

THE IMPLICATIONS OF EXTREME RESPONSE STYLE (ERS) FOR CROSS-CULTURAL AND COMPARATIVE RESEARCH IN SOUTH AFRICA*

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ABSTRACT

Cross-cultural research in which fivepoint, Likert-type and semantic-differential scales are utilized, is a popular research practice. Extreme response style (ERS) may contaminate the validity of research results, however this possibility is often ignored in behavioural science research. In this study, the influence of biographical variables on extreme response style and the contaminating effect thereof on the validity of research results is investigated. The results of the study reveal that culture separately, and interaction with age and gender has a meaningful influence on ERS when five-point scales are utilized. The underlying causes of the phenomenon can however not exclusively be ascribed to biographical variables.

OPSOMMING

Kruiskulturele navorsing waarin vyfpunt, Likert-tipe- en semantiese-differensiale skale benut word, is 'n bekende navorsingspraktyk. Ekstremes responsiestyl is egter daartoe in staat om die geldigheid van sondanige navorsingsresultate te kontamineer, maar hierdie moontlikheid word dikwels in die gedragswetenskaplike navorsingspraktyk geïgnoreer. In hierdie studie word ondersoek ingestel na die invloed van biografiese faktore op ekstremes responsiestyl en die kontaminerende effek daarvan op die geldigheid van navorsingsresultate. Daar is gevind dat kultuur in interaksie met ouderdom en geslag, ERS betekenisvol beïnvloed wanneer vyfpunt-skale gebruik word. Die onderliggende oorsake van die verskynsel kan egter nie uitsluitlik aan biografiese veranderlikes toegeskryf word nie.

INTRODUCTION

Rapid change pertaining to the creation of equitable life-satisfying events and conditions in South Africa sparked off increased attention to cross-cultural research in which the utilization of psychometric measures with five-point, Likert-type and semantic-differential scales is well known. About fifty years ago, the Likert-type scale was developed in an attempt to avoid a costly and time-consuming evaluation group required by Thurstone's technique (Black & Champion, 1976). At a later stage, Osgood and his coworkers developed the semantic-differential methodology which consists of bipolar scales with alternatives, for example, kind-cruel, satisfied-dissatisfied and strong-weak at the end-points of the scale (cf. Shaw & Wright, 1967). Researchers generally prefer to use the Likert scale due to (a) the ease of construction, application and interpretation to which it lends itself (Couper, 1982) and (b) the assumption that expanding the number of response categories enhances precision in determining a respondent's position on a measurement continuum (Duncan & Stenbeck, 1987). Therefore, deviations from the original approach proposed by Osgood *et al.* by including a number of scale-points between the poles of the continuum are often utilized.

Researchers on cross-cultural issues are often faced with complex methodological problems pertaining to *inter alia* the selection of comparable samples, psychometric measures which have the same meaning for diverse cultural groups and educational levels (cf. Stening & Everett, 1984) and the utilization of Likert-type scales. Although most commonly used, the Likert scale tends to confound the cognitive (direction) and affective (intensity) dimensions of attitudes which often results in the underreporting of extreme positions (Albaum, Golden, Murphy & Strandskov, 1987). Duncan & Stenbeck (1987) found disturbing evidence of these authors' suggestion and

stated that: "One of the surprising results from modern investigations in item response theory is that the method of summated ratings suggested by Likert over half a century ago can, under certain conditions, be given rigorous justification . . . (p. 245)." In a South African study (Couper, 1982) serious doubts were also raised on the validity of the Likert scale when applied to coloured and white respondents.

Some of the research which has paid attention to cross-cultural differences regarding satisfaction (or frustration) with real-life events in South Africa are studies on: the mutual perception of personality and social behaviour in different racial groups (Edwards, 1984); a study of the difference between stressful events associated with the practice of industrial relations as experienced by white and black subjects (Bluen & Barling, 1987); the difference between global life satisfaction of racial groups (Ochse, 1984); and the world view of black and white adolescents and the implications for counselling psychology (Hickson, Christie & Schmukler, 1990).

In these, as well as most other cross-cultural studies, meagre or no attention was paid to the influence of stylistic responding on the research findings (cf. Bachman & O'Malley, 1984). In other words, stylistic responding, at present, does not appear to be of major concern amongst behavioural scientists although it has been recognized for some time that response sets do contribute to systematic error in the measurement of attitudes, beliefs and personality. Stylistic responding can be described as the general tendency to respond positively, centrally or negatively to questionnaire content (Kerlinger, 1974). It relates to behavioural characteristics rather than to item-content (Oskamp, 1977). Although Rorer (1965) dismissed the importance of response style for test interpretation, research indicates that response styles tend to contaminate the validity of: the Strong-Campbell Interest Inventory due to occupational differences between subjects (Creaser, 1985; 1986); the Bem Sex Role Inventory (Helmes & Holden, 1986); and two-dimensional mood models (Vickers & Hervig, 1987).

A closely related, but less researched, responding pattern is

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the extreme response style (ERS) which is manifested in the tendency to choose the extreme poles of a multiple response measurement scale, for example, "strongly agree" or "strongly disagree" (Bachman & O'Malley, 1984). Albaum and Murphy (1988) postulate that ERS surfaces more often on response formats with few categories, and this is supported by Hui and Triandis' (1989) finding that the phenomenon manifests itself significantly less on ten-point than five-point scales. Research also indicates that extreme response styles differ significantly between: the "hispanics" and "non-hispanics" in the United States of America (Hui & Triandis, 1989); British, American and Japanese managers (Stening & Everett, 1984); and American whites and blacks (Bachman & O'Malley, 1984). In these studies, it is suggested that cultural and other biographical variables have a meaningful influence on ERS and are able to contaminate the validity of research results. Hui and Triandis (1989) explain these findings from two paradigmatic viewpoints, viz:

- Extreme responding is an affective response, stimulated by cultural background. According to Stening and Everett (1984), this argument suggests that responding is a function of social norms which permit or prohibit extreme responding. Asians, for example, tend to respond cautious-

ly to experienced conditions due to a belief that extreme reactions are in poor taste.

- Extreme response styles often surface as a result of cognitive processes when individuals respond to specific questionnaire formats, for example, five- or ten-point scales. A better understanding of this phenomenon is obtained by distinguishing between response categories and response formats. Response categories develop from cognitive, perception-forming processes in which objects are described as, for example, "terrible", "excellent" or "not bad". Response formats on the other hand, are anchored scales which represent the individual's response categories. Whilst responding to a questionnaire-item, respondents tend to "broaden" or "narrow down" the subjective response categories in an attempt to adapt to the given response format. Extreme responses occur when a respondent's "number" of subjective response categories exceed the number of format categories of the measurement scale. Hui and Triandis (1989) suggest that the frequency of extreme responses is independent of the content that is measured. If this suggestion holds true, individuals with a proneness to extreme responding should demonstrate a constant tendency to respond intensively positive or negative to various objects.

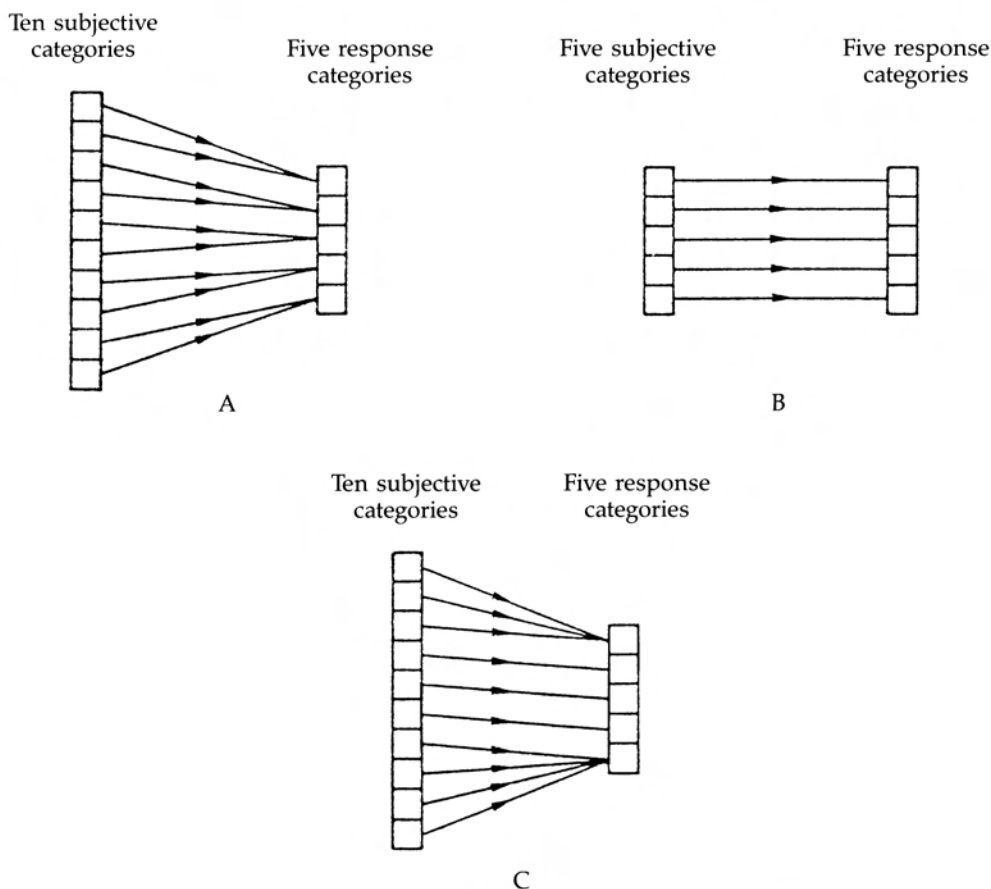


FIGURE 1: Mapping of subjective categories on response categories. A, Optimal mapping when number of subjective categories exceeds number of response categories; B, Mapping when number of subjective categories equals number of response categories; C, Suboptimal mapping when number of subjective categories exceeds number of response categories (Adapted from Hui & Triandis, 1989)

With regard to research on the influence of biographical variables on ERS, mixed results are reported. Bachman and O'Malley (1984), for example, found that education has no significant influence on the ERS of white and black Americans, whereas Stening and Everett (1984) report that the opposite holds true for Asian and Western managers. Although explanations of the ERS-phenomenon are limited, it seems that extreme responding remains a major source of error variance that has to be accounted for in cross-cultural research. Creaser

(1986), for example, found an inverse correlation between two dimensions of the Strong-Campbell Inventory before statistical control of ERS and thereafter, a weak, but positive relationship.

Although Hui and Triandis (1989) found that the occurrence of the phenomenon is significantly higher on five-point than ten-point scales, researchers recommend that replicate studies be undertaken to fully explore the influence of culture on ERS.

A dire need for the improvement of cross-cultural research methodology in South Africa exists however, the author could find no empirical studies which reported the extreme response styles of South African subjects. Due to methodological problems, the validity of the research referred to in the previous paragraph are also questionable to some extent, for example: researchers found it difficult to report consistent findings on the influence of biographical factors on ERS; socio-economic differences between the samples could not be ignored, but could also not be "proved" to significantly influence ERS; and the differences between the language proficiency of the subjects on which questionnaires were administered, place the validity of previous research results under some suspicion (Bachman & O'Malley, 1984). What this criticism boils down to is that the samples might not have been well matched. Consequently, the purpose of this exploratory study was to determine whether:

- culture (as indicated by race), gender and age have a significant influence on extreme response styles of South African subjects;
- it is possible to find support for previous research results that indicate that ERS manifests itself more often on five-

point than ten-point scales;

- it is possible to incorrectly reject a null hypothesis about an affective response (for example, work satisfaction) without statistical control over ERS and therefore to make incorrect conclusions about the difference between groups.

METHOD

Subjects

The possible effect of socio-economic status on ERS was partially controlled by selecting 1 100 part-time students (all races) enrolled at the University of South Africa who are also employed in semi-professional or professional occupations. At the above-mentioned university, education is offered in both official languages (English and Afrikaans), and it can therefore be accepted that all subjects are proficient in at least one of these languages. The research instruments were mailed to the students, of which 550 responded. A small number (16) of the questionnaires were inadequately completed and were omitted from the analyses. Descriptive statistics of the sample are presented in Table 1.

TABLE 1
DESCRIPTIVE STATISTICS OF THE SAMPLE

Race	N	Sex	N	Age	N	Occupational Category	N
Coloured	102	Male	299	< 30 yrs	165	Physical & Mental Health	57
Black	118	Female	229	30-40 yrs	180	Education & Training	106
White	204	Unspecified	12	> 40 yrs	102	Law	20
Indian	102			Unspecified	79	Engineering & Technical	55
Unspecified	22					Administrative	101
						Management	192
						Finance	55
						Marketing	42
						Other	40

N = 528

Research Instruments

A common characteristic of the subjects is that they are employees of various organizations and consequently experience different levels of work satisfaction. The research instruments consisted of two questionnaires which measure work satisfaction, the one on a five-point scale, and the other on a ten-point scale. Fifteen action-tendency measures (for example, "every day feels as if it will never end" and "I often think of resigning from my work") with forced-choice scales which varied between "strongly agree" and "strongly disagree" (cf. Milbourne & Francis, 1981) were included in the five-point scale questionnaire. The ten-point scale questionnaire consisted of fifteen facets of work satisfaction ("How satisfied are you with: . . . your supervisor; . . . your colleagues; etc.")

described by Locke (1973), to which ten-point, semantic-differential scales were linked. A reliability study (Cronbach-Alpha) produced highly satisfactory results for both questionnaires (0,86 and 0,97 respectively). A product-moment correlation coefficient of 0,67 ($p < 0,001$) between questionnaires was also measured. The means, standard deviations, standard errors of the means, and differences between variances (F-test) for the subgroups are presented in Table 2, from which it is evident that the groups were fairly well matched. In view of the reliability of, and the relation between, questionnaires it would be fair to expect that both questionnaires should yield approximately the same results pertaining to the difference between the job satisfaction of various groups. However, according to Table 2, the opposite seems to hold true.

TABLE 2
MEANS, STANDARD DEVIATIONS, STANDARD ERRORS OF MEANS AND DIFFERENCE BETWEEN GROUPS (F-TEST) FOR JOB SATISFACTION SCORES

	\bar{X}	S	MEAN ERROR	F	\bar{X}	S	MEAN ERROR	F
	FIVE-POINT SCALE				TEN-POINT SCALE			
RACE				1,74				18,11**
Black	54,81	10,73	0,99		75,98	21,69	2,01	
White	57,26	10,13	0,71		94,27	25,39	1,77	
Coloured	56,64	10,03	0,99		80,45	25,47	2,52	
Indian	55,22	9,81	1,19		77,25	26,90	3,29	
GENDER				0,02				2,58*
Male	56,22	10,61	0,64		86,59	24,97	1,51	
Female	56,36	9,81	0,68		82,77	27,16	1,88	
AGE				4,62**				0,21
< 30 years	54,21	11,11	0,87		85,33	26,20	2,04	
30-40 years	57,29	9,45	0,63		84,11	25,72	1,71	
> 40 years	57,35	9,96	0,98		84,94	26,65	2,63	

** $p < 0,01$; * $p < 0,05$

Procedure

The following steps were followed in the design of the study:

1. ERS was operationally defined as the frequency of using the end-points of a scale, i.e. the number of times that respondents chose the extreme alternatives on the scales (Bachman & O-Malley, 1984; Hui & Triandis, 1989).
2. Regression analyses were performed to determine the proportion of variance in job satisfaction scores explained by ERS.
3. A 4 (race) \times 3 (age) \times 2 (gender), type 3-variance analysis (ANOVA) of main effects (see SAS, 1985, p 459) with ERS as the dependent variable was performed on the five-point and ten-point scale questionnaires.
4. The significance of differences (t-test with the Bonferroni-test for experimentwise type 1 errors) between the extreme response styles of cultural, gender and age groups was investigated for the five-point and ten-point scale questionnaires respectively.
5. A variance analysis of differences in work satisfaction by culture, gender and age (as measured by the five-point and ten-point scales respectively) was performed before and after including ERS as a covariate factor.

Results and discussion

Regression analyses of ERS-scores (Table 3) with job satisfaction as the dependent variable reveal that 14 percent ($p < 0,01$) of the variance in the five-point scale questionnaire is explained by ERS, whereas only one percent of the variance in the ten-point scale questionnaire is explained ($p > 0,05$).

According to the analyses of main effects of some biographical factors on ERS (see Table 4), culture has a distinctive, significant effect ($p < 0,05$) on extreme responses to five-point response formats. Although gender and age separately have no distinctive influence on ERS when five-point scales are utilized, the interactive effect of gender, culture and age is meaningful ($p < 0,05$).

However, when response formats are "broadened" to ten-point scales, none of these variables has a meaningful effect on ERS. It is also notable that only eight percent, in the case of the five-point scale, and six percent, in the case of the ten-point scale, of the variances in extreme responding are explained by biographical variables.

TABLE 3
REGRESSION ANALYSES OF EXTREME RESPONSE STYLE WITH JOB SATISFACTION AS DEPENDENT VARIABLE

	R ²	MS	(PROP.)	MS _e	(PROP.)	F
Five-point scale	0,14	6930,10	0,987	90,67	0,013	76,43**
Ten-point scale	0,01	3208,80	0,826	672,36	0,174	4,77

MS; mean squares; MS_e; mean squares errors

** $p < 0,01$

TABLE 4
ANALYSES OF EFFECTS (TYPE 3) OF CULTURE, GENDER AND AGE ON ERS

Source of Variation	DF	SS	F	FIVE-POINT SCALE			TEN-POINT SCALE		
				DF	SS	F	DF	SS	F
Race	3	103,31	2,75*	3	11,58	0,60			
Gender	1	15,70	1,25	1	11,63	1,80			
Age	2	56,40	2,25	2	15,14	1,17			
Age X Gender	2	1,06	0,04	2	0,33	0,03			
Age X Culture	6	38,87	0,52	6	42,33	1,09			
Gender X Culture	3	21,18	0,75	3	20,45	1,05			
Age X Gender X Culture	6	173,47	2,31*	6	73,25	1,89			
Mean Squares	22,85			8,98					
Mean Square Errors	12,53			6,48					
R ²	0,08			0,06					

* $p < 0,05$

Bonferroni's test (for experimentwise type I errors) for the significance of differences between ERS means on the five- and ten-point scales demonstrates a meaningful difference ($p < 0,05$) between white and black respondents (Table 5) on the five-point scale questionnaire, and no meaningful differences on the ten-point scale questionnaire. With regard to gender, no significant differences were found (Table 6). However, the results in Table 7 show that the group consisting of respon-

dents younger than thirty years of age differs significantly ($p < 0,05$) from the group with ages of respondents ranging between 30 and 39 years. It is also notable that no statistical test is needed to determine that ERS surface more often on five-point than ten-point scales. This finding supports Albaum and Murphy's (1988) suggestion and Hui and Triandis' (1989) finding that ERS surface more often when scale formats are shortened.

TABLE 5
t-TEST FOR THE SIGNIFICANCE OF DIFFERENCE BETWEEN ERS BY CULTURE ON FIVE- AND TEN-POINT SCALES WITH BONFERRONI-TEST FOR TYPE 1 EXPERIMENTWISE ERROR

		FIVE-POINT SCALE			
		Black	White	Indian	Coloured
		$\bar{X} = 6,50$ S = 3,52	$\bar{X} = 5,31$ S = 3,45	$\bar{X} = 5,18$ S = 3,88	$\bar{X} = 5,85$ S = 5,18
T E N P O I N T S C A L E	Black		2,93 ^a	2,37	1,28
	$\bar{X} = 1,85$ S = 2,51				
	White	0,97 ^b		0,27	1,18
	$\bar{X} = 1,77$ S = 2,65				
Indian	0,23	0,96		1,13	
$\bar{X} = 1,95$ S = 2,65					
Coloured	0,23	0,63	0,41		
$\bar{X} = 1,77$ S = 2,65					

a: Difference between white and black respondents on five-point scales

b: Difference between white and black respondents on ten-point scales

*p < 0,05

TABLE 6
t-TEST FOR THE SIGNIFICANCE OF DIFFERENCE BETWEEN ERS BY GENDER ON FIVE- AND TEN-POINT SCALES WITH BONFERRONI-TEST FOR EXPERIMENTWISE TYPE 1 ERROR

		FIVE-POINT SCALE	
		Male	Female
		$\bar{X} = 5,54$ S = 3,68	$\bar{X} = 5,92$ S = 3,51
T E N P O I N T	Male		1,16
	$\bar{X} = 1,91$ S = 2,48		
S C A L E	Female	1,52	
	$\bar{X} = 1,56$ S = 2,57		

TABLE 7
t-TEST FOR THE SIGNIFICANCE OF DIFFERENCE BETWEEN ERS BY AGE ON FIVE- AND TEN-POINT SCALES WITH BONFERRONI-TEST FOR EXPERIMENTWISE TYPE 1 ERROR

		FIVE-POINT SCALE		
		40 >	30-40	< 30
		$\bar{X} = 6,14$ S = 4,09	$\bar{X} = 6,10$ S = 3,43	$\bar{X} = 5,01$ S = 3,48
T E N P O I N T	40 >		0,28	2,31
	$\bar{X} = 1,48$ S = 1,97			
S C A L E	30-40	1,32		2,80*
	$\bar{X} = 1,82$ S = 2,55			
< 30	1,01	0,15		
$\bar{X} = 1,78$ S = 2,88				

*p < 0,05

Although the results show that race, by itself and in interaction with age and gender, has a meaningful effect on ERS when five-point scales are utilized, only eight percent of the variance in ERS is explained by these variables. When ten-point scales are utilized, these factors apparently have no meaningful effect on ERS. Nevertheless, six percent of the ERS-variance is explained. This leads to the possibility of ten-point scales being insensitive as far as revealing tendencies towards extreme responding is concerned. It therefore seems that a very small proportion of variance in ERS can be ascribed to biographical variables. The results in Table 2 suggest that ERS is indeed able to contaminate the validity of research results when subgroups are compared. In view of the finding that ten-point scales are insensitive in revealing tendencies to extreme responding, the following hypothesis is stated:

Extreme response style has an intervening effect on the measured difference between the affective experiences of groups (race, gender and age groups) when a five-point measurement scale is utilized.

To test this hypothesis, the significance of differences (t-test with Bonferroni-test for experimentwise type 1 errors) in job satisfaction by race, age and gender was determined. Table 8 reveals that a null hypothesis which states that no significant differences between the work satisfaction of gender and racial groups exist, could incorrectly be rejected without statistical control of ERS. With regard to age, it is evident that incorrect conclusions pertaining to the level of the significance of differences can be made. It is also remarkable that the proportion of error variance is significantly reduced after including ERS as a covariate factor in the analysis of differences between the various groups. After statistical control of ERS, the five-point scale to a large extent yielded the same results as the ten-point scale questionnaire pertaining to the difference between the job satisfaction of culture and gender groups. With regard to age groups, the incongruity of the results is ascribed to the arbitrary, robust classification that was used in this study (compare Table 8 with Table 2).

TABLE 8
THE DIFFERENCE BETWEEN JOB SATISFACTION (FIVE-POINT SCALE) BY RACE, GENDER AND AGE WITH AND WITHOUT ERS AS A COVARIATE FACTOR

		Df	SSQ	^a M.square	prop.	^b MSe	prop.	F	P
RACE	No covariate	3	543,07	181,02	0,46	104,25	0,54	1,74	0,16
	Covar = ERS	4	7972,38	1993,09	0,96	89,24	0,04	22,33	0,001
GENDER	No covariate	1	2,11	2,11	0,02	105,50	0,98	0,02	0,88
	Covar = ERS	2	7123,11	3561,55	0,97	91,03	0,03	39,12	0,001
AGE	No covariate	2	1061,01	530,51	0,84	102,80	0,16	4,62	0,006
	Covar = ERS	3	7394,07	2464,09	0,96	90,08	0,04	27,36	0,0001

a; Mean square b; Mean square error

CONCLUSIONS

The results indicate that culture, separately and in interaction with gender and age, has a significant influence on extreme response styles when five-point scales are utilized in research in which South African subjects are included. This merited further investigation into the differences between cultural, gender and age classification groups. The analyses revealed that:

- ERS means differed significantly between black and white subjects when five-point scales were utilized. However, the biographical variables that were included in this study explained only eight percent of the variance in ERS. Nevertheless, ERS explained 13 percent of the variance in job satisfaction. This leads to the conclusion that ERS may contaminate the results of comparative studies.
- Although the individual effect of gender on ERS and the difference between the ERS means of male and female subjects are not significant (when five-point scales are utilized), the proportion of error variance decreases after statistically controlling for ERS.
- The younger age group (less than 30 years) demonstrated a tendency to choose extreme responses on five-point scales significantly less than the age group ranging from thirty to forty years. From the results of this study it is evident that age, in interaction with race and gender, may influence ERS.

According to Hui and Triandis (1989), it could be argued that black respondents, in an attempt to adjust to five-point measurement scales, find it more difficult to "narrow down" their

subjective response categories than white respondents. This, however, does not seem to hold true when ten-point scales are utilized. In this study, it was notable that culture, gender and age explained only a very small proportion of variance in ERS. Other underlying causes of this phenomenon should therefore be researched.

This research probably creates more questions than answers pertaining to the complex dynamics underlying responding and specifically, extreme response style. Questions that are left unanswered are, for example: Do blacks tend to "exaggerate" while whites "inhibit" their responses? Does the difference between educational background of blacks and whites contribute to stylistic responding? What influence does questionnaire content have on extreme responding? To what extent do personality factors contribute to stylistic responding?

Although the aim of this research was not to explain how complex and dynamic forces actually give rise to extreme responding, it is clear that ERS may contaminate the validity of cross-cultural and comparative research, and it should therefore be controlled. The study also showed that the intervening effect of ERS on the measurement of differences between groups can be decreased by including ten-point scales in questionnaire formats. Albaum *et al.* (1987) propose a two-stage process to overcome this situation by requesting respondents to first indicate whether they agree or disagree with a statement, and then how strong they feel about their response. In view of increased complexity, length of the questionnaire and time required for administration, control of ERS by means of statistical procedures or ten-point scale formats seems to offer viable alternatives.

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