METHODS & DESIGNS

Transformations from adjectives to scales for the Adjective Check List (ACL): ACLTRANS FORTRAN IV program

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The ACLTRANS ANSI FORTRAN IV program transforms the 300 adjectives on the Adjective Check List (Gough, 1950, 1960) into 37 raw and T-standard psychological scales. This program has three advantages over scoring based on the *Adjective Check List Manual* (Gough & Heilbrun, 1965, 1980, 1983): ease and speed of computing the raw scale scores; exact partialing of number of adjectives checked from standardized scale scores; and choice of parameter norms for standardization. By using the ACLTRANS program, the researcher can be confident of quick and accurate scoring, as well as appropriate standardization.

The Adjective Check List (ACL) (Gough, 1950, 1960) lists 300 adjectives used for description in everyday life. The respondent's task is to check those adjectives that seem relevant to the stimulus object. The ACL has been used to characterize the ideal self, political leaders, legendary personages, geographical regions, commercial products, ideas, beliefs, ethnic groups, kinds of people, workers in designated occupations, and other stimulus objects.¹ The modal application, however, has been self-description.

Responses to the ACL may be interpreted at the item or scale level. Thirty-seven psychological scales of various kinds are reported in the *Adjective Check List Manual* (Gough & Heilbrun, 1980, 1983). Some of these scales were developed rationally; other scales were developed empirically. The conversion of raw scores to T-standard scores permits easy comparison of any particular profile to a designated reference group.

The ACL is idiographic in that descriptions reflect personal saliency, and is normative in that the checking of one adjective has no mandatory influence on the checking of other adjectives. It has many qualities that make it attractive: It can be used to describe almost any stimulus object; it is brief to administer (usually no more than 10 min); it is easy for respondents to understand and use; it has a broad coverage of terms impor-

tant for personal description; it does not have a pathological orientation; it has a large and generally favorable literature¹; it is readily accessible to researchers²; and it produces scales relevant to several theories of personality.

TRADITIONAL SCORING PROCEDURES

Scoring the ACL can be tedious. Computing raw sums for 37 scales, with scales averaging 35 adjectives each, requires computerization if more than a few questionnaires are to be processed.

Standardizing scale scores to population norms according to the procedures given in the *ACL Manual* is inexact and sometimes inappropriate. Individual differences in the number of adjectives a respondent checks are indexed by the "No.Ckd" scale. The psychological constructs measured by the raw scores of the other 36 scales are to a greater or lesser extent affected by the adjective-checking response style. To remove the effect of these individual differences in "No.Ckd" from the other 36 scales, each scale must be controlled for "No.Ckd." According to the *ACL Manual* (Gough & Heilbrun, 1965, 1980, 1983), this is done by classifying respondents into categories based on their "No.Ckd" scores, and then transforming raw scores to standard scores within each category.

This procedure has three problems. First, scoring is time-consuming and tedious. Second, transformed scores are still correlated with "No.Ckd," although these correlations are much lower than for untransformed scores. Third, these transformations properly apply only to self-ratings, *not* to protocols obtained under other instructions (such as descriptions of political

Special thanks are rendered for the advice and support of William Meredith, Kenneth Craik, Jimmy Chan, and John Tisak of the Department of Psychology, and Richard McIntosh of Computer-Assisted Survey Methods (CSM), University of California, Berkeley, California. To obtain copies of the *ACLTRANS User's Manual* and the *ACLTRANS Fortran IV Program*, see Footnote 3. The authors' mailing address is: Department of Psychology, University of California, Berkeley, CA 94704.

leaders). New methods of standardizing and norming, to be described next, seek to overcome these limitations.

NEW SCORING PROCEDURES

The ACLTRANS ANSI FORTRAN IV program³ replaces the traditional category approach with a precise partialing procedure (Nunnally, 1967, pp. 151-154).⁴ The partialled scores correlate exactly zero with the "No.Ckd" scale. In order to obtain reference-group-appropriate transformations, the user can choose among self-rating norms, within-group norms, or some other non-self-rating norms (for instance, parameters based on ratings of political leaders).

The user can specify whether or not to output listing and punch files for adjectives, raw scales, standard scales, and within-group parameters (means, standard deviations, and correlations with "No.Ckd").

Diagnostic warnings are appended to the listing of each case when: adjectives are assigned illegal numeric values; too many (more than 249) or too few (fewer than 21) adjectives are checked; standard scales are unusually high or low (3.5 SDs from the parameter mean); adjectives appear to be checked at random; and the respondent's sex code has an illegal value.

Results from ACLTRANS were compared with results from a program used for many years at the Institute of Personality Assessment and Research, University of California, Berkeley, which was based on the conversion tables in the *ACL Manual*. The two programs produced identical raw scale totals in the 374 cases tested. For standardized and adjusted scale scores, 12 of the 37 scale means for males and 21 of the means for women were significantly ($p < .01$) different between the two procedures. However, these differences tended to be quite small. The average correlation between scale results from the two procedures was .96 for both males and females.

Three benefits—ease and speed of scoring, exact partialing of "No.Ckd," and choice of parameter norms—make the ACLTRANS scoring procedures preferable to the scoring procedures given in the *ACL Manual*.

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NOTES

1. An extensive bibliography of research using the ACL may be obtained from Consulting Psychologists Press, 577 College Avenue, Palo Alto, CA 94306. Buros (1978, p. xxxviii) lists the ACL as the 26th most referenced mental measurement test.

2. The ACL and the *ACL Manual* may be obtained from Consulting Psychologists Press, 577 College Avenue, Palo Alto, CA 94306.

3. To obtain copies of the *ACLTRANS User's Manual* and the *ACLTRANS Fortran IV Program*, contact Director, Institute of Personality Assessment and Research, University of California, Berkeley, CA 94720.

4. The partialing and standardizing procedures consist of four steps:

(a) Z scores are computed for each of the 37 raw scales, using either self-rating, within-group, or input parameters.

$$Z(j) = (X(j) - \text{mean}X(j))/sdX(j)$$

(b) The variance due to the number of adjectives checked ("No.Ckd") is removed (partialled) from each scale (except the "No.Ckd" scale) by the following formula:

$$Z'(j) = Z(j) - (R(j))(Z(l)),$$

where $R(j)$ is the correlation of $Z(j)$ with $Z(l)$ ("No.Ckd" scale). $Z'(j)$ is *not* a standard score because its variance is not usually 1.00.

(c) To standardize $Z'(j)$, it is divided by the square root of the variance remaining in $Z(j)$ after the variance due to $Z(l)$ ("No.Ckd") has been removed:

$$Z(Z'(j)) = (Z'(j))/(\text{sqrt}(1-R(j)**2))$$

(d) Finally, the standardized, adjusted, and restandardized score is converted to a T score (mean = 50.0; SD = 10.0):

$$T(j) = (10.)(Z(Z'(j))) + 50.$$