The Dimensionality of a Preparedness Scale for K-12 Teachers in South Florida

David Walker
Northern Illinois University
Purpose

1. What is the dimensionality structure of the instrument?
2. Does the instrument develop constructs that will measure the theorized domains?
Standards-based reform initiative: A+ Plan.

Examines academic standards that delineate the skills and knowledge that children in the K-12 Florida public school system should comprehend.

Assessments aligned to these standards, which act as accountability measures, play a major role in determining if the standards are being reached and by whom.

Assignment of letter grades based on an “A” through “F” grading scale that corresponds to a school’s success in meeting certain standards and requirements.
The New Teacher Academy (NTA) was created as a link to Florida’s A+ Plan for K-12 public schools in Broward County, which during academic year 2001-02 enrolled 260,892 students.

- Assists new teachers with their performance levels in the classroom as a measure of accountability, but also as a means of professional development.
- Addresses the challenge of hiring more non-education major teachers to educate the increasing student enrollments within the K-12 system.
- Supports new teachers’ development and overall preparedness in the classroom.
Ten major domains were recognized. Of those 10 domains, two were rated as high priority and dealt approximately with the following areas: instruction and classroom-based competencies. These two domains were the principal emphasis of the NTAR results.

In this quasi-experimental nonequivalent-groups design, an instrument was developed and administered to both randomly selected groups: the NTAg group and the Nbn-NTAg group.
Random selection was used for the sample.

NTA participants, who had been hired as new K-12 teachers (i.e., within a semester of the training) and practicing K-12 teachers within the system, who were used as the control group.

The sample size was $n = 105$, where $NTA = 73$ and $Non-NTA = 26$. The sample was predominately Caucasian, female, and elementary school level educators with a Bachelor’s degree.
Instrument consisted of 16 items.

Four-point Likert-type scale, where 1 = Not Adequately Prepared; 2 = Somewhat Prepared; 3 = Prepared; and 4 = Very Prepared.

NTA group reliability coefficient = .9197 with 90% lower and upper confidence limits of (.8949, .9370).

Non-NTA group reliability coefficient = .9216 with (.8780, .9467).
CFA

- The scale needed to be validated to determine if it measured the two domains and if these domains held together.
- Using the extraction method of maximum likelihood with oblimin rotation, a CFA was conducted to look at the total variance explained by the model.
Fit Indices

- As relative fit measures, the incremental fix index ($\text{IFI} = .977$), the comparative fit index ($\text{CFI} = .977$), and the Tucker-Lewis index ($\text{TLI} = .969$) all indicated that the proposed model compared very well to, and exceeded, a null model per the cut point fixed at $\geq .95$.

- The root mean square error of approximation ($\text{RMSEA} = .104$), meaning that this model was a fairly good estimation of misfit to the population correlation matrix, but did have some error.
Extraction Methods

- Eigenvalue greater than 1.00 rule (K1).
- Scree plot.
- Parallel analysis.
- Minimum Average Partial.
- Two factors were extracted.
- Variance of the first factor was \( = 7.531 \) and the second factor \( = 1.789 \).
- Accounted for 58\% of the variation among the 16 variables.
To name these two factors, we rotated the solution to simulate a simple structure via oblimin rotation.

- Relative contribution of each variable to a factor.
- Pattern coefficients are standardized regression weights that account for the correlation among the two factors.
- Structure coefficients are bivariate correlations between the two factors and the 16 variables.
- How a factor primarily influenced a variable was established as both $p \geq .700$ and $s = \geq .700$, while a more moderate extent influence was established as both $p$ and $s$ between .350 and .699.
Rotation

- Factor 1 should be named Classroom and Behavior Management. This incorporated in-class activities, which addressed issues that impacted both learning and instruction such as motivating students to behave, implementing techniques to accommodate various learning styles, and promoting an effective learning environment.

- Factor 2 should be named Instructional Knowledge and Skills, which looked at questions that measured if teachers thought they were prepared to teach students the content standards deemed important toward achieving grade level proficiency.
Conclusions

- Scale was measured as a multidimensional instrument with two distinct factors: classroom and behavior management and instructional knowledge and skills. This implied that one factor was not adequate for the entire instrument.
- Corroborated that the instrument had construct validity by providing evidence that these two domains held together and had a set of 16 items that were relatively homogeneous.
- Can substantiate generated theory about the instrument so that additional analyses can adjoin to these results and shape generalizations back to the K-12 and higher education teacher training populations.
- One approach for K-12 school systems and college of education teacher preparatory programs to initiate an assessment process concerning the preparedness levels of their new hires and graduates.