Middle-level Leaders: Measuring their Perceptions of the Role

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Abstract

A previous investigation utilising the interview method revealed key aspects of the middle-level school leadership position. The highly detailed descriptive data on these qualities were re-analysed to identify the components of a construct model to guide development of a measure. This re-examination was necessary because the specification of the construct model was constrained by methodological requirements incumbent in the measurement process. The previous key aspects were not amenable to measurement and an alternative model was developed. This centred on the attitudes and experiences of middle-level leaders which were conceptualised as five facets of the role: *role clarity*; *role authority*; *role support*; *role value* and *role fulfilment*.

The research questions were:
1. Can a measure of middle-level leaders' perceptions of their role be constructed?
2. What are the least affirmed and the more highly affirmed attributes of the role? and
3. Do attributes of middle-level leaders such as gender or years in the position, account for differences in how they perceive the role?

A 36-item rating scale instrument (four-category response scale) was developed. This was administered to a convenience sample of middle-level leaders from 15 state schools and six private schools. 125 completed surveys were returned. On the assumption that the phenomenon of interest was likely not uni-dimensional, five separate Rasch model analyses were conducted – one for each of the five facets. To enable cross-facet comparison, a global analysis was also performed.

Data generally fitted the Rasch model well providing evidence that a measure had been created. The construct of middle-level leaders' perceptions of their role was as hypothesised - not uni-dimensional. The most difficult to affirm items were mainly on *role support*. In contrast, the easiest to affirm items were mainly on the *role fulfilment*. The number of years in the position was associated with more favourable role perceptions.

Introduction

Utilisation of the interview method in an initial phase of a mixed-method investigation revealed aspects of the middle-level leadership position in Western Australian secondary schools. The literature informing the study, the sample, and the interview methods of the mixed-method study were reported to AARE in 2009 (see Brooks & Cavanagh, 2009). In the study, the term middle-level leadership was used to describe leadership situated hierarchically between teaching-only duties and the senior administration of the school (e.g. Deputy Principal, Assistant Principal, Principal, and Executive Principal). This is not necessarily leadership of a middle school. Incumbents could include heads of departments, pastoral care team leaders and year coordinators. Nine semi-structured interviews were conducted with a sample of discipline-based, pastoral-based and program-based middle-level leaders in three Western Australian secondary schools. A senior leader from each school was also interviewed. Six key aspects of the middle-level leadership role were distilled from the qualitative data: the dual and dynamic nature of middle-level leadership; the organisational functions of middle-level leaders; the problems and limitations associated with middle-level leadership positions; the qualities and skills of effective middle-level leaders and their training needs; the support and review requirements of the position, as well as the personal goals and experiences of middle-level leaders.

While this six-element conceptual framework of middle-level leadership is useful in describing the role, and the rich detailed interview data qualified these elements thoroughly, it was considered unsuitable for the subsequent phase of the study. This phase intended to measure middle-level leaders' perceptions of their role by constructing and administering a self-report rating scale instrument. The process of measurement is underpinned by theoretical principles initially proposed early in the previous century. Wright and Masters (1982), incorporated these theoretical requirements into a set of four measurement criteria for rating scale instruments.

Uni-dimensionality: Data measures a single or dominant trait or the measurement of any object or entity it describes only one attribute of the object measured (see Thurstone 1931).

Qualification: Data can be compared. Guttman (1950, p. 62) noted that: "If a person endorses a more extreme statement, he should endorse **all** less extreme statements if the statements are to be considered a scale...We shall call a set of items of common content a scale if [and only if] a person with a higher rank than another person is just as high or higher on **every** item than the other person".

Quantification: Variables are measured in common units. However, a unit of measurement is not necessarily a thing such as a piece of yardstick, a unit of measurement is always a process of some kind which can be repeated without modification in the different parts of the measurement continuum (see Thurstone 1931, p. 257).

Linearity: Data is positioned on a line or scale. Measurement implies a linear continuum of some sort such as length, price, volume, weight, or age (Wright, 1997). When the idea of measurement is applied to scholastic achievement, for example, it is necessary to force the qualitative variations into a scholastic linear scale of some kind (see Thurstone & Chave, 1929, p. 11).

When these four requirements were applied to this study, they predicated specification of a construct model, the writing of items, selection of response scale categories, and selection of a measurement model to analyse the data. The construct of interest was middle-level leader's perceptions of their role. Development of the construct model commenced by critically examining the six key aspects and associated data to identify aspects of the role that were both substantively significant and also of importance to respondents. The respondents needed to be provided with questions and response categories to which they could respond meaningfully. That is, to not be confounded by item wording, not be presented with irrelevant questions, and be given response options that allow for degrees of affirmation commensurate with the strength of their perceptions of aspects of the role. The construct model was specified *a priori* and the items were written *a priori*. How well the items indicate the trait of role perceptions was assessed by analysing the resulting data with a measurement model – testing data-to-model fit

The next section commences with explication of the internal structure of the construct model and the items written for each component of the model.

Construct model and items

The middle-level leadership role was conceptualised to comprise five interrelated facets. The meaning of each facet was qualified by the respective items from the rating scale instrument. The groups of items constitute what might be considered sub-constructs, or in the case of the whole instrument, sub-scales.

Role Clarity

Role clarity refers to the extent to which a middle-level leader perceives their role to be clearly defined and appropriate in scope. For role clarity to be high, a middle-level leader should have a clear understanding of the expectations and responsibilities associated with their middle-level

leadership position and this understanding should be shared and consistent across other members of the school community. The facet of role clarity contained seven items in total, each designed to measure the level of role clarity middle-level leaders perceived within their position. Middle-level leaders were asked to respond to the following statements: "In the school there is an understanding of the main duties and expectations of my position" (Item 1); "The duties and expectations of my position are documented in a written position description"(Item 2); "My position duties and expectations are clearly defined" (Item 3); "My role is clearly delineated from other leadership positions" (Item 4); "The responsibilities of my position are appropriate in scope" (Item 5); " There is a shared and consistent understanding of my role within the school" (Item 6); and "There is a deep and detailed understanding of the role throughout the school community" (Item 7).

Role Authority

Role authority relates to the level of formal or informal authority middle-level leaders are afforded in their leadership position. This includes the degree to which middle-level leaders feel involved in school planning and decision-making processes, as well as the level of authority they have within the school community enabling them to share ideas, influence others and make changes. For this facet, middle-level leaders were asked to respond to seven items which included the following statements: "There are opportunities for me to contribute to whole school planning and decision making" (Item 8); "There are opportunities for me to voice concerns about school issues" (Item 9); "I have the authority to make decisions which affect my colleagues" (Item 10); "I am regularly involved in planning or school decision making at the whole-school level" (Item 11); "I am consulted by the school's senior leaders about all important whole-school decisions or plans" (Item 12); "My ideas and opinions are taken into account" (Item 13); and "I play an influential role in whole-school development" (Item 14).

Role Support

Support in this context, encompasses both the provision of relevant training and of the resources needed to undertake the responsibilities required by a middle-level leadership position. Middle-level leaders were asked to consider whether they had been provided with the appropriate time, budget, educational resources and training necessary for them to effectively fulfil their role as middle-level leaders. The facet of role support contained nine items including: "I have been provided with additional non-teaching time to fulfil my role" (Item 15); "I have been provided with the resources required for me to fulfil my professional responsibilities" (Item 16); "I have been provided with adequate training" (Item 17); " I have been provided with ongoing professional learning opportunities" (Item 18); "The professional learning I have undertaken has been relevant and specific to my work as a middle leader" (Item 19); "I am well supported in my role" (Item 20); "I

receive an appropriate program budget" (Item 21); "I receive an appropriate allotment of non-teaching time" (Item 22); and "I am provided with optimal, high quality professional support" (Item 23).

Role Value

Role value focuses on middle-level leaders' perceptions about the worth and importance of their middle-level leadership role. Middle-level leaders were prompted to consider the extent to which they personally felt their work was valuable to the school community, as well as the extent to which they felt their role was valued and acknowledge by other members of the school community. Seven items were developed to measure middle-level leaders' perceptions of role value. These included: "I believe that my role is worthwhile" (Item 24); "I see my role as being beneficial to the day-to-day functioning of my school" (Item 25); "My work is valued by the members of the school community" (Item 26); "My work is recognised by the school members" (Item 27); "My colleagues view my work as being of high importance" (Item 28); "My work is regularly acknowledged by members of the school community" (Item 29); and "My work is recognised by the school community as being vital to the school's operation and performance" (Item 30).

Role Fulfilment

A middle-level leader's role fulfilment refers to the level of satisfaction and enjoyment the leader associates with their work. Professional fulfilment for middle-level leaders was seen to be connected to the positive relationships formed through the position, the positive challenges provided by the work and the overall sense of professional reward gained through the position. The last six items on the survey were developed to measure role fulfilment, and included the following statements: "I find satisfaction in my work" (Item 31); "I find my work stimulating" (Item 32); "I find my work fulfilling and rewarding" (Item 33); "I enjoy the professional interactions required by the position" (Item 34); "My day-to-day experience is enjoyable and positive" (Item 35); and "I experience a strong sense of professional satisfaction" (Item 36).

Research questions

1. Can a measure of middle-level leaders' perceptions of their role be constructed?
2. What are the least affirmed attributes of the role and what are the most highly affirmed attributes of the role? and
3. Do attributes of middle-level leaders such as gender or years in the position, account for differences in how they perceive the role?

Research methods

The philosophy underpinning the research approach and methods was post-positivism – "... that human knowledge is not based on unchallengeable, rock-solid foundations – it is conjectural" (Phillips & Burbules, 2000, p. 26). This is a stochastic perspective. Stochasticity assumes randomness is present, and variable states are not described by unique values, but rather by probability distributions. The Rasch rating scale model (Andrich, 1978a, 1978b &1978c) is probabilistic and applicable to phenomena that are stochastic. The role perceptions of middle-level leaders were assumed to be stochastic and therefore the Rasch rating scale model was used for data analysis. The model requires the probability of a leader affirming a particular item in the survey to be a function of her/his level of role perception, and also of the level of difficulty that item affirmation presented to many leaders. The model produces an estimate of role perception strength for each leader and also an estimate of item difficulty for each item. When data fit the Rasch model, the measure (the scale of items), is invariant across different groups of persons, and the calibrations (person scores) are not dependent on the particular set of items from the scale that are administered. These conditions of invariance are characteristic of a measure. The computer program RUMM2030 (Rasch Uni-dimensional Measurement Models, RUMMLab, 2007) was used to determine the properties of the data. Leaders responded on a four-point rating scale scored 0 for strongly disagree, 1 for disagree, 2 for agree, and 3 for strongly agree.

The construct model was multi-faceted which could have led to either multi-dimensionality or uni-dimensionality. Consequently, the data from the five facets were analysed separately (multi-dimensional condition), and then conjointly (uni-dimensional condition).

Fifty schools were invited to take part in the survey, of these schools 21 were the final sample. Fifteen state schools and six private schools participated in the study with 125 completed surveys returned (approximately 40% return rate). The participating schools were predominately from the Perth metropolitan area and were socio-economically and demographically diverse.

The following section presents the results of RUMM2030 analyses.

Results

The analysis of the data on the first facet (role clarity) is presented in detail. The analyses for the other four facets and for the combined data are summarised.

1. Logical use of the response scale categories

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RUMM generates Category Probability Curves which show the probability of a respondent selecting a particular response category for an item against her/his overall level of affirmativeness (person location) The category probability curve for Item 1 is displayed in Figure 1.
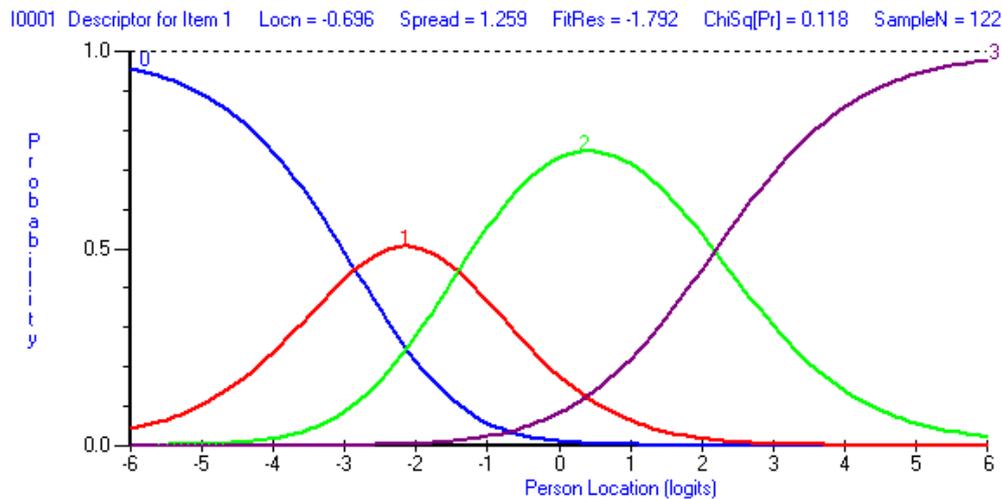

Figure 1. Category Probability Curve for Item 1

According to Bond and Fox (2007, p. 163), "Each category should have a distinct peak in the probability curve graph, illustrating that each is indeed the most probable response for some portion of the measured variable. Therefore, thresholds that are disordered or too close will show up visually, with flat probability curves, as being problematic". Item 1 asked middle-level leaders to respond to the statement, "In the school there is an understanding of the main duties and expectations of my position". For this item, the category probability curve shows that for the 'Strongly Disagree' (0) response category, the probability of selecting this category is 0.95 for leaders with a person location of -6.0 logits (leaders with very low perceptions of their role). The probability of leaders selecting this category decreased to 0.0 for leaders with a location of 0.0 logits. For the 'Disagree' (1) response category, leaders with a location of -2.0 logits had the highest probability of selecting the item, which reduced to a probability of 0.0 for leaders with a location of 2.5 logits. For the most affirmative category 'Strongly Agree' (3), the probability is close to 1.0 for middle-level leaders with person location of 6.0 logits (leaders with very affirmative perceptions of their role). This indicates that, as would be expected, middle-level leaders who have a less affirmative view of their role are more likely to select a lower response category. More role affirmative middle-level leaders are more likely to select a higher response category.

The threshold location is the point on the scale where the category probability curves intersect. At this point, there is an equal probability that respondents with the same person location logit (that is

middle-level leaders who have the same level of affirmativeness) will select either of the two intersecting response categories. As is shown, the threshold location logit at the intersection of categories 0 and 1 is lower than the threshold location of categories 1 and 2, which in turn, is less than the threshold location of categories 2 and 3. When the thresholds are ordered, this indicates that respondents have used the categories in a logical, consistent and non-idiosyncratic manner.

With the exception of items 24 and 25 ("I believe that my role is worthwhile" and "I see my role as being beneficial to the day-to-day functioning of my school"), all the items elicited data in which the thresholds were ordered.

2. Fit of individual item data to the model
The Item Characteristic Curve displays the expected curve predicted by the Rasch model for a particular item. The observed scores for several class intervals were plotted against the expected curve to visually depict how closely the observed scores reflect the expected scores, and thus how well the item data fits the Rasch model.

The Item Characteristic Curve for Item 1 is displayed below, in Figure 2. The curve shows the expected value for the item in relation to the person locations.
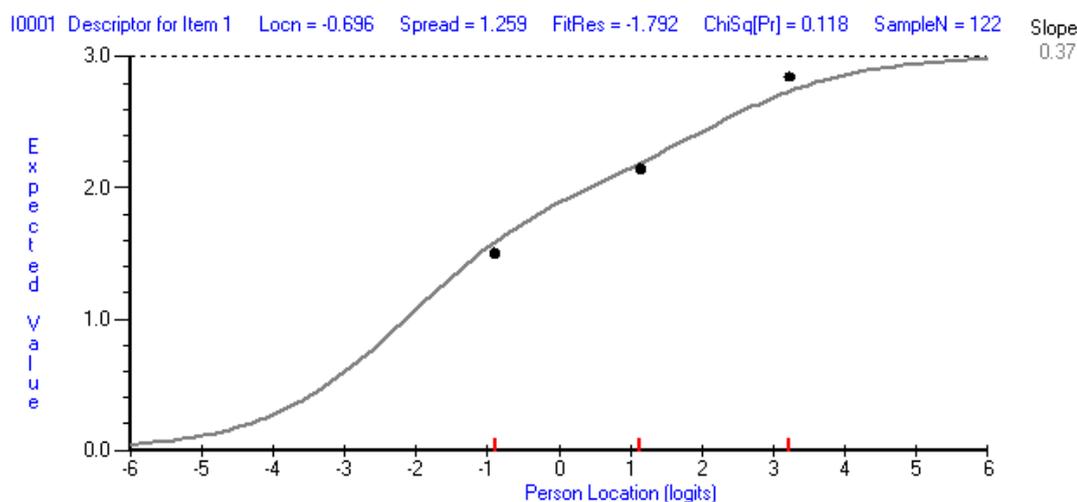
Figure 2. Item Characteristic Curve for Item 1

RUMM2030 plots the observed scores for the item (the three dots) against the predicted response curve to indicate how closely the observed scores fit the predicted values. The Item Characteristic Curve for Item 1 shows that the observed scores match the predicted scores well. A fit residual is estimated to quantify the degree of fit. In order for good data-to-model fit, the residual for an item

should be < ±2.5. The closer the residual is to zero, the better the fit to the model. Additionally, the probability of fit to the model is tested statistically with a Chi-Square and when the data fit the model, the probability should be greater than 0.05.

The data from the majority of the items fitted the model well. There was minor misfitting with Items 11, 25 and 35 ("I am regularly involved in planning or school decision making at the whole-school level", "I see my role as being beneficial to the day-to-day functioning of my school" and "My day-to-day experience is enjoyable and positive") [p<0.05]; and Items 24, 31 and 33 ("I believe that my role is worthwhile", "I find satisfaction in my work" and "I find my work fulfilling and rewarding") [residuals > ±2.5].

3. Other tests of data-to-model fit

Summary test-of-fit statistics were estimated for each facet – item-person interaction, item-trait interaction and the separation index. For all five facets, these statistics were most acceptable, particularly for role clarity, role authority and role support. Item bias is shown by differential item functioning. For an item, this occurs when persons with the same level of role perceptions but from different groups, have different observed scores. For middle-level leaders, the scores for an item might be biased by their position, time in the position or gender. Only one item (from role clarity – Item 1) showed this bias. The individual items were invariant across the type of leadership role, the time in the role, and gender.

4. Individual item difficulty

Table 1 presents the locations of all 36 items on five scales of item difficulty – the units of the scales are logits (the logarithmic odds of affirming an item). A negative location results from the item being easy to affirm, whereas a higher location indicates the item was more difficult to affirm. For example in the role clarity items, the easiest item to affirm item was Item 6 ("There is a shared and consistent understanding of my role within the school") [-0.73 logits]), and the most difficult item to affirm was Item 7 ("There is a deep and detailed understanding of the role throughout the school community") [+1.44 logits]. Item 7 was three times more difficult to affirm than Item 6. The items are ordered by increasing location. "SE" is the standard error of measurement - RUMM2030 has estimated this for each item. Please note that the five scales are from five independent calibrations of item difficulty.

Table 1
Individual item difficulties within facets – five analyses (n =125)

Number	Location	SE	Item
			Role clarity

6	-0.73	0.18	There is a shared and consistent understanding of my role within the school
1	-0.70	0.17	In the school there is an understanding of the main duties and expectations of my position
4	-0.42	0.17	My role is clearly delineated from other leadership positions
5	-0.09	0.16	The responsibilities of my position are appropriate in scope
3	0.22	0.16	My position duties and expectations are clearly defined
2	0.26	0.15	The duties and expectations of my position are documented in a written position description
7	1.44	0.17	There is a deep and detailed understanding of the role throughout the school community

Role authority

9	-2.57	0.24	There are opportunities for me to voice concerns about school issues
8	-2.26	0.23	There are opportunities for me to contribute to whole school planning and decision making
11	0.03	0.21	I am regularly involved in planning or school decision making at the whole-school level
10	0.28	0.21	I have the authority to make decisions which affect my colleagues
13	0.38	0.22	My ideas and opinions are taken into account
14	1.85	0.21	I play an influential role in whole-school development
12	2.29	0.18	I am consulted by the school's senior leaders about all important whole-school decisions or plans

Role support

15	-0.73	0.16	I have been provided with additional non-teaching time to fulfil my role
18	-0.61	0.17	I have been provided with ongoing professional learning opportunities
20	-0.51	0.16	I am well supported in my role
16	-0.25	0.16	I have been provided with the resources required for me to fulfil my professional responsibilities
19	0.17	0.15	The professional learning I have undertaken has been relevant and specific to my work as a middle leader
17	0.41	0.15	I have been provided with adequate training
22	0.47	0.13	I receive an appropriate allotment of non-teaching time
23	0.48	0.15	I am provided with optimal, high quality professional support
21	0.57	0.14	I receive an appropriate program budget

Role value

25	-2.79	0.24	I see my role as being beneficial to the day-to-day functioning of my school
24	-2.64	0.24	I believe that my role is worthwhile
26	0.01	0.19	My work is valued by the members of the school community
27	0.36	0.20	My work is recognised by the school members
28	0.85	0.18	My colleagues view my work as being of high importance
30	1.83	0.17	My work is recognised by the school community as being vital to the school's operation and performance
29	2.37	0.19	My work is regularly acknowledged by members of the school community

			Table 1 continued
			Role fulfilment
34	-0.67	0.24	I enjoy the professional interactions required by the position
32	-0.32	0.25	I find my work stimulating
36	-0.01	0.25	I experience a strong sense of professional satisfaction
33	0.00	0.24	I find my work fulfilling and rewarding
35	0.37	0.25	My day-to-day experience is enjoyable and positive
31	0.62	0.24	I find satisfaction in my work

In the subsequent conjoint analysis, the data file comprised scores from all five facets. The RUMM2030 analysis found only four of the 36 thresholds were not ordered (Items 15, 24, 25 and 31), and only one item had misfitting data (Item 22). But, the item-trait interaction statistic was very low and a factor analysis of residuals showed considerable structure in the data after the Rasch measure had been extracted. Residual data from Items 26 to 30 were strongly associated, similarly for items 31 to 36. This is evidence of multi-dimensionality. The item difficulty locations from the conjoint analysis are presented in Table 2.

The sequencing of the item difficulties within the respective facets in Tables 1 and 2 are very similar. For example the order of item difficulties for role clarity when these items were analysed independently of the other 29 items was 6, 1, 4, 5, 3, 2 and 7 (Table 1). The order when all 36 items were analysed was 1, 4, 6, 5, 3, 2 and 7 (Table 2). The difference could be due to the probabilistic nature of the Rasch model which causes minor variations when data are re-analysed. Importantly, the consistency of item difficulty location sequencing across the different analyses is a type of invariance and provided justification for comparing data across facets.

In Table 2, the difficulties of the 36 items were calibrated on the same scale of logits. Because the item difficulties are interval measures, they can be subject to mathematical operations such as calculating mean values (Doig & Groves, 2006). Facet means were calculated for each facet and these were compared to make inter-facet comparisons. For example in Table 2, the mean of the role support item difficulties was the highest facet mean, while role fulfilment was lowest. This is because the middle-level leaders were generally more affirmative of the role fulfilment items than the role support items. The range of item difficulties within a facet also provides useful information about the leaders' role perceptions. The smallest range was 1.8 logits for the role support items, the range for role clarity and role fulfilment was 2.1 logits, 3.0 for the role authority items, and 3.8 logits for the role value items.

Table 2

Individual item difficulties within facets – 36 items (n =125)

Number	Location*	Item
		Role Clarity
1	0.28	In the school there is an understanding of the main duties and expectations of my position
4	0.28	My role is clearly delineated from other leadership positions
6	0.28	There is a shared and consistent understanding of my role within the school
5	0.76	The responsibilities of my position are appropriate in scope
3	0.91	My position duties and expectations are clearly defined
2	0.96	The duties and expectations of my position are documented in a written position description
7	1.87	There is a deep and detailed understanding of the role throughout the school community
Mean	0.76	

Table 2 continued

Number	Location*	Item
		Role Authority
9	-1.92	There are opportunities for me to voice concerns about school issues
8	-1.69	There are opportunities for me to contribute to whole school planning and decision making
11	-0.14	I am regularly involved in planning or school decision making at the whole-school level
13	-0.05	My ideas and opinions are taken into account
10	-0.04	I have the authority to make decisions which affect my colleagues
14	0.82	I play an influential role in whole-school development
12	1.06	I am consulted by the school's senior leaders about all important whole-school decisions or plans
Mean	-0.28	
		Role Support
15	0.36	I have been provided with additional non-teaching time to fulfil my role
18	0.39	I have been provided with ongoing professional learning opportunities
20	0.45	I am well supported in my role
16	0.71	I have been provided with the resources required for me to fulfil my professional responsibilities
19	1.06	The professional learning I have undertaken has been relevant and specific to my work as a middle leader
17	1.35	I have been provided with adequate training
23	1.36	I am provided with optimal, high quality professional support
22	1.38	I receive an appropriate allotment of non-teaching time
21	1.47	I receive an appropriate program budget
Mean	0.95	
		Role Value
24	-2.78	I believe that my role is worthwhile
25	-2.77	I see my role as being beneficial to the day-to-day functioning of my school
26	-0.38	My work is valued by the members of the school community
27	-0.17	My work is recognised by the school members
28	0.27	My colleagues view my work as being of high importance

30	0.94	My work is recognised by the school community as being vital to the school's operation and performance
29	1.05	My work is regularly acknowledged by members of the school community
Mean	-0.55	
		Role Fulfilment
34	-1.74	I enjoy the professional interactions required by the position
32	-1.67	I find my work stimulating
33	-1.50	I find my work fulfilling and rewarding
36	-1.46	I experience a strong sense of professional satisfaction
35	-1.39	My day-to-day experience is enjoyable and positive
31	-0.31	I find satisfaction in my work
Mean	-1.34	

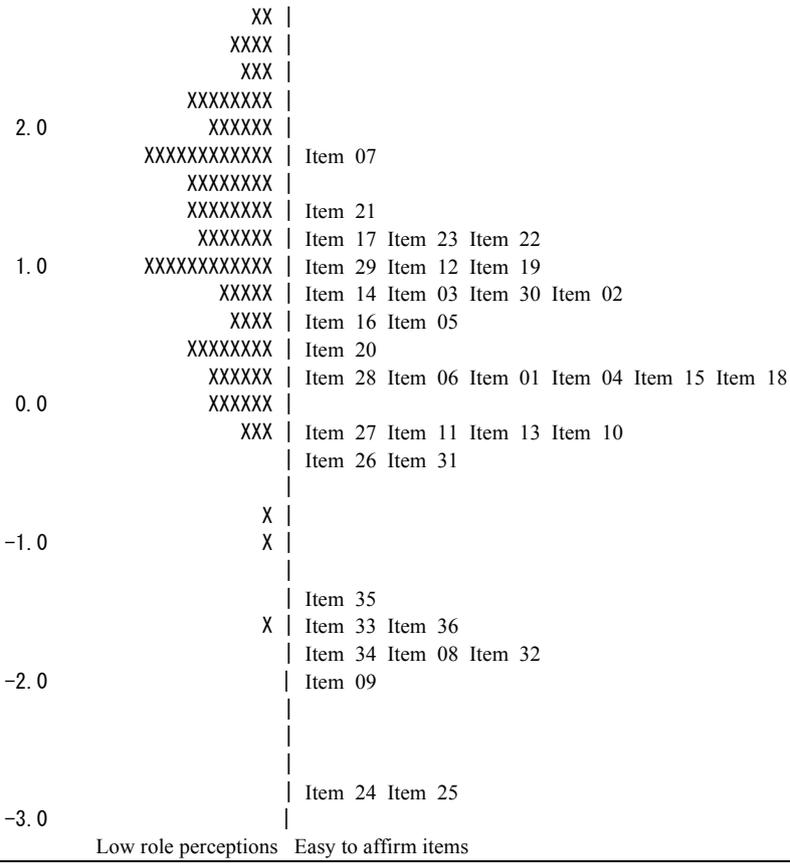 * The item difficulty location is measured in logits

5. Person scores

RUMM2030 can plot the person scores (person locations), and the item difficulties (item locations) on the same logit scale. In the item map presented in Table 3, the logit scale is the left column, the person scores are the middle column and the item difficulties are the right column. The item difficulties are the mean of the respective thresholds. Had the three thresholds for each item been plotted, the range of item difficulties would have been increased considerably.

The range of person scores is from -1.6 logits (low role perceptions) to +5.6 logits (high role perceptions). This shows large differences in how individual middle-level leaders perceived their role. The alignment of the person score distribution with the item difficulty distribution shows the items were generally easy for the respondents to affirm. In particular, the role fulfilment items (Items 35, 33, 36, 34 and 32) and Items 24 and 25. On this scale, the leaders were generally affirmative of their role. The scale could be improved by the inclusion of some more difficult items.

Table 3
Item map

Location	Persons	Items [locations]
	High role perceptions	Difficult to affirm items
6. 0	|	
	|	
	X |	
	|	
	|	
5. 0	|	
	XX |	
	X |	
	X |	
	|	
4. 0	|	
	XXXX |	
	|	
	XXXXX |	
	XXX |	
3. 0	XX |	

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                        XX |
                      XXXX |
                       XXX |
                  XXXXXXXX |
      2.0            XXXXXX |
               XXXXXXXXXXXX | Item 07
                  XXXXXXXX |
                  XXXXXXXX | Item 21
                    XXXXXX | Item 17  Item 23  Item 22
      1.0      XXXXXXXXXXXX | Item 29  Item 12  Item 19
                     XXXXX | Item 14  Item 03  Item 30  Item 02
                      XXXX | Item 16  Item 05
                  XXXXXXXX | Item 20
                    XXXXXX | Item 28  Item 06  Item 01  Item 04  Item 15  Item 18
      0.0           XXXXXX |
                       XXX | Item 27  Item 11  Item 13  Item 10
                           | Item 26  Item 31
                           |
                         X |
     -1.0               X |
                           |
                           | Item 35
                         X | Item 33  Item 36
                           | Item 34  Item 08  Item 32
     -2.0                   | Item 09
                           |
                           |
                           |
                           | Item 24  Item 25
     -3.0                   |
          Low role perceptions   Easy to affirm items
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Note: X = 1 Person

The person scores can also be plotted for different groups of leaders and the significance of differences between the group scores can be tested by One-way Analysis of Variance (ANOVA). The distribution of person scores for four groups of middle-level leaders of differing period of tenure is presented in Figure 3. The role perception scores of individual middle-level leaders are plotted on the horizontal axis in logits. The frequencies of scores for each of the four groups of leaders are plotted on the vertical axis. The leaders with 16 or more years in the position were statistically significantly more affirmative of their role (F= 3.78, p< 0.05).
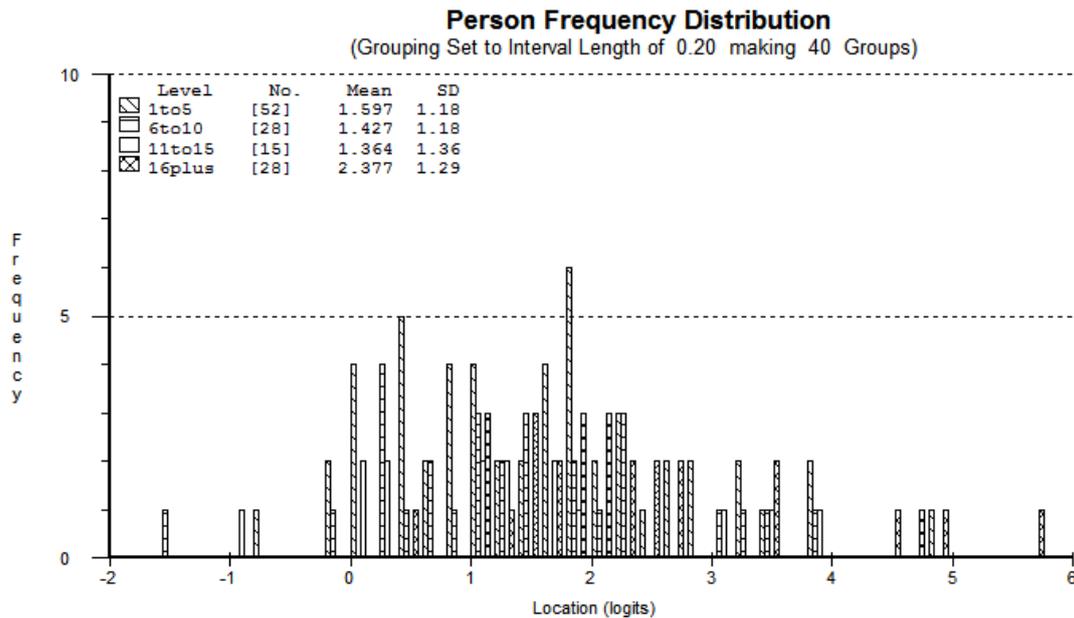
Figure 3. Person Frequency Distribution – years in the position

ANOVA of person scores by type of position and gender did not reveal statistically significant differences.

Discussion

1. Fit of data to the Rasch rating scale model

Responses to Items 24 and 25 were all agree and strongly agree. When RUMM2030 estimated the thresholds, this caused a lack of ordering of the bottom two thresholds. For Items 15 and 31, the strongly disagree category was not selected by the middle-level leaders with low role perceptions as much as the model predicted. This threshold disordering could be rectified by combining the responses from strongly disagree with the disagree responses - a three category response scale is more appropriate for these four items.

For Item 2 ("I receive an appropriate allotment of non-teaching time"), the observed scores of leaders with lower role perceptions were higher than predicted by the model, and the observed scores of leaders with higher role perceptions were lower than predicted by the model. The item did not discriminate as expected and the relation between the observed responses and the estimated levels of role expectations did not comply with the Rasch model. The data from this item should be treated with caution.

Apart from the above instances, the data fitted the Rasch rating scale model well. The fit was good in the facet by facet analyses (five separate analyses) but not as good in the single analysis of data from all the 36 items. Overall, there is evidence that the trait of middle-level leaders' perceptions of their role was measured.

3. Affirmation of features of the role

Five of the role fulfilment items (Items 32, 33, 34, 35 and 36), two of the role value items (Items 24 and 25), and two of the role authority items (Items 8 and 9) were strongly affirmed. The six items concern pleasure and enjoyment with the role, a sense of being valued, and opportunities to contribute. It is likely that this is related to motivation to perform the duties of the position, particularly intrinsic motivation.

Affirmation was also elicited by Items 26 and 27 from role value, Items 10, 11 and 13 from role authority, and Item 31 from role fulfilment. This affirmation tended to be more associated with formal aspects of the role and recognition by others. For example, involvement in school-wide planning, delegation of authority, being listened to, and acknowledgement by the community and colleagues.

Items 1, 4 and 6 from role clarity, Items 15, 18 and 20 from role support, and Item 28 from role value were comparatively more difficult to affirm but still affirmable by the majority of the leaders (leaders with person scores above 0.02 logits). These items elicited information on the role being clearly explained, being understood by others, and being assigned importance by others. Also, on being provided with time and professional learning opportunities.

Items 2, 3 and 5 from role clarity, Items 12 and 14 from role authority, Items 16, 17, 19, 21, 22 and 23 from role support, and Items 29 and 30 from role value had difficulty estimates above the 36-item mean (0.00 logits). Many of these items were similar in content to those in the previous group of items, but were more demanding in the degree of what was specified for affirmation. For example, influencing whole-school development, provision of optimal, high quality professional support, and work being recognised by the school community as vital to the school's operation and performance.

This trend in the nature of item difficulties was continued and Item 7 ("There is a deep and detailed understanding of the role throughout the school community") was the most difficult to affirm. Apart from this rank, it was still affirmed by 40% of the leaders, specifically those with role perception scores above 1.6 logits.

3. Effect of person factors on role perceptions

Of the three person factors, only time in the position was associated with higher role perception scores. The perceptions were gender-neutral and not dependent on the type of position (e.g. head

of subject area, pastoral care coordinator). Presumably, the development of confidence requires a long time and changes significantly over time. The level of 16 year plus leaders' confidence was nearly twice that of less experienced colleagues (mean 2.4 logits compared to mean 1.4 logits).

Conclusion

The data elicited by the self report rating scale survey of middle-level leaders' perceptions of their role met the requirement of the Rasch rating scale model in six analyses. A measure was created and this was used to plot interval data on a linear logit scale for each leader. The difficulties the items presented to respondents were also estimated as interval data and these were also was plotted on a linear scale. The calibration of person and item difficulty scores enables statistical estimations to be made with a level of certainty not possible with raw scores.

The instrument has applicability for measuring aspects of leadership for other school leadership positions and in other types of organisations.

Finally, understanding the results is an interpretive process and in the case of these results, would be greatly assisted by a complementary qualitative study. For example, the planned conjoint interpretation of the findings from the previous interview study and the findings reported in this paper.

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