

**Bethany C. Bray**  
Curriculum Vita

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The Methodology Center  
College of Health and Human Development  
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### Current Position

July 2007—Present Assistant Director, The Methodology Center, The Pennsylvania State University  
July 2007—Present Research Associate, The Methodology Center, The Pennsylvania State University

### Education

2007 Ph.D. Human Development and Family Studies, The Pennsylvania State University  
Advisor: Dr. Linda M. Collins  
Dissertation Title: *Examining Gambling and Substance Use: Applications of Advanced Latent Class Modeling Techniques for Cross-sectional and Longitudinal Data*

2006 M.A.S. Applied Statistics, The Pennsylvania State University  
Project Title: *The Reliability of Type-specific Inhalant Abuse and Dependence Criteria Among Adolescents and Young Adults*

2005 M.S. Human Development and Family Studies, The Pennsylvania State University  
Thesis Title: *Modeling the Development of Substance Use and Delinquency Simultaneously: An Associative Latent Transition Analysis Example*

2000 B.S. Mathematics and Applied Statistics, The University of Michigan, Dearborn

### Honors

2008 National Council on Problem Gambling Outstanding Dissertation Award

### Research Experience

07/01/2005—06/30/2007 Pre-doctoral Research Fellow, Prevention and Statistical Methodology Training Program, The Methodology Center and The Prevention Research Center, The Pennsylvania State University; Funded by the National Institute on Drug Abuse, National Institutes of Health, T32-DA-017629

07/01/2002—06/30/2005 Research Assistant, The Methodology Center, The Pennsylvania State University

01/01/2001—06/30/2002 Research Assistant, The Methodology Center, The University of Michigan

11/01/1999—12/31/2000 Research Assistant, College of Arts, Sciences and Letters, The University of Michigan, Dearborn

## Funding

- 06/01/2008—05/31/2010 *Alcohol use and gambling in college: Examining unique aspects, shared aspects, and event-level co-occurrence of behaviors*  
Alcohol Beverage Medical Research Foundation (ABMRF)  
Role: Principle Investigator (20% effort)  
Total Costs: \$100,000
- 09/01/2007—08/31/2008 *Understanding the comorbidity between gambling and substance use through the development and application of latent class methodologies*  
The Methodology Center, The Pennsylvania State University  
Role: Principle Investigator (20% effort)  
Total Costs: \$17,610
- 03/01/2008—08/31/2008 *Unique and shared aspects of alcohol use and gambling in college: A pilot study to inform behavior assessment*  
Children, Youth, and Families Consortium of the Social Science Research Institute, The Pennsylvania State University  
Role: Principle Investigator  
Direct Costs: \$1,500

## Travel Awards

- May 2007 SPR/ECPN Annual Meeting Scholarship Program: Early Career Scholarship (\$450)  
May 2006 SPR/ECPN Annual Meeting Scholarship Program: Early Career Scholarship (\$500)

## Peer-Reviewed Publications

- White, H. R., **Bray, B. C.**, Fleming, C. N., & Catalano, R. F. (in press). Transitions into and out of light and intermittent smoking from adolescence into emerging adulthood. *Nicotine and Tobacco Research*.
- Ridenour, T. A., **Bray, B. C.**, & Cottler, L. B. (2007). Reliability of use, abuse, and dependence of four types of inhalants in adolescents and young adults. *Drug and Alcohol Dependence*, 91(1), 40-49.
- Bray, B. C.**, Almirall, D., Zimmerman, R. S., Lynam, D., & Murphy, S. A. (2006). Assessing the total effect of time-varying predictors in prevention research. *Prevention Science*, 7(1), 1-17.

## Under Review

- Koukounari, A., Webster, J. P., Donnelly, C. A., **Bray, B. C.**, Naples, J., Bosompem, K., & Shiff, C. (*Journal of Parasitology*). Sensitivity and specificity of diagnostic tests for estimating infection prevalence of *Schistosoma haematobium* using data from adults in the central region of Ghana.

## In Preparation

- Bray, B. C.**, Collins, L. M., White, H. R., & Pandina, R. J. (*Journal of Gambling Studies*). Patterns of gambling activity participation among college students: A latent class approach to identifying and predicting types of high-risk gamblers.

**Bray, B. C., & Ridenour, T. A.** (*Journal of Youth and Adolescence*). Examining late childhood predictors of gambling participation and the desire to gamble in the future.

### Other Publications

Ridenour, T. A., **Bray, B. C.**, Scott, H. S., & Cottler, L. B. (2008). Classification and assessment of substance use disorders in adolescents. In C. A. Essau (Ed.), *Adolescent addiction: Epidemiology, assessment, and treatment (Practical resources for the mental health professional)*. Burlington, MA: Academic Press.

Wong, P., McAuslan, P., & **Bray, B. C.** (2000). *Survey of problem gambling in the Metropolitan Detroit Area, 2000*. Conducted under contract for the United Way Community Services.

### Technical Reports

**Bray, B. C.** (2008). *Dissertation executive summary for "Examining gambling and substance use: Applications of advanced latent class modeling techniques for cross-sectional and longitudinal data"* (Tech. Rep. No. 08-88). University Park, PA: The Methodology Center, The Pennsylvania State University.

**Bray, B. C.** (2005). *Modeling the development of substance use and delinquency simultaneously: An associative latent transition analysis example* (Tech. Rep. No. 05-72). University Park, PA: The Methodology Center, The Pennsylvania State University.

**Bray, B. C.**, Zimmerman, R. S., Lynam, D., & Murphy, S. (2003). *Assessing the total effect of time-varying predictors in prevention research* (Tech. Rep. No. 03-59). University Park, PA: The Methodology Center, The Pennsylvania State University.

### Invited Presentations

**Bray, B. C.** (2008, June). *Examining gambling and substance use: Applications of advanced latent class modeling techniques for cross-sectional and longitudinal data*. Paper presented at the 22<sup>nd</sup> National Conference on Problem Gambling: "Family and Community Issues," Long Beach, CA.

**Bray, B. C.** (2008, March). *A multidimensional latent variable approach to the measurement of gambling*. Paper presented at the 8<sup>th</sup> Annual Scientific Meeting of the American Academy of Health Behavior: "Addictions: From Cells to Societies," Oxnard, CA.

**Bray, B. C.** (2006, February). *Rambling, gambling Willie: What Bob Dylan left out about pathological gambling*. Paper presented at the Centre County Correctional Facility, Bellefonte, PA.

**Bray, B. C., & Collins, L. M.** (2005, February). *Modeling the development of substance use and delinquency simultaneously: An associative latent transition analysis example*. Paper presented at The Methodology Center, The Pennsylvania State University, University Park, PA.

**Bray, B. C.**, Zimmerman, R. S., Lynam, D., & Murphy, S. (2003, April). *Assessing the total effect of time-varying predictors in prevention research*. Paper presented at the University of Michigan—Dearborn, Dearborn, MI.

## Workshops

Collins, L. M., Lanza, S. T., & **Bray, B. C.** (2007, February). *ZA spring seminar, topics in advanced categorical data analysis (CDA): Latent class analysis for cross-sectional and longitudinal data*. The University of Cologne: Cologne, Germany.

**Bray, B. C.** (2006, Summer). *An introduction to programming in SAS*. The Pennsylvania State University: University Park, PA.

## Organized Symposia

Chairs: **Bethany C. Bray**, Brittany L. Rhoades. *Modeling risky behaviors with latent class and latent transition analysis: New applications and innovative approaches* (organized poster forum). Presented at the Society for Prevention Research 15<sup>th</sup> Annual Meeting: “Advancing Science-Based Prevention: Creating Real World Solutions” (May 31, 2007).

Chair: **Bethany C. Bray**. *Recent research on gambling from late childhood to adulthood: Implications for prevention*. Presented at the Society for Prevention Research 14<sup>th</sup> Annual Meeting: “Applying Prevention Science to Reduce Health Disparities” (June 1, 2006). Speakers: **B. C. Bray**, T. A. Ridenour, K. C. Winters.

## Presentations

**Bray, B. C.**, & Collins, L. M. (2006, June). *The structure of gambling behavior in adulthood*. Paper presented at the Society for Prevention Research 14<sup>th</sup> Annual Meeting: “Applying Prevention Science to Reduce Health Disparities,” San Antonio, TX.

Ridenour, T.A., & **Bray, B.C.** (2006, June). *Do correlates of preadolescent gambling resemble correlates of early substance use targeted in prevention programs?* Paper presented at the Society for Prevention Research 14<sup>th</sup> Annual Meeting: “Applying Prevention Science to Reduce Health Disparities,” San Antonio, TX.

Wong, P., McAuslan, P., & **Bray, B.** (2000, August). *Survey of problem gambling in the Metropolitan Detroit Area, 2000*. Paper presented at the Joint Mathematical Association of America and Pi Mu Epsilon National Conference, Los Angeles, CA.

## Posters

**Bray, B. C.**, Cleveland, M. J., Greenberg, M. T., Feinberg, M. E. (2008, May). *Examining differences in patterns of alcohol, tobacco, marijuana, and other drug use by gambling behavior*. Poster presented at the Society for Prevention Research 16<sup>th</sup> Annual Meeting: “Context and Prevention Science,” San Francisco, CA.

**Bray, B. C.**, Collins, L. M., White, H. R., & Pandina, R. J. (2008, March). *Identifying and predicting types of college-student gamblers*. Poster presented at the 8<sup>th</sup> Annual Scientific Meeting of the American Academy of Health Behavior: “Addictions: From Cells to Societies,” Oxnard, CA.

Palen, L., Smith, E. A., Caldwell, L. L., **Bray, B. C.**, & Flisher, A. J. (2008, March). *Longitudinal patterns of cigarette use among South African high school students*. Poster presented at the Biennial Meeting of the Society for Research on Adolescence, Chicago, IL.

- Bray, B. C.,** Collins, L. M., White, H. R., & Pandina, R. J. (2007, November). *An alternative approach to identifying types of gamblers: Using latent class analysis to identify and predict high-risk college-student gamblers*. Poster presented at the National Center for Responsible Gaming 8<sup>th</sup> Annual Conference: "Responsible Gaming, Regulation and Recovery: Testing Conventional Wisdom," Las Vegas, NV.
- Bray, B. C.,** Lanza, S. T., & Collins, L. M. (2007, May). *Modeling the longitudinal relation between adolescent smoking and drinking behavior*. Poster presented at the Society for Prevention Research 15<sup>th</sup> Annual Meeting: "Advancing Science-Based Prevention: Creating Real World Solutions," Washington, DC.
- Bray, B. C.,** & Ridenour, T. A. (2006, June). *Do predictors of late childhood substance use also predict gambling during late childhood?: Implications for prevention*. Poster presented at the National Council on Problem Gambling 20th Annual Conference on Prevention, Research, and Treatment of Problem Gambling: "Addressing Gambling Problems in Underserved Populations," St. Paul, MN.
- Bray, B. C.,** & Collins, L. M. (2005, December). *Using latent class analysis to examine the structure of gambling behavior*. Poster presented at the National Center for Responsible Gaming 6<sup>th</sup> Annual Conference: "Finding Common Ground on Prevention, Treatment, and Policy," Las Vegas, NV.
- Bray, B. C.,** & Collins, L. M. (2005, May). *The relation between the waxing and waning of adolescent substance use and delinquency*. Poster presented at the Society for Prevention Research 13<sup>th</sup> Annual Meeting: "Prevention Science to Public Health: Promoting Well-Being in the Population," Washington, DC.
- Bray, B. C.,** Whyte, K. S., & Collins, L. M. (2005, May). *The methodological state of research on gambling among adolescents*. Poster presented at the Society for Prevention Research 13<sup>th</sup> Annual Meeting: "Prevention Science to Public Health: Promoting Well-Being in the Population," Washington, DC.
- Bray, B. C.** (2004, June). *Spatial distribution of poverty in Michigan counties, 1990 Census data*. Poster presented at the 7<sup>th</sup> International Summer Institute on Developmental Science, Jyvaskyla, Finland.
- Bray, B. C.,** Zimmerman, R. S., Lynam, D., & Murphy, S. A. (2003, June). *Assessing the total effect of time-varying predictors in prevention research*. Poster presented at the Society for Prevention Research 11<sup>th</sup> Annual Meeting: "Research to Policy," Washington, DC.

## Technology Demonstrations

- Lemmon, D. R., **Bray, B. C.,** Lanza, S. T., & Dziak, J. J. (2008, May). *New developments in SAS procedures for prevention research*. Technology demonstration presented at the Society for Prevention Research 16<sup>th</sup> Annual Meeting: "Context and Prevention Science," San Francisco, CA.
- Lemmon, D. R., **Bray, B. C.,** Lanza, S. T., & Chung, H. (2007, May). *PROC LTA: A SAS procedure for latent transition analysis*. Technology demonstration presented at the Society for Prevention Research 15<sup>th</sup> Annual Meeting: "Advancing Science-Based Prevention: Creating Real World Solutions," Washington, DC.

**Teaching Experience**

Summer 2007	Guest Lecturer	Course: Sociology of Deviance Topic: Research on Gambling and Problem Gambling
Summer 2007	Guest Lecturer	Course: Criminology Topic: Research on Gambling and Problem Gambling
Spring 2007	Course Assistant	Course: Latent Class Analysis for Cross-sectional and Repeated Measures Data
Fall 2006	Guest Lecturer	Course: Methods of Research in Human Development Topic: Sampling Designs
Summer 2006	Guest Lecturer	Course: Criminology Topic: Research on Gambling and Problem Gambling
Fall 2005	Guest Lecturer	Course: Methods of Research in Human Development Topic: Sampling Designs
Fall 2005	Instructor	Course: Graduate Applied Statistics Lab Department: Human Development and Family Studies
Winter 2001	Instructor	Course: Introduction to Statistics and Data Analysis Department: Statistics (The University of Michigan)

**Professional Service Activities**

2008	Program Thematic Sub-committee Member, Abstract Review Committee Member, Society for Prevention Research 16 <sup>th</sup> Annual Meeting: “Context and Prevention Science”
2007—Present	Manuscript Reviewing <i>American Journal of Health Behavior</i> 2008 (1) <i>Child Development</i> 2008 (2) <i>Journal of Abnormal Child Psychology</i> 2007 (1), 2008 (2) <i>Journal of Adolescence</i> 2007 (1) <i>Journal of Studies on Alcohol and Drugs</i> 2007 (4), 2008 (1) <i>Prevention Science</i> 2007 (2) <i>Psychological Methods</i> 2007 (1)
2007	Program Thematic Sub-committee Member, Abstract Review Committee Member, Society for Prevention Research 15 <sup>th</sup> Annual Meeting: “Advancing Science-Based Prevention: Creating Real World Solutions”
2005—Present	Director of The Methodology Center Help Desk
2005—2006	Department of Human Development and Family Studies Graduate Student Steering Committee: Developmental Methodology Faculty Search Committee, Graduate Student Representative

- 2005 Abstract Review Committee Member, Society for Prevention Research 14<sup>th</sup> Annual Meeting: “Applying Prevention Science to Reduce Health Disparities”
- 2004—2005 Department of Human Development and Family Studies Graduate Student Steering Committee: Co-chair
- 2003—2004 Department of Human Development and Family Studies Graduate Student Steering Committee: Community Outreach Representative
- 2002—2003 Department of Human Development and Family Studies Graduate Student Steering Committee: Graduate Student Association Representative
- 2000—2001 Southeast Michigan Science Fair, Statistics Judge

### Professional Memberships

American Academy of Health Behavior  
 Association for Women in Mathematics  
 American Statistical Association  
 Early Career Preventionist Network  
 Institute for Mathematical Statistics  
 Pi Mu Epsilon  
 Society for Prevention Research

### Training

Office for Research Protections: *IRB Basic Training on the Protection of Human Participants*, The Pennsylvania State University (2001).

### Workshops Attended

- Summer Institute on Longitudinal Methods 2008, Statistical Mediation Analysis* (University Park, PA); Conducted by: Drs. David MacKinnon and Linda Luecken
- Summer Institute on Longitudinal Methods 2007, Mixed Models and Causal Inference* (University Park, PA); Conducted by: Drs. Donald Hedeker and Joseph Schafer
- Summer Institute on Longitudinal Methods 2006, Causal Inference* (University Park, PA); Conducted by: Dr. Christopher Winship and Felix Elwert
- Society for Prevention Research 14<sup>th</sup> Annual Meeting Pre-Conference: Missing Data Methods for Causal Inference* (2006; San Antonio, TX); Conducted by: Dr. Joseph Schafer
- Summer Institute on Longitudinal Methods 2005, Survival Analysis* (University Park, PA); Conducted by: Dr. Paul D. Allison

*Statistical Analysis with Latent Variables: Mplus* (2004; UCLA, Los Angeles, CA, teleconferenced with University Park, PA); Conducted by: Dr. Bengt Muthén

*Summer Institute on Longitudinal Methods 2003, Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence* (University Park, PA); Conducted by: Drs. Judith Singer and John Willett

*Workshop on Bayesian Methods* (2003; University Park, PA); Hosted by: Penn State Department of Statistics

*Workshop on Analyzing Developmental Trajectories: A Group Based Approach* (2003; University Park, PA); Conducted by: Dr. Daniel S. Nagin

*Society for Prevention Research 10<sup>th</sup> Annual Meeting Pre-Conference: Missing Data in Longitudinal Studies* (2002; Seattle, WA); Conducted by: Dr. Joseph Schafer

*Society for Prevention Research 9<sup>th</sup> Annual Meeting Pre-conference: Multilevel Analysis for Discrete and Time-to-Event Data in Prevention Research* (2001; Washington, D.C.); Conducted by: Dr. Donald Hedeker

**Coursework – Statistics and Methodology:**

Methods of Research in Human Development  
Applied Statistics Lab  
Methods of Analysis in Human Development  
Measurement in Human Development  
Research Methods in Developmental Processes  
Theory of Statistics  
Sampling  
Spatial Statistics  
Regression Analysis and Modeling  
Categorical Data Analysis  
Design and Analysis of Experiments  
Longitudinal Data  
Statistical Consulting

**Coursework – Substantive:**

Human Development Across the Lifespan  
Introduction to Family Studies  
Human Development Intervention: Analysis  
of Theories and Approaches  
Social Epidemiology  
Risk and Resilience  
Program Development and Evaluation  
Adolescent Development