

THE IMPACT OF A DEVELOPMENTAL ASSESSMENT CENTRE ON MANAGERIAL PERFORMANCE

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ABSTRACT

The object of this study was to determine if a developmental assessment centre improves managerial performance in the workplace. Focus was placed on the behavioural level of evaluation. The research design made use of a two-group design with random selection and a control group. A sample of 76 managers, at supervisory level, was used. Behaviourally anchored rating-scales were developed to measure the job-performance of participating managers. The results indicated significant differences between the experimental and the control groups for six performance dimensions. Significant differences were also found in all the second-order factors (clusters of dimensions) and the total managerial performance score. Thus, the developmental assessment centre had a positive impact on managerial performance, and this effect was still measurable three months after centre attendance. In order to generalise the results of this study it is essential to do further research on the utility of the developmental assessment centre.

OPSOMMING

Die doelstelling van hierdie studie was om te bepaal of 'n ontwikkelingsgerigte takseersentrum 'n positiewe impak op bestuursprestasie het. Die fokus van die evaluering was gerig op die gedragvlak. Daar is van 'n twee-groepontwerp gebruik gemaak, met 'n kontrole groep en ewekansige seleksie. Die steekproef het bestaan uit 76 toesighoudende bestuurders. Bestuursprestasie is gemeet met behulp van gedragsegeankerde beoordelingskale wat daarvoor ontwikkel is. Daar is beduidende verskille tussen die eksperimentele- en kontrolegroep vir ses prestasiedimensies gevind. Beduidende verskille is ook gevind vir al die tweede-orde faktore (saamgestelde areas van dimensies), sowel as vir die algehele bestuursprestasie telling. Die ontwikkelingsgerigte takseersentrum het dus 'n langtermyn positiewe invloed op bestuursprestasie gehad aangesien die evaluasie eers drie maande na takseersentrum bywoning plaasgevind het. Ten einde die resultate van hierdie studie te veralgemeen, is dit noodsaaklik om verdere navorsing oor die gebruikswaarde van die ontwikkelingsgerigte takseersentrum te doen.

Over the last 35 years, assessment centre technology has evolved from being used only for selection to having at present diverse applications. A continuum of assessment centre applications can be postulated (Woodruffe, 1990). Figure 1 represents this continuum.

Purpose	Development	Selection/development	Selection
Label	development centre or collaborative centre	developmental assessment centre	assessment centre
Process	simulations/case studies followed by feedback after each exercise	simulations followed by feedback after the centre	simulations followed by no feedback
Output	improved performance through learning and doing	insight for participant after doing and measures of ability for organisation.	selection/promotion decisions

(Woodruffe, 1990, p.24)

Figure 1: Continuum of assessment centres

The developmental approach has become necessary because of the need of participants to understand and agree with centre results, cost-effective procedures and an increased focus on management development (Griffiths and Allen, 1987). The assessment of managerial skills that is gained through an expensive, comprehensive and time-consuming process should be put to development uses (McCloskey and Slivinsky, 1983). Developmental assessment centres thus focus on diagnosing development needs, making development recommendations, and providing the participant with comprehensive feedback

which is facilitative (Thornton & Byham, 1982; Boehm, 1985). Observer (assessor) training and practice also serve as a developmental experience for line managers throughout the organisation.

Given the evolution of assessment centre technology from the early selection centre to the newest developmental centres, one would expect research to reflect the same progression. However, by far the most research has been done on assessment centres used for selection purposes (Thornton & Byham, 1982; Gaugler, Rosenthal, Thornton and Bentson, 1987). Assessment centres as predictors of performance is one of the best research methodologies in industrial psychology (Woodruffe, 1990; Kriek, 1991; Cascio, 1991). In contrast, assessment centres for development seem to be under-researched (Robertson and Rout, 1989). Research on its management development application is mostly aimed at the feedback process (Slivinsky, McDonald & Bourgeois, 1979; Moses & Byham, 1977; Flenor, 1988) and assessor exposure and benefits (Lorenzo, 1984; Beardslly, 1985).

The fundamental issue of the developmental application is whether development actually takes place and improves the job performance of managers. Although inferential evidence exists, probably not one empirical study has yet been done to measure directly the impact on performance at a behavioural level. Only one study (Flenor, 1988) could be found which investigated this matter. However, the evaluation was conducted only on the first (reactions), second (learning) and fourth (results) levels of the Kirkpatrick model (Kirkpatrick, 1979). Transfer of learning to the workplace (third level) and actual performance improvement could be only inferred (Carnvale and Schultz, 1990). These deficiencies highlight the need to do evaluation research at the behavioural level.

The most recent application of assessment centre technology, that is developmental centres, has also not yet been researched to determine its effect on performance. Published articles are limited to process descriptions and anecdotal evi-

dence regarding benefits (Dakin and Gough, 1986; Rayner and Goodge, 1988; Griffiths and Allen, 1987).

It thus becomes evident that empirical research in the field remains focused on the selection centre, whilst industrial developments have progressed to the developmental assessment centre and, recently, to the purely developmental centre. The present trend in industry seems clearly to favour the developmental use of the assessment centre method (Dulewitz, 1991). More and more organisations can therefore be expected to start using developmental centres, and unless research follows this trend, the present empirical gap will only increase.

Internationally as well as in South Africa, a movement away from traditional assessment centres towards developmental assessment centres can be seen. Despite the enormous financial and human resources spent, no South African and very little international, research evidence backs developmental assessment centres. The object of the present research is to provide empirical evidence on the effect of the developmental use of the assessment centre method on managerial performance. This research intends to evaluate the effect of a developmental assessment centre on participating managers, focusing on the behavioural level of the Kirkpatrick model.

METHOD

Hypotheses

The object of this research yields three hypotheses:

H1: Participation in a developmental assessment centre and feedback session, followed by on-the-job development, will significantly improve managerial performance as measured according to the following skills (dimensions):

- Action orientation
- Task structuring
- Development
- Empathy
- Managing information
- Probing
- Synthesis
- Judgement

H2: Participation in a developmental assessment centre and feedback session, followed by on-the-job development, will significantly improve managerial performance as measured according to the following skill-clusters:

- Action management cluster
- Human resources management cluster
- Information management cluster
- Problem resolution cluster

H3: Participation in a developmental assessment centre and feedback session, followed by on-the-job development, will significantly improve overall managerial performance as measured by behaviourally anchored rating-scales (BARS).

Sample

The multiracial, multigender sample used for this study consists of 76 first-level supervisors, employed by a large South African insurance society. The gender and race distribution is given in Table 1.

TABLE 1:
GENDER AND RACE DISTRIBUTION
OF SAMPLE (N = 76)

Race/Gender	Number	Percentage
White	56	73,68
Non-white	20	26,32
Male	38	50,00
Female	38	50,00

Research Design

The sample of 76 managers was randomly selected from managers who had been screened and accepted for assessment centres. The design consisted of a two-group design, with an experimental group (n = 41) and a control group (n = 35). Evaluation was conducted three months after a developmental assessment centre, in order to establish the transfer of learning and skills over the longer term. Due to practical limitations, random assignment could not take place. T-tests were thus conducted to ensure that extraneous independent variables were controlled and that the experimental and control groups were similar. The results are reported in Table 2.

TABLE 2:
DIFFERENCES BETWEEN CONTROL (N = 35) AND
EXPERIMENTAL (N = 41) GROUPS BEFORE TREATMENT

VARIABLE	EXPERIMENTAL GROUP		CONTROL GROUP		TVALUE	PVALUE
	\bar{X}	S.D	\bar{X}	S.D		
Performance appraisal scores	3,56	0,50	3,65	0,54	-0,80	0,42
Number of subordinates	6,29	4,11	5,06	5,60	1,11	0,27
Managerial experience in months	21,41	17,74	16,20	8,63	1,67	0,10
Managerial courses attended	2,63	1,26	3,06	1,11	-1,54	0,13
Age	29,05	5,51	27,57	5,87	1,13	0,26
Managerial level in grade (Peromnes)	12,10	0,66	12,10	0,56	0,08	0,93

From Table 2 it is evident that no significant ($p < 0,05$) differences exist between the experimental and control groups, with regard to variables which could influence managerial performance. A reasonable deduction could be made that extraneous independent variables were seemingly equal and thus controlled. In addition, a control group and random selection further safeguard the control of the research.

Instrument

After participation in a developmental assessment centre, job-performance of participating managers were evaluated by their direct seniors. Behaviourally anchored rating-scales (BARS) were developed for this purpose (Fischer, 1992). The procedure used to construct BARS for this study was very similar to that used by Spangenberg, Esterhuyse, Visser, Briedenhann and Calitz (1989). The behaviourally anchored rating-scales reflect the same dimensions employed in the centre and serve as an aid around which the feedback and development recommendations are structured.

The following managerial dimensions and clusters are measured in the assessment centre as depicted in Figure 2.

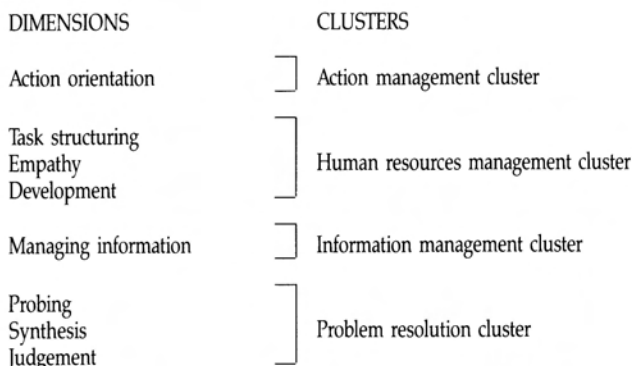


Figure 2: Managerial dimensions and clusters measured in the developmental assessment centre

The process followed in this developmental assessment centre can be categorised in three phases. Firstly, the assessment centre itself, where the participant goes through the exercises as he/she would have done with the conventional assessment centre. Secondly, there is the feedback session subsequent to centre attendance. Feedback is given to the senior of the participant, detailing strengths and weaknesses and also focusing on developmental action plans for the participant. A detailed and lengthy feedback is then given to the participant in an interactive (facilitative) manner. A copy of the participant's assessment centre report is also given to the senior and the participant. In addition, the participant completes a workbook during the feedback session which details his/her developmental actions and behaviour observed during the centre. Thirdly, on-the-job development is undertaken by the participant assisted by his/her senior, based on the recommendations and action plans of the feedback session.

RESULTS

Table 3 contains a summarised version of the results.

TABLE 3:
T-VALUES, MEANS, STANDARD DEVIATIONS
AND OMEGA-VALUES FOR ALL THE DEPENDANT
VARIABLES

VARIABLE	EXPERIMENTAL GROUP		CONTROL GROUP		T-VALUE	W2-VALUE
	\bar{X}	S.D.	\bar{X}	S.D.		
Action orientation	3,64	0,60	3,23	0,68	2,85**	0,0857
Task structuring	3,35	0,51	3,07	0,47	2,42*	0,0601
Development	3,45	0,62	2,92	0,73	3,36***	0,1192
Empathy	3,37	0,69	3,00	0,73	2,27*	0,0518
Managing information	3,62	0,57	3,32	0,64	2,15*	0,0455
Probing	3,35	0,57	2,95	0,49	3,29**	0,1145
Synthesis	3,35	0,59	3,12	0,70	1,57	—
Judgement	3,33	0,60	3,10	0,60	1,71	—
Action management	3,64	0,60	3,23	0,68	2,85**	0,0857
Human resources	10,17	1,41	9,00	1,36	3,65***	0,1395
Information management	3,62	0,57	3,32	0,64	2,15*	0,0455
Problem resolution	10,03	1,38	9,16	1,36	2,76**	0,0801
Overall managerial performance	27,47	3,32	24,71	3,12	3,70***	0,1431

* $p < 0,05$

** $p < 0,01$

*** $p < 0,001$

From Table 3, it is evident that there is a significant difference between the experimental and control groups in action orientation, task structuring, development, empathy, managing information and probing. No significant difference was found in either synthesis or judgement. The results thus indicate an improvement in managerial performance for all those dimensions in which a significant statistical difference was found between the experimental and control groups.

Table 3 also demonstrates the effect of the developmental assessment centre on each cluster (accumulated dimensions) of managerial skills. The experimental group scores are significantly higher for all the managerial clusters. The results also indicate that there is a significant difference between the ex-

perimental and control groups in the problem resolution cluster, despite the fact that the difference in scores for synthesis and judgement (these two dimensions combined with probing form this cluster) is not statistically significant.

Table 3 also indicates that there is a statistically significant difference between the experimental and control groups for the total score of managerial performance ($p < 0,001$). The scores of the experimental group are significantly higher than those of the control group.

Statistically significant differences indicate whether a relationship exists between the independent (developmental assessment centre) and dependent (managerial job-performance) variable. It does not indicate the strength of the relationship. The omega square (indication of practical significance) indicates the strength of the treatment effect (Du Toit, 1985). It thus indicates the proportion of the total variability in a set of scores that can be accounted for by the independent variable (Shavelson, 1981). The omega square values, in Table 3, indicate that between 4,55% and 11,92% of the total variance in the dimensions of managerial performance can be attributed to the developmental assessment centre. Similarly, between 4,55% and 13,95% of the total variance in the clusters and 14,31% of the total variance in the overall measure of managerial performance can be attributed to the developmental assessment centre.

The developmental assessment centre can thus be considered to be accountable for 14,3% of the total variance in overall managerial performance as measured by BARS, three months after centre attendance.

These results support all three hypotheses, except for the individual dimensions of synthesis (hypothesis 1g) and judgement (hypothesis 1h). In addition, omega values of practical significance were obtained for all the variables which demonstrated statistically significant differences. The overall managerial performance, human resources cluster, development and probing dimensions exceeded the 10% level of practical significance.

DISCUSSION

From the results it is evident that significant statistical differences were found between the experimental and control groups in all the dimensions, except synthesis and judgement. The greatest difference was found in development. These results indicate that the developmental assessment centre had the greatest effect on the skill of development (especially development of subordinates). The next greatest differences were found in action orientation and probing.

No significant difference was found in either synthesis or judgement. This seems to indicate that the developmental assessment centre process had no significant effect on improving those dimensions which are of a cognitive nature. Thornton and Byham (1982, p. 402) support this finding in stating that: "There is general agreement that change is quite difficult in personality characteristics such as cognitive style or flexibility". Boehm (1985) also supports this notion that decision-making ability does not change easily or appreciably. Both synthesis and judgement can be categorised as cognitive skills, using Shroder's (in Spangenberg, 1990) model of managerial effectiveness.

Further, significant statistical differences were found between the experimental and control groups in all the managerial clusters. These results indicated that the developmental assessment centre had a significant effect on all the clusters of managerial performance. The highest improvement seems to be in the area of human resources (task structuring, development and empathy). This is supported by Thornton and Byham (1982, p. 402) in that dimensions such as sensitivity (similar to empathy), leadership, management control (similar to task structuring) and oral communication seem to show the biggest improvement over time.

Although the differences between the experimental and control groups in synthesis and judgement were not significant, the overall cluster of problem resolution was highly significant ($p < 0,01$). This improvement could be attributed to the influence that the remaining dimension of this cluster (probing) had on the overall difference. In considering the definitions of the above three dimensions, it becomes evident that probing is more behavioural than synthesis and judgement, which are cognitive.

The effect of the developmental assessment centre seemed to be highly significant ($p < 0,001$) on overall managerial performance, which is a summation of all the dimension variables.

Only two studies could be found which investigated the effects of the developmental assessment centre on subsequent performance. An unpublished study by Barber (Thornton and Byham, 1982, p. 329) found that participants who received feedback from the assessment scored significantly higher on performance criteria than the group who received no feedback. A study by Fleenor (1988) also indicates that participants were able to improve their managerial performance after receiving feedback. A situational test was used for measurement purposes (the test provides hypothetical situations and requires written responses by giving participants choices). The post-test scores for the experimental group were significantly higher than the post-test scores for the control group ($t = 2,28$; $p < 0,05$) (Fleenor, 1988, p. 121). A limitation of this study was the fact that measurement was limited to the second level (learning) of the Kirkpatrick model. The degree of actual transfer of this learning to the job is thus unknown.

The results of the present study indicate that the participants were able to improve their managerial performance as a result of participating in the developmental assessment centre process. This improvement could be attributed to the fact that the post-centre feedback sessions were specific and behaviourally based. In addition to the participants receiving feedback, they also gained insight into the effect of both positive and negative behaviour. Pragmatic action plans for formal and on-the-job development are also typically formulated with the participant and his/her senior. This process results in a personal development plan which formalises the development action of an individual manager.

Practical significance (that is, the strength of the relationship between the developmental assessment centre and performance) was also indicated by the results. An omega value of 14,31% was found for overall managerial performance. This indicates that 14,31% of variance in managerial performance can be attributed to the developmental assessment centre. Another measure of practical significance is that of effect size. It can be described as the normalised difference between the treatment group and a comparison group. According to this formula (Burke and Day, 1986, p.237) effect size is equal to the difference between the scores of the experimental group and the control group divided by the within-group standard deviation. Cohen (1977) provides the following guidelines for the interpretation of effect size: 0,2 (small effect); 0,5 (medium effect) and 0,8 is a large effect. A measure of 0,5 is considered to be an indication of practical significance (Fleenor, 1988, p.151). The effect size for this study is 0,85 which constitutes not only a large effect, but a very strong indication of practical significance for the developmental assessment centre.

The results are supported by those of Fleenor (1988, p.151) who found an effect size of 0,64 for the developmental assessment centre improving job performance. However, the level of measurement was limited to the learning level of Kirkpatrick's model as opposed to the behaviour level of this study. Further support comes from Landy and Farr (Fleenor, 1988, p.151) who conducted a literature review on the effect of feedback on managerial performance. They concluded that the effect size of evaluation and feedback was 0,60.

Another meta-analysis by Guzzo, Jette and Katzell (Fleenor,

1988, p.151) on the effect of various intervention programmes on productivity found an effect size of 0,41 for appraisal and feedback.

Given the above standards, the effect of the developmental assessment centre on the experimental group (effect size = 0,85) seems strong and of considerable practical significance.

CONCLUSION

The results of this study indicate that the developmental assessment centre has a positive impact on managerial performance. This is supported by measures of both statistical and practical significance. The effect also seems to persist over an extended period (three months) and successful transfer of learning is thus demonstrated.

This study therefore provides significant and new evidence on the effect on performance of assessment centre methodology used for development. It also provides the first direct evidence on the behavioural effect (third level of the Kirkpatrick model) of centres on managerial performance, without having to make inferences. Given the evolution of the assessment centre method, it also becomes evident that research should shift its focus considerably. The developmental applications (developmental assessment and collaborative centres) of the assessment centre methodology need to be studied more, especially in the light of large numbers of organisations using assessment centre technology for development. It is thus recommended that the Kirkpatrick model be used extensively to determine the effect of developmental centres. Especially the third (behavioural) and fourth (utility/value added) levels are of vital importance to organisations using centre methodology.

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