

A grayscale image of the Purdue University clock tower, centered in the background. The tower features a clock face with Roman numerals and a pointed top. The text 'PURDUE' is overlaid in large white letters, and 'UNIVERSITY' is overlaid in smaller yellow letters below it, separated by a thin yellow horizontal line.

PURDUE
UNIVERSITY



My Class Activities (Gentry & Gable, 2001; Choi & Gentry, 2007; Pereira, Peters, & Gentry, 2009)

Student Perceptions of Classroom Quality
(Gentry & Owen, 2004; Chae & Gentry, 2009)

Teacher Observation Form—Revised
(Peters & Gates, 2009)

Mathematical Perceptions Survey
(Mann, 2004)

HOPE Scale
(Gentry et al., 2008; Peters & Gentry, 2009)

Presented by **Nielsen Pereira**
Doctoral Candidate
Purdue University



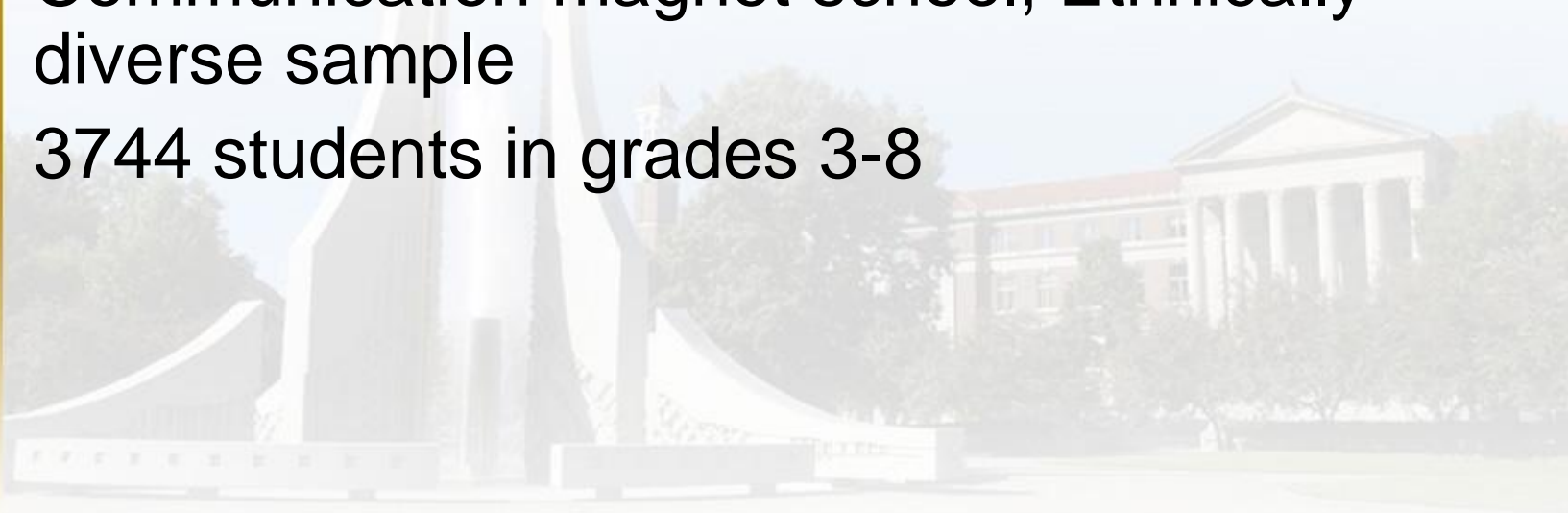


- Pilot Study (1998) (EFA)
- Confirmatory (CFA) & Comparative Studies
- Creative Learning Press (2001)
- Translation and cross-cultural validation
- Measures 3rd–8th grade students' perceptions of
 - Challenge
 - Choice
 - Interest
 - Enjoyment



Rural, Urban, Suburban

- 26 Schools in 7 States, 200 classrooms
 - Elementary Schools (18)
 - Middle Schools (8)
- Public schools, G/T magnet schools, Communication magnet school, Ethnically diverse sample
- 3744 students in grades 3-8





- Alpha reliability estimates (n = 3744)
 - Elementary Range (.68-.91)
 - Middle School Range (.75-.92)
- Test-Retest reliability estimates (.66-.74)
- Construct Interpretation
 - CFA elementary: CFI .92, RMSEA .04
 - CFA middle sch.: CFI .88, RMSEA .09
 - IRT, definition and response scale

My Class Activities

A Survey Instrument to Assess Students' Perceptions of Interest, Challenge, Choice, and Enjoyment in Their Classrooms

Marcia Gentry, Ph.D.
&
Robert K. Gable, Ed.D.

Student Survey About . . .

My Class Activities

Marcia Gentry Ph.D. and Robert K. Gable Ed.D.



We would like to know how you feel about your class activities. Read each sentence and indicate how often this happens for you in your class by coloring in the doughnut. There are no right or wrong answers. Your answers will be kept secret. Remember to color in a doughnut for each sentence.

Student ID				A	B	C	D
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Name/ID _____ (Optional)

Subject/Class _____ Teacher _____

Grade

1 2 3 4 5 6

I am a . . .

Female Male



In the example below, the person indicated that his/her class is often enjoyable.

Example: My class is enjoyable.

Never	Seldom	Some-times	Often	Always
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Never	Seldom	Some-times	Often	Always
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- 1. What I do in my class fits my interests. Never Seldom Some-times Often Always
- 2. I have an opportunity to work on things in my class that interest me. Never Seldom Some-times Often Always
- 3. What I do in my class gives me interesting and new ideas. Never Seldom Some-times Often Always
- 4. I study interesting topics in my class. Never Seldom Some-times Often Always
- 5. The teacher involves me in interesting learning activities. Never Seldom Some-times Often Always
- 6. What I learn in my class is interesting to me. Never Seldom Some-times Often Always
- 7. What I do in my class is interesting. Never Seldom Some-times Often Always
- 8. My class has helped me explore my interests. Never Seldom Some-times Often Always
- 9. The activities I do in my class are challenging. Never Seldom Some-times Often Always
- 10. I have to think to solve problems in my class. Never Seldom Some-times Often Always

Please continue on the back



My Class Activities: Enrichment Program Evaluation



- MCA has been used for student program evaluation at Purdue University since 2004
- Conducting responsible evaluation is important both in general and gifted education (VanTassel-Baska, 2006; Gallagher, 2006)
- Importance of evaluating an instrument on a new population before making decisions based on results (Joint Committee on Testing Practices, 2005)



1. How do *MCA* data from a Saturday student enrichment program fit the original factor model from Gentry and Gable (2001a)?
2. How do alternative models affect overall model fit?
3. What changes (if any) should be made to *MCA* to enable the instrument to be used with enrichment programs?
4. Can the *MCA*, in its current or a revised form, be used as one component to evaluate enrichment programs?

Participants



- 1,065 students in grades 3-8 from 107 classes in a Saturday enrichment program (seven sessions between 2004 and 2008). $N = 826$ cases after listwise deletion.
- Students from rural, suburban, and urban locations
- 51% female and 49% male

- Confirmatory Factor analyses using *MPlus* Software
 - Maximum likelihood estimation: ordinal, moderately non-normal data (skewness <2 ; kurtosis <7) (Finney & DiStefano, 2006)
- Test different models based on theory and previous studies
- Modifications to the instrument based on previous studies and modification indices for the present sample

- Chi-square: Absolute fit index
- GFI: values approaching 1.0 indicate good fit
- Root Mean Square Error of Approximation (RMSEA): Parsimony Correction - $<.01$
- Comparative Fit Index (CFI) : Incremental fit index – values approaching 1.0 indicate good model fit



Model	$\chi^2(df)$	GFI	RMSEA	RMSEA 90% CL	CFI
MCA Original Model	1726.6960 (428)	0.8620	0.0606	(0.0577, 0.0636)	0.893
Second-order Model	2145.5155 (429)	0.8485	0.0694	(0.0665, 0.0724)	0.885
Three-factor Model	2089.6308 (431)	0.8304	0.0683	(0.0654, 0.0712)	0.864
Revised MCA	1269.0860 (379)	0.9107	0.0507	(0.0472, 0.0541)	0.922



- Translationed MCA into Korean
- 648 Korean students in grades 3-6
- Four schools in Korea
- Gifted and non-gifted students
- Interest and Enjoyment combined into Appeal
- Purpose: to verify the validity and reliability of the Korean MCA



1. Korean-English
2. Feedback from Korean students
3. Pilot test (2 students)
4. Translation back into English
5. Congruence of two versions by experts of gifted education
6. Removal of items with congruence scores below 3 (on a 4-point scale)

- Alpha Reliability Estimates ($n=648$)
Appeal: .93
Challenge: .76
Choice: .84
- CFI: .91; RMSEA: .036



- MCA can be used for evaluation and research in both in-school and out-of-school programs
- Original four factors should be retained in the English version.
- A revised version (removing 2 items of the Challenge scale) provided even better model fit for use in out-of-school programs.
- Korean MCA measures three constructs (Appeal, Challenge, Choice)



Presented by **Marcia Gentry, Ph.D.**

Director, GERI

Purdue University

for **YooJung Chae, Ph.D.** 2009

Purdue University

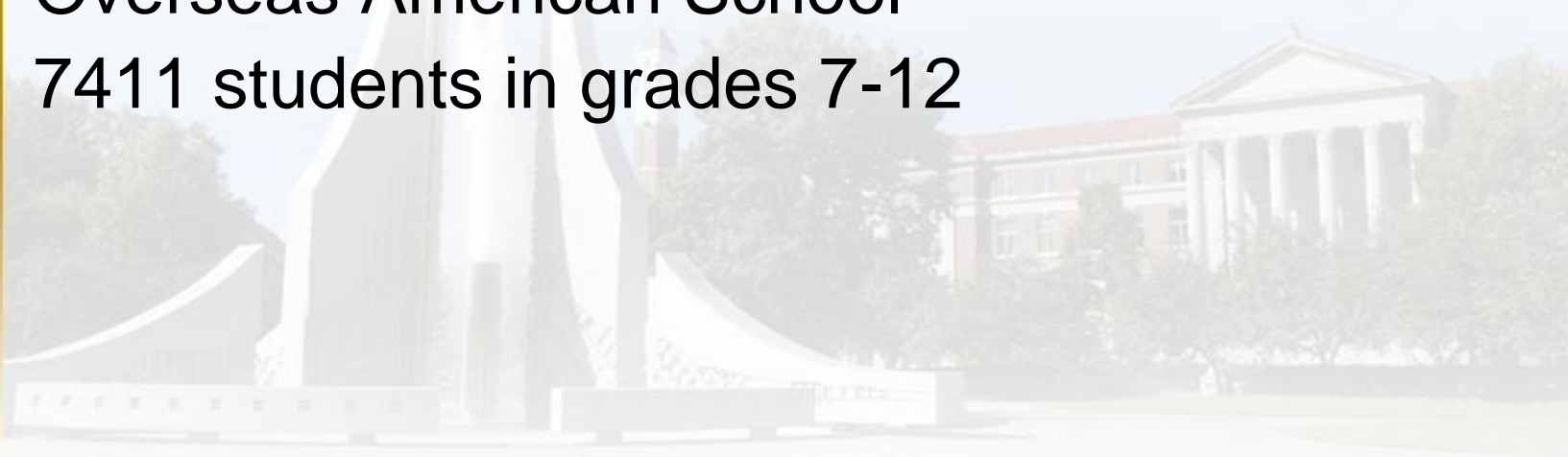


- Pilot Study (JSGE, 2002)
- Confirmatory Study (2002)
- Completing Test/Retest reliability
- Measures grade 7-12 student perceptions of:
 - Appeal,
 - Challenge,
 - Choice,
 - Meaningfulness,
 - Academic Self-Efficacy

Student Perceptions of Classroom Quality: Sample



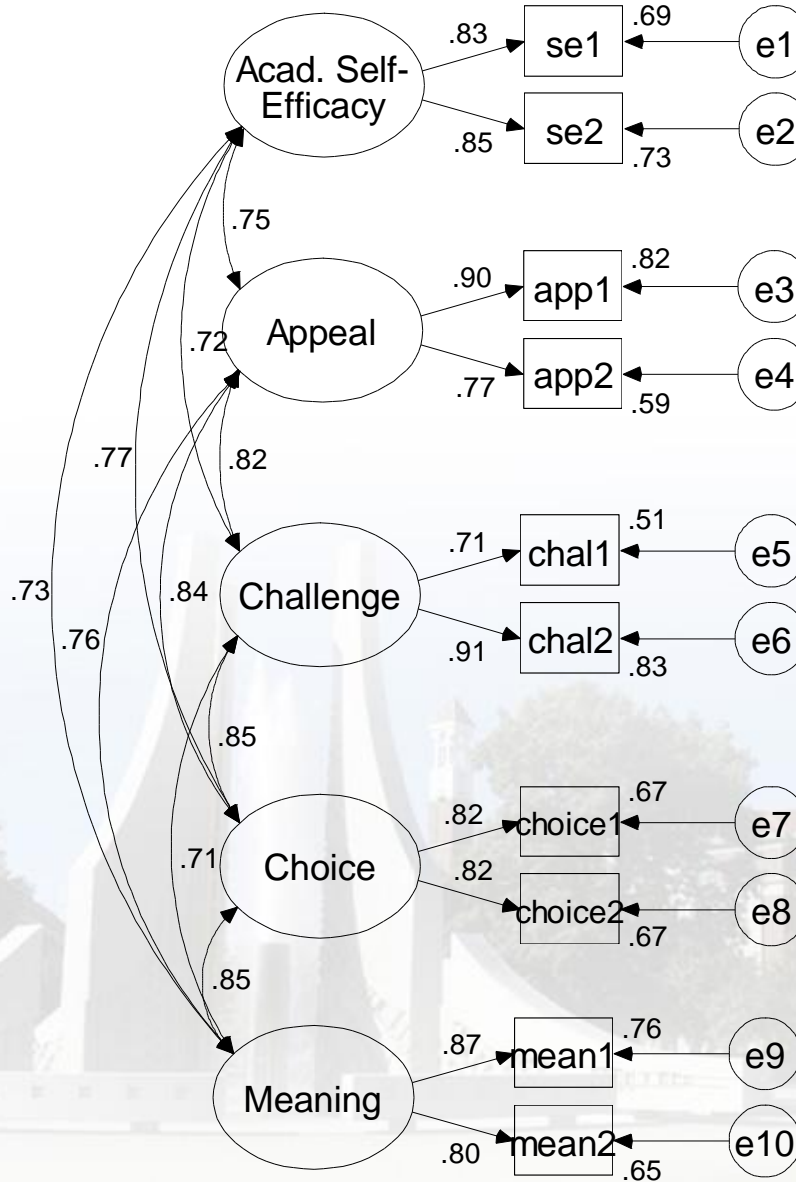
- Rural, Urban, Suburban
- 26 Schools in 7 States & 1 Foreign Country
 - Middle Schools (12)
 - High Schools (14)
- Prep School, G/T magnet, Vocational Center, Overseas American School
- 7411 students in grades 7-12



- Alpha reliability estimates ($n= 7411$)
 - Appeal (.85)
 - Challenge (.81)
 - Choice (.81)
 - Meaningfulness (.80)
 - Academic Self-Efficacy (.82)

- Construct Interpretation
 - CFA: CFI .997, RMSEA .051
(.90 CL=.048-.055)
 - CFA: using randomly generated item parcels for each construct (loadings range from .71-.90)

CFA Model



Student Survey About . . .

Student Perceptions of Classroom Quality

Marcia Gentry, Steven V. Owen, and Penny Springer



Secondary Version

We would like to know how you feel about your class activities. Read each statement and show how much you agree with it by filling in the circle. There are no right or wrong answers. Your answers will be kept confidential. Remember to mark an answer for each statement. In the example below, the person agreed that the class was enjoyable. Thank you for your help in this project!

Name/ID _____ (Optional)
 Teacher _____ School _____

SUBJECT AREA <small>(please choose the answer that most closely describes the type of class in which you are completing this survey)</small> <input type="radio"/> Math <input type="radio"/> Foreign Language <input type="radio"/> Science <input type="radio"/> Art <input type="radio"/> Social Studies <input type="radio"/> Music <input type="radio"/> Language Arts <input type="radio"/> Physical Education <input type="radio"/> Other: _____	COMMUNITY <small>Which type of community best describes your school community?</small> <input type="radio"/> Rural <input type="radio"/> Urban <input type="radio"/> Suburban	GENDER <input type="radio"/> Male <input type="radio"/> Female	ETHNIC GROUP <input type="radio"/> African-American <input type="radio"/> Asian-American <input type="radio"/> Caucasian-American <input type="radio"/> Hispanic-American <input type="radio"/> Native American <input type="radio"/> Other: _____
Is this class an advanced level, Advanced Placement, or honors course? <input type="radio"/> Yes <input type="radio"/> No	GRADE <input type="radio"/> 7 <input type="radio"/> 9 <input type="radio"/> 11 <input type="radio"/> 8 <input type="radio"/> 10 <input type="radio"/> 12	Do you receive any special services from your school district? <input type="radio"/> Yes <input type="radio"/> No If yes, what services do you receive: <input type="radio"/> Gifted/talented <input type="radio"/> English as a second language <input type="radio"/> Speech <input type="radio"/> Hearing <input type="radio"/> Special education-learning disability <input type="radio"/> Special education-behavioral services <input type="radio"/> Compensatory services <input type="radio"/> Other: _____	

Student ID	A	B	C	D
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

Your Current Grade in this Course
 A B C D F

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Example: My class is enjoyable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
1. I am given choices regarding how to show the teacher what I have learned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I'm good at helping other kids understand concepts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I find the contents of my class interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I find my class time instruction appropriately challenges my intellectual abilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. My teacher lets me choose the resources I use for projects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. When there are different ways to show what I have learned, I can usually pick a good way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. The teacher applies the lessons to practical experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I find my class assignments a good challenge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. The assigned reading material for my class is interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. My teacher makes connections between the course material and society.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please continue on the back

Side 2

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
11. I learn best when I am challenged.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I am given lots of choices in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. In my class my teacher relates current issues to the material we are learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I am good at connecting material from this class with the real world.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. This class content is an appropriate challenge for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I feel responsible for my learning because I am allowed to make choices in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. The teacher uses a variety of instructional techniques that make this class enjoyable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I like the challenge of the projects in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. The material covered in my textbook is interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. The textbook provides examples of how the material relates to society and daily living.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I am good at answering questions in this class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. I am encouraged to pursue subjects that interest me in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. It is pretty easy for me to earn good grades.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. In my class I explore real issues that affect the world around me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. I look forward to learning new things in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. I find the reading material for my class a pleasure to read.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. I use my critical thinking skills in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. I'm good at taking tests in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. I can relate the material discussed in my class to my daily life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. I can easily understand reading assignments for this class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. I like going to my class each day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. I can usually discover interesting things to learn about in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. I like the way my teacher challenges me in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. I can express my opinions clearly in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35. Good grades are mainly the result of my hard work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36. Good grades are mainly the result of my ability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37. I can improve my intelligence by working hard.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38. I plan to go to college.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

01021

Gifted and General High School Students' Perceptions of Classroom Quality in Korea and the United States

Yoojung Chae

Research Questions

1. Do the original English version of the SPOCQ and the Korean version of the SPOCQ have equivalent constructs?
2. Are there differences in perceptions of classroom quality between gifted high school students and general high school students in Korea and the U.S.?

- 221 Korean gifted students
- 128 students from one foreign language high school in Seoul and 93 students from one Science Academy in Busan
- 220 students from two general high schools in Seoul and one general high school in Ku-mi- Previous study sample

From SPOCQ validation study in 7 states
(Gentry & Owen, 2004)

- 1,141 gifted students in advanced, AP, or honors classes
- 2,510 students in general classes
- Randomly selected from the SPOCQ validation study sample
- 221 gifted and 220 general students, 10th-11th students only

The original SPOCQ instrument (Gentry & Owen, 2004)

- 5 factors with 34 items: appeal (7 items), challenge (7 items), choice (7 items), meaningfulness (5 items), and academic self-efficacy (8 items) using a 5-point Likert scale of 5 strongly agree to 1 strongly disagree.
- Translated into Korean, back-translated, rechecked (Chae & Gentry, 2007)

- Confirmatory factor analysis (CFA) and Multiple group confirmatory factor analysis (MCFA)



- Missing data- multiple imputation for randomly missing data (Schafer and Graham, 2002)
- Checking univariate skewness and kurtosis of variables : at least under 2 and under 7 respectively (Curran, West, & Finch, 1996)
- Normal distribution- maximum likelihood (ML) estimation following Finney and DiStefano (2006).

- Invariance investigation
 - Factor invariance check : 5 factor Baseline model
 - Factor loadings (pattern coefficients) check
 - Error variances check





Appeal	.86
Challenge	.79
Choice	.86
Meaningfulness	.84
Academic Self-Efficacy	.85

Good internal consistency estimates (Gable & Wolf, 1993)



Acceptable fit to both the Korean data
($\chi^2 = 2065.38$, $p < .001$, $df = 454$;
RMSEA = .091; NNFI = .94; CFI = .94)

and to the U.S. data
($\chi^2 = 2566.03$, $p < .001$, $df = 454$; RMSEA = .011;
NNFI = .93; CFI = .93)

All of the factor loadings were greater than .40

- Baseline model for factor loading invariance (Model1)
- A five factor model including Appeal, Challenge, Choice, Meaningfulness, and Academic Self-Efficacy.

The acceptable five factor model fit ($\chi^2 = 4629.92$, $df = 908$, $p < .001$, $RMSEA = .099$, $NNFI = .94$, $CFI = .93$)

- Constrained all variables equally on factor structure and factor loadings across groups (Model 2): to examine factor loading invariance across groups

->The chi-square difference test between Model 1 and Model 2 indicated that factor loadings (pattern coefficients) were not invariant across groups (χ^2 difference (27) = 167.06, $p < .001$).

Identification of the variables that affected non-invariance across groups

Each factor loading (lambda parameter) of the 32 variables was examined independently





“The assigned reading material for my class is interesting” (Appeal)

“I find the reading material for my class a pleasure to read” (Appeal)

“My teacher lets me choose the resources I use for projects” (Choice)

“I am given lots of choices in my class” (Choice)

“I can relate the material discussed in my class to my daily life” (Meaningfulness)

“I am good at connecting material from this class with the real world” (Academic Self-Efficacy)

“I can express my opinions clearly in this class” (Academic Self-Efficacy)

- The chi-difference test for investigating error variance invariance across groups showed that the error variance (χ^2 difference (5) = 258.864, $p < .001$) was non-invariant.
- A follow-up test to examine the problematic items showed that all 32 variables were non-invariant across groups.
- **In conclusion, partial invariance existed between Korean and U.S. groups**

Research Question 2

2 X 2 MANOVA (Nationality x Giftedness)

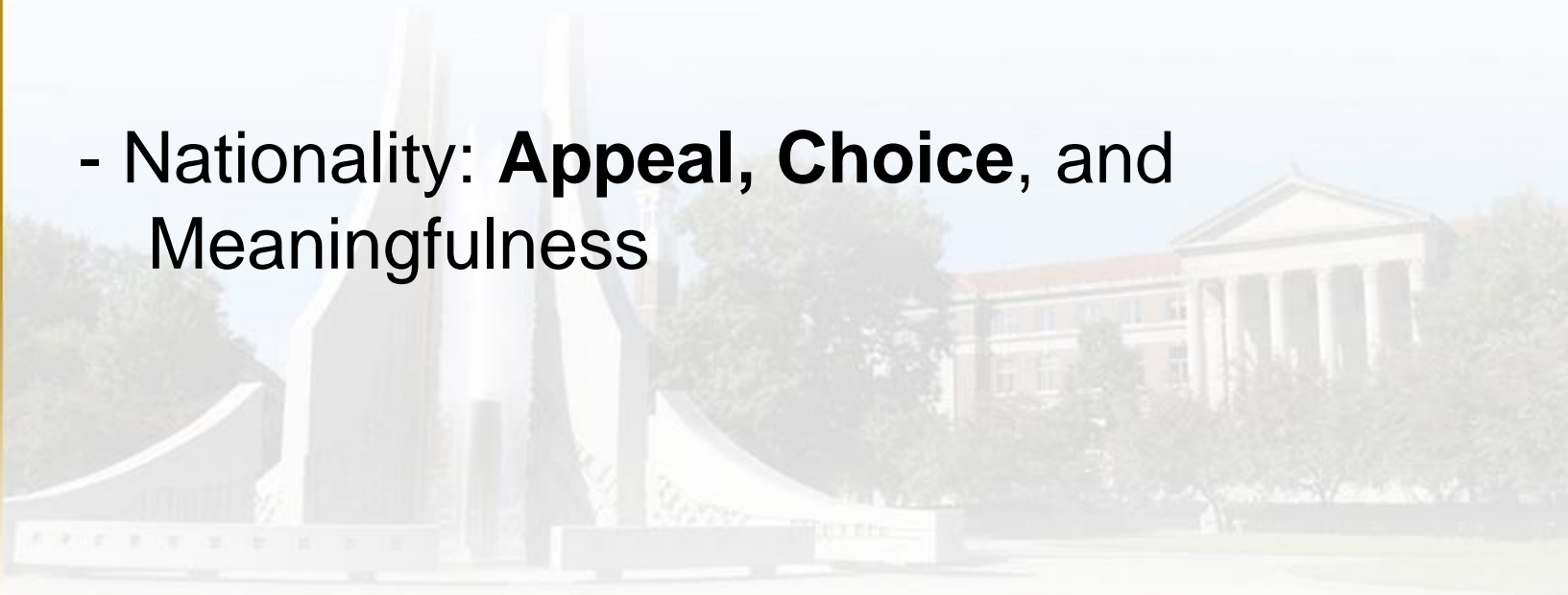
- Differences between Korean and U.S. students, differences between gifted and general students, and interaction effects between nationality and giftedness.

2) Follow-up simple effect tests

- Gifted students' perceptions: different in each nationality group.
- General student perceptions: different in each nationality group.
- Korean students' perceptions: different in each gifted/general group.
- U.S. students' perceptions: different in each gifted and general group.

3) Follow-up DFA

- Giftedness: **Challenge**, Meaningfulness, and Choice.
- Nationality: **Appeal**, **Choice**, and Meaningfulness



- DFA predicted the 63.7% of the gifted group and 57.5% of the general group correctly.
- The predictions for nationality were good: 85.9% of the U.S. group and 80.3% of the Korean group membership were classified correctly.

Conclusions

- The U.S. and the Korean SPOCQ: Same constructs; good to use for cross-cultural study
- U.S. students and the gifted group had higher scores on the SPOCQ scale

- Both Korean and U.S. students need more enjoyment and interest in class; with means ranging from 3.14 and 3.30 on a 5-point scale.

Kim et al. (2006)- Need more interest

Gentry, Gable, & Rizza (2002)- 8th graders, MCA, Enjoyment and Interest

- Meaningfulness and Choice: Moderate predictor of giftedness
 - Different result from the findings of Gentry and Owen (2004); in this current study, gifted students' higher mean scores on the Choice factor.
- > Due to the Korean sample?



Presented by **Jillian Gates**

Doctoral Candidate

Purdue University

Paper by **Scott Peters Ph.D.**

University of Wisconsin, Whitewater

and **Jillian Gates**

What is the TOF?



- The Purdue Teacher Observation Form (TOF) has been used to provide feedback to instructors of the Gifted Education Resource Institute's (GERI) Talent Development Programs for over 25 years.



- Replication of previous reliability and content validity investigations.
- Previous studies sought to identify the most important characteristics of a quality gifted education classroom and develop an observation form.
- They also sought feedback from experts in the field and conducted measures of internal consistency reliability.

- The TOF originally was developed in the late 1970s in order to evaluate the teachers of the Purdue Super Saturday Program.
- The TOF was conceptualized by creating a broad list of competencies from the literature that were seen as important in teachers of gifted students.

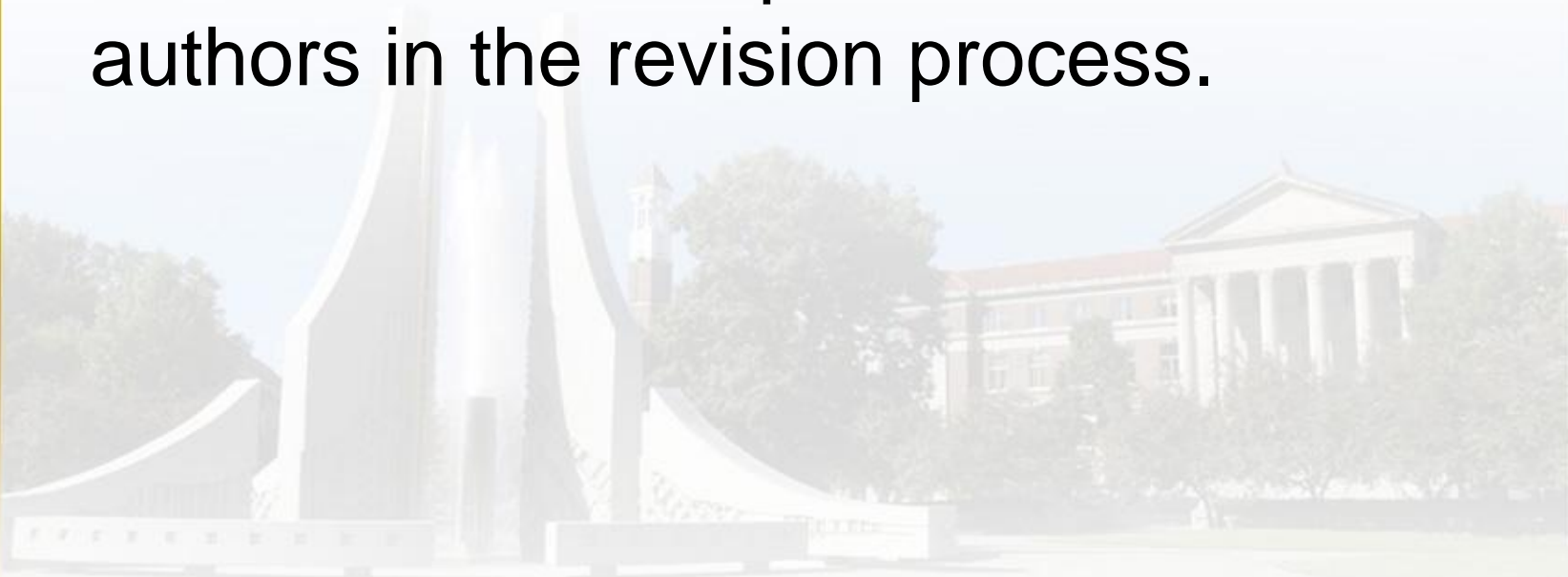
- The first TOF included items such as “Higher level thinking skills used” and “Chance for self-determination of work” and were rated by observers on a five-point scale (outstanding to not satisfactory), plus a “not observed” category .

- The TOF was used for approximately 25 years with no noticeable changes or revisions.
- However, in early 2007 the authors noticed that several of the TOF items no longer seemed appropriate, or that they required some clarification.

- 15 experts in gifted education were given the 12 original items and asked to evaluate them for importance of inclusion in the instrument and for clarity of language.
- These data informed the authors in revising the Form's content and language.

	Importance		Clarity	
	Mean	Std Dev.	Mean	Std Dev.
Areas of Teacher Competence				
Subject matter coverage	4.400	0.737	4.286	0.825
Clarity of teaching	4.467	0.640	4.143	0.770
Motivational techniques	4.286	0.726	4.286	0.825
Pace of instruction	4.600	0.828	4.000	0.877
Opportunity for self-determination of activities by student	4.533	0.743	4.462	0.877
Student involvement in a variety of experiences	4.333	0.724	4.500	0.650
Interaction between teacher and student, student and peers, appropriate to course objectives	4.133	0.915	4.071	0.997
Opportunity for student to follow-through of activities outside of class (homework)	3.133	1.187	4.143	0.770
Emphasis on higher-level thinking skills	4.786	0.426	4.214	0.802
Emphasis on creativity	4.467	0.640	4.143	0.949
Lesson plans designed to meet program, course, and daily objectives	3.600	0.910	3.929	1.072
Use of teaching and learning aids	3.467	0.915	4.786	0.579

- In addition to rating each item according to importance and clarity, experts provided comments about the instrument that helped to inform the authors in the revision process.



- “In regards to the use of teaching and learning aids) Use of technology that advances what students already know – 21st century skills”
- “Add interdisciplinary items to subject matter and rename category as content “
- “Topics of instruction are related to other subjects / content areas.”

Changes Made



Behaviors and Classroom Conditions Observed

Original TOF Sections	Revised TOF Sections
Subject matter coverage	Content coverage
Clarity of teaching	Clarity of instruction
Motivational techniques	Motivational techniques
Pace of instruction	Pedagogy / Instructional techniques
Opportunity for self-determination of activities by student	Opportunity for self-determination of activities by student
Student involvement in a variety of experiences	Student involvement in a variety of experiences
Interaction between teacher and student, student and peers, appropriate to course objectives	Interaction between teacher and student, student and peers
Opportunity for student follow-through of activities outside class (homework)	Opportunity for student follow-up on activities and topics on their own
Emphasis on higher-level thinking skills	Emphasis on higher-level thinking skills
Emphasis on creativity	Emphasis on creativity



Presented by **Rebecca L. Mann, Ph.D.**
Co-Director, GERI
Purdue University



Mathematical Perceptions: Teacher Efficacy, Attitudes, and Performance

Rebecca L. Mann
Assistant Professor of Educational Studies
Co- Director of the Gifted Education Resource Institute

Why do we study mathematics in school?

“Because my teacher could get sued if we don’t. That’s what she said. Any subject we don’t know...wham!

She gets sued.

And she’s already poor.”

(Why do we study math in school?, 1997)

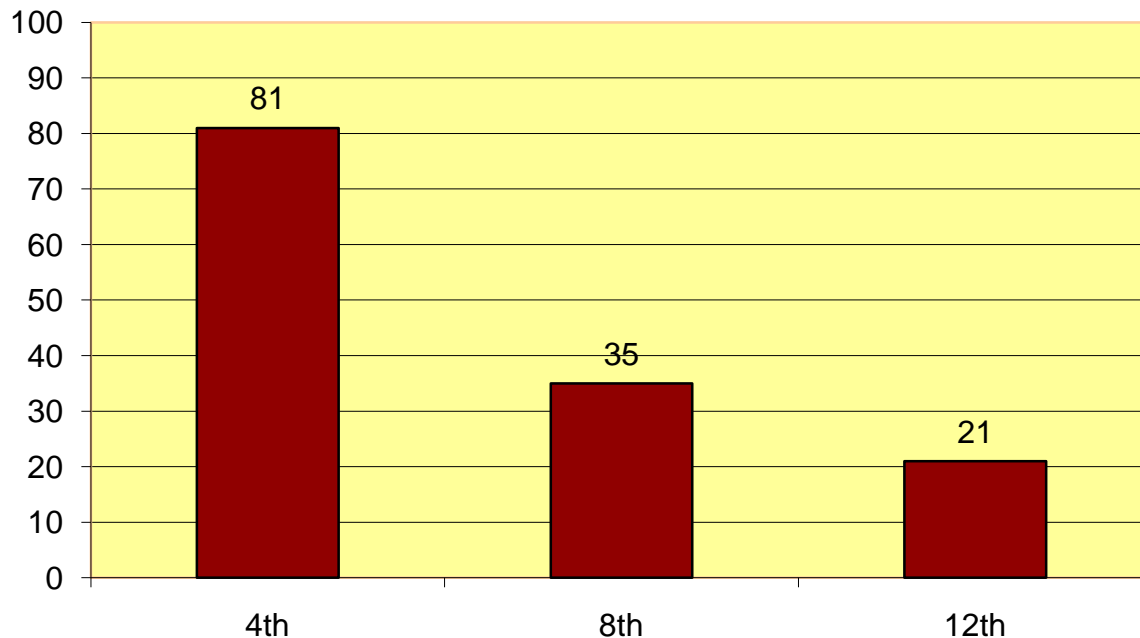
Statement of the problem



0.9% of Bachelor degrees awarded in the US in 2000-2001 were in mathematics. (National Center for Education Statistics, 2003)

49% of math & 53% of engineering doctorates in 1994 in the US earned by foreign students. (Young & Bae, 1997)

STUDENT ATTITUDES TOWARD MATHEMATICS



81% of 4th graders and 35% of 8th graders in US have positive attitudes about math.

- **Attitude** – attitude effects teaching and classroom behavior (Phillipou & Christou, 1998)
- **Performance** – teacher content knowledge is essential factor of effective teacher (Darling-Hammond, 2000)
- **Content Efficacy** – self-efficacy judgment should be consistent with and tailored to the domain of functioning (Pajares, 1996)
- **Teaching Efficacy** - Belief about own teaching ability, belief that one can influence students achievement and engagement (Lin & Tsai, 1999)

To validate results from an instrument designed to measure:

- Ability to do basic elementary mathematics – *performance*
- Confidence in teaching the specific concept being assessed – *content efficacy*
- Teacher efficacy in general mathematics instruction – *instructional efficacy*
- Attitudes toward school mathematics – *attitudes*

Research Question

What are the psychometric properties of Mathematical Perceptions?



Instrument Development

Literature review related to teaching elementary mathematics

- **Attitudes** (Cornell, 1999; Gellert, 1999; Phillipou & Christou, 1998; Sliva & Roddick, 2002)
- **Efficacy** (Bandura, 1997; Pajares & Schunk, 2001; Lin & Tsai, 1999; Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998).
- **Performance** (NCTM, 2000; Kahan, Cooper, & Bethea, 2003; Ma, 1999)



Sample Statements

- I have confidence I can do math.
- I view math as a roadblock I cannot get past.
- I saw a purpose in taking high school math classes.
- I dread being asked to do a math problem.
- I had a fear of math during school.

Format

- Six-point Likert type scale (1 = strongly disagree, 6 = strongly agree)

Content Validity

- 22 original statements
- Reviewed by panel of 8 content experts
- Researchers narrowed field and retained 10 statements

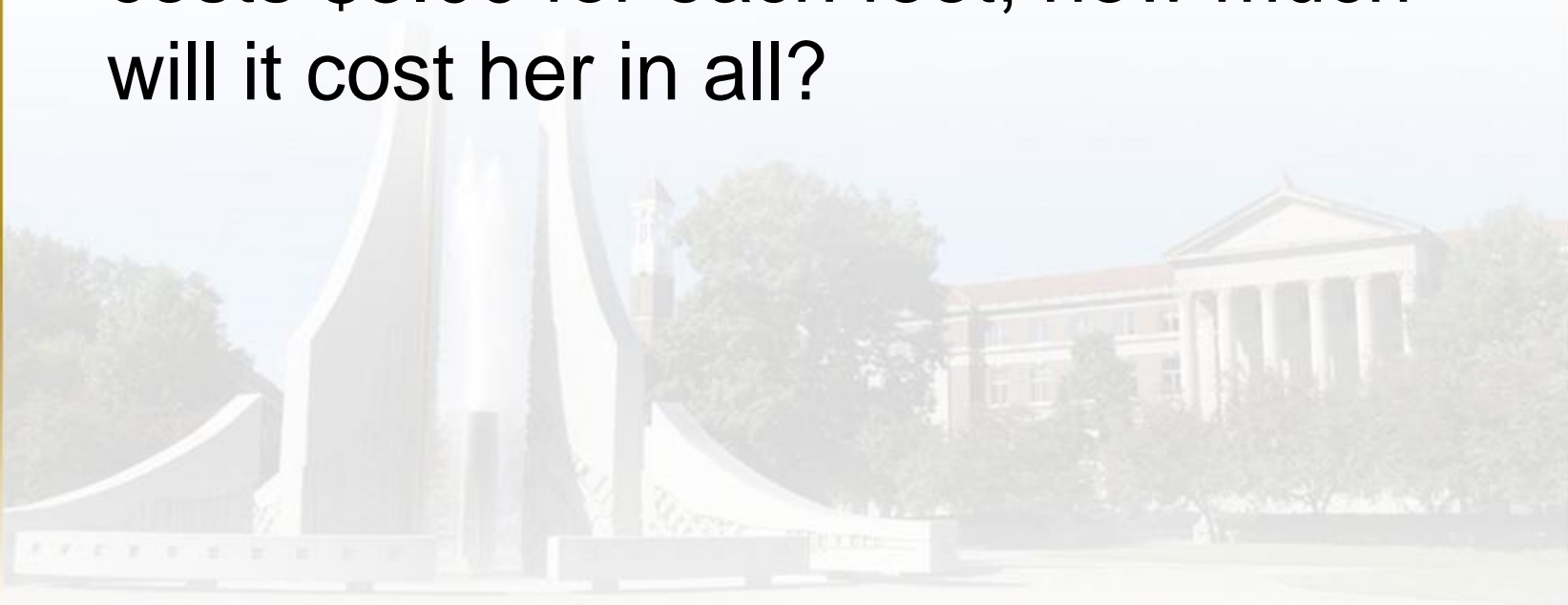


- 14 problems based on the NCTM Strands and Connecticut 5th grade standards
 - Number
 - Algebra
 - Geometry
 - Measurement
 - Data Analysis and Probability
- Participants solved each problem, then rated their comfort in teaching that concept on a 6 point scale.
- “I would be comfortable teaching this concept to students” – Never to Always

Sample Problem



Danielle is going to put a wallpaper border around her room. Her room is 11 feet long and 9 feet wide. If trim costs \$3.00 for each foot, how much will it cost her in all?





Sample Statements

- I will be able to adjust the level of difficulty of my lessons to meet the needs of individual students in my math class.
- I will be able to rephrase a question or provide an alternative explanation when my students do not understand.
- If a student were to grasp a concept quickly, it may be a result of my effective teaching strategies.
- If a student did not grasp a concept presented in a previous lesson, I have the ability to reteach the concept in a way that will increase his or her retention.

Format

- Six-point Likert type scale (1 = strongly disagree, 6 = strongly agree)

Content Validity

- 10 original statements, all retained
- Reviewed by panel of 8 content experts

Sample

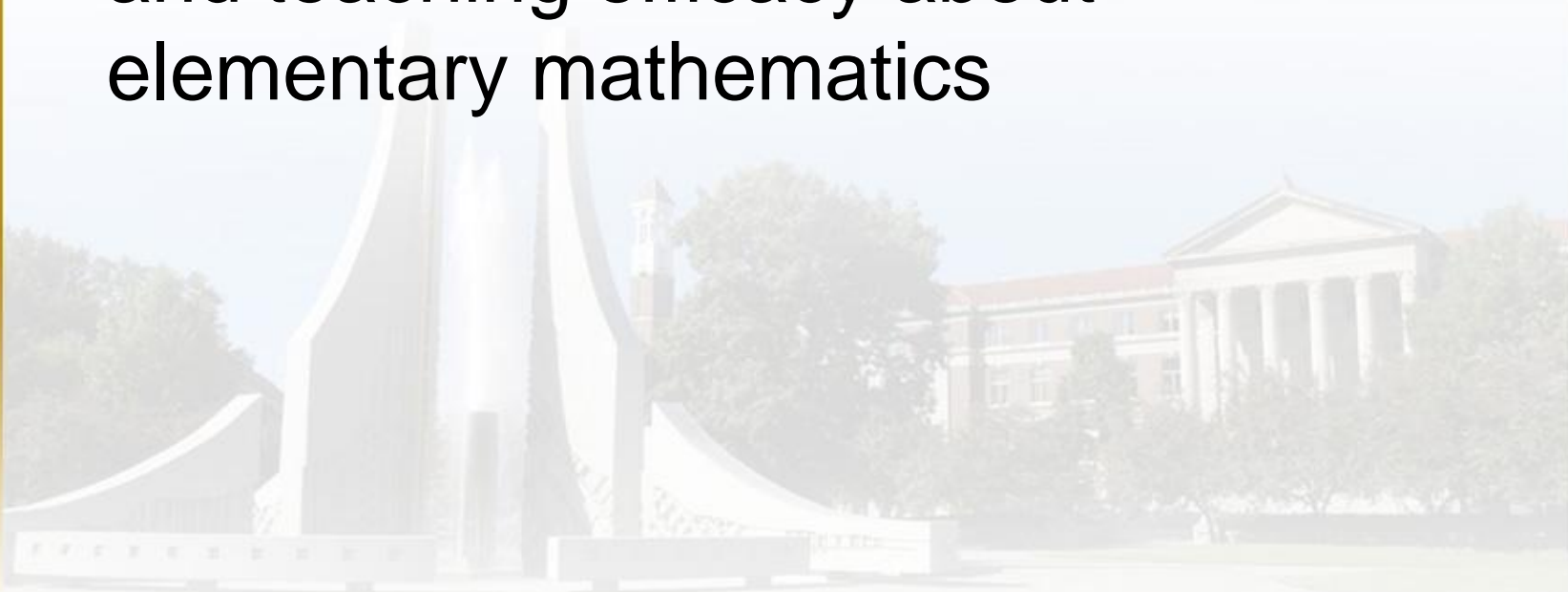


- Midwestern elementary teacher candidates near the end of their coursework
- $N = 267$
- 78% female, 16% male, & 6% unknown
- 93% Caucasian, 3% African-American, 2% Hispanic, and 2% unknown

- Part I - Attitudes
 - 2 factors
 - Statements #2 and #9 load on factor 2
 - #2. I view math as a challenge to be undertaken.
 - #9. I had to work hard in math.
- Part II – Content Efficacy
 - 1 factor
- Part III – Teaching Efficacy
 - 1 factor

- Part I – Attitude
 - Cronbach's Alpha = .82
 - Without statements 2 and 9 = .90
- Part II – Content Efficacy
 - Cronbach' Alpha = .96
- Part III – Teaching Efficacy
 - Cronbach's Alpha = .93

- *Mathematical Perceptions* could prove useful to gauge teacher candidate attitudes, content efficacy, and teaching efficacy about elementary mathematics





Presented by **Marcia Gentry**, Ph.D.

Director, GERI

Purdue University

Paper by **Scott Peters**, Ph.D.

University of Wisconsin, Whitewater

and **Marcia Gentry**

Involving Teachers in the Gifted and
Talented Identification Process: *The
HOPE Teacher Rating Scale*

Scott J. Peters

Marcia Gentry



- 30 of 43 states responding in the State of the States report indicated that the GT identification process was initiated after a teacher or parent referral
- Despite advances in psychological testing, much of the ID decision often falls on one teacher or on specific gatekeepers' shoulders



- “The use of teacher judgments in the identification of gifted children should be continued, and, in fact, expanded” (Hodge & Cudmore, 1986)
- Teachers can notice non-traditional talents that are often culture-specific and not measured by standardized tests (Peterson & Margolin, 1999)



- Rating scales can help lend structure to a component of the ID process that is otherwise very subjective
- Can help teachers avoid bias for or against certain genders, races, ethnicities, or income groups
- Can allow for students to be compared across raters



The vast majority have no psychometric properties and were at best haphazardly designed (e.g., KOI, TABS, KTII)

- Even the best designed and researched rating scales have not been evaluated for group equivalence (e.g., SRBCSS, GRS, GES, GATES)
- None have been specifically designed with a focus on use to identify low-income students

The *HOPE* Scale



- Items include behaviors most easily noticeable in underrepresented students
- Only includes 12 items making it easy to complete on a classroom of students
- Asks rater to rate each student as compared to others of similar background and experience in order to create a specific norm / comparison group

- The HOPE Scale has been:
 - Completed by approximately 420 teachers on 7700 students from Indiana and Illinois
 - Subjected to EFA and multiple rounds of CFA on the different revisions
 - Evaluated for income, gender, and race / ethnicity group differences
 - Evaluated for the level of teacher influence



- Students should only be compared within their income group, but can also be compared across racial / ethnic groups
- Differential item functioning was found due to gender – gender comparisons should be avoided
- Teacher-level effects were small (i.e., .13 - .15)



- The *HOPE Scale* can be included as one component / pathway in an identification process
- Students within major subgroups can be compared in order to determine those who might benefit most from special programming

PURDUE UNIVERSITY HOPE Scale: Academic Scale



1. Performs or *shows potential* for performing at remarkably high levels.
6. Is eager to explore new concepts.
7. Exhibits intellectual intensity.
9. Uses alternative processes.
10. Thinks “outside the box.”
11. Has intense interests.

Internal consistency reliability estimate: **.96**

PURDUE UNIVERSITY HOPE Scale: Social Scale



2. Is sensitive to larger or deeper issues of human concern.
3. Is self-aware.
4. Shows compassion for others.
5. Is a leader within his/her group of peers.
8. Effectively interacts with adults or older students.

Internal consistency reliability estimate: **.92**



Date of Birth: _____ Age: _____ Sex: Male Female Free/Reduced Lunch
 American Indian/Alaska Native Asian Black or African American White
 Native Hawaiian or Other Pacific Islander Mixed Race Hispanic / Latino/a

When rating students on each item below please think about the student *compared to other children similar in age, experience, and/or environment.*

Use the following scale to indicate how frequently you observe the traits and behaviors listed in items 1 – 11.

6 = always 5 = almost always 4 = often 3 = sometimes 2 = rarely 1 = never

	6	5	4	3	2	1
1. Performs or <i>shows potential</i> for performing at remarkably high levels.						
2. Is sensitive to larger or deeper issues of human concern.						
3. Is self-aware.						
4. Shows compassion for others.						
5. Is a leader within his/her group of peers.						
6. Is eager to explore new concepts.						
7. Exhibits intellectual intensity.						
8. Effectively interacts with adults or older students.						
9. Uses alternative processes.						
10. Thinks "outside the box."						
11. Has intense interests.						
12. Please indicate all content areas where the student shows talent. <input type="checkbox"/> Math <input type="checkbox"/> Reading <input type="checkbox"/> Creative Writing <input type="checkbox"/> Social Studies <input type="checkbox"/> Science <input type="checkbox"/> Foreign Language <input type="checkbox"/> Arts <input type="checkbox"/> Other _____						

Please provide additional information concerning this child's potential:

¹Developed with funding from the Jack Kent Cooke Foundation 2007

Questions/Discussion?



A grayscale image of the Purdue University clock tower, centered in the background. The tower has a clock face with Roman numerals and a pointed top. The text 'PURDUE' is overlaid in large white letters, and 'UNIVERSITY' is overlaid in smaller yellow letters below it, separated by a yellow horizontal line.

PURDUE
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