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THE ASSESSMENT CENTRE: TESTING THE FAIRNESS HYPOTHESIS

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The Leadership Concept

OPSOMMING

Geakkumuleerde internasionale navorsing toon dat die takseersentrum redelik 'billik' is ten opsigte van ras, geslag en ouderdom. Soortgelyke navorsing met betrekking tot die takseersentrum in Suid-Afrika is egter grootliks onbekend en ongedokumenteer. Die steekproef in die huidige studie bestaan uit 317 wit en minder bevoorregte mans wat op toesighouer vlak geëvalueer is. Die takseersentrum voorspel werkprestasie vir beide die bevoorregte groep (Wit) en die minder bevoorregte groep (Swart en 'Kleurlinge'). In terme van Cleary (1968) se model van 'billikheid' is daar geen bewys van sydigheid in die voorspellingsgeldigheid van die takseersentrum vir die twee groepe gevind nie.

ABSTRACT

Accumulated international research reveals that assessment centre technology appears to be reasonably 'fair' based on race, sex, and age. Similar research on the assessment centre in South Africa is mostly unknown and/or undocumented. The sample of this study consisted of 317 white and disadvantaged males assessed at the supervisory level. The assessment centre predicted job performance for both the advantaged group (whites) as well as the disadvantaged groups (blacks and 'coloureds'). Similarly, in terms of Cleary's (1968) model of 'fairness', we found no evidence of bias in the predictive validity of the assessment centre for the two groups.

The emphasis many organisations are placing on so called 'black advancement' has ushered in an awareness of the need for the effective identification and development of human resources in South Africa (Jordaan, 1988). The accurate assessment of human resources is critical to an organisation's selection, promotion and manpower planning decisions (Guion & Gibson, 1988). As Appelbaum, Kay and Shapiro (1990) have emphasised, the soundness of an organisation depends on a succession of personnel with the knowledge, skills and ability to manage.

THE PREDICTIVE VALIDITY OF THE ASSESSMENT CENTRE

The assessment centre is a technique which has been used worldwide in the identification of management potential (Stroebel & Raubenheimer, 1983) and its acceptability and utilisation by organisations in South Africa has grown since the 1970's (Schilbach, 1988). Evidence of its continuing popularity can in part be ascribed to the extensive accumulation of validity information from the United States and British studies (Kriek, 1991).

The finding that assessment centres are successful in making valid predictions of managerial success in the United States is well established in reviews of the research literature by Byham (1970); Cohen (1980); Cohen, Moses and Byham (1977); Howard (1974); Huck (1973); Klimoski and Strickland (1977); Norton (1977) and Thornton and Byham (1982), as well as the meta-analyses of assessment centre research results by Hunter and Hunter (1984); Gaugler, Rosenthal, Thornton and Bentson (1987); and Schmitt, Gooding, Noe and Kirsch (1984). Schmitt et al. (1984), for example, found 21 validity coefficients on assessment centres which had been used to predict a range of criteria including ratings of people's performance and status change. Taking all the criteria together, they reported that assessment centres were amongst the most valid predictors with a mean validity coefficient of r = 0,41. Similar results were reported by Gaugler et al. (1987) in which they carried out a meta-analysis of 50 validation studies of assessment centres containing 107 validity coefficients. They reported an overall validity coefficient of r = 0,37, rising to 0,53 when the centres were designed to predict ratings of management potential.

In South Africa, little research investigating the predictive validity of the assessment centre method has been undertaken. The only published studies to have been conducted are those of Britz (1984), Capraro (1991), Charoux (1987), Hurst (1992), Sakinofsky and Raubenheimer (1982) and Spangenberg, Esterhuyse, Visser, Briedenhann and Calitz (1989). In his exploratory study, Charoux (1987) compared the OARs of 49 black potential managers with their upward mobility. Although he used small samples and the study was not well controlled, his results suggested that assessment centre ratings appear to predict black managerial potential (Kriek & Thornton, 1989). Spangenberg et al. (1989) examined the validity of an assessment centre for a sample of 110 middle managers (100 white and 10 black) against behaviorally anchored rating scales (BARS). A correlation coefficient of 0,37 was found between assessment centre predictor variables and the BARS ratings. Differential prediction was however, not investigated in this study. These results testify to the validity of the assessment when used to assess 'white' leadership potential. More recently, Hurst (1992) found a significant correlation of 0,54 accounting for 31 percent of the variance of a composite performance criterion on a sample of 233 blacks assessed for leadership potential at the supervisory level.

LEVEL AND DISTRIBUTION OF OVERALL ASSESSMENT RATINGS

Racial or ethnic group discrimination has been of some concern to organisational psychologists in the United States since the late 1960's (Einhorn & Bass, 1971). In response to research indicating that some racial or ethnic minorities do not perform as well as majority applicants on psychometric tests and are more likely to fall below selection cut-off scores, the U.S. Federal Government encouraged employers to use alternative selection procedures that were equally valid, but produced less adverse impact (Hunter & Hunter, 1984; Reilly & Chao, 1982). Adverse impact is deemed to occur whenever the proportions of the various groups selected for an organisa-

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tion differ significantly from the proportions of the various groups who were eligible or applied for jobs in the organisation (Taylor, 1987).

According to Boehm (1982), assessment centres are less likely to result in adverse impact than other less behaviorally oriented selection devices – probably because of their focus on observed behaviour (Byham, 1979). However, conflicting evidence regarding the level and distribution of ratings for different population groups has been found (Thornton & Byham, 1982). For example, whites were rated higher than blacks on assessment centre performance in studies by Jaffee, Cohen and Cherry (1972); Moses (1973); Huck (1974); Huck & Bray (1976) and Clingenpeel (1979), but no differences were found in ratings for blacks and whites in studies by Alexander (1975) and Russel (1975). Byham reviewed all the published and unpublished research findings in 1981 and concluded that differences in black and white overall assessment ratings were mainly found amongst candidates for first line supervisory level position. He suggested that this may not be evidence of low predictive validity, but could rather be ascribed to companies' affirmative action programmes designed to increase the number of blacks at the supervisory level. In his opinion, managers in these companies may send marginal blacks to an assessment centre in the hope that they will fair well (Thornton & Byham, 1982, p. 296).

THE CONCEPT OF TEST FAIRNESS IN THE UNITED STATES

Federal legislation in the United States has established that if adverse impact is present in selection procedures, the organisation must be able to provide documented evidence which substantiates the 'validity' and 'fairness' of assessment centres (Boehm, 1982).

Employment practices, including selection, can be based on various conceptions of test fairness (Lourens, 1982). Each conception of test fairness is underpinned by a different value system (Taylor, 1992). Numerous statistical models of test fairness have been proposed in the research literature (Schmidt & Hunter, 1981). Fairness in selection testing has to do with the nature of the decision rule for rejection when candidates from two or more known groups are involved (Verster, 1985).

The most commonly accepted model of test fairness in the United States is that of Cleary's (1968) regression model (Hunter, Schmidt & Rauschenberger, 1977). The model defines a test as unfair to a minority group if it predicts lower levels of job performance than the group can in fact achieve (Schmidt & Hunter, 1981). Conversely, if the discrimination between individuals on the basis of test scores is demonstrably related to job performance, the test is deemed as fair even if there are mean test score differences between groups (Thacker, Blanchard & Camp, 1989). This definition is accepted and enforced by the Equal Employment Opportunity Commission and outlined in the Uniform Guidelines on Employee Selection Procedures (Luthans, 1981).

CULTURE FAIRNESS OF THE ASSESSMENT CENTRES

Much of the data on the fairness of assessment centres have not been published because of the legal implications of breaching the confidentiality of such information (Boehm, 1982). Assessment centres have, however, been found to predict managerial success without discriminating on the basis of race or sex, in studies by Huck and Bray (1976), Marquardt (1976), Moses (1973), Moses and Boehm (1975), Russel (1975) and Russel and Byham (1980).

No evidence for 'single group' or 'differential' validity has been found in the research literature. Schmidt, Pearlman and Hunter (1980) define single group validity as the condition pertaining when true (population) validity is zero for one group but not for the other. Differential validity, on the other hand, exists where the validity of the two population groups are unequal, but not necessarily zero for either group (Hunter, Schmidt & Hunter, 1979). Single group and differential validity can be observed when the slopes of the regression lines for the two groups differ and this difference is commonly referred to as 'slope bias' (Anastasi, 1982).

Moses (1973), for example, evaluated an assessment centre used to assess potential supervisors among a sample of recently hired employees. A one-day Early Identification Programme was found to be equally valid for a sample of black and white men and women using a longer assessment programme as a criterion. The validity coefficients for the two groups were r = 0,68 for blacks and r = 0,73 for whites. In another study, Huck and Bray (1976) found equal validities for black and white females in relation to two global criteria of overall job performance which resulted in correlations of 0,41 for whites and 0,35 for blacks. The correlations with regard to potential for advancement were 0,59 and 0,54 respectively. Huck and Bray (1976) concluded that the assessment centre method is especially attractive for affirmative action such as the accelerated advancement of minority groups and women.

Even when a test yields the same validity coefficients for two groups, it may exhibit 'intercept bias' which occurs when a test systematically underpredicts or over-predicts criteria performance for a particular group (Anastasi, 1982). Cleary's (1968) regression model states that a test is unfair to a group if the criterion score from the regression line is too high or low for members of the subgroup. It is interesting to note that Huck and Bray (1976) found no difference in the regression lines for a sample of black and white females where assessment centre ratings were used to predict job performance.

UNFAIR DISCRIMINATION IN SOUTH AFRICA

Under existing legislation in South Africa, the definition of an unfair labour practice, as amended by the Labour Relations Amendment Act, 83 of 1988, now includes "the unfair discrimination by any employer against any employee solely on the grounds of race, sex or creed" (Campanella, 1990). In terms of this Section (although it does not specifically refer to testing), policies which have an adverse effect on a race or sex not justified by business necessity should be regarded as 'unfair discrimination' (Brassey, 1990; Cameron, Cheadle & Thompson, 1989).

The prospect of a new constitution including a Bill of Rights outlawing discrimination and sanctioning affirmative action, supplemented by legislation on discrimination, affirmative action and employment equity means that selection procedures are likely to receive even closer scrutiny in the future (Albertyn, 1993; Charoux & Moerdyk, 1991; Montsi, 1993). Selection procedures which favour one race group at the expense of another will inevitably have to be proven to be non-discriminatory and fair (Holburn, 1991). The guidelines compiled by the South African Society of Industrial psychology (1992), on selection and validation place the onus on practitioners and psychologists to give evidence that their selection practices are fair. It is therefore important for organisations to examine all possible areas of potential discrimination in South Africa and to establish the validity and fairness of their selection procedures.

STATEMENT OF THE PROBLEM

Although American research reveals that the Assessment Centre technique is capable of identifying supervisory potential amongst various population groups and with both sexes, it is clear from the above that similar research on the validity of the assessment centre in South Africa is mostly undocumented or unknown (Kriek & Thornton, 1989). Essentially, there remain a paucity of research investigating single group validity, differential validity, and differential prediction in South Africa and in view of the fact that United States research findings cannot be assumed to be valid under South African conditions, such research is therefore urgently needed.

METHOD

Subjects

The sample consisted of 317 selected male supervisors from five different manufacturing organisations. They were assessed for leadership potential at the supervisory level between 1986 and 1989 by means of an assessment centre. Criteria data regarding their subsequent job performance were collected during 1992.

In evaluating the 'fairness' of the assessment centre, the sample was classified according to the racial divisions commonly used by organisations for affirmative action purposes in South Africa. Namely, it consisted of 77 white male supervisors on the one hand and 240 disadvantaged male supervisors on the other. The disadvantaged group includes 138 blacks from a variety of ethnic groups and 102 so-called 'coloureds' or people of mixed race.

The total sample ranged in age form 20 to 61 years (Mean = 34,87, SD: 8,06). Education ranged from standard five to education at the tertiary level (Mean = Standard 8, SD = 0,80).

Predictor measures

The assessment centre known as 'The F.A.I.R. Process' measures eight managerial dimensions in seven simulation exercises over one-and-a-half days (Charoux, 1986; Hurst, 1992). Each assessor received three full days of training prior to taking part in the assessment centre. The following dimensions were measured: Sound Judgement; Planning/Organising; Situational Sensitivity; Assertiveness/Decisiveness; Persuasiveness; Oral Communication; Written Communication; Initiative/Creativity. The overall assessment rating (OAR) which is derived at the end of the assessment centre was used as the predictor of supervisor job performance. Biographical data such as age, education and the number of years that passed between the assessment centre and the collection of criteria date were also included.

Criterion Measures

Performance on the job was assessed by means of three criteria: (1) Rate of Promotion (2) Supervisors' Ratings of Performance (3) Subordinates' Ratings of Performance.

The supervisors' ratings of performance were measured by the Employee Rating Scale developed by Grean, Dansereau and Minami (1972). The scale measures dependability, alertness, skill in dealing with people, planning (time and equipment), knowledge and judgement, overall present performance and expected future performance. Ballantine (1989) found reliability coefficients of 0,86 to 0,89 in a South African study.

The subordinates' ratings of performance were measured by the Leader-Member Exchange Scale of Scandura and Graen (1984). The scale measures subordinates' perceptions of the quality of the interpersonal exchange relationships between themselves and their supervisor and evaluates subordinates' overall satisfaction with the quality of supervision. Nunns, Ballantine, King and Burns (1988) found a reliability coefficient of 0,98 in a South African study.

The number of promotions candidates received since they participated in the assessment centre was used as a measure of advancement or progress within the organisation.

Finally, a composite criterion was constructed by incorporating Rate of Promotion, Supervisors' Ratings and Subordinates' Ratings scores into a single score. The composite score can be viewed as an overall indication of supervisory success and performance. Given the aim of the current study to evaluate the fairness of the assessment centre, it is necessary to combine the separate criteria into a composite score representing a construct of overall worth to the organisation.

RESULTS

Statistical Analysis

In order to test for bias in the predictive validity of the assessment centre, the regression model described by Cleary (1968) provides a strategy which is consistent with the recommendations (1992, p. 23) of the Society for Industrial Psychology of South Africa. In short, Cleary's procedure involves the development of separate regression equations for each group (disadvantaged and whites in this study), and statistically examines the difference between the two slopes and the two intercepts. When a statistically significant difference exist, the selection procedure is found to be biased. Although other definitions of bias have been introduced, only those based on the regression model have been found to be consistent (Society of Industrial Psychology, 1992).

Bias defined in this way can be tested in different ways. Testing for the equality of lines across groups was done on the basis that when the regression lines are identical, the total of the sum of squares of the residuals over the groups will be equal to the sum of squares of the residuals for the analysis of the data prior to grouping (Dixon, 1985).

TABLE 1
DESCRIPTIVE STATISTICS OF ALL VARIABLES: DATA CONSIDERED AS A SINGLE GROUP

Variable	Mean	Standard Deviation	Coefficient of variation
1. OAR	6302,50	1818,64	,28
2. Age	34,87	8,06	,23
3. Education	4,17	1,41	,33
4. Year of Assessment	3,33	,97	,29
5. Composite Score	46,48	11,46	,24

TABLE 2
CORRELATION MATRIX OF ALL VARIABLES: DATA CONSIDERED AS A SINGLE GROUP

VARIABLES	1	2	3	4	5
1. OAR	–				
2. Age	−0,16**	–			
3. Education	0,15**	−0,38***	–		
4. Year of	0,08	−0,03	−0,06	–	
5. Composite Score	0,51***	−0,02	0,06	0,15**	–

*p < ,05 **p < ,01 ***p < ,001

TABLE 3
MULTIPLE REGRESSION RESULTS FOR COMPOSITE SCORE OF JOB PERFORMANCE REGRESSED ON ASSESSMENT CENTRE OVERALL RATINGS (OAR)

	Intercept	Std. Reg Coeff	P (2 Tail)
Disadvantaged group	24,3	0,58	0,00
White group	34,8	0,26	0,02
Groups combined	26,1	0,51	0,00

TABLE 4
ANALYSIS OF VARIANCE REGRESSION COEFFICIENTS OVER GROUPS AND REDUCTION OF RESIDUALS DUE TO GROUPING

	Sum of Squares	Mean Square	F Ratio	P
Regression over groups	382,24	191,12	1,98	0,13
Residuals within groups	30202,28	96,49		

Looking at the results reflected in Table 3, it is clear that the assessment centre demonstrated a positive and significant relationship with job performance in both the disadvantaged ($p = 0,00$) and white groups ($p < 0,02$). Table 4 reflects the results of the test for the difference in slopes or intercepts between

the two groups. No significant difference beyond chance was detected between the slopes or intercepts of the two groups ($p > 0,05$). According to the Cleary's (1968) model of fairness, no significant evidence of bias in the predictive validity of the assessment centre could be found. With no evidence of difference between the regression lines of the two groups, it can be considered 'fair' to use one common regression line in the prediction of job performance.

The intercept of the white group, although not significant ($p > 0,05$), was higher than that of the disadvantaged group. This trend is in accordance with most of the accumulated research on the fairness of the assessment centre where minority group intercepts tend to be lower than that of whites (Huck & Bray, 1976; Thornton, 1992). In using a common regression line, it would mean that in practice there might be a trend that the job performance of disadvantaged individuals will be over-predicted while that of whites will be under-predicted. If, however, the difference between the slopes of the two groups is considered, again keeping in mind that it is not significant ($p > 0,05$), one can expect the regression lines to cross. The implication of this is that in the use of one common regression line to predict job performance, there might be a trend to over- and under-predict job performance at different points on the regression line.

Effect of the third variables

In order to investigate the possible effect of biographical data and other third variables in explaining some of the variance of the composite criteria, all the data were considered as a single group and the composite score were regressed on all the independent variables (including race) in a stepwise multiple linear regression. The overall assessment centre rating (OAR) and year of assessment were the only two variables that entered the stepwise regression equation and explained a significant amount of the variance of the composite criteria of job performance.

'OAR' entered the equation first and explained 26% of the variance of job performance. This confirms the predictive validity of the assessment centre for the total sample of supervisors and could be expected in terms of the literature overview. 'Year of assessment' entered the equation during the second step and could only add 1% ($p = 0,03$) to the explained variance. Race, education, and age could not add significantly to the variance already explained by OAR and the Year of Assessment. The finding that the Year of Assessment is related to job performance was also observed by Gaugler et al. (1987) who found that the predictive validity of the assessment centre increases with time.

It is interesting to note that race did not add significantly to the variance of job performance as explained by the assessment centre and Year of Assessment. This confirms to a large extent the previous finding of non-significant differences between the regression lines.

DISCUSSION

The major aim of this study was to examine the cross-cultural validity of the assessment centre in the South African context. The findings of this study provide no evidence of predictive bias in the use of assessment centre scores to predict job performance for white and disadvantaged groups. The results of this study are consistent with much of the American literature on the predictive validity of the assessment centre (Gaugler et al. 1987; Thornton & Byham 1982; Thornton, 1992). In practice, they imply that the assessment centre described in this study can be used as a valid predictor of supervisory job performance across disadvantaged and white groups in the manufacturing industry.

In this study, race was used as a basis for the classification of groups. The question must, however, be asked whether race is a key determinant in the observed group differences in assessment centre and job performance results. Given the results of this study, it might be wise to rather direct our attention to more critical variables in explaining group differences in predictor and job performance. It might be more useful for instance, to look at other independent variables such as the type of education – an example being 'Bantu Education School' versus private white school, and socioeconomic status. Given the history of South Africa, one can expect a meaningful overlap between race and socioeconomic status. The development of an index of socioeconomic disadvantage should be considered in future research. Returning exiles may, for example, have the benefit of excellent overseas training and schools, and can hardly be viewed as disadvantaged or marginalised.

By using more individualised or situational criteria rather than a crude and stigmatised classification such as race or sex, we may be in a better position to understand differences in individual job performance. This may also put us in a better position to make personnel decisions that address both economic and affirmative action goals without reinforcing race as a criteria in an already race preoccupied society.

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