

THE USE OF
BEHAVIOURALLY ANCHORED
RATING SCALES TO DETERMINE
EFFECTIVE PERFORMANCE IN
SPORT AND PHYSICAL EDUCATION
RESEARCH

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A B S T R A C T

This paper analysed the use of Behaviourally Anchored Rating Scales in Sport and Physical Education Research. In Sport the example used was State Development Officers. It also aimed to develop a definitive statement of the roles and competencies of the Head Teacher PD/Health/PE.

The Behaviourally Anchored Rating Scales (BARS) process provided a means whereby a large percentage of the population could have input into the product with minimal time expended. In short BARS was an efficient method which provided maximum participation for all concerned at all levels.

Two panels of "experts" independently developed statements of competence in their particular field and grouped those statements under general role headings. (Anshel and Webb, 1989). The groups then compared their outcomes.

A survey was then constructed comprised of the items which both groups agreed on (Anshel and Webb, 1989). The survey was then distributed to respondents in the field e.g. State Development Officers and Head Teachers of PD/Health/PE for validation. The results are reported in this article.

INTRODUCTION:WHAT IS A BEHAVIOURALLY ANCHORED RATING SCALE?

The specific purpose of the Behaviourally Anchored Rating Scale is to use behavioural procedures to design an instrument that can identify and measure the critical components that constitute effective performance in an occupation. The instrument has been used to identify performance competencies in such occupations as Nurses (Smith and Kendall, 1963), store managers (Campbell, et. al., 1973), college professors (Harrai and Zedeck, 1973) and for identifying the professional and career development activities needed by teachers (Erffmeyer and Martray, 1988). The instrument allows for researchers to "capture performance in multidimensional, behaviour-specific terms" (Anshel and Webb, 1989).

A scale is constructed by developing a series of critical anchors or competencies that are perceived to represent effective performance in an occupation. Each competency area is then defined as a series of precise and specific indicators or dimensions. These indicators are written as specific behaviours which can be observed, rather than inferred. Each set of indicators is designed to represent the specific skills associated with effective performance in the competency area. As Smith and Kendall (1963) proclaim, the instrument is "rooted in and referable to actual behaviours".

To ensure content validity a representative sample of the targeted population or occupation is used to construct each rating scale (Erffmeyer and Martray, 1988). Generally this procedure involves selecting individuals because of their expertise in the area of investigation. Individuals are split into groups and go through identical processes to develop the scale. Behavioural anchors or competencies are identified as well as the dimensions or indicators in each competency area. Smith and Kendall (1963) maintain that these procedures allow for an instrument to be developed in the language of the

occupation that is being investigated, therefore increasing its face validity. Once constructed, a rating scale is then administered to a wider sample of the targeted occupational population. Respondents are asked to indicate on a five point Likert scale their perception as to how essential each competency area is to effective performance. Each

competency can be rated on each individual indicator (Campbell, 1973). Erffmeyer and Martray (1988) included another dimension to this step by asking respondents to also indicate, on a five point scale, the level of difficulty they experienced in developing each skill area.

After a scale has been administered it is then evaluated as to the level of how essential the competencies and the indicators are perceived to be. The criterion for inclusion on the final rating scale of an indicator or competency is a mean essential ranking of greater than or equal to 3.5 and a standard deviation of less than 1.2 (Smith and Kendall, 1963).

THE USE OF BEHAVIOURALLY ANCHORED RATING SCALES

Behaviourally anchored rating scales (BARS) provides a procedure to overcome some of the inherent weaknesses typically associated with traditional rating scales.

Gay (1981, 128) generally suggests that rating scales have problems with "halo effect" and "generosity error". "Halo effect" refers to the situation where ratings are influenced by a rater's positive feeling towards the person they are rating. "Generosity error" refers to the

situation in which a rater gives higher ratings than they otherwise might. This generally occurs when a rater does not have enough information to make an objective rating and as a result the ratee benefits from any doubt that may exist, with a high rating (Gay, 1981).

Another problem associated with rating scales is when "trait type" scales are used. Often the dimensions used in trait type scales are ambiguous. This results in threats to the internal validity of the instrument.

Smith and Kendall (1963) and Campbell (1973) argue that these problems can be overcome through the use of Behaviourally Anchored Rating Scales. The strength of these scales is in the level of precision and specificity that occurs in the procedure for design and construction. Firstly, identified items for rating are at all times defined in specific behavioural terms. In addition, the scales measure performance, rather than behavioural or effectiveness. Campbell et. al. (1973) specify that performance is behaviour that occurs in a specific context.

Effectiveness is also not measured with the scale. The reason being that effectiveness is influenced by too many variables out of the control of an individual. As Campbell et. al. (1973, 15) maintain:

The crucial distinction between performance and effectiveness is that the latter does not refer to behaviour directly but rather it is a function of additional factors not under the control of the individual.

THE PROCEDURES

In utilising Behaviourally Anchored Rating Scales the following process needs to be undertaken.

1. Generation of expert panels. Two panels of "experts" who due to their knowledge and experience in the area of study, are able to design an instrument to assess quality performance.
2. Designing a questionnaire based on a 5 point Likert scale of "competencies" required to measure performance.
3. Validating the instrument by sending the questionnaire to a wide sample.

4. Analysis of the results.

BEHAVIOURALLY ANCHORED RATING SCALES IN PHYSICAL EDUCATION AND SPORT RESEARCH

This paper will address the use of BARS giving one example in sport research and the other in Physical Education. In Sport Research BARS was used in defining the roles and competencies of Sporting Development

Officers and in Physical Education the roles and competencies of Head Teacher of Health, Personal Development and Physical Education.

PURPOSE OF THE STUDY

The primary purpose of this study was to analyse both the actual and perceived roles of the Sporting Development Officers in New South Wales. Input was gained from 16 Development Officers (see Table 1) throughout New South Wales.

TABLE 1
DEMOGRAPHIC DATA OF DEVELOPMENT OFFICERS
SEX

NUMBER%

Male 1168.75
Female 531.25
TOTAL 16100

AGE

NUMBER%

20-25 637.5
26-30 425
31-35 425
36-40 16.25
NOT GIVEN 16.25
TOTAL 16100

METHODOLOGY

The Behaviourally Anchored Rating Scale (BARS) was used in this study to determine a valid and reliable role of Development Officers in N.S.W. Sporting Associations. BARS consists of a vertical continuum of behavioural statements ranging from effective to ineffective descriptions of the the role of the Officer (Anshel et.al., p. 79).

The procedure in deriving the effective role of the Development Officer was to establish two panels of experts to separately reach consensus. Only competencies that were independently generated by both panels were considered essential. Panel members included Aussie Sports representatives, Development Officers, Administrators, Academics and players. It was run over a six hour session with results at the end categorized and developed into a questionnaire that 16 Development Officers had to complete (Anshel et. al., p. 81).

The procedure was that each panel established "action verbs" that described the role of a Development Officer. After this, these verbs were elaborated upon with the formation of statements. A consensus was then established between both panels combining similar roles and tasks into one structure (Anshel et. al., p. 85). The final product was therefore a rating scale that was given to Development Officers to

complete. The advantage of the BARS System is that it is a highly valid and reliable procedure in the establishment of the role of the Development Officer. The questionnaire developed from the two interview panels is shown below.

RESULTS

The results of the questionnaire administered to 16 N.S.W. Sporting Development Officers is shown in Table 2.

TABLE 2: BEHAVIOURAL ANCHORED RATING SCALE (BARS)

- COMPETENCIES OF DEVELOPMENT OFFICERS

CATEGORY Very
Essential

Essential
Somewhat
Essential
Not Very
Essential
Un-

Important
N%N%N%N%N%
Demonstrates
Knowledge of
Sport

11
68.75
5
31.25
0
0
0
0
0
0
0

Possesses Suitable Qualifications for their Sport

8
50
3
18.75
4
25
1
6.25
0
0

Uses Appropriate Presentation Skills
8

50

8

50

0

0

0

0

0

0

Have Effective Verbal Communication Skills

5

31.25

10

62.5

1

6.25

0

0

0

0

Possesses Effective Written Communication Skill

2

12.5

11

68.75

3

18.75

0

0

0

0

Possesses the Ability to Identify, Design, Implement and Evaluate
Programs

4

25

8

50

3

18.75

1

6.25

0

0

Displays Effective Organisational/
Administrative Skills

5

31.25

7

43.75

4

25

0

0

0

0

Exhibits the Following Professional & Personal Qualities

9

56.25

6

37.5

1

6.25

0

0

0

0

Capable of Promoting Sport in a Positive Manner

5

31.25

8

50

1

6.25

1

6.25

0

0

Can Conduct and Present Results of Appropriate Research in Sport

0

0

9

56.25

6

37.5

0

0

1

6.25

Can Work Within Salary, Travel and Time Restrictions

7

43.75

9

56.25

0

0

0

0
0
0
Has the Ability to Run Development Courses
7
43.75
8
50
0
0
1
6.25
0
0

Based on the analysis of the Development Officers responses the competencies were categorized into "must have" essential, "should have" (important but not required to succeed) and "unimportant" (non essential).

"MUST HAVE" (ESSENTIAL) CATEGORIES

(90% of responding Technical Development Officers must rate either one or two.)

- .Demonstrates knowledge of the sport.
- .Uses appropriate presentation skills.
- .Has effective verbal communication skills.
- .Exhibits the following professional and personal qualities.
- .Can work within salary, travel and time restriction
- .Has the ability to run development courses.

"SHOULD HAVE" CATEGORIES

(90% of responding Technical Development Officers must rate 1, 2 or 3.)

- .Possesses suitable qualifications for their sport.
- .Possesses effective written communication skills.
- .Possesses the ability to identify, design, implement and evaluate programmes.
- .Displays effective organisational/administrative skills.
- .Capable of promoting sport in a positive manner.

"UNIMPORTANT" (Non Essential)

No competency statements were rated here.

In addition to the BARS instrument Development Officers were asked to rank in order of importance the areas where they devoted the most time. The results are shown below.

TABLE 3: ACTUAL AND PERCEIVED ROLE OF STATE DEVELOPMENT OFFICERS

ACTUALSCORE

- 1.SCHOOLS124
- 2.OFFICE ADMINISTRATION86
- 3.COACHING COURSES (LEVEL 0, LEVEL 1)82
- 4.AUSSIE SPORTS PROGRAM74
- 5.DEVELOPMENT CAMPS/TALENT IDENTIFICATION60
- 6.POLICY DEVELOPMENT60
- 7.COMMUNITY 53
- 8.COUNTRY TOURS53
- 9.UNIVERSITY/TEACHERS COLLEGE49
- 10.AFFILIATED SPORTING ASSOCIATIONS41

PERCEIVEDSCORE

- 1.SCHOOLS118
- 2.COACHING COURSES92
- 3.UNIVERSITY/TEACHERS COLLEGE72
- 4.OFFICE ADMINISTRATION70
- 5.COMMUNITY67
- 6.AUSSIE SPORTS PROGRAMME62
- 7.COUNTRY TOURS57
- 8.DEVELOPMENT CAMPS/TALENT IDENTIFICATION55
- 9.POLICY DEVELOPMENT53
- 10.INSERVICE DAYS42

As can be seen in the results, there were some variations in the actual role (at this time) and the perceived role (that in which they believe ideal) of the Development Officer. Notably, schools were highest ranked in both the actual and perceived roles.

Greatest differences can be seen in the perceived important the Development Officers have of the Universities and the Teachers Colleges. Its actual importance was ranked at 9 but the perceived important was ranked at 3.

All other roles only varied one or two positions except for the actual role in Affiliated Sporting association. This did not rank in perceived importance, being replaced by inservice days.

ROLES AND COMPETENCIES OF HEAD TEACHERS PD/HEALTH/PE

Two panels of four experts selected from a list of recommended Head Teachers PD/Health/PE developed the initial Role and Competency Statement. The development took place during two three-hour sessions and followed the BARS methodology guidelines.

When brought together after initially generating their own ideas on Roles and Competencies the group developed the matrix described in Table 4.

TABLE 4: THE ROLE AND COMPETENCY DESCRIPTORS WERE DEVELOPED ON THE

FOLLOWING MATRIX Roles

CompetenciesStaff
Development
Curriculum
ResourcesWhole-School
Responsibilities
Community

Communicate
Negotiate
Evaluate
Develop and Organise
Motivate/
Promote
Lead
Implement
Teach

Subsequently, they used the action verbs to further develop statements of competency under each of the Role headings.

The resultant Role and Competency descriptors were used as items in the survey which was piloted in three schools and then sent to all New South Wales Department of Education Secondary Schools in the Metropolitan South-West and Metropolitan West Regions.

The data was then recorded on computer and the results analysed using the findings of Anshel and Webb (1989). They used the same scale descriptors and stated that where an item was rated as a 3, 4 or 5 by 90% of the respondents it was deemed to be essential. The scale used was: 1 Unimportant; 2 Not Very Important; 3 Somewhat Essential; 4 Essential; 5 Very Essential.

RESULTS

SECTION 1: RESPONDENT DETAILS

TABLE 5: POSITION IN SCHOOL

Position in School	No.	%
Teacher PD/Health/PE	49	
Head Teacher- PD/Health/PE	3680	

Head Teacher Administration00
 Head Teacher - Home Science00
 Head Teacher - Design and Technology12
 Other49

TABLE 6: MAJOR FIELDS OF TRAINING

Major Fields of TrainingNo.%
 P/D/Health/PE3884
 Home Science37
 Other49

TABLE 7: NUMBER OF YEARS TEACHING

Years%
 1-60
 7-1131

 12-1624
 17-2127
 22-310
 32-362

TABLE 8: NUMBER OF YEARS IN HEAD TEACHER POSITION

Years%
 1-447
 5-729
 8-107
 11-137
 14-162
 17-194

SECTION 2: ROLE DESCRIPTORS

TABLE 9: ROLE DESCRIPTORS

Role Descriptor for each item	Percentage Response
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Un-important Not very Essential Somewhat Essential Essential Very Essential
 %%%%

Staff Development 0273358
 Curriculum 200989
 Resources 0075340
 Whole-School Responsibilities 02185129
 Community 27364411

Other Role Descriptors suggested by Respondents

Welfare (2 respondents)
 Student Welfare (2 respondents)
 Teacher
 Faculty Administration
 Finance Manipulation
 Administration
 "The children and resources need to come first"
 "The community and other duties become secondary in the implementation
 of PD/Health/PE."

SECTION 3: COMPETENCY DESCRIPTORS

Under each of the roles the Panels developed competency descriptors.
 An example of one of the competency descriptors is shown below.

TABLE 10: STAFF DEVELOPMENT

Percentage response for each item

Unimportant Somewhat Essential Very
 important Very Essential Essential
 Essential

COMMUNICATE: %%%%

Whole school policy requirements 00134047
 Aims and objectives of Staff Development Process 20185327
 Expectations of individual staff 00 74053
 Responsibilities of individual staff 00 74053
 Faculty policy requirements 00 41680

NEGOTIATE

Individual staff development programs 02164438

Roles and responsibilities of individuals 0294247
 Supervision timetables 04363624
 Your own roles and responsibilities
 with senior executive. 02223638
 Attendance at inservice courses 02364418
 Staff development priorities 02 95624
 Delegation of duties 0275338

EVALUATE % % % %

Individual outcomes 02136024
 Individual progress 02115829
 Performance of roles and responsibilities 20115827
 Your own performance 20 93653

DEVELOP

Teaching strategies 0 0133353
 Career paths 0 2423811
 Individual programs 0 2185327
 Staff curriculum development roles 0 4185622
 Whole faculty/whole school staff
 development activities 0 2244031

MOTIVATE/PROMOTE

Regional, Cluster and Inschool training and
 staff development programs 0 2444013
 External training programs (e.g, private business) 9384077
 Positive attitude towards staff development 0295138

TABLE 10: STAFF DEVELOPMENT (Continued)

Percentage response for each item

UnNot SomewhatEssentialVery
 importantVeryEssentialEssential
 Essential

LEAD % % % %

The faculty staff development process 0 0 04051
 By implementing staff development
 policy statements 2 0164933
 By fostering a positive role model 0 0 02278

IMPLEMENT:

Staff development programs 0 0 93656
Needs based programs 0 0132958

TEACH

By adopting new skills and techniques 0 0133651
By adopting student/classroom
management techniques 0 0 73856
By adopting whole school management policy 0 9 94733

CONCLUSION

This paper has analysed the use of Behaviourally Anchored Rating Scales (BARS) in determining effective performance in Sport and Physical Education Research. One example from each of the areas has been used to demonstrate the use of the methodology.

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