

SIGNificance.

The newsletter for the AERA Research on Giftedness and Talent SIG

Guidelines for Data Analysis

Letter from the Chair, Michael Pyryt

This year, AERA is returning to Chicago. This city is where the Special Interest Group: Research on Giftedness and Talent had its beginning. Sandy Cohn drafted the petition to form a SIG on Intellectual Giftedness in April 1985. As one of the original signers of the petition, it's an honor for me to serve as chair of a SIG that now numbers 163 current members. The SIG owes a debt of gratitude to Carolyn Callahan, Past Chair, for her leadership from July 2004 through June 2006. I hope to build on the excellent foundation that we have established.

For this column, I thought I'd discuss my Top 5 rules about data analysis, realizing that others might view my rules as biases.

Over the years I have developed a passion for data analysis and strong convictions about how to approach data analytic tasks. For this column, I thought I'd discuss my Top 5 rules about data analysis, realizing that others might view my rules as my biases.

My first rule might be called Less is More. One overarching complex analysis is better than multiple simple analyses. One MANOVA trumps five ANOVAs. One MANOVA with fifteen dependent variables is preferable to three MANOVAs with five dependent variables each. One canonical analysis is better than four separate multiple regression analyses.

The problem with multiple analyses is that they inflate the nominal level of significance and so increase the likelihood of a Type I error. Even if this aspect is controlled by adopting a more conservative

alpha level, multiple analyses fail to take into account the intercorrelation among variables. Measures of divergent thinking, for example, can be scored for fluency, flexibility, and originality. There is a very high correlation between fluency and both flexibility and originality. In the simple multiple analyses approach, one might conclude that an instructional program improved fluency, flexibility, and originality. A more complex analysis might reveal



that by simply improving fluency, flexibility and originality were necessarily improved. Less is more also applies to the number of variables used. Using factor analysis to derive four intelligence factors is preferable to using ten highly correlated subtests.

My second rule might be called You Need Variability to Account for Variance. Many correlational and multiple regression studies are doomed to failure due to limited variability in the predictor, criterion, or both. Consider a study of the validity of the Graduate Record Exam at selective universities. There is restriction of range of both the predictor (only those above a certain cut-off get in) *continued page 7*

Spring 2007

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- Terry Friedrichs
- Marion Porath
- Michael Pyryt
- Carol Tieso

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Annual Meeting Highlights. Chicago, April 9-13, 2007

Consult the schedule below for the dates, times and locations of sessions relevant to giftedness and talent. See page 6 for detailed information about each session.

Monday, April 9

12:00-12:40 p.m.: The Personality of Giftedness: Identification to Talent Development (roundtable). *Hyatt Regency Grand Ballroom Sections C&D South, East Tower, Gold Level*

6:15 p.m.– 8:15 p.m.: Gifted SIG Business Meeting. *Sheraton Chicago, Michigan, Level 2*

Don't miss the Gifted SIG Business Meeting on Monday, April 9 from 6:15-8:15 p.m. in Sheraton Chicago, Michigan, Level 2

Tuesday, April 10

8:15-10:15 a.m.: The Social/Emotional Needs of Gifted Students: Perfectionism, Social Coping, and Self-Concept (paper discussion). *Sheraton Chicago, Michigan, Level 2*

4:05-6:05 p.m.: Programming Issues in Gifted Education (paper discussion). *Sheraton Chicago, Michigan, Level 2*

4:55 p.m.– 5:35 p.m.: Diverse Gifted Learners: The Risks and Promises (roundtable). *Sheraton Chicago, Michigan, Level 2*

Wednesday, April 11

8:15 a.m.-10:15 a.m.: Developing Specific Talents in Gifted Students (paper discussion). *Sheraton Chicago, Michigan, Level 2*

10:35 a.m.-12:05 p.m.: Curriculum and Instruction for Gifted Students (paper discussion). *Sheraton Chicago, Michigan, Level 2*

Thursday, April 12

8:15 a.m.-10:15 a.m.: Influence of Teachers on Gifted Students (paper discussion). *Sheraton Chicago, Michigan, Level 2*

10:35 a.m.-12:05 p.m.: Characteristics of Gifted Students (paper discussion). *Sheraton Chicago, Michigan, Level 2*

12:25 p.m.– 1:55 p.m.: Evaluation and Policy Studies in Gifted Education (paper discussion). *Sheraton Chicago, Chicago Ballroom, Section VI, Level 4*

2:15 p.m.– 3:45 p.m.: Scaling Up of Effective Interventions with Students of Poverty (symposium). *Sheraton Chicago, Erie, Level 2*

4:05 p.m.-6:05 p.m.: The Self-Concept and Self Esteem of Gifted Students (paper discussion). *Sheraton Chicago, Michigan, Level 2*

Friday, April 13

8:15 a.m.– 10:15 a.m.: Factors that Influence the Behavior and Personality of Gifted Students (paper discussion). *Sheraton Chicago, Superior, Level 2*



Report from the Program Committee on 2007 AERA Gifted SIG Submissions and Acceptances

Cheryll Adams, Program Chair, & Carol Tieso, Assistant Program Chair.

-67 papers and 1 symposium were submitted

-Based on our submissions, we were allotted 10 substantive sessions and 2 roundtable sessions

-3 papers were deleted and the authors notified—2 because of length (30+ pages) and 1 because the author indicated it had been presented last year at AERA

-8 proposals were rejected based on reviewers' assessments

-56 individual papers and 1 symposium were accepted

-6 sessions are 120 minutes long and have 5 papers, 3 sessions are 90 minutes and have 4 papers

-2 roundtables sessions, 40 minutes, 7 papers in each

-Michael Pyryt has volunteered to bring an LCD projector and laptop to all SIG paper sessions.

Social and Emotional Needs, and Preferred Educational Approaches, for Gifted Gay and Bisexual Adolescent Males

Terry Friedrichs, *Friedrichs Education, St. Paul, Mn.*

In my dissertation research with four artistically-gifted, high-school-aged, gay and bisexual adolescent males at a Midwestern state high school for the arts (Friedrichs, 2005), I employed a postmodernist-influenced framework of open-ended questions, interactive discussion of responses, and other general interview guidelines from Seidman (1991), as well as additional, gay-specific interview suggestions from Kong, Mahoney, and Plummer (2002). In my interviews, I investigated the applicability of those social and emotional needs

previously affirmed in three earlier research groups (Friedrichs & Etheridge, 1993) to the current subjects' lives, over their school careers in grades 7-8, 9-10, and 11-12. I utilized pre-set interview questions as my research focus. I also used traditional data coding guidelines from Neuendorf (2002) to find content themes in student responses. In reporting content themes running through the respondents' answers, I wrote summaries in terms of whether (and to what degree) the majority of subjects affirmed each hypothesized socially-constructed need and each hypothesized helpful approach. I also employed

postmodernist principles to describe further the content themes evident in the youths' responses, reporting the contextual *whos, whats, whens, wheres,* and *hows* associated with their needs and the fulfillment of those needs. I then undertook a postmodern analysis of the various content themes derived from the students, using the rather "dark" lens of Foucault (1977) -- when the subjects' responses illustrated mostly disenchantment and unmet social and emotional needs -- and the "lighter" framework of Kumoshiro (2000) -- when the youths' answers revealed general student (*cont'd p. 4*)

The Child as Psychologist: Children's Understanding of Exceptional Learning Abilities

Marion Porath, *University of British Columbia*, & Judy Lupart, *University of Alberta*

This research project focuses on children whose development is advanced but nonetheless considerably variable across academic and social domains and children who have both advanced capabilities and learning disabilities. Children's and adolescents' definitions of learning and perspectives on their patterns of development in reading, writing, and mathematics, how they would like to be taught and would choose to teach these subjects are emphasized, along with their perceptions of their own and others' roles and responsibilities in school. Interview and observational data, children's representations of themselves as learners, and responses to semi-structured interviews based on school-related social scenarios combine to give a picture of students'

perspectives on their education. Using a neo-Piagetian theoretical perspective, the development of core understandings about learning, teaching, and the social dimensions of school is being analyzed from childhood to adolescence. Following is an example of a 7th grade gifted boy's representation of himself as a learner:

$X=Y+12-10+20-8+(-200)+[(-100)x(-3)]$
 $Y=4Z+(10!)$
 $Z=(100x100x79)-\{10000x[5-(-22)]\}$
 $Z=52000$
 $Y=3836800$
 $X=3836914$



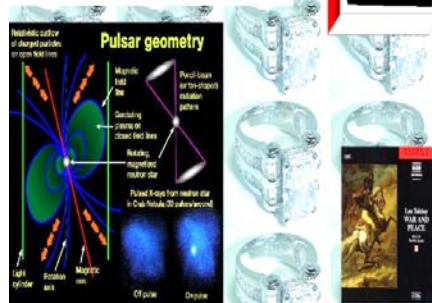
Judy Lupart

In his accompanying narrative, he explains:

I would like to explain my image. First, the diamond and platinum rings in the background represent my passion for expensive jewelry. Second, the complex algebra problem and the picture of quasar star geometry represent my passion for mathematics and advancing my skill in it in my free time. Third, the item that looks marginally like a book and says "TANKS" is representing my immense liking towards writing non-fiction pieces. Fourth, and finally, the picture in the lower right-hand corner of Leo Tolstoy's famous War and Peace represents my huge will to read. However, feel free to interpret the image as you wish.



Marion Porath



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SIGNificant Research: Gifted Gay and Bisexual Adolescent Males, cont'd

(cont'd from p. 3)

engagement and fulfilled needs.

The summary of content themes revealed that the previous three research phases' needs and approaches were generally affirmed by the present subjects (with varying degrees of vigor)

As students strove to establish their identities, they demonstrated both passive and active resistance to the largely-straight cultural hegemony.

for their several secondary schooling phases. The postmodern analysis of the subjects' comments showed six particularly common themes in the six item groups, including respondents' identity development, resistance, construction of needs, dialoguing, resilience, and fluidity. The subjects developed growing GLBT identities through their GLBT socialization experiences (group #A, items # 1-4), demonstrating desires to be a part of the GLBT community through their increasing acknowledgments of male-to-male attractions and through expressions of exclusion from mainstream culture. As students strove to establish their identities, they demonstrated both passive and active *resistance* to the largely-straight cultural hegemony (Group B, #5-8), rejecting the anti-gay comments of their peers and seeking out much more positive information about sexual minorities. Just as youth resisted obstructive forces in the meeting of their needs, they moved toward more affirming forces, *constructing* their needs and appreciation for positive GLBT-related experiences (Group C, items #9-14) in their various relationships with straight and GLBT peers. In proceeding toward meeting their needs, the subjects also engaged in *dialogues* with a broad spectrum of youth and adults in their midst (Group D, items #15-18), achieving noticeably improved relationships with both par-

ents. In dealing with relatives and peers, respondents demonstrated *resilience* (Group E, items #19-24) from those earlier periods when their needs had not been met. Resilience that became especially clear evident in their improved relationships with their relatives. The youths' renewed willingness to dialogue with others after tough interpersonal times, reflected their *fluid* needs (Group F, items #25-29), especially in their newfound emphases seeking out teacher support in important instructional, artistic, and emotional arenas.

Based on the preceding post-modernist analyses, I offered some possible recommendations for gifted GLBT youth's schooling in highly-controlled settings, such as all four subjects' middle schools and the two rural and suburban subjects' grade 9 and 10 schools. I also made suggestions for more-sensitive locations, including the subjects' urban grade 9 and 10 settings

Parents and teachers can engage more in knowing and asking about GLBT-student issues.

and State Arts High School. Both sets of recommendations dealt with teacher actions in the my six areas of inquiry: a) GLBT socialization, (b) GLBT information flow, (c) peer relations, (d) movement toward independence, (e) relatives' acceptance, support, and nurturance, and (f) teachers' support of specific needs. In highly-controlled locations, representing a range of conditions described symbolically by Foucault (1977), parents and teachers can engage more in *knowing* and *asking* about GLBT-student issues. These adults also can *reinforce* constructive parent, educator, and student actions in support of these youth. In this "hopeful" reading of Foucault, knowing, asking, and reinforcing are actions that

even resistant witnesses may risk, to help the GLBT youth around them. For schools with histories of GLBT-sensitive treatment, teachers can probably consider more ambitious suggestions. Adults can be guided by the words "find," "share," and "dialogue," words summarizing Kumoshiro's (2000)

Adults can strive openly and actively to assist these youth with GLBT-specific protection, instruction, and guidance.

positions, as they can strive openly and actively to assist these youth with GLBT-specific protection, instruction, and guidance.

References

- Foucault, M. (1977). *Discipline and punish*. London: Allen Lane.
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The AERA SIG: Research on Giftedness and Talent

invites our members to an evening of business and pleasure in Chicago, IL ...

Business Meeting Symposium: *Doing more Regression-Discontinuity Studies of the Gifted: Why RDD is better than other Quasi-Experimental Alternatives*



Monday, April 9, 6:15-8:15

Sheraton, Michigan, Level 2

Pleasure: Rock Bottom Brewery (One W. Grand Ave.)

(www.rockbottom.com)

Monday, April 9 from 8:30pm-10:30pm

Party in a private room with hot appetizers and a cash bar

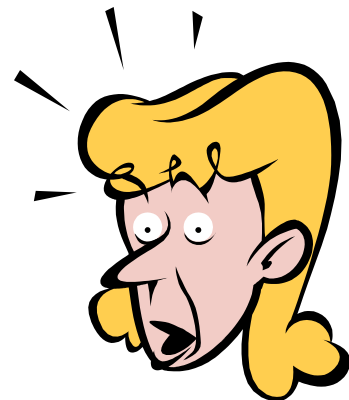
COST: \$24 per person

OR come as a new AERA SIG member!

SIG membership is only an additional \$10.00/year (FREE for graduate students!).

Please add our SIG to your AERA membership!

<http://www.aeragifted.org/>



Descriptions of AERA Gifted SIG Sessions

Characteristics and Needs of Gifted Students

Papers in this session explore various aspects of characteristics and needs of gifted students. Topics include young gifted children, identification, and motivation.

Curriculum and Instruction for Gifted Students

Various models and strategies are used to deliver curriculum and instruction to gifted students. This session examines several vehicles for providing these services.

Developing Specific Talents in Gifted Students

This session examines talent and talent development in the specific areas of mathematics, athletics, spelling and technology as well as talent development in general.

Effective Scaling Up Interventions for Students of Poverty

Over the past four years, Project Athena has addressed the needs of Title I students by using both multiple and alternative assessments and a language arts curriculum rich in adaptations for scaffolding higher order thinking in the hopes that interventions designed for gifted learners would benefit all learners. This symposium brings together a set of papers that addresses three-year longitudinal research results of this project, implemented in seven school districts in three states. Data will be reported on 1) the effects of interventions on students' critical thinking, reading comprehension, and curriculum-based performance; 2) the effects of teacher professional development on differentiated instructional strategy use and effectiveness; and 3) the effects on school response to innovation and scale-up efforts.



Joyce Van Tassel-Baska, Project Athena.

Factors that Influence the Behavior and Personality of Gifted Students

The presenters in this session examine internal and external factors that may influence the behavior and personalities of gifted students. Papers in this session address ADHD, underachievement, personality, special friends, and creativity.

Influence of Teachers on Gifted Students

Attitudes, beliefs, qualities, and perceptions of teachers about gifted students influence the manner in which teacher-student interactions occur, access to services, and the opportunities afforded gifted students. These papers investigate the ways teachers may directly or indirectly influence the identification and education of gifted students.

Evaluation and Policy Studies in Gifted Education

Evaluation of gifted programs and the policies that govern gifted services are important issues. These papers explore evaluation and policy at the district, state and national levels.

Programming Issues in Gifted Education

Identifying students as gifted and/or talented implies that there will be programs or services to meet their needs. The presenters in this session discuss various aspects of programming for gifted students.

Self-Concept and Self-Esteem of Gifted Students

The papers in this session explore academic self-concept and self-esteem of gifted students. Gender's role in self-concept is also discussed.

Social and Emotional Needs of Gifted Students: Perfectionism, Social Coping, and Self-Concept

The social and emotional aspects of gifted education are often neglected in the classroom. The presenters in this session examine several facets of these issues in papers that address self-concept, social coping, and perfectionism.

AERA Gifted SIG Business Meeting Agenda. Monday, April 9, 6:15 p.m. -8:15 p.m.

-Symposium by Thomas Cook and Vivian Wong: *Doing more Regression-Discontinuity Studies of the Gifted: Why RDD is better than other Quasi-Experimental Alternatives*

-Business Meeting:

- Welcome
- Treasurer's Report (Catherine Brighton)
- Program Report (Cheryll Adams)

-Social Report (Marcia Gentry)

-Publications Report (Holly Hertberg-Davis & Jonathan Plucker)

-Elections Report (Del Siegle)

-Presentation of Awards (Awards Committee)

-Adjournment to Rock Bottom Brewery! (see page 5 for your invitation)

Letter from the Chair: Guidelines for Data Analysis, cont'd

(continued from p. 1) and criterion (students are thrown out unless they maintain a high GPA). Almost any correlational study attempting to relate ability and achievement using only a sample of gifted students will have similar problems. Studies attempting to

My third rule is that Everything is Likely to be Correlated.

document the effectiveness of gifted programs on achievement will only work if off-level testing is done so there is room on the achievement measures to show growth.

My third rule is that Everything is Likely to be Correlated. It would be nice if all our predictor variables were correlated with the criterion but uncorrelated with each other. Since this is unlikely to happen, one shouldn't force it to happen. When conducting a factor analysis, I'm a believer in using some form of oblique rotation so that there are no artificial constraints on the correlation among factors. When conducting standard multiple regression or predictive discriminant analysis one should avoid the stepwise approach, which gives the best solution for the particular variables and sample, but will never replicate. All types of multiple regression including discriminant analysis and canonical analysis produce the best fitting weights for a particular variable set and sample. Structure coefficients (the correlations between scores

on a variable and scores generated by regression equations) provide critical information about the underlying relationships and should always be reported in addition to the standardized regression weights.

My fourth rule is to recognize that Computer Calculations can be Fallible. Correlations can range from -1.00 to 1.00. Since standardized regression weights in multiple regression, discriminant analysis, canonical analysis, and structural equation modeling are forms of correlation coefficients, the values of the standardized regression weights should not exceed 1.00. Sometimes they do. The culprit is usually multicollinearity (high correlations among variables in a variable set). Sometimes variables that should have positive

My fourth rule is to recognize that Computer Calculations can be Fallible.

weights enter equations with negative weights. This is an indication of a suppressor effect in which irrelevant variance is partialled out. The value of standardized regression coefficients should be smaller than the simple correlations between a predictor variable and the criterion. When one or more values is larger, it's an indication that there are likely problems with multicollinearity and possible suppressor effects. When I review manuscripts for publication or proposals for conferences, I often request that a table of correlations be

provided. Without this information, it's hard to determine whether or not the obtained regression weights are reasonable.

My fifth rule is to remember that Statistical Significance Does Not Indi-

My fifth rule is to remember that Statistical Significance Does Not Indicate Practical Importance.

cate Practical Importance. I've been an early jumper on the effect size bandwagon, the focus of last year's SIG: Research on Giftedness and Talent business meeting. In Canada, J. Philippe Rushton has achieved notoriety for his claims of a statistically significant relationship between circumference of the head and intelligence scores. If Rushton were correct, we in the field of the gifted could use tape measures instead of WISC-IVs to obtain our samples. The correlation between head circumference and IQ based on thousands of military recruits is approximately .10. From a practical point of view, we can say that 1% of the variation in the IQ scores of these military recruits could be accounted for by knowing the circumference of their heads.

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In a Nutshell: The Top 5 Rules of Data Analysis

1. Less is More.
2. You Need Variability to Account for Variance.
3. Everything is Likely to be Correlated.
4. Computer Calculations can be Fallible.
5. Statistical Significance does not Indicate Practical Importance.

Contributors...

Cheryll Adams, Ph.D.



Dr. Cheryll Adams is the Director of the Center for Gifted Studies and Talent Development at Ball State University and is Program Chair for the AERA SIG on Research on Giftedness and Talent.

Terry Friedrichs, Ed.D.

Terry Friedrichs earned a Ph. D. in gifted education and special education from the University of Virginia in 1990 and an Ed. D. in critical pedagogy from the University of St. Thomas (MN) in 2005. As director of Friedrichs Education, a one-on-one education center in St. Paul, MN, he currently assesses, teaches, consults, and advocates for many groups of gifted and special needs individuals (K-adult). He has served gifted GLBT youth for almost 20 years, as a teacher, researcher, and advocate, at the senior high, undergraduate, and graduate levels. His dissertation on gifted gay and bisexual males, described in this issue of *SIGNificance*, was awarded the NAGC Research and Evaluation Division's Dissertation of the Year Award.

Marion Porath, Ph.D.



Dr. Marion Porath is a Professor in the Department of Educational and Counselling Psychology, and Special Education at The University of British Columbia. Her research interests include different forms of giftedness, young children's social development, instructional applications of developmental theory, innovative approaches to early childhood education, and problem-based learning. Her current research focuses on gifted and gifted/learning disabled children's and adolescents' views of themselves as learners and their understanding of the learning process.

Michael Pyryt, Ph.D.



Dr. Michael Pyryt is Director of the Centre for Gifted Education and Associate Professor of Applied Psychology at the University of Calgary. He specialized in gifted education at both the Master's (Johns Hopkins University) and Doctoral Level (University of Kansas). His research interests include conceptions of giftedness, gifted education, multivariate analysis, applied psychometrics, creativity, personal development and special education.

Carol Tieso, Ph.D.



Dr. Carol Tieso is an Assistant Professor at the College of William and Mary where she teaches graduate courses in gifted education. She was the program chair in gifted education at the University of Alabama for five years prior to joining the staff at William and Mary. She completed her Ph.D. in Educational Psychology at the University of Connecticut in 2000. Her research interests include examining the impact of flexible grouping and curriculum differentiation on students' achievement, self-efficacy, and self-concept; and addressing the social and emotional needs of gifted, talented, and creative students.

Working on something interesting?

Share the wealth...

Write an article for the *SIGNificance* newsletter.

Next deadline: July 15, 2007.

Submit your writing to Holly Hertberg-Davis: hollydavis@virginia.edu