the investigation of psychological constructs. Empirical evidence supports the contention that in the contexts of personality testing and laboratory research, "what the person tells us directly generally turns out to be as valuable an index as any other more indirect sign" (Mischel, 1977, p. 249).

Self-report measures of assertiveness form the focus of the present study. A number of these inventories are presently avail-

able (*e.g.*, Bates & Zimmerman, 1971; Friedman, 1968; Galassi, DeLo, Galassi, & Bastien, 1974; Gambrill & Richey, 1975; Lawrence, 1970; McFall & Lillesand, 1971; Rathus, 1973; Wolpe & Lazarus, 1966). No single self-report inventory developed to date can be regarded as adequate for screening or research purposes. A number of recurrent deficiencies need to be resolved, related to the broad issues of validation, and the definition and sampling of the domain.

Conceptualization of Assertiveness

There is a trend to denigrate assertiveness inventories based on trait assumptions, and to stress the need for sampling specific situations. A survey of the research literature provides support for this viewpoint.

Direct evidence of situational specificity comes from studies of overt behavior. First, the expression of assertive behavior varies as a function of the class of response required. For example Miller and Eisler (1977) found that alcoholics delivered more competent responses than other psychiatric patients in tests of positive assertion, but were equally as non-assertive as the rest of the sample in expressing disapproval.

Second, the expression of assertiveness varies with characteristics of the stimulus person, including sex (Eisler, Hersen, Miller, & Blanchard, 1975; Stebbins, Kelly, Tolor, & Power, 1977) and familiarity (Eisler *et al*, 1975).

Studies of assertion training and generalization also support the view that assertiveness is a group of situation-specific response classes. Problems of transfer of training to other types of assertive responses and to persons in the client's real-life environment are widely discussed in the literature (*e.g.*, see review by Hersen & Bellack, 1976).

Self-report assessments also provide evidence of situational influences on assertiveness. Factor analytic studies of responses to assertiveness inventories (Lawrence, 1970; Bates & Zimmerman, 1971; Gambrill & Richey, 1975; Gay, Hollandsworth, & Galassi, 1975) have typically yielded multiple factors, many of which seem to account for behaviors which are highly situation-specific.

These findings do not logically entail the extreme situationist view that the use of self-report measures is unfounded. Hollands-

worth (1976) and Hogan, De Soto, and Solano (1977) note that much criticism of self-report measures has been based on the fallacious assumption that personality tests are designed to measure unitary traits and that researchers who employ these scales are committed to "trait theory". Personality scales may be used to pursue goals which are compatible with the current thinking of many situationists. Mischel (1977) concedes the usefulness of personality typologies where these are construed as "subtypes of people who display consistencies on some well-defined dimensions of behavior under some sub-types of conditions." Typologies must be qualified to "take account of [types of responses and] types of situations as well as types of people" (p. 250), and this must be reflected in the sampling of the domain.

Methodological Considerations

In an effort to resolve the issue of situational specificity and its implications for the measurement of assertiveness, Rich and Schroeder (1976) have suggested the need for a statistical computation of the proportion of variance due to individual differences, situations, and response classes.

This approach has previously been applied to constructs other than assertiveness. Bowers (1973) reviewed a number of studies which attempted to evaluate the relative magnitude of person and situational influences on behavior by using the analysis of variance model; some of these studies have also looked at the percentage of variance due to specific response modes (*e.g.* Endler & Hunt, 1966).

Golding (1975) has critically evaluated the sources-of-variance paradigms, showing the use of omega-squared ratios for the interpretation of data to be inappropriate when the research issue is defined in terms of transsituational consistency. Coefficients of generalizability are shown to be the correct indices. Golding also suggests that it is logically and empirically unjustifiable to interpret the relative size of interaction terms without multivariate demonstration that these interactions are replicable, and meaningfully patterned. He recommends Tucker's three-mode factor analysis as a means of systematically investigating interactions.

The three-mode factor analysis model (Tucker, 1964a, 1964b, 1966) aims to describe a complex of variables in terms of a smaller

number of factors. It is an exploratory linear model designed to uncover new structures in two-way categorized repeated measures (three-way) designs. Since this technique attends to common factors that may not have been hypothesized (Cronbach, Gleser, Nanda, & Rajaratnam, 1972, p. 13), it serves purposes which a generalizability study cannot and should logically precede any such study.

The present study focuses on the development of an assertiveness inventory based on a comprehensive sampling of situations and response classes. Data obtained from this inventory are subjected to three-mode common factor analysis to investigate individual differences in patterns of self-reported difficulty in assertiveness.

Method

Subjects

Subjects were female students of introductory psychology at the University of Queensland, who participated in the study as partial fulfillment of course requirements. Sample 1 contained 140 subjects, with data collection taking place between the 1st and 4th of April, 1977. A second sample of 130 subjects was studied between the 6th and 8th of September, 1977, for purposes of replication.

The mean ages of the samples were 20.4 and 19.8 years respectively, with standard deviations of 5.5 and 4.4 years. Same-sex samples were obtained for this exploratory study because of the empirical evidence for sex differences in self-reported assertive behavior (Hollandsworth & Wall, 1977).

Questionnaire

The Difficulty in Assertiveness Inventory (DAI) was developed, based on a two-facet model of assertiveness for item specification. From previous inventories and the results of factor analytic studies, eight response classes were considered to define the construct facet.

A sample of 33 females and 29 males from introductory psychology courses were asked to provide brief written descriptions of specific situations in which they experienced difficulty in performing each of the eight assertive response classes. The referents for

Table 1
Items and Facet Specification for the Difficulty in Assertiveness Inventory

Item	Referent	Response Class
1. Express your annoyance with a group of which you are a member.	5	3
2. Express to a sales assistant your lack of understanding of the terms he is using.	7	6
3. Express your annoyance with someone of importance who is in authority over you.	6	3
4. Openly discuss with a friend his/her criticism of your behavior.	1	7
5. Disobey a directive from someone in authority.	6	5
6. Invite your parents on an outing.	4	1
7. Outwardly show your affection to a date or spouse.	3	4
8. Express your personal limitations in a group of which you are a member.	5	6
9. Openly discuss with your parents their criticism of your behavior.	4	7
10. Invite a friend on an outing.	1	1
11. Express a difference of opinion with a stranger.	2	8
12. Express your annoyance with poor food or service at a restaurant.	7	3
13. Initiate conversation with a stranger.	2	1
14. Express a difference of opinion with someone of importance who is in authority over you.	6	8
15. Refuse the request of a friend to borrow something from you.	1	5
16. Express a difference of opinion with parents' points of view.	4	8
17. Ask a friend to help you with a task.	1	2
18. Refuse a request from a person of the opposite sex to accompany him/her on an outing when you do not wish to go.	3	5
19. Outwardly show your affection to a friend.	1	4
20. Express your annoyance at the actions of your parents.	4	3
21. Express to a date or spouse your inadequacy in an important area.	3	6
22. Introduce yourself to someone with whom you wish to initiate a business transaction.	7	1
23. Ask someone of importance who is in authority over you to do you a favor.	6	2
24. Express a difference of opinion with a date or spouse over plans for an outing.	3	8
25. Outwardly show your affection for your parents.	4	4
26. Express your displeasure to a stranger who is annoying you.	2	3
27. Openly discuss with someone of importance who is in authority over you his/her criticism of your behavior.	6	7
28. Not do what your parents want when you believe they are in the wrong.	4	5
29. Show gratitude towards a helpful sales assistant.	7	4
30. Express your displeasure with a date or spouse who does something to annoy you.	3	3
31. Express to your parents your personal fears or shortcomings.	4	6
32. Refuse a stranger soliciting volunteers for a project.	2	5
33. Openly discuss with a date or spouse his/her criticism of your behavior.	3	7
34. Express to someone in authority your inadequacy in an important area.	6	6
35. Express a difference of opinion with a sales assistant over prices charged.	7	8
36. Initiate conversation with a person of the opposite sex whom you wish to meet.	3	1
37. Ask a date or spouse to do a favor for you.	3	2
38. Express a difference of opinion with the rest of a group.	5	8
39. Express to a stranger your ignorance of a topic of conversation.	2	6
40. Ask your parents to do a favor for you.	4	2
41. Express your annoyance to a friend who has treated you unfairly.	1	3
42. Resist pressure from a door-to-door salesman.	7	5
43. Refuse an invitation from a group to accompany them for lunch or drinks when it is inconvenient.	5	5
44. Ask a stranger to do a favor for you.	2	2
45. Express warmth and friendliness towards the members of a group in which you are meeting.	5	4
46. Express a difference of opinion with a friend.	1	8
47. Introduce yourself to a person of importance who is in authority over you.	6	1
48. Express to a friend a personal inadequacy of yours.	1	6
49. Openly discuss with a sales assistant his/her criticism of your choice of articles.	7	7
50. Express warmth and friendliness to an important person who is in authority over you.	6	4
51. Openly discuss with a group their criticism of your behavior.	5	7
52. Express warmth and friendliness to someone you meet who is a complete stranger.	2	4
53. Ask a group of people to help you make a decision.	5	2
54. Openly discuss with a stranger his/her criticism of your actions.	2	7
55. Introduce yourself to a group in which you are meeting for the first time.	5	1
56. Ask a sales assistant to help you find particular items.	7	2

Note. Referent 1 = Friend
2 = Stranger
3 = Date or spouse
4 = Parents
5 = Group
6 = Authority
7 = Service

Response class 1 = Initiate an interaction
2 = Ask a favor
3 = Express displeasure
4 = Express positive feelings
5 = Turn down a request
6 = Express personal limitations
7 = Discuss criticism
8 = Express a difference of opinion

an assertiveness interaction were derived from their situational descriptions. This behavior-analytic approach (advocated by Rich & Schroeder, 1976) was adopted to ensure coverage of the referent facet.

The term "referent" has been adopted in preference to "situation" to denote the interpersonal context of an interaction. The terms "situation" and "response class" have been used loosely and interchangeably by some authors (*e.g.* Gambrill & Richey, 1975; Rimm & Masters, 1974). In this study, the use of the term "situation" will be restricted to its more global meaning whereby all characteristics of an interaction, including interpersonal elements and the type of response required, are considered as attributes of the situation.

The seven referents sampled by the questionnaire are friends, strangers, dates or spouses, parents, groups, persons in authority, and persons in a "service" or business role. The eight response classes are initiating interactions, asking favors, expressing displeasure, expressing positive feelings, turning down requests, expressing personal limitations, discussing criticism, and expressing differences of opinion.

Items were written to represent each of the 56 combinations of referents and response classes (see Table 1 for items and facet specification), and were worded so as to be applicable to both sexes and to populations outside of the university setting.

Instructions for the DAI were: "Many people experience difficulty in handling interpersonal situations requiring them to assert themselves in some way, for example, turning down a request, asking a favor, etc. Please read carefully the following list of actions which people are sometimes required to take. Indicate the degree of difficulty you would have in performing each action if you were placed in the situation described. Try to give an answer for every item in the inventory, even though your mind may not be completely made up on some of the issues raised.

You may indicate the amount of difficulty you would experience by marking, in the appropriate box on the answer sheet, a number from 1 to 7. The numbers when written will be taken to have the following meaning:

1. None at all
2. Very little
3. A small amount
4. A fair amount

5. Quite a bit
6. A lot
7. A great deal."

The term "degree of difficulty" was selected because it was suspected that a subject's degree of discomfort or anxiety in assertion situations may be a better predictor of potential clinical candidacy than measures of response probability or frequency.

Procedure

Subjects in Sample 1 were administered the DAI. Sample 2 was studied for replication purposes and to investigate the extent to which DAI scores are affected by response sets of social desirability. Subjects in Sample 2 were administered the DAI and the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) in counterbalanced order.

Analysis

Sample 1 data were analyzed according to Tucker's three-mode common factor analysis model. Three-mode factor analysis is a procedure for investigating the structure of data derived from three-way cross-classifications. The data from the three-way design form a rectangular prism, where each data cell corresponds to the Cartesian product of the modes. In the present study, a cell entry consists of the self-report rating of the difficulty experienced in making a particular response in the presence of a specified referent. The three modes are the persons (sampled from some population), the classes of response reflecting the behavior under study, and the varieties of referents which may alter the generality of the behavior.

The data are reduced to their basic structure, the inner core, which is a three-way classification scheme of reduced proportions. Factors are now defined in terms of the modes, and cell entries are interaction scores among these "idealized dimensions." The reduced modes of the core are the idealized individual differences, which reflect deviations from average behavior (*i.e.* more or less difficulty in performing some specified behavior); the idealized responses, which reflect the dimensions of the behavior; and the idealized referents, which reflect the dimensions of the interpersonal contexts.

For full discussion of the computational details of three-mode

common factor analysis, see Snyder and Law (1979), and for the theoretical development and formal mathematical exposition, see Tucker (1966).

Replication

The same analyses were performed on the data from Sample 2 with the exception that instead of computing new varimax rotations for the referent, response class, and individual differences factor loading matrices, the principal axes solutions were rotated by means of the transformation matrices used in Sample 1. Since the orientation of the axes in factor analysis is arbitrary, it is permissible to rotate one solution to maximum agreement with another when investigating similarity of factor structures. The present method of using the transformation matrix computed on the first sample seems to provide a more rigorous test of factor similarity than would be provided by the use of a Procrustes transformation (*e.g.* see Horn, 1967) or separate analyses.

For investigation of the possible influence of social desirability response set, DAI data from Sample 2 were formed into subscales corresponding to the major individual differences factors. In forming the subscales, all salient loadings (.30 and above) were included, and some questionnaire items were represented on more than one scale. Items 6, 29, and 36 were omitted from the analysis. These items were factorially complex and presented computational difficulties because of bidirectional factor loadings. Unit weights were assigned to items in the calculation of subscale totals, since empirical studies suggest that this method provides a close approximation to methods of computing factor scores (Gorsuch, 1974, p. 238). Scores on the DAI subscales and the Marlowe-Crowne Social Desirability Scale were intercorrelated.

RESULTS

The eigenvalues and cumulative percent of total variance accounted for by the major components from the initial principal components analysis of 56 items for both samples are shown in Figure 1.

Several criteria were employed in determining the number of factors to be extracted—the discontinuity test (Cattell, 1958), the scree test, and percent of variance accounted for (Cattell, 1966),

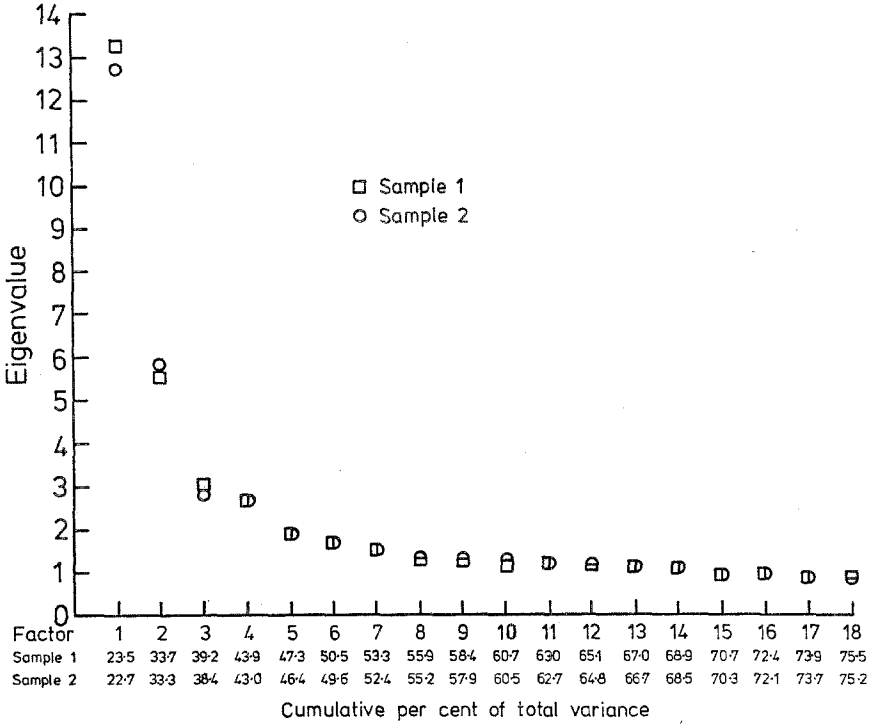

Fig. 1. Variance accounted for by major principal components (56 items).

the Kaiser-Guttman criterion of eigenvalues greater than one (Kaiser, 1960), and the interpretability of rotated factor solutions (Hakstian & Muller, 1973). Five principal axes factors were extracted, and accounted for approximately 47.3 and 46.4 percent of the total variance in Samples 1 and 2 respectively. Varimax solutions were retained; oblique rotations did not provide greater interpretability or better approximation to simple structure. (This also applies to the analyses of the referent and response class modes.)

Item communalities and rotated principal axes factor loadings for the 56 items are shown in Table 2. In determining salient factor loadings, a criterion of .30 and above has been adopted (Nunnally, 1967, p. 357); variables with salient loadings on a given factor in solutions from both Samples 1 and 2 are considered in the interpretation of that factor.

Examination of the rotated factor loadings in Table 1 indicates that the fifth factor appears unstable and is not defined by a large

Table 2
Item Communalities and Rotated Factor Loadings for 56 Items (Rotated F Matrix)

Item	Factor 1		2		3		4		5		Communality	
	S_1	S_2	S_1	S_2	S_1	S_2	S_1	S_2	S_1	S_2	S_1	S_2
1	.35	.35	.48	.36	.02	-.05	.13	.02	-.14	.13	.40	.27
2	.24	.21	-.02	.10	.40	.30	.11	.37	-.03	-.15	.30	.31
3	.05	.15	.60	.65	.13	.02	-.06	-.07	-.10	.07	.39	.46
4	.55	.54	.19	.11	-.19	-.19	.04	.10	.02	.08	.38	.35
5	-.00	.03	.46	.44	.01	.11	-.18	-.09	.01	.01	.24	.22
6	.34	.26	-.27	-.28	.17	.21	.56	.43	.13	.29	.53	.46
7	.50	.44	-.09	-.12	.16	.32	.29	.06	.16	.34	.40	.43
8	.48	.33	.18	.25	.10	.17	.20	-.04	.09	.28	.32	.27
9	.28	.15	.09	.03	-.07	.04	.59	.72	.09	.38	.45	.69
10	.64	.59	-.27	-.28	.22	.16	.32	.26	.16	.13	.67	.53
11	.48	.47	.20	.22	.26	.31	-.16	.12	.18	-.08	.40	.39
12	.03	.18	.38	.45	.54	.38	-.10	.08	-.03	-.14	.44	.40
13	-.02	-.11	.13	.16	.52	.71	-.01	-.00	.37	.18	.43	.57
14	.27	.25	.57	.44	.20	.35	-.01	.04	.07	.17	.45	.41
15	-.15	-.10	.57	.57	.30	.21	.01	-.18	-.26	-.11	.52	.43
16	.68	.61	-.02	-.23	.12	.14	.28	.34	.04	.10	.57	.56
17	.66	.60	-.02	.01	.08	.15	.11	.17	.20	.05	.50	.41
18	.21	.32	.10	.10	.34	.24	.20	.12	-.29	-.24	.30	.25
19	.44	.43	-.00	.06	.12	.14	.21	.33	.32	.30	.36	.41
20	.46	.46	.04	-.02	.03	.09	.14	.26	.25	.30	.30	.38
21	.48	.41	.23	.10	.08	.25	.12	-.13	.17	.40	.33	.42
22	.17	.20	.16	.17	.46	.50	-.09	-.06	.03	-.01	.28	.33
23	-.03	.05	.68	.70	.29	.27	.08	-.11	.13	.12	.57	.60
24	.63	.66	.33	.19	.24	.11	.08	-.00	-.22	-.11	.62	.50
25	.19	.11	.02	.11	-.03	.04	.68	.57	.17	.38	.52	.49
26	.52	.41	.28	.36	.26	.08	-.07	.13	.01	-.06	.42	.33
27	.25	.27	.59	.56	.00	.07	.01	.01	.02	.05	.41	.40
28	.44	.42	.27	.14	.33	.26	-.17	.03	.09	-.05	.41	.27
29	.45	.50	-.33	-.32	.22	.29	.26	.39	.34	.21	.55	.64
30	.53	.55	.14	.19	.28	-.03	-.04	.13	-.09	-.10	.39	.36
31	.09	.12	.08	.11	.06	.11	.74	.53	.04	.28	.57	.40
32	.42	.49	-.03	-.02	.26	.23	.28	.33	-.07	-.16	.33	.43
33	.61	.59	.31	.30	-.00	-.02	.18	.14	.00	.14	.50	.48
34	.22	.35	.44	.45	.13	.08	.12	.13	.32	.02	.38	.36
35	.19	.29	.18	.19	.52	.44	.06	.09	-.10	-.18	.36	.36
36	.13	.20	.42	.40	.29	.43	.04	-.11	.23	.17	.33	.43
37	.68	.67	.10	.09	.27	.26	.04	.02	.09	.12	.55	.54
38	.55	.54	.32	.23	.25	.18	.17	.05	.05	.25	.50	.44
39	.36	.34	.11	.11	.33	.25	.20	.28	.18	-.06	.32	.27
40	.39	.35	-.19	-.06	.15	-.09	.42	.62	.16	.18	.42	.54
41	.44	.45	.10	.13	.16	-.03	.21	.15	-.01	.06	.27	.25
42	.43	.45	-.17	-.07	.51	.38	.25	.31	.07	-.09	.54	.45
43	.36	.56	.10	-.04	.39	.31	.07	.10	-.24	-.17	.35	.45
44	-.18	-.14	.50	.46	.06	.19	-.06	-.11	.16	.06	.31	.28
45	.29	.25	-.01	.10	.17	.27	.32	.16	.48	.51	.48	.43
46	.75	.71	-.08	-.26	.14	.26	.12	.03	-.01	.24	.61	.70
47	.02	-.07	.30	.34	.46	.57	-.00	-.19	.21	.00	.34	.48
48	.56	.56	-.01	-.10	-.05	.02	.10	.03	.21	.22	.37	.38
49	.27	.27	.18	.21	.49	.44	.13	.22	.09	-.16	.37	.38
50	.08	.03	.15	.27	.13	.30	.43	.35	.41	.26	.40	.36
51	.30	.31	.56	.55	-.08	-.14	.27	.24	.19	.12	.52	.50
52	.15	.07	.15	.33	.02	.14	.10	.21	.44	.24	.25	.24
53	.19	.19	.22	.24	-.11	.03	.28	.13	.54	.25	.46	.18
54	.09	.10	.56	.58	.06	.09	.05	.05	.12	-.01	.35	.36
55	-.02	.05	.51	.60	.45	.35	.13	.04	.14	.07	.50	.49
56	.51	.54	-.25	-.25	.41	.34	.26	.21	.10	.00	.57	.52

Note. S_1 = Sample 1, S_2 = Sample 2.
Salient loadings (.30 and above) are underlined.

number of items. The first four factors are clearly replicable across subject samples and have been labeled Assertiveness A, B, C, and D.

Assertiveness A (Factor 1) involves difficulty in expressing displeasure and differences of opinion with strangers and with moderate to close referents. Asking favors, discussing criticism, expressing personal limitations and positive feelings are also represented, particularly in relation to friends and dates or spouses. Turning down requests in service situations and from strangers, groups, and parents are included. Interactions with persons in authority do not load on this factor; neither do situations which require subjects to introduce themselves to people with whom they are not closely affiliated.

Assertiveness B includes loadings on all interactions with authority figures, with the exception of expressing positive feelings and initiating interactions. Discussing criticism with strangers, groups, and dates or spouses is also included, together with expressing displeasure with groups and with poor service, initiating interactions with groups and members of the opposite sex, turning down requests from friends, asking favors of strangers, and expressing positive feelings in service situations.

The items defining Assertiveness C involve difficulty in initiating interactions with moderate to distant referents, and in all patterns of response in service situations except for the expression of positive feelings. Turning down an invitation from a group is also included.

The items with salient loadings on the fourth factor, Assertiveness D, reflect closeness to and openness with parents. The expression of positive feelings to persons in authority is also included.

For the seven referents, two principal axes factors were extracted and accounted for approximately 51.3 and 50.7 percent of the total variance in Samples 1 and 2 respectively. Rotated principal axes factor loadings and communalities are shown in Table 3.

The variables with salient loadings on Factor 1 represent distant referents—strangers, dates (or spouses), groups, persons in authority, and persons in a business or service role. Factor 2 may be interpreted as close referents. Variables with salient loadings include friends and parents; groups and dates or spouses are also represented on the second factor.

For the eight response classes, two principal axes factors were

extracted, and accounted for approximately 51.6 and 51.2 percent of the total variance in Samples 1 and 2 respectively. Rotated principal axes factor loadings and communalities are shown in Table 4.

Variables with salient loadings on the first response class factor include initiating interactions, asking favors, discussing criticism, and expressing positive feelings and personal limitations. These variables may be interpreted as positive response patterns, in contrast with the negative responses characterizing the second factor (expressing displeasure and differences of opinion, turning down requests, and discussing criticism).

The counter-rotated and transformed core matrices for Samples 1 and 2 are shown in Tables 5 and 6 respectively.

Table 3
Communalities and Rotated Factor Loadings for Seven Referents
(Rotated B Matrix)

Referent	Factor 1		Factor 2		Communality	
	S_1	S_2	S_1	S_2	S_1	S_2
Friend	.16	.03	*.69*	*.67*	.50	.45
Stranger	*.61*	*.64*	.12	.19	.39	.45
Date/Spouse	*.45*	*.30*	*.44*	*.52*	.40	.36
Parents	.22	.12	*.42*	*.42*	.23	.19
Group	*.51*	*.47*	*.37*	*.36*	.39	.34
Authority	*.44*	*.46*	.20	.22	.23	.26
Service	*.38*	*.33*	.20	*.31*	.19	.21

Note. S_1 = Sample 1, S_2 = Sample 2.
Salient loadings (.30 and above) are italicized.

Table 4
Communalities and Rotated Factor Loadings for Eight Response Classes
(Rotated C Matrix)

Response Class	Factor 1		Factor 2		Communality	
	S_1	S_2	S_1	S_2	S_1	S_2
Initiate interactions	*.46*	*.46*	.21	.26	.26	.28
Ask favors	*.57*	*.51*	.24	*.33*	.38	.37
Express displeasure	.19	.15	*.65*	*.64*	.46	.43
Express positive feelings	*.56*	*.57*	.08	.22	.33	.38
Turn down requests	.09	.02	*.36*	*.42*	.14	.17
Express personal limitations	*.54*	*.42*	.24	*.35*	.35	.30
Discuss criticism	*.47*	*.43*	*.40*	*.43*	.38	.37
Express differences of opinion	*.40*	.26	*.64*	*.65*	.57	.49

Note. S_1 = Sample 1, S_2 = Sample 2.
Salient loadings (.30 and above) are italicized.

Table 5
Counter-Rotated and Transformed Core Matrix (Sample 1)

Individual differences factor	Distant referents		Close referents	
	Responses			
	Positive	Negative	Positive	Negative
1	0.80 (10)	*1.21* (4)	*1.75* (1)	*1.36* (2)
2	*1.03* (6)	*1.22* (3)	−0.01 (20)	0.56 (13)
3	0.91 (9)	0.94 (8)	0.29 (16)	0.48 (14)
4	0.62 (12)	0.04 (19)	*1.07* (5)	0.37 (15)
5	*1.02* (7)	−0.14 (18)	0.64 (11)	−0.17 (17)

Note. Numbers in parenthesis indicate the ranks of the absolute scores. The highest ranking absolute scores (Ranks 1 to 7) are italicized.

Table 6
Counter-Rotated and Transformed Core Matrix (Sample 2)

Individual differences factor	Distant referents		Close referents	
	Responses			
	Positive	Negative	Positive	Negative
1	0.52 (12)	*1.29* (3)	*1.69* (1)	*1.51* (2)
2	*1.26* (4)	*1.14* (5)	−0.04 (20)	0.39 (14)
3	*1.11* (6)	0.65 (9)	0.52 (11)	0.42 (13)
4	0.33 (16)	0.34 (15)	*0.93* (7)	0.32 (17)
5	0.58 (10)	−0.16 (18)	0.87 (8)	0.12 (19)

Note. Numbers in parenthesis indicate the ranks of the absolute scores. The highest ranking absolute scores (Ranks 1 to 7) are italicized.

The core elements are analogous to scores (Levin, 1963, 1965; Tucker, 1966), and may be interpreted by reference to the ranks of the absolute values. Dividing the rank ordered elements into three approximately equal categories frequency-wise, Ranks 1 to 7 may be interpreted as indicating difficulty, relative to other members of the population, in performing the specified behaviors. Ranks 8 to 13 indicate some difficulty, and Ranks 14 to 20 indicate no difficulty relative to the rest of the population. Since the fifth factor derived from the individual differences matrix did not replicate, the fifth row of the core matrix was not interpreted.

The first "idealized subject" (Row 1) experiences a fairly general difficulty in behaving assertively. Relative to other members of the population, this subject has difficulty in both positive and negative assertion with close referents and in negative assertion with distant referents. This person also finds it somewhat more difficult than the rest of the population to behave assertively in positive interactions with distant referents.

The second idealized subject experiences difficulty in both positive and negative assertion with distant referents. This subject, relative to the rest of the population, has some difficulty in responding negatively, but not positively, to close referents.

The third idealized subject finds it somewhat difficult to behave assertively in both positive and negative interactions with distant referents. Idealized subjects 2 and 3 cannot be clearly differentiated without reference to the individual differences matrix.

The difficulty in assertiveness experienced by the fourth idealized subject is restricted to positive responses to close referents.

Results of the intercorrelation analysis of the four stable DAI subscales and the Marlowe-Crowne are −0.03, −0.16, −0.12, and −0.01 respectively, none of which is statistically significant.

Discussion

Interpretation of Factors

There is a very high degree of similarity between the sets of principal axes solutions for Samples 1 and 2, in terms of both the patterns of factor loadings and the proportion of variance accounted for by each factor. The two referent factors, the two response class factors, and four of the five individual differences factors match across the two samples and are interpreted in greater detail in the following discussion.

Referent Factors

The two referent factors have been interpreted as distant and close referents, in accordance with the particular variables loading on them. Two variables—group, and date or spouse—have salient loadings on both factors. The relationship between a subject and each of these target persons may involve varying degrees of closeness and emotional involvement, and the pattern of loadings is therefore consistent with the interpretation placed upon the factors.

The identification of distant and close referent factors parallels the clinically derived "intimacy of interaction" categories of Cotler and Guerra (1976) and the empirical finding that behavioral

measures of assertion are influenced by the degree of familiarity of the target (Eisler, Hersen, Miller, and Blanchard, 1975).

Response Class Factors

The two response class factors have been interpreted as positive and negative responses. Several researchers concerned with the definition and descriptive analysis of assertiveness have divided assertive behavior into specific response patterns or response classes (*e.g.* Cotler & Guerra, 1976; Lazarus, 1973; Miller & Eisler, 1977); the response patterns enumerated have typically included positive assertion (usually defined as expressions of praise, appreciation, and liking), and negative assertion (usually defined as expressions of anger, displeasure, and disappointment). The distinction between positive and negative assertion has also been emphasized in relation to assertion training procedures and, in particular, to the content of training and assessment stimuli. For example, Bellack, Hersen, and Turner (1976) and Eisler *et al* (1975) have described intervention strategies employed to increase "commendatory" assertion, and negative or "hostile" assertion.

The terms "positive" and "negative" as applied to the response class factors in the present study have broader connotations than the above definitions and incorporate the entire range of response patterns delimiting the domain. Positive responses include not only the expression of feelings of warmth and gratitude, but also a variety of behaviors likely to create or strengthen a relationship with the referent (*e.g.* taking the referent into one's confidence by divulging information of a personal nature; placing oneself in a position of indebtedness to the referent).

Negative responses include all expressions of conflicting or opposing needs and feelings. These responses are likely to jeopardize a relationship with the referent, and may result in negative reinforcement from the target person.

It should be noted that negative assertion is not to be equated with aggression. Aggressive verbal statements specify the future expression of behavior with aversive properties, where aversive behavior includes negative evaluation, deprivation of expected gains, and social ostracism (Hollandsworth, 1977). Verbal content of a threatening or aversive nature is not necessarily implied in the response patterns loading on the second factor. On the contrary, researchers have stressed the need to ensure that clients undergoing assertion training are able to discriminate between assertive

and aggressive responses (*e.g.* Foy, Eisler, & Pinkston, 1975; McFall & Lillesand, 1971).

The variable, "discussing criticism," has salient loadings on both response class factors. This type of behavior may be consistent with either positive or negative assertion, depending on the extent to which it is nonjudgmental and accepting of the referent's feelings and opinions.

Individual Differences Factors

Assertiveness A cannot be validly conceptualized as a general difficulty in assertiveness factor, since it accounts for only 15.49 and 15.11 percent of the total variance (after rotation) in Samples 1 and 2 respectively. However, 29 of the 56 items on the DAI load saliently and consistently on this factor. The factor may be interpreted as difficulty in assertion situations other than those which involve establishing new relationships and interacting with persons in authority. It includes difficulty in expressing all kinds of assertive behavior with friends, difficulty which is restricted to some specific behaviors with strangers, groups, and parents (predominantly negative response patterns) and difficulty in isolated behaviors in service situations. Interactions with close referents present the greatest difficulty.

The second factor, Assertiveness B, involves difficulty in assertive behavior with persons in authority and some problems in negative assertion with groups, dates and spouses. The factor may be interpreted as difficulty in assertion situations which involve an element of risk to the subject. There may be powerful social sanctions against the specified behaviors (*e.g.* disobeying a directive from persons in authority), or the actions may be likely to result in aversive social consequences (*e.g.* turning down a request from a friend).

Assertiveness C may be interpreted as difficulty in establishing new relationships and dealing with service and business situations. It appears to be related to problems in interacting openly and efficiently in business, contractual, and formal social relationships.

Assertiveness D reflects a very circumscribed or situation-specific problem with assertiveness and involves difficulty in confiding in and expressing positive feelings to parents.

Core Matrix

When the core matrix data are considered in conjunction with the correlates of the four individual differences factors, a clearer picture emerges of the four types of subjects and their reactions to assertion situations. The first idealized subject experiences difficulty in performing many assertive behaviors, particularly when interacting with peers and other close referents. This type of subject does not, however, find it difficult to interact assertively with authority figures or to establish new relationships and initiate interactions. The second and third idealized subjects, on the other hand, experience difficulty in asserting themselves with distant referents. The second idealized subject is reluctant to engage in behaviors which may fail to be accepted or positively reinforced by the target persons. The third type of subject finds it difficult to stand up for her rights in service situations and to take the initiative in establishing relationships. The fourth idealized subject finds assertiveness difficult only with respect to expressing warmth and gratitude to parents and to initiating interactions which would create close emotional ties with parents.

Uses of a Refined and Validated Inventory

A refined, validated, and standardized version of the DAI would appear to have many uses. Applications to the treatment of assertiveness deficits include assessment at the beginning of therapy to identify specific problem areas and to facilitate selection of intervention strategies, evaluation of treatment programs (including measures of generalization of training effects), and development of hierarchies for use in assertion training or systematic desensitization. The DAI could also be employed in the investigation of the relationship between assertiveness and other aspects of adjustment and behavioral functioning.

The tendency of behaviorists to downplay the utility and validity of self-report data has been based in part on the assumption that self-report measures are uniquely and characteristically susceptible to distortion and response bias (Mischel, 1977). Bates and Zimmerman (1971) report that assertiveness, as measured by the Constriction Scale, does correlate positively with measures of social desirability. However, the results of the present study, which correspond to those obtained from the Rathus Assertiveness Sched-

ule (Appelbaum, 1976), indicate there is no relationship between self-report assertiveness and scores on the Marlowe-Crowne.

Cautela and Upper (1976) note that structured self-report instruments are forming an increasingly important part of behavioral analysis and are able to provide information of sufficient specificity to be relevant to intervention techniques. Such a standardized assessment strategy, although far removed from the traditional trait concept of personality description, also presents advantages over the practice which has been adopted by many behaviorists of viewing each clinical case as entirely unique, and requiring individually designed instruments. Standardized assessment assists the therapist in administration, interpretation, and communication of clinical information and permits the accumulation of a data base upon which research hypotheses can be formulated and tested.

References

Alberti, R. E., and Emmons, M. L. *Your perfect right: A guide to assertive behavior.* San Luis Obispo, Calif.: Impact, 1974.

Appelbaum, A. S. Rathus Assertiveness Schedule: Sex differences and correlation with social desirability. *Behavior Therapy*, 1976, *7*, 699.

Bates, H. D., & Zimmerman, S. F. Toward the development of a screening scale for assertive training. *Psychological Reports*, 1971, *28*, 99-107.

Bellack, A. S., Hersen, M., & Turner, S. M. Generalization effects of social skills training in chronic schizophrenics: An experimental analysis. *Behaviour Research and Therapy*, 1976, *14*, 391-398.

Bowers, K. Situationism in psychology: An analysis and critique. *Psychological Review*, 1973, *80*, 307-336.

Cattell, R. B. Extracting the correct number of factors in factor analysis. *Educational and Psychological Measurement*, 1958, *18*, 791-837.

Cattell, R. B. The scree test for the number of factors. *Multivariate Behavioral Research*, 1966, *1*, 245-276.

Cautela, J. R., & Upper, D. The Behavioral Inventory Battery: The use of self-report measures in behavioral analysis and therapy. In M. Hersen & A. S. Bellack (Eds.), *Behavioral assessment: A practical handbook.* Oxford: Pergamon, 1976.

Cotler, S. B., & Guerra, J. J. *Assertion training: A humanistic-behavioral guide to self-dignity.* Champaign, Ill.: Research Press, 1976.

Cronbach, L. J., Gleser, G. C., Nanda, H., & Rajaratnam, N. *The dependability of behavioral measurements: Theory of generalizability for scores and profiles.* New York: Wiley, 1972.

Crowne, D. P., & Marlowe, D. A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology*, 1960, *24*, 349-354.

Eisler, R. M., Hersen, M., Miller, P. M., & Blanchard, E. B. Situational determinants of assertive behaviors. *Journal of Consulting and Clinical Psychology*, 1975, *43*, 330-340.

Endler, N. S., & Hunt, J. McV. Sources of behavioral variance as measured by the S-R Inventory of Anxiousness. *Psychological Bulletin*, 1966, *65*, 336-346.

Foy, D. W., Eisler, R. M., & Pinkston, S. Modeled assertion in a case of explosive rages. *Journal of Behavior Therapy and Experimental Psychiatry*, 1975, *6*, 135-137.

Friedman, P. H. The effects of modeling and role playing on assertive behavior (Doctoral dissertation, University of Wisconsin, 1968). *Dissertation Abstracts*, 1969, *29*, 4844B-4845B. (University Microfilms No. 69-912)

Galassi, J. P., DeLo, J. S., Galassi, M. D., & Bastien, S. The College Self-Expression Scale: A measure of assertiveness. *Behavior Therapy*, 1974, *5*, 165-171.

Gambrill, E. D., & Richey, C. A. An assertion inventory for use in assessment and research. *Behavior Therapy*, 1975, *6*, 550-561.

Gay, M. L., Hollandsworth, J. G., Jr., & Galassi, J. P. An assertiveness inventory for adults. *Journal of Counseling Psychology*, 1975, *22*, 340-344.

Golding, S. L. Flies in the ointment: Methodological problems in the analysis of the percentage of variance due to persons and situations. *Psychological Bulletin*, 1975, *82*, 278-288.

Gorsuch, R. L. *Factor analysis*. Philadelphia: Saunders, 1974.

Hakstian, A. R., & Muller, V. J. Some notes on the number of factors problem. *Multivariate Behavioral Research*, 1973, *8*, 461-475.

Hersen, M., & Bellack, A. S. Social skills training for chronic psychiatric patients: Rationale, research findings, and future directions. *Comprehensive Psychiatry*, 1976, *17*, 559-580.

Hogan, R., De Soto, C. B., & Solano, C. Traits, tests, and personality research. *American Psychologist*, 1977, *32*, 255-264.

Hollandsworth, J. G., Jr. Further investigation of the relationship between expressed social fear and assertiveness. *Behaviour Research and Therapy*, 1976, *14*, 85-87.

Hollandsworth, J. G., Jr. Differentiating assertion and aggression: Some behavioral guidelines. *Behavior Therapy*, 1977, *8*, 347-352.

Hollandsworth, J. G., Jr., Galassi, J. P., & Gay, M. L. The Adult Self Expression Scale: Validation by the multitrait-multimethod procedure. *Journal of Clinical Psychology*, 1977, *33*, 407-415.

Hollandsworth, J. C., Jr., & Wall, K. E. Sex differences in assertive behavior: An empirical investigation. *Journal of Counseling Psychology*, 1977, *24*, 217-222.

Horn, J. L. On subjectivity in factor analysis. *Educational and Psychological Measurement*, 1967, *27*, 811-820.

Kaiser, H. F. The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 1960, *20*, 141-151.

Lawrence, P. S. The assessment and modification of assertiveness behavior (Doctoral dissertation, Arizona State University, 1970). *Dissertation Abstracts International*, 1970, *31*, 396B-397B. (University Microfilms No. 70-11,888)

Lazarus, A. A. On assertive behavior: A brief note. *Behavior Therapy*, 1973, *4*, 697-699.

Levin, J. Three-mode factor analysis (Doctoral dissertation, University of Illinois, 1963). *Dissertation Abstracts*, 1964, *24*, 5530-5531. (University Microfilms No. 64-6099)

Levin, J. Three-mode factor analysis. *Psychological Bulletin*, 1965, *64*, 442-452.

McFall, R. M., & Lillesand, D. B. Behavior rehearsal with modeling and coaching in assertion training. *Journal of Abnormal Psychology*, 1971, *77*, 313-323.

McFall, R. M., & Marston, A. R. An experimental investigation of behavior rehearsal in assertive training. *Journal of Abnormal Psychology*, 1970, *76*, 295-303.

Miller, P. M., & Eisler, R. M. Assertive behavior of alcoholics: A descriptive analysis. *Behavior Therapy*, 1977, *8*, 146-149.

Mischel, W. On the future of personality measurement. *American Psychologist*, 1977, *32*, 246-254.

Nunnally, J. C. *Psychometric theory.* New York: McGraw-Hill, 1967.

Rathus, S. A. A 30-item schedule for assessing assertive behavior. *Behavior Therapy,* 1973, *4,* 398-406.

Rich, A. R., & Schroeder, H. E. Research issues in assertiveness training. *Psychological Bulletin,* 1976, *83,* 1081-1096.

Rimm, D. C., & Masters, J. C. *Behavior therapy: Techniques and empirical findings.* New York: Academic Press, 1974.

Snyder, C. W., Jr. & Law, H. G. Three-mode common factor analysis: Procedure and computer programs. *Multivariate Behavioral Research,* 1979, *14,* 435-441.

Stebbins, C. A., Kelly, B. R., Tolor, A., & Power, M-E. Sex differences in assertiveness in college students. *The Journal of Psychology,* 1977, *95,* 309-315.

Tucker, L. R. Experiments in multi-mode factor analysis. *Proceedings of the 1964 Invitational Conference on Testing Problems,* 1964, 46-57. (a)

Tucker, L. R. The extension of factor analysis to three-dimensional matrices. In N. Frederiksen & H. Gulliksen (Eds.), *Contributions to mathematical psychology.* New York: Holt, Rinehart & Winston, 1964. (b)

Tucker, L. R. Some mathematical notes on three-mode factor analysis. *Psychometrika,* 1966, *31,* 279-312.

Wolpe, J., & Lazarus, A. A. *Behavior therapy techniques.* New York: Pergamon, 1966.