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Construct Measurement Using Factor Analysis: Creating & Validating Survey Protocols

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Construct Measurement Using Factor Analysis: Creating & Validating Survey Protocols

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Food World Member, *2014-present*

Keep it Brief Richard...

- Research Interests [NOTE: *not an exhaustive listing*]
- Validating Protocols for “New” Populations
- Considering Assumptions

Helping Students Flourish

- Resiliency
 - Positive Psychology (Lopez et al., 2009)
- Spirituality
 - Professional Recognition (ACA, ASCA, CACREP)
 - Conceptualizing Spirituality
 - Internal & Possibly Secular (Noddings, 2006)
 - Religious (Fowler, 1981)
 - constructivist (Phillips, 1995)
- Spirituality & General Well-Being
 - Developmental/Psychological (Kim & Esquivel, 2011)

Holder, Coleman & Wallace (2010)

- Correlations between Spirituality, Religiosity & Happiness in Children
 - 3 Happiness (FACES, OHQ-SF, SHS)
 - 1 Spirituality (SWBQ)
 - 1 Religiosity (PBS)
 - 1 Temperament (EAS)

So What Did Richard Do?

- “New” Populations
 - Instruments Created/Administered with Adult Samples (*spirituality, subjective well-being, temperament, etc.*)
 - Instruments Created/Administered with English Samples (*mindfulness, e.g., CAMM-K*)
- “New” Latent Variables
 - School Counselor PK-12 CGCP Implementation

Assumptions Richard Made

1. EFA versus CFA
2. PAF versus PCA
3. Skewness & Kurtosis Parameters
4. Parallel Analysis

EFA versus CFA

- Confirmatory Factor Analysis (CFA) investigates hypotheses about identified factors and their relationships with each other.
- *Exploring* a construct (e.g., latent variable) and the contributing factor(s) within requires EFA.

(Field, 2009; Nunnally & Bernstein, 1994; Pedhazur & Schmelkin, 1991; Pett et al., 2003)

PAF vs. PCA

- **Underlying Mathematics** (Fabrigar & Wegener, 2012; Field, 2009; Tabachnick & Fidell, 2007)
 - *PAF correlations among variables*
 - *PCA reducing variables to a smaller set*
- **Variance** (Fabrigar & Wegener, 2012; Tabachnick & Fidell, 2007)
 - *PAF analyzing shared variance only*
 - *PCA no distinction between common/unique variance*
- **Theory** (Fabrigar & Wegener, 2012; Gall, Gall & Borg, 2007)
 - *PAF parameter estimates generalized beyond sample*
 - *PCA parameters fit to sampling at core level*

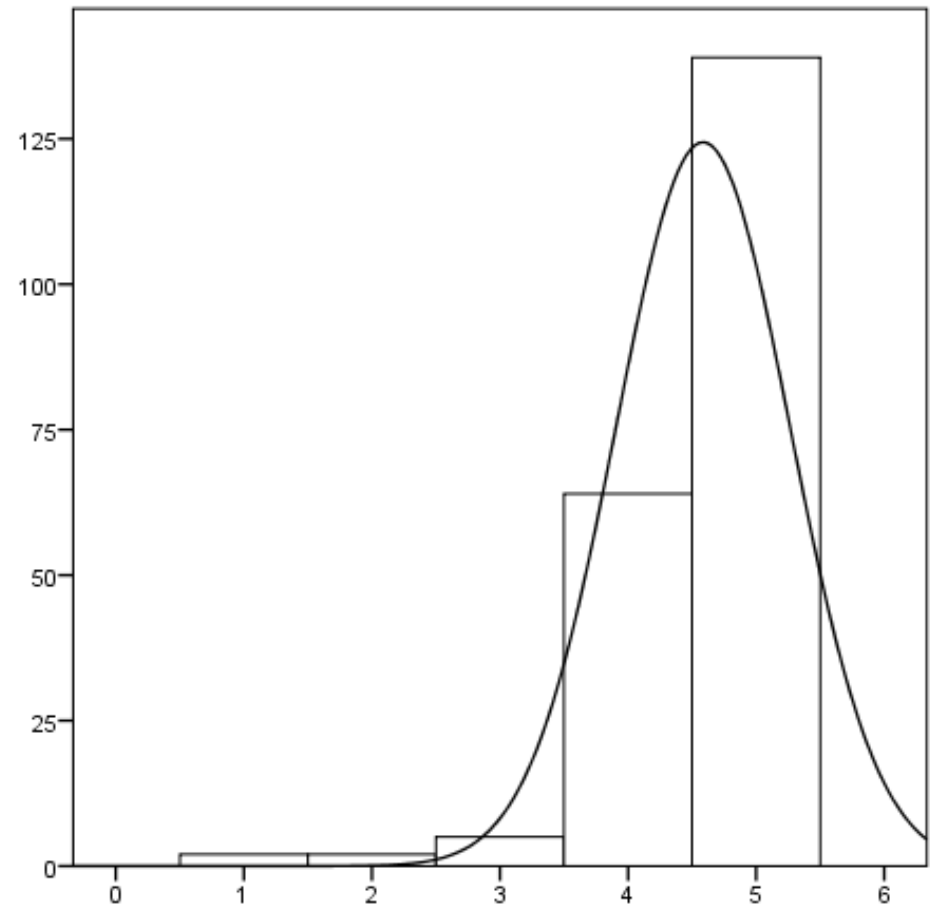
Skewness & Kurtosis

- EFA Parameters

- Skewness < $|2|$

- Kurtosis < $|7|$

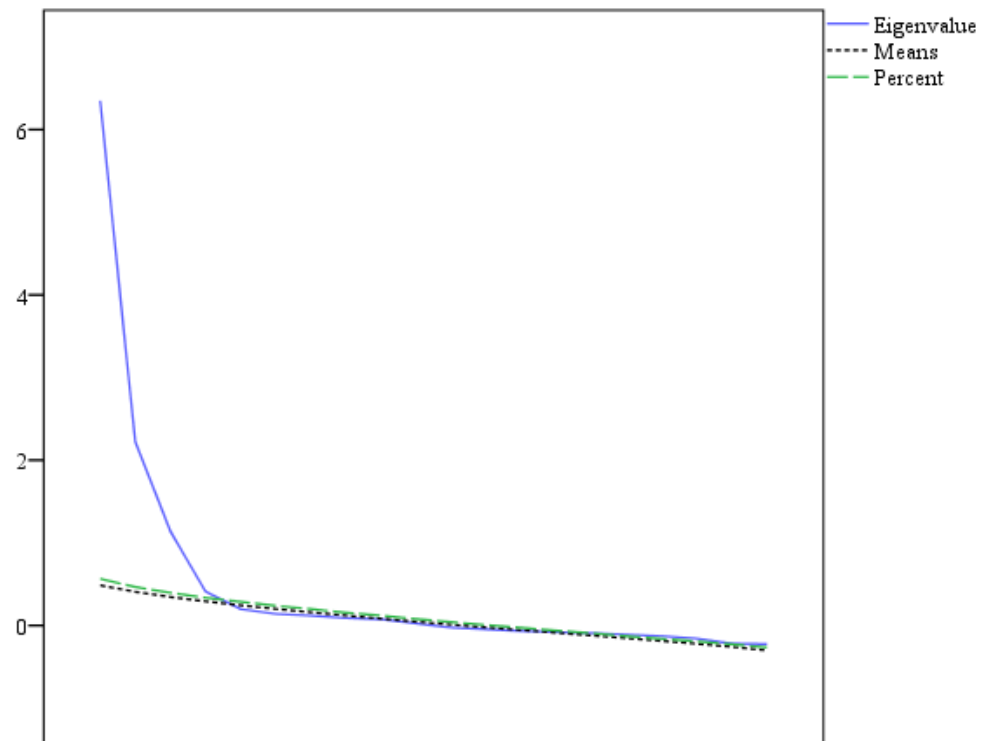
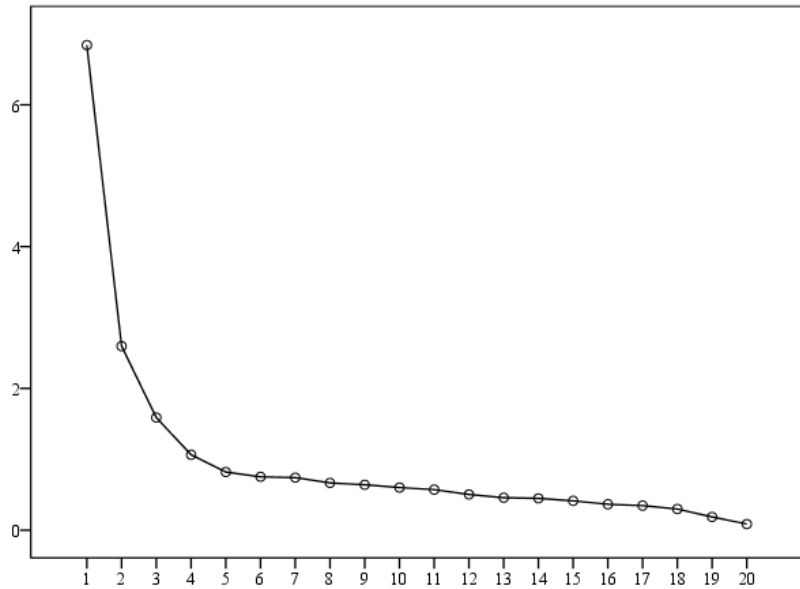
(Fabrigar & Wegener, 2012)



Parallel Analysis

- Determining the appropriate number of factors
 - Random data generated in a parallel (similar) model
 - Non trivial components in the model influence both raw & random data
 - Eigenvalues: Raw > Random
 - SPSS Syntax O'Connor (2000)

(Fabrigar & Wegener, 2012; Fabrigar, Wegener, MacCallum, & Strahan, 1999; Hayton, Allen, & Scarpello, 2004; O'Connor, 2000)



Thank You



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