

A Continuous Measure of Repressive Style

SHEILA MULVANEY, JOHN F. KIHLMSTROM, AURELIO JOSÉ FIGUEREDO, & GARY E. SCHWARTZ

Department of Psychology, University of Arizona

Since Freud (1915) popularized the idea of repression, the concept has been approached from two different perspectives (for historical reviews, see Erdelyi, 1990; Erdelyi & Goldberg, 1979; MacKinnon & Dukes, 1964; Singer, 1990). On the one hand, repression can be construed as a general process, available to and utilized by everyone in certain contexts, in order to block awareness of threatening and anxiety-evoking percepts, memories, ideas, feelings, and impulses. Thus, for example, Bruner and Postman (1947) found that subjects had generally higher recognition thresholds for "taboo" words compared to control items. On the other hand, the tendency to employ repression in the self-regulation of emotion can be construed as an individual-difference variable, with people rank-ordered on a dimension of repressive tendency. Thus, to take another example, subjects with high scores on Byrne's (1961) Repression-Sensitization Scale — that is, repressors — also tend to be better adjusted (Byrne et al., 1965). Of course, the two construals are not necessarily incompatible: repression can be construed as a general process, employed more frequently, or perhaps more successfully, by certain individuals. For example, repressors might show a greater difference between taboo and non-taboo words than nonrepressors.

The attempt to measure individual differences in repression dates at least to the work of Rosenzweig (1938; Rosenzweig & Mason, 1934; Rosenzweig & Sarason, 1942; Sarason & Rosenzweig, 1942), who measured repression in terms of the differential recall of successes and failures on an experimental task. The development of questionnaire measures of repression began with a subscale of the MMPI developed by Ullman (1958). Another MMPI scale (Altrocchi et al., 1960) was modified and improved by Byrne (Byrne, 1961), and became the 127-question Repression-Sensitization Scale (R-S Scale; for a review, see Bell and Byrne, 1978). Unfortunately, Byrne's R-S scale

correlates highly with scores on the Taylor Manifest Anxiety Scale (MAS) (Taylor, 1953), even when overlapping items are excluded (Abbott, 1972; Sullivan & Roberts, 1969). For this reason, it is not clear whether the R-S scale measures the denial of anxiety, or simply a low level of anxiety.

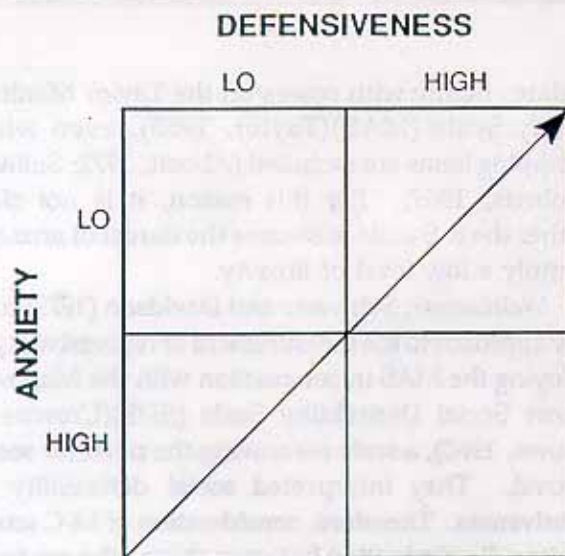
Weinberger, Schwartz and Davidson (1979) took a new approach to the measurement of repressive style, employing the MAS in conjunction with the Marlowe-Crowne Social Desirability Scale (SDS) (Crowne & Marlowe, 1960), a scale measuring the need for social approval. They interpreted social desirability as defensiveness. Therefore, consideration of M-C scores permits a discrimination between those who are truly low in anxiety, and those who may be defensively denying anxiety. According to their scheme, individuals who score low in anxiety but high in social desirability are classified as repressors (as opposed to the truly low-anxious): their claims of low anxiety appear to be motivated not by a lack of anxiety *per se*, but by considerations of defense. The Weinberger et al. (1979) classification scheme is depicted in Figure 1.

In support of their hypothesis, Weinberger et al. (1979) found that repressors showed greater physiological response to sexual and aggressive stimuli than either defensive high-anxious or nondefensive low-anxious subjects. This finding was subsequently confirmed by Asendorf and Scherer (1983). Over the past decade or so, a large literature has used the Weinberger et al. technique or a conceptual variant thereof.

Unfortunately, this body of research is characterized by considerable variability in the precise criteria used to identify subjects as repressors. Thus, Weinberger et al. (1979) established their cutpoints at the median of the MAS and the upper quartile of the SDS. However, Asendorf and Scherer (1983) divided subjects at the lower third of MAS scores and the upper

Figure 1

THE CLASSIFICATION SCHEME PROPOSED BY WEINBERGER ET AL. (1979). SUBJECTS REPORTING LOW LEVELS OF ANXIETY BUT HIGH LEVELS OF SOCIAL DESIRABILITY ARE CLASSIFIED AS REPRESSORS.



quartile of SDS; Davis (1987; Davis & Schwartz, 1987), and Shaw and his colleagues (Shaw et al., 1985; Shaw et al., 1986), split their samples at the means of the two distributions; many other published studies do not clearly report the criteria used to establish groups. Accordingly, it seems clear that some standardization is needed in the selection of repressors, in order to insure comparability across laboratories.

In a more recent development, Weinberger (1990) has introduced a refined measure of repressive tendency, incorporated in the Weinberger Adjustment Inventory (WAI). The new technique assumes that distress (anxiety, depression, low self-esteem, and low sense of well-being) and restraint (impulse control, suppression of aggression, consideration of others, and responsibility) are higher-order dimensions of personality (Weinberger & Schwartz, 1990). The WAI, which is available in both long (84 items) and short (37 items) forms, employs the same logic as Weinberger et al. (1979), classifying as repressors those who are low in distress (anxiety, depression, low self-esteem, and low well-being) and at least moderately high in

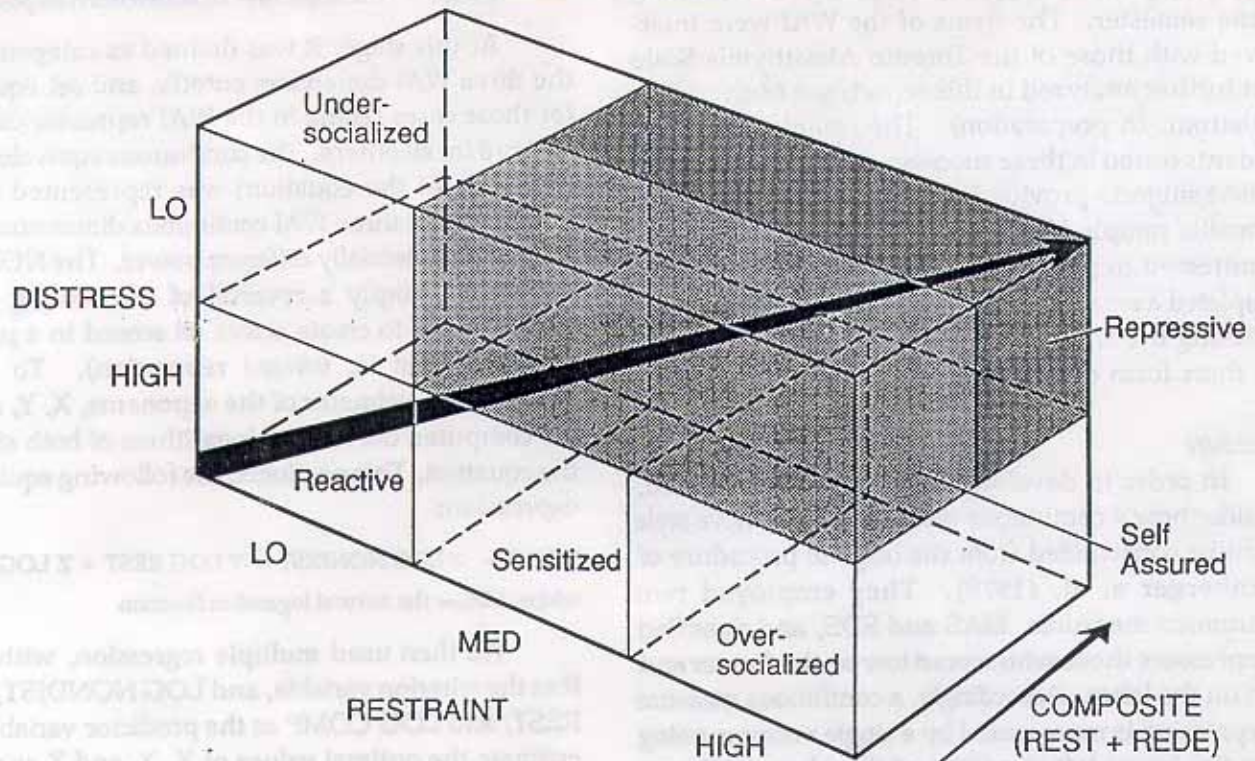
restraint (impulse control, suppression of aggression, consideration of others, and responsibility). However, it adds a measure of defensiveness (denial of distress and repressive defensiveness) to the measure of restraint in an attempt to tap repressors' characteristically extreme denial of anxiety and extreme denial of restraint. These three dimensions — distress, restraint, and composite of restraint plus defensiveness — are then employed to construct the sixfold typology illustrated in Figure 2. Note that the repressive defensiveness dimension is relevant only to the classification of subjects who show moderate to high levels of restraint; it is not considered relevant to the sensitized and oversocialized groups, who both show low levels of restraint. Similarly, the restraint dimension does not distinguish between self-assured and repressive individuals, who both have moderate to high levels of restraint. Among those who report at least high levels of distress, self-assured and repressive subjects share moderate to high levels of restraint, but differ on the composite measure of repressive defensiveness.

While the original combination of MAS and SDS was a jury-rigged system for identifying repressors, the WAI has the advantage that it has been specifically designed to measure the construct of repressive style. At the same time, as noted earlier, a substantial literature has already appeared which uses the older system for classifying subjects. Thus, it would seem important to know how the classification generated by the new procedure relates to that yielded by the new one. Unfortunately, the papers announcing the WAI do not provide this information (Weinberger, 1989, 1990). Our research began as an attempt to explore the relations between the two procedures.

Because it distinguishes between repressive and self-assured subjects, and because its items were specifically written to tap the constructs of distress, restraint, and defensiveness, the WAI is probably the instrument of choice for the identification of individuals with repressive tendencies. At the same time, it should be noted that the typological scheme offered by Weinberger (1989, 1990; Weinberger & Schwartz, 1990) is constructed by applying somewhat arbitrary (if conventional) cutpoints applied to essentially continuous data. Of course, more than this is required to have a genuine taxonomy of personality types (Balthazard

Figure 2

THE CLASSIFICATION SCHEME PROPOSED BY WEINBERGER (1990). SUBJECTS REPORTING LOW LEVELS OF DISTRESS, MODERATE TO HIGH LEVELS OF RESTRAINT, AND HIGH LEVELS OF REPRESSIVE DEFENSIVENESS ARE CLASSIFIED AS REPRESSORS.



& Woody, 1989; Block & Ozer, 1982; Gangestad & Snyder, 1985; Mendelsohn et al., 1982; Weiss et al., 1982). Thus the proposed typology, while perhaps useful as a set of summary labels, may be somewhat misleading. From a methodological point of view, categorical rather than continuous predictor variables necessarily entail a loss of data in regression and other multivariate analyses. According to Cohen and Cohen (1983), artificially dichotomizing a continuous variable may cut statistical power by as much as half.

Comparing the categorical and dimensional approaches to the assessment of repressive defensiveness, each approach has its own assets and each its liabilities. The categorical approach, whether the fourfold typology of Weinberger et al. (1979) or the sixfold one of Weinberger (1990), makes clear distinctions between theoretically interesting subgroups, and is convenient for designs employing the analysis of

variance; but it forfeits information about individual differences within each category, and frustrates comparison to potentially related constructs which are measured on continuous scales. The dimensional approach, whether derived from the two scales of the original Weinberger or the three subscales of the newer WAI, captures individual differences within the category of repressors and permits comparisons to other dimensional constructs, but obscures potential differences between subjects who lie in the middle of the continuum. Thus, it appears that there may be advantages in representing individual differences in repressive style on a continuous dimension, after the manner of the earlier repression scales. This study attempted to create a continuous version of repression from the older two-dimensional and the newer three-dimensional typologies.

Method

Subjects

The subjects for this study were 2867 college undergraduates, who completed the short form of the WAI during a routine survey session at the beginning of the semester. The items of the WAI were interleaved with those of the Toronto Alexithymia Scale (not further analyzed in this report; see Mulvaney & Kihlstrom, in preparation). The sample comprises students tested in three successive semesters. A total of 2864 subjects provided complete data for analysis. A smaller sample of 444 college undergraduates, who volunteered to participate in a study of personality, completed a small packet of personality questionnaires including the short form of the MAS, the SDS, and the short form of the WAI.

Procedure

In order to develop the logic of our approach, consider how a continuous measure of repressive style might be constructed from the original procedure of Weinberger et al. (1979). They employed two continuous measures, MAS and SDS, and classified as repressors those who scored low on the former and high on the latter. Accordingly, a continuous measure of repression is represented by a single vector running from the lower-left quadrant of the plane in Figure 1 to the upper-right quadrant. In other words, the individual with the lowest MAS score and highest SDS score is the one who scores highest on repression; and the subject with the highest MAS score and lowest SDS score is lowest on this dimension.

By analogy, a continuous measure of repression based on the three dimensions of the WAI would be represented by a vector running from the lower-left-proximal corner of the solid in Figure 2 to the upper-right-distal corner. That is, the individuals with the strongest repressive tendencies are those with the lowest score on Distress, and the highest scores on Restraint and Repressive Defensiveness; the individual with the opposite pattern of scores (high Distress, low Restraint and Repressive Defensiveness) is lowest.¹

To construct a continuous measure that would reflect the increasing likelihood of being classified as repressors as a joint and positively accelerated function of three different dimensions, we developed the

following conceptual formula:

$$R = \text{NONDIST}^x \cdot \text{REST}^y \cdot \text{COMP}^z$$

where R = categorical measure of repressive style

NONDIST = reverse scoring for WAI Distress score

REST = WAI Restraint score

COMP = WAI Repressive Defensiveness composite score

At this stage, R was defined as categorical, by the three WAI dimension cutoffs, and set equal to 1 for those cases falling in the WAI repressor category and to 0 for all others. The continuous equivalent (the right side of the equation) was represented by the product of the three WAI continuous dimensions, each raised to a potentially different power. The NONDIST variable is simply a reversal of the scoring of the distress scale to create scales all scored in a positive direction (that is, toward repression). To obtain quantitative estimates of the exponents, X, Y, and Z, we computed the natural logarithms of both sides of the equation. This produced the following equivalent expression:

$$\text{LOG R} = X \text{ LOG NONDIST} + Y \text{ LOG REST} + Z \text{ LOG COMP}$$

where LOG = the natural logarithm function

We then used multiple regression, with LOG R as the criterion variable, and LOG NONDIST, LOG REST, and LOG COMP as the predictor variables, to estimate the optimal values of X, Y, and Z as model parameters. Having obtained the least-squares estimates for the optimal regression weights and intercept by this process, we constructed the following algorithm for our continuous measure of repression:

$$\text{REPRESS} = \text{EXP} (\text{INTERCEPT} + X \text{ LOG NONDIST} + Y \text{ LOG REST} + Z \text{ LOG COMP})$$

where REPRESS = continuous measure of repressive style

EXP = the inverse natural logarithm function

INTERCEPT = -3.904

X, Y, Z = regression weights (.2621, -.3340, 1.013)

1. Actually, the situation is not quite so straightforward. The WAI classificatory system is accurately represented as a rectangular solid only if the three dimensions are uncorrelated. But because the composite score, which makes up the third dimension, is composed partly of the restraint score, which makes up the second dimension, this is not strictly the case. Nevertheless, a continuous measure of repression consists of a single vector running from one corner to its opposite.

The above equation was used to calculate REPRESS scores. The algorithm for the corresponding continuous scale for the Taylor Manifest Anxiety Scale (MAS) / Social Desirability Scale (SDS) measure of repression was developed, and the corresponding scores computed, by the same procedures outlined above, using the MAS and SDS in place of the three WAI dimensions. The parameter estimates used for the MAS/SDS continuous repression scale were, thus, based on the regression weights and intercepts derived from the smaller sample of 444 that was drawn from the same population. Regression weights derived from the smaller sample were: .393 for the Taylor Manifest Anxiety (reverse scored), .790 for the Marlowe-Crowne, and -5.035 for the intercept.

Results

Descriptive statistics for the WAI data are shown in Table 1. For convenience, the REPRESS scores were multiplied by 10. The distribution of all variables was normal. There was no evidence of bi- or tri- modality in the distribution of the continuous scores.

In Table 2 the continuous and categorical measures are compared by dividing the continuous distribution into deciles and plotting this against the six WAI groups. There is obviously a strong association between them, $X^2(45) = 3342.95$, $p < .0001$. If

the conventional WAI procedure is taken as a standard, then a threshold set at the upper 10% of the continuous distribution (corresponding to scores higher than 13.3) shows a sensitivity of 262/437, or 60%, and a specificity of 2404/2429, or 99%. A more liberal threshold, set at the upper 20% of the continuous distribution, yields a sensitivity of 91.8%, and a specificity of 93%. Table 3 contains similar data for the MAS/SDS continuous scores.

The correlations between the continuous and categorical versions of both the WAI and MAS/SDS are shown in Table 4. Note that the continuous MAS/SDS and the original categorical version of that measure are correlated .70. A correlation of .59 was obtained for the same comparison with the WAI.

Frequency distributions of the WAI REPRESS scores and the analogous MAS/SDS REPRESS scores (from the smaller sample) are shown in Figure 3. Mean REPRESS scores by WAI and MAS/SDS categories are shown in Table 5.

The bivariate correlation for the continuous MAS/SDS and the continuous WAI scores within the smaller sample was .80, indicating that the algorithms we developed independently on two different sets of variables converge on a similar quantitative scale, presumably reflecting the latent trait of repressiveness rather than the particular methods of measurement used. Thus, the results of these mathematical procedures, although somewhat involved, are not specific to any single set of alternative measures, such as MAS/SDS versus WAI. They are also not specific to any particular sample of subjects, since the WAI parameters from the large sample were applied to the computation of the WAI continuous scale of repression for the smaller sample. The bivariate ("phi") correlation for the categorical MAS/SDS and the categorical WAI repression dichotomies within the smaller sample was only .54, indicating that, as theoretically predicted, the derived continuous measures show superior convergent validity to the corresponding categorical measures of this construct.

Additionally, the continuous version of the MAS/SDS may be utilized instead of the older version, with the caution that the correlation was .70 between the two versions. It is recommended to restrain from generalizing either from the continuous WAI to the categorical MAS/SAS, as this correlation was only .52,

Table 1
SAMPLE CHARACTERISTICS

Scale	M	SD	Min/Max	Q1/Q3	Skew
Nondistress	41.42	8.41	12/60	36/ 47	-.33
Restraint	44.11	7.43	17/60	39/ 50	-.48
Repressive Defensiveness	26.60	6.08	11/51	22/ 30	.33
Composite	70.71	11.60	33/109	63/ 79	-.08
Continuous Index	1.124	0.162	.59/1.76	1.01/1.23	.14

Note. $N = 2864$.

Table 2

COMPARISON OF CONTINUOUS AND CATEGORICAL MEASURES OF REPRESSION:
WEINBERGER ADJUSTMENT INVENTORY

WAI Decile	WAI Category						Total
	Reactive	Sensitized	Oversocialized	Undersocialized	Self-Assured	Repressive	
10%	212	36	2	36	1	0	287
20%	118	90	11	57	11	0	287
30%	86	101	17	55	28	0	287
40%	39	94	36	58	60	0	287
50%	24	77	36	55	92	0	284
60%	16	66	50	31	124	0	287
70%	8	45	62	25	146	1	287
80%	2	26	60	11	153	35	287
90%	1	10	51	12	73	139	286
100%	0	1	12	2	10	262	287
Total	506	546	337	342	698	437	2866

Table 3

COMPARISON OF CONTINUOUS AND CATEGORICAL MEASURES OF REPRESSION:
MARLOW-CROWNE / TAYLOR

Continuous Decile	MAS/SDS Category				Total
	Hi Anxious	Defensive Low Anxious	Hi Anxious	Repressive	
10%	40	4	0	0	44
20%	41	4	0	0	45
30%	36	7	0	0	43
40%	30	14	0	0	44
50%	20	25	1	0	46
60%	23	15	6	0	44
70%	5	32	8	0	45
80%	0	21	11	11	43
90%	0	5	8	32	45
100%	0	0	1	44	45
Total	195	127	35	87	444

Table 4
CORRELATION TABLE FOR ALL REPRESSIVE MEASURES, CONTINUOUS AND CATEGORICAL
(FROM SAMPLE OF 444)

		Categorical		Continuous	
		MAS/SDS	WAI	MAS/SDS	WAI
Categorical	MAS/SDS	1.00			
	WAI	.54	1.00		
Continuous	MAS/SDS	.70	.57	1.00	
	WAI	.52	.59	.80	1.00

Table 5
MEAN REPRESS SCORES FOR PERSONALITY CATEGORIES

WAI Category	REPRESS Score (sd)	MAS/SDS Category	REPRESS score (sd)
Reactive	.945 (.11)	High Anxious	1.01 (.13)
Sensitized	1.056 (.08)	True Low Anx	1.17 (.11)
Undersocialized	1.060 (.11)	Def High Anx	1.28 (.08)
Oversocialized	1.096 (.07)	Repressive	1.46 (.13)
Self-Assured	1.175 (.07)		
Repressive	1.359 (.08)		

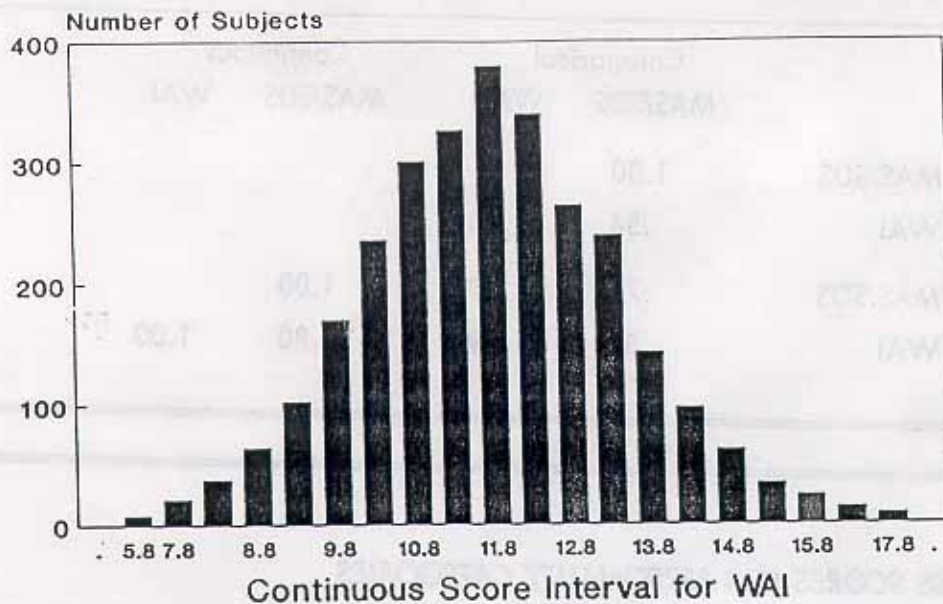
or from the continuous MAS/SDS to the categorical WAI, as this correlation was only .57. These crossed correlations, however, were no worse than the correlation of the categorical MAS/SDS with the categorical WAI (See Table 4).

The WAI typology affords a more conservative classification of subjects as repressors, and thus might be preferred on strictly theoretical grounds. On the

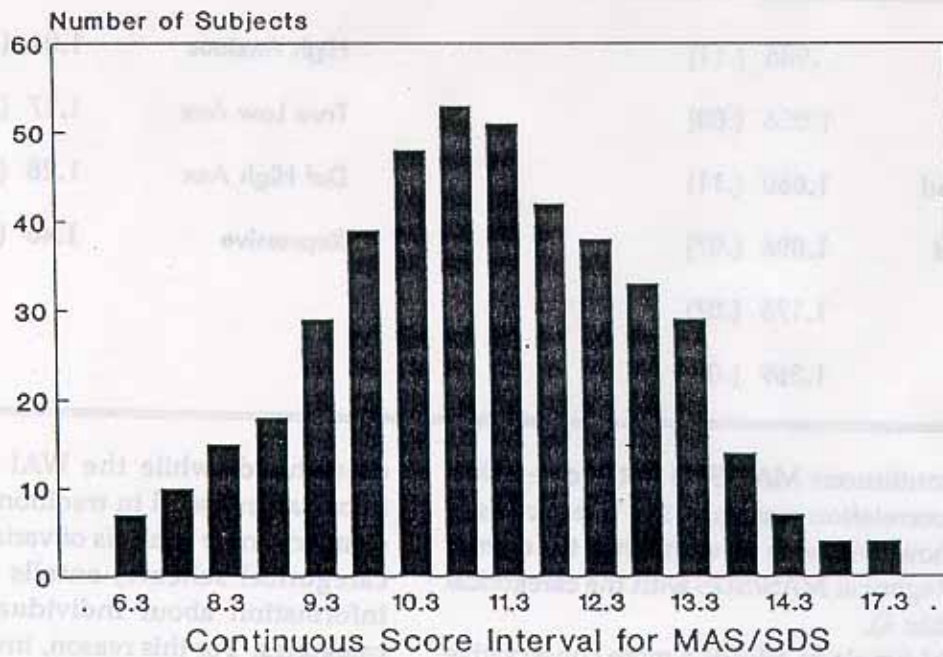
other hand, while the WAI provides categorical information useful in traditional strategies of group comparison by analysis of variance, it (like any other categorical scheme) entails considerable loss of information about individual differences within categories. For this reason, investigators who prefer to employ factor analysis, multiple regression, and similar forms of analysis may desire a continuous

Figure 3

THE DISTRIBUTION OF SCORES ON A CONTINUOUS MEASURE OF REPRESSIVE STYLE, DERIVED FROM THE CATEGORICAL SCHEME OF WEINBERGER (1990) AND WEINBERGER ET AL., (1979)



N = 2884 College Students



N = 444 College Students

measure of repression. One such measure is proposed here: a single dimension anchored at the low end by individuals with high scores on distress and low scores on restraint and repressive defensiveness, and at the high end by individuals with low scores on distress but high scores on restraint and defensiveness.² We have shown that such a single dimension can be recovered from the WAI subscale scores. It is difficult to compare the value of personality typologies versus personality dimensions, but if the investigator is interested solely in the correlates and consequences effects of repressive style, this continuous index may be preferred to the categorical one.

Because self-assured persons fall on the continuum next to repressors other comparison groups may be desirable. Reactive individuals fall at the bottom of the continuum, with sensitized just above. Weinberger and Schwartz (1989), describe "reactive" as exhibiting "a pattern of volatile affect expression including high feeling reactivity and low scores on all of the measures of emotional control". This could be thought of as an *inability* to repress, or inability to put emotion out of consciousness. Additionally, as the name implies, sensitizers are a reasonable comparison, just as they were on the original continuous dimension of repression (Bell & Byrne, 1978). For researchers who wish to use the low end of the continuum for comparison to repressors, we see no theoretical reason not to do so. There is no preferred answer to the question of which approach is correct: as always, the choice is dictated by the purposes of the research to be performed.

2. Other continuous indices are possible. For example, one might be interested in distinguishing, among those who are high in restraint and defensiveness, between those who are low in distress (successful repressors) and those who are high (unsuccessful repressors). Alternatively, one might be interested in distinguishing, among those who are low in distress, between those who are also low in restraint and defensiveness (the genuinely undistressed) and those who are high on these attributes (true repressors). However, only our index runs through all three WAI dimensions, permits representation of individual differences in the population at large.

Note: A longer version of this paper which includes another related study has been submitted for publication to the *Journal of Personality*.

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