EVALUATION OF THE VALIDITY AND RELIABILITY OF THE REVISED UNIVERSAL DESIGN IN HEALTHCARE EDUCATION INSTRUMENT

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Learning Objectives

• Describe the universal design framework applied to healthcare teaching environments
• Discuss the psychometric properties of the Universal Design in Healthcare Education (UDinHE) instrument related to the face and content validity, and stable reliability indexes.

• The UDinHE was formerly known as the Inclusive Teaching Strategies in Nursing Education [ITSinNE].
Background

- Healthcare educators are preparing a diverse workforce in response to the growing healthcare needs of a heterogeneous community (American Hospital Association, 2015, 2016)
- Diversity in postsecondary institutions extends beyond ethnicity and includes students with disabilities
- An approach to reduce barriers for students in healthcare academia is universal design (UD)
- UD focuses on inclusive teaching approaches in curriculum development and instructional delivery
Background-con’t

• The practice of UD is well known in other disciplines, but not in professional healthcare programs.

• To date, no valid instrument exists to measure healthcare educators’ perceptions towards inclusive teaching methods based in UD.

• Assessing educators’ perceptions towards UD is the first step in designing and measuring the effectiveness of an educational intervention.
Universal Design for Instruction

• UDI focuses on instructional elements related to content, assessments, delivery methods, and physical environments for the broadest range of learners (McGuire, 2011; Burgstahler, 2017; Levey, 2014, 2015, 2016, 2017, 2018)

• Applicable to all learners:
  Learning styles (VARK)
  English as a Second Language
  Individuals with Disabilities
• Assessment
Which one is the easiest to read?

• Universal Design (44)
• Universal Design (40)
• Universal Design (36)
• Universal Design (32)
• Universal Design (28)
• Universal Design (24)
• Universal Design (20)
• Universal Design (18)
What colors do you see?

Source: Dr Alex Wade, Research Fellow at Stanford University http://www.vischeck.com/info/wade.php
This is what some see...

• Mock strawberries as they would appear to someone who is red/green colorblind.

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UDI in the Classroom and Clinical Environments
Purpose

• Universal Design in Healthcare Education (UDinHE)
  • Overall study: Do the scales measuring the UDinHE constructs demonstrate acceptable estimates of validity and reliability?
  • Presentation: To discuss the refinement of the UDinHE instrument, face and content validity, and stable reliability indexes.
Theoretical Framework

- Diffusion of Innovation (Rogers, 2003)
Measuring Willingness to Adopt Universal Designed Educational Environments Model

Know UD

Support UD

Perceptions of UD
- Relative Advantage
- Compatibility
- Complexity
- Observability
- Trialability

Decision
- Adopt
- Reject
- Contemplating

Implementation
Teaching Setting

Confirmation
C1 and C2 are DIRECT EFFECTS, A1*B is indirect effect 1, and A2*B is indirect effect.
UDinHE

• **Measurement:** The UDinHE is a 33-item instrument (5 pt-Likert); Anchors (*Strongly Disagree* to *Strongly Agree*)

• **Scales—**
  
  • **Knowledge of UDI (4-item)** scale measures healthcare educators’ perceived level of awareness-knowledge of UD concepts.
  
  • **System Support for UDI (4-item)** scale measures healthcare educators’ perceptions of support for UD practices within the systems of their organization: administration, peers’ and institution.
  
  • **Perceptions of UDI (25-item)** scale measures healthcare educators’ perceptions of UDI teaching practices (5-items per subscale: Relative Advantage, Comparability, Complexity, Observability, and Trialability).
Face and Content Validity

- **Face and Content Validity** - A panel of nine experts in UD working in postsecondary education reestablished the face and content validity of the UDinHE.

- The overall scale content validity index (S-CVI) was .98. An S-CVI index of .80 or greater is acceptable (Lynn, 1986; Waltz, Strickland, & Lenz, 2010).
Method

- **Design** - A cross-sectional study (national); repeated measures (stable reliability)

- **Subjects** – Deans and Program Directors from throughout the United States were randomly selected and asked to distribute the survey to faculty. Recruitment was also done through professional associations and organizations’ electronic mailing lists

- Deans and Program Directors associated with the PI’s university were asked to distribute the test-retest survey

- **Inclusion criteria** - Educators currently working in academia in the US with at least two years of teaching experience in the classroom, clinical, online, simulation, skills lab or other setting
Procedure and Incentive

• **Data Collection:** August to December 2017

• **Procedure:** Received IRB approval; invitation and reminder emails sent by electronic mailing lists to subjects for a one-time (national) or two-time (test-retest) survey; secure password; implied consent; opt-out; estimated time to complete approximated at 10 minutes based on previous studies (Dillman, 2009)

• **Incentive:** $50 gift card drawing
  • National survey
  • Test
  • Retest
Determining Sample Size

- **Confirmatory Factor Analysis**
  - *Rule of thumb for determining sample size*, at least 5 participants per item
  - A total of 330 completed surveys were needed for the analysis
  - To account for the 20 - 22 % response rate of online surveys, 1650 educators needed to be recruited
Results

Test-retest

- Internal consistency analysis revealed all subscales had a reliability coefficient (Cronbach’s alpha) greater than 0.70, except for the social system at 0.62 for the 22 paired surveys.
- No significant differences between Time 1 ($M = 2.56, SD = 0.51$) and Time 2 ($M = 2.57, SD = 0.52$) ($t = -0.26, p = 0.79, d = -0.06$) or changes in mean scores; indicating stability of the instrument over time.
- All correlations between subscales were statistically significant at $p < .001$ (two-tailed) and ranged from 0.53 to 0.83; indicating a strong relationship between the constructs.
Limitations

- Convenience sample (test-retest)
- Distribution through some electronic mailing lists were administrator dependent
- Self-report and social desired effect of the survey
Importance and Next Steps

• Significance
  • Professional healthcare education, practice, and research

• Scholarship
  • Publications
  • Conference presentations
  • Holistic admission, assessment, and curriculum

• Research
  • Interdisciplinary team
    • Multi-site interventional study
    • Adaptive equipment in educational settings
Publications


Questions

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