ANALYSIS OF A CURVILINEAR RELATIONSHIP BETWEEN SELF-ESTEEM AND EMOTIONAL ADJUSTMENT[1]

ANN H. KARMOS, Department of Curriculum, Instruction, and Media, Southern Illinois University, Carbondale IL 62901

JOSEPH S. KARMOS, Department of Guidance and Educational Psychology, Southern Illinois University, Carbondale Il 62901

Abstract.   One component of the theoretical and empirical network for self-esteem is the relationship between self-esteem and adjustment. Empirical support exists for the position that the relationship is linear, with some studies indicating that high self-esteem corresponds to high adjustment and others indicating that the relationship is negative. Some studies have found curvilinear relationships, U-shaped or inverted-U shaped. In a study involving 202 college students, the authors found a U-shaped relationship between self-esteem and emotional adjustment. Self-esteem was measured by the Sliding Person Test of Self-Esteem (SPERT). SPERT scores in the middle self-ideal discrepancy (SID) range were found to correspond not only to lower emotional adjustment, but also to lower self-acceptance and higher anxiety than scores in the small or large SID ranges. The upward swing of the U-shaped graph of the relationship at the large self-ideal discrepany end was attributable to off-campus military students enrolled in an undergraduate degree program. These students saw themselves as emotionally and socially well-adjusted and moderately low-anxious, even though they reported a large discrepancy between real and ideal self. The authors conjectured that clearly-defined career goals might account for their acceptance of self and high emotional adjustment in spite of their perceived distance from ideal self.

The self-concept literature shows inconsistent results about the relationship between self-esteem and adjustment. Wells and Marwell (1976) found three different positions on the level of self-esteem considered optimal for adjustment. These positions emerged from differing theoretical perspectives as well as from empirical evidence. The most common is the *"high* self-esteem" model, where the relationship is linear, with high self-esteem corresponding to better adjustment. For the *"low* self-esteem" model, individuals with low self-esteem are less authoritarian, more flexible, and more open to admitting personal shortcomings, while high self-esteem individuals tend to use denial defenses and to repress negative information about themselves. The *"medium* self-esteem" model supports a

curvilinear relationship where the extremes of self-esteem are the least well adjusted (inverted-U relationship).

In a construct validity study of a self-ideal discrepancy instrument, the authors found a curvilinear relationship between self-esteem and adjustment, but the U was *not* inverted (Karmos and Karmos 1979). This finding was contrary to the inverted-U relationship hypothesized in the study but corresponded to the results of a study by Chodorkoff (1954). Of the studies reviewed that used self-ideal discrepancy self-esteem measures and samples of adolescents or college students, three supported the *high* self-esteem model. Grigg (1959) found a nonsignificant correlation of .245, $P = .12$ between self-esteem and adjustment. Smith (1958) and Hanlon, Hofstaetter, and O'Conner (1954) found significant correlations, $r = .67$, $P < .01$, $r = .70$, $P < .001$, re-

spectively; however, neither Grigg nor Smith investigated curvilinearity.

Curvilinear relationships were found in 3 studies, but the results were conflicting. Inverted-U relationships supporting the "*medium* self-esteem" model were found by Block and Thomas (1955) and by Cole, Oetting, and Hinkle (1967). However, Chodorkoff (1954) found a U-shaped relationship where middle self-esteem people had lower adjustment than high or low self-esteem people.

The U-shaped relationship found in the Karmos and Karmos study (1979) was for those in the sample who were below the 75th percentile on a measure of social desirability. The idea of defensivenss is regularly mentioned in the literature with respect to small discrepancies. Low self-reports of self-esteem are usually expected to correspond to maladjustment, but high scores may have two interpretations—one, an "accurate" report of positive self-esteem; the other, a "defensively" high position (Crowne and Marlowe 1964, Silber and Tippett 1965, Rogers and Dymond 1954). The Karmos and Karmos study found that high social desirability people did tend to report small self-ideal discrepancies ($r = -.29$, $P < .001$) and to score high on emotional adjustment ($r = .40$, $P < .001$). Multiple linear regression analysis was used for testing the hypothesized inverted-U relationship. F tests were conducted on the entire sample and the regression equation included vectors for parabolic-shaped relationships for individuals high and for those not high in social desirability.

$$Y = a_0 U + u_1 U_1 + d_1 D_1 + d_2 D_2 + u_2 U_2 + d_3 D_3 + d_4 D_4 + E_1$$

Where

Y = emotional adjustment

U = unit vector

$U_1 = 1$ if *not* high on social desirability, 1 otherwise

D_1 = SPERT discrepancy if *not* high on social desirability, 0 otherwise

$D_2 = (D_1) * (D_1)$

$U_2 = 1$ if high on social desirability, 0 otherwise

D_3 = SPERT discrepancy if high on social desirability, 0 otherwise

$D_4 = (D_3) * (D_3)$

a_0 to d_4 = partial regression weights calculated to

minimize E_1

E_1 = error vector

For students high in social desirability, the best predictor of emotional adjustment was the emotional adjustment mean of 28.4. Both the first- and second-degree terms for students not high in social desirability contributed to variance in emotional adjustment at less than a .05 alpha level, but the coefficient of neither term was in the hypothesized direction, so neither F was significant. Contrary to expectations, a U-shaped curve was the best predictor of emotional adjustment for students not high in social desirability. If a U-shaped relationship had been hypothesized, the F's would have been significant for the first-degree term ($F_{1,196} = 9.39$, $P = .002$) and for the second-degree term ($F_{1,196} = 6.48$, $P = .01$). The regression equation accounted for 19% of the variance in emotional adjustment ($R = -.44$, $P < .0001$). In comparison, only 6% of the variance was explained by a linear correlation ($r = -.24$, $P < .001$). Possible explanations for the U-shaped curve were sought in a post hoc analysis of the scatter plot for the relationship between self-ideal discrepancy (SID) and emotional adjustment.

METHOD

Sample.   The sample consisted of 202 students enrolled in an educational psychology course at Southern Illinois University (SIU) (52 On-campus graduate students, 75 on-campus undergraduates; 75 military personnel enrolled in SIU undergraduate degree program at Great Lakes Naval Base and Altus Air Force Base). About 66% of the sample was male. Ages ranged from 19 to 59, with an average age of 29. Students came from 39 states, 32 reported major fields, in 48 different areas outside the College of Education. The sample was predominantly white (90%).

Instruments.   Self-esteem was measured by a paper-pencil test, the Sliding Person Test (SPERT), which is a direct parallel of a wooden manipulative developed to measure self-ideal discrepancy at an "abstract" global level as described by Shlien (1962). Conceptualizations and validity evidence for the instrument are given in Karmos and Karmos (1979). A test-retest reliability coefficient of .82, $P < .001$, is reported. A 15 cm line with a star (*) at the left and an outline of a person marked "A" at the right end is given. Instructions are: "Look at the line below. Think of person A as being yourself as you would like to be. Now put your pencil at * and move it along the line. Stop at the point which shows how close you are

now to being person A. Mark that point with an X."
The SPERT-discrepancy score is the distance in
tenths of centimeters from X to A.

The Berger self-aceptance scale (Berger 1952) con-
sisted of 36 Likert-type items. Methods of measuring
self-esteem generally correspond to three types of
self-esteem definitions; (1) self-esteem as *attitudes*,
approval or disapproval of one's self; (2) self-esteem as
relations between attitudes, self-ideal comparisons; or
(3) self-esteem as *psychological responses*, feelings as-
sociated with (1) or (2), usually called "self-accep-
tance" (Wells and Marwell 1976). SPERT corres-
ponds to category (2) and Berger-acceptance to cate-
gory (3); therefore, Berger self-acceptance was re-
garded as an instrument to measure a different aspect
of self-esteem that SPERT.

Two of the 5 subscales of the student form of the
Bell Adjustment Inventory (Bell 1962) were used to
measure emotional adjustment and social adjust-
ment. For the present study, high scores indicated
high adjustment.

The Marlowe-Crowne scale was used to measure
social desirability. It consisted of 33 true-false first
person statements. The total score was the number of
items answered in a socially desirable direction. Val-
idity and reliability evidence is reported by Crowne
and Marlowe (1964).

The IPAT Anxiety Scale consisted of 40 questions,
each of which had three possible responses varying
from item to item. The test manual states that, "the
scale is primarily designed to measure *free-floating*,
manifest anxiety level, whether it be situationally de-
termined or relatively independent of the immediate
situation" (Cattell and Scheir 1963, p. 12).

Procedure.   Instruments were administered by
one investigator to all on-campus subjects and by SIU
instructors on the military bases. Procedures for the
testing sessions were standardized. As recommended
by Wylie (1974), testing conditions were designed to
minimize deliberate deception. Subject anonymity
was provided and the purpose of the data collection
was explained. The instruments were presented in a
booklet with self-explanatory instructions and no
time limitations. Students were asked to work "mod-
erately rapidly" and not to dwell on individual items.

RESULTS AND DISCUSSION

The U-shaped curve for self-esteem and
emotional adjustment for not-high social
desirability people ($N=153$) is shown in
figure 1. The curve shows higher emotional
adjustment for people with smaller and
larger self-ideal discrepancies and lower
emotional adjustment for those in the
middle.

To explain this finding, selected sub-
groups from the scatter plot were compared
for differences in scores on three variables
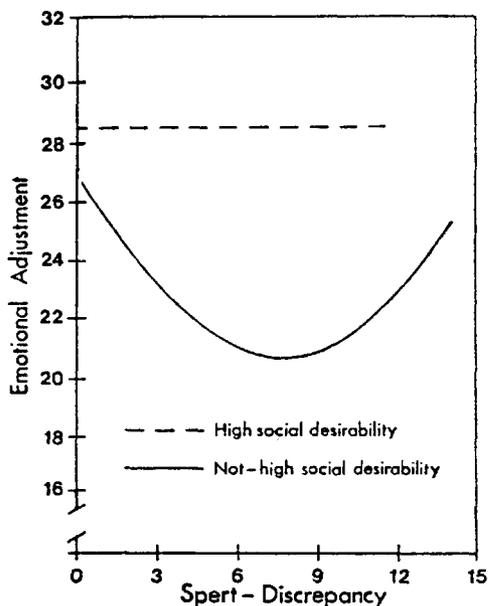related to emotional adjustment. For com-

FIGURE 1. Graph of the relationship between SPERT-
discrepancy and emotional adjustment for high and
not-high social desirability students. (The graph was
plotted from the most parsimonious model obtained.
The equation for the "high" students is $y=28.4$. The
graph for the "not-high" students is
$y=26.9-1.66x+.11x^2$.)

parisons, means were computed for the 153
people for self-acceptance ($M=142.6$), so-
cial adjustment ($M=20.5$), and anxiety
($M=30.7$). The mean for emotional adjust-
ment was 22.5.

The minimum point of the curve was the
focus for defining large, middle, and small
SID groups. The middle group was to con-
sist of those who "pulled the curve down" in
the middle. The minimum point of the
curve was (7.6, 20.6). Conveniently, the
midpoint of the 15 cm SPERT continuum
was 7.5, which was almost the same as the
SPERT score of the minimum point. Mid-
dle SID people, then, were defined as those
who moved their "real selves" to within the
one-fourth of the SPERT continuum
around the midpoint (SPERT scores of 5.7
to 9.3). Small SID people were those who
moved farther than three-fourths of the 15
cm distance (.0 to 3.7), and Large SID
people were those who moved no farther
than one-fourth of the distance toward their
"ideal selves" (11.3 to 15.0).

TABLE 1

Means for Groups Above and Below the U-Shaped Curve for Three SPERT Intervals.*

| | SPERT intervals | | | | | | | | | | | | | | |
| | Small SID (.0-3.7) | | | | | Middle SID (5.7-9.3) | | | | | Large SID (11.3-15.0) | | | | |
	No.	S-ACC**	S-ADJ	ANX	E-ADJ	No.	S-ACC	S-ADJ	ANX	E-ADJ	No.	S-ACC	S-ADJ	ANX	E-ADJ
Above curve															
Military	23	153.6	22.9	22.3	28.6	8	151.1	23.6	22.3	26.4	5	153.0	22.0	28.0	27.4
Undergraduate	5	157.8	21.0	20.4	27.2	5	147.0	23.6	30.8	26.6	—	—	—	—	—
Graduate	14	152.7	23.1	23.9	27.6	9	145.6	19.9	27.9	26.0	—	—	—	—	—
Total above curve	41	152.9	22.8	22.6	28.1	22	147.9	22.1	26.5	26.3	5	153.0	22.0	28.0	27.4
Below curve															
Military	6	149.7	21.5	30.0	19.5	2	131.0	14.5	37.5	18.5	—	—	—	—	—
Undergraduate	8	122.4	17.8	42.5	15.8	12	127.0	18.1	40.8	14.2	1	129.0	14.0	42.0	18.0
Graduate	9	144.4	20.1	36.2	18.4	5	106.2	16.2	47.2	14.4	1	111.0	19.0	44.0	14.0
Total below curve	23	138.1	19.7	36.8	17.8	19	121.9	17.2	42.1	14.7	2	120.0	17.6	44.0	16.0
Total for interval	65	148.2	21.7	27.6	24.4	41	135.9	19.8	33.7	20.9	7	143.6	20.4	32.6	24.1

*Means for the entire not-high social desirability group (No. =153): S-ACC, M=142.6; S-ADJ, M=20.5; ANX, M=30.7; E-ADJ, M=22.5.

**S-ACC=self-acceptance; S-ADJ=social adjustment; ANX=anxiety; E-ADJ=emotional adjustment.

These three groups were further sub-divided according to whether an individual's score on emotional adjustment was located above or below the U-shaped curve of best fit on the scatter plot. Table 1 gives mean scores for military, undergraduate, and graduate students in each of these six subgroups.

The people who pulled the curve up at the Small SID end (above the curve) were primarily older students—military and graduate. Their scores were comparatively high on self-acceptance and social adjustment, and they were particularly low-anxious ($M = 22.6$).

The curve was pulled down in the Middle SID range by the very low emotional adjustment scores of the below-the-curve undergraduates ($M = 14.2$) and graduates ($M = 14.4$). The low adjustment of the 19 below-the-curve people was further indicated by their low self-acceptance ($M = 121.9$), high anxiety ($M = 42.1$), and low social adjustment ($M = 17.2$).

The curve was pulled up at the Large SID end by five military people whose emotional adjustment, self-acceptance, and social adjustment scores were very close to the above-the-curve people at the Small SID end, but whose anxiety scores were higher ($M = 28.0$). Their mean anxiety, however, was below the mean for the total not-high social desirability group ($M = 30.7$).

Chodorkoff (1954) also found a U-shaped curve and concluded that people with high or low self-esteem were better adjusted than people with middle self-esteem, but that adjustment was highest for high self-esteem people. Table 1 shows this same pattern for total means on all four variables in the three SID ranges (see "Total for interval").

People with large SID scores were of sufficient interest to warrant further investigation of their characteristics. An increase in emotional adjustment was observed to right of the minimum point of the curve (7.6, 20.6), so scores were examined for the 24 people with discrepancies greater than 7.6. Since the midpoint of the 15 cm SPERT continuum was 7.5, these people

moved less than half-way toward their ideal selves when responding on SPERT. Twelve of these people were above the curve (higher emotional adjustment) and 12 were below. Eight of the 12 above the curve were military students with an average higher on self-acceptance ($M = 155.8$), higher on social adjustment ($M = 22.3$), and lower on anxiety ($M = 25.4$) than the averages of the entire not-high social desirability group. Below the curve, there were 6 on-campus undergraduates and 6 graduates who were less self-accepting ($M = 111.8$), less socially adjusted ($M = 17.0$), and more anxious ($M = 44.9$) than those above the curve. In general, their self-ideal discrepancies were smaller than those of the eight military students and this placed them closer to the minimum point on the curve. Thus, examination of all students whose scatter points fell on the upward swing of the curve at the large discrepancy end further supported that military students were responsible for the upward swing.

A previous study by Karmos and Karmos (1979) found that college students with small and large self-ideal discrepancies had higher emotional adjustment than those with medium self-ideal discrepancy scores. In the present post-hoc analysis, self-acceptance, social adjustment, and anxiety scores for three extreme groups (Small SID, Middle SID, and Large SID) were compared to further explain this U-shaped relationship. Within these three groups, scores for undergraduates, graduates, and military people were also compared.

Older students (military and graduate students) pulled the curve up at the small discrepancy end, undergraduates pulled it down in the middle, and military people pulled it up at the large discrepancy end. Social adjustment did not seem to differentiate these three groups, but the two extreme SID groups were more self-accepting and less anxious than the Middle SID group. The upward swing of the U-shaped curve at the large discrepancy end was attributable to older military personnel who saw themselves as emotionally and socially adjusted and moderately low-anxious. They were far from their ideals, but they

were highly accepting of themselves. To them, a large discrepancy might have been viewed as a challenge rather than as a frustration. The reporting of very large self-ideal discrepancies by these apparently emotionally well-adjusted people could be explained by the fact that they were established in a career and in a lifestyle and were probably moving toward clearly-defined goals.

Support for several different relationships between self-esteem and emotional adjustment can be found in the literature, but almost none of the studies are comparable with respect to instrumentation or methodology. From the descriptions of the samples in the college studies reviewed, it is not possible to determine whether students similar to the military undergraduates in the present study were included. The U-shaped relationship between SPERT scores and emotional adjustment scores, however, does correspond to the findings of Chodorkoff (1954), who also used statistical tests of curvilinearity, self-report measures of self-esteem, and a college population.

Further study of the self-esteem/emotional adjustment relationship is needed. The U-shaped relationship found in the present study is not generalizable since it was contrary to expectations. The data were further analyzed, *post hoc,* to provide possible directions for future studies. The results suggested that curvilinearity should be tested and that samples should include persons who have clearly defined career goals in order to test the hypothesis that, for some of these people, self-acceptance and emotional adjustment may be high even though distance from ideal self is large.

LITERATURE CITED

Bell, H. M. 1962 Bell Adjustment Inventory. Consulting Psychologists Press, Palo Alto, CA.

Berger, E. M. 1952 The relation between expressed acceptance of self and expressed acceptance of others. J. Abnor. Soc. Psychol. 47: 778-782.

Block, J. and H. Thomas 1955 Is satisfaction with self a measure of adjustment? J. Abnor. Soc. Psychol. 51: 254-259.

Cattell, R. B. and I. H. Scheir 1963 Handbook for the IPAT Anxiety Scale Questionnaire. Institute for Personality and Ability Testing, Champaign, IL.

Chodorkoff, B. 1954 Adjustment and the discrepancy between the perceived and ideal self. J. Clin. Psychol. 10: 166-268.

Cole, C. W., E. R. Oetting and J. E. Hinkle 1967 Non-linearity of self-concept discrepancy—The value dimension. Psycholog. Rep. 21: 58-60.

Crowne, D. P. and D. Marlowe 1964 The approval motive: Studies in evaluative dependence. Wiley, New York. pp. 258.

Grigg, A. E. 1959 A validity test of self-ideal discrepancy. J. Clin. Psychol. 15: 311-313.

Hanlon, T. E., P. R. Hofstaetter, and J. P. O'Connor 1954 Congruence of self and ideal self in relation to personality adjustment. J. Consult. Psychol. 18: 215-218.

Karmos, A. H. and J. S. Karmos 1979 Construct validity analyses of a "nonverbal" measure of self-esteem: The Sliding Person Test. Psycholog. Rept. 44: 895-910.

Rogers, C. R. and R. F. Dymond 1954 Psychotherapy and personality change. Univ. of Chicago Press, Chicago. pp. 246.

Shlien, J. M. 1962 Toward what level of abstraction in criteria? *In:* H. H. Strupp and L. Luborsky (eds.), Research in psychotherapy. The American Psychological Association, D.C.

Silber, E. and J. S. Tippett 1965 Self-esteem: Clinical assessment and measurement validation. Psycholog. Rep. 16: 1017-1052.

Smith, M. G. 1958 Six measures of self-concept discrepancy and instability: Their interrelations, reliability, and relations to other personality measures. J. Consult. Psychol. 2: 101-112.

Wells, L. E. and G. Marwell 1976 Self-esteem: Its conceptualization and measurement. Sage publications, Beverly Hills, CA. pp. 287.

Wylie, R. C. 1974 The self concept, a review of methodological considerations and measuring instruments. Vol. 1. Univ. Nebraska Press, Lincoln. pp. 335.