


Spring Undergraduate Research Forum

Welcome to SURF 2014

*The 21st Annual
Celebration of Achievements in
Undergraduate Research
at Elon University*

The **Spring Undergraduate Research Forum** is a time each year when we suspend our other campus activities to celebrate the academically-centered creative endeavors and research efforts of Elon's students. This year, over 155 proposals for presentation were submitted for consideration, and over 150 faculty members representing all disciplines on campus provided over 625 reviews of the submitted abstracts. Students were invited to present at SURF at the recommendation of that body of reviewers.

SURF is an integral part of  – a weeklong series of events that brings to light the wonderful diverse academic and creative pursuits in which our students engage each year.

We invite you to join and support the student presenters and performers as they share the joy of exploration and discovery that are the hallmarks of an intellectual community.

UNDERGRADUATE RESEARCH PROGRAM ADVISORY COMMITTEE

Dr. Eric Hall
Dr. Paula Rosinski
Dr. Byung Lee
Dr. Mark Kurt
Dr. Meredith Allison
Dr. Yuko Miyamoto
Dr. Sarah Glasco

Prof. Joel Hollingsworth
Prof. Lauren Kearns
Dr. Kyle Altmann
Dr. Mark Enfield
Dr. Ryan Kirk
Dr. Barbara Miller
Dr. Rebecca Pope-Ruark

Dr. Paul Miller, Director, Undergraduate Research Program

Undergraduate Research & Creative Endeavors includes activities undertaken by undergraduate students with significant faculty mentoring that: (1) lead to new scholarly insights and/or the creation of new works; (2) add to the discipline; and (3) involve critical analysis of the process and/or outcome of the activities. Quality undergraduate research and creative activity result in a product that has potential for peer-reviewed dissemination in the form of presentations, publications, exhibitions, or performances.

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Poster Session I

8:30am - 10:30am; Authors Present 9:00am - 10:30am

McKinnon Hall

Kristen Bryar (Dr. Tom Mould)

Personal Experience Narratives of Public Aid Recipients: Emic Strategies for Success

Ann M. Quigley (Dr. Michael Terriblino)

Dynamics of RNA-Binding Proteins

Jillian C. Pieciak (Dr. David Vandermaast)

A Comparison of Seed Longevity of Eastern United States Tree Species for Seeds of Varying Ages

Jaden Wilkes (Dr. Benjamin Evans)

Biosensor for Point-of-Care Medical Diagnostics

Jessica W. Harris (Dr. Sara Triffo)

Function and Organization of the Cell Membrane

Kasey M. Llorente (Dr. Jennifer Uno)

The Effect of Valproic Acid on Notch Signaling in Intestinal Cell Development in Danio Rerio

David W. Scammon (Dr. Karl Sienerth)

Synthesis and Study of New Iridium-Centered Compounds

Madeline C. Wise & Britta M. Halvorson (Dr. Eugene Grimley)

Determination of Content and Oxidative Properties of Flavonoids in Poplar Honey

Thomas F. Riley & Christopher Battaglia (Dr. Eugene Grimley)

Five-Coordinate Metal Complex Substitution Reaction

Dana A. Gullquist (Dr. Amanda Sturgill)

Get it First, Get it Fast, Get it in Fewer Than 140 Characters: Local vs. Regional Effects on Accuracy, Sourcing of Breaking News

Joseph R. Bruno & Brian A. Mezerski (Prof. Brian Walsh)

A Widening Digital Divide: Infrastructure and Government Control in an Age of Expanding Internet Use

Emily R. Bishop (Dr. Jessie Moore)

How Small Businesses Can Leverage Social Media Sites for More Sales

Kyle Whitaker (Dr. Paula Rosinski)

The Academic and Self-Sponsored Writing Lives of High School Students: Implications for Writing Curricula & Pedagogy

Kristianne M. Oristian (Dr. Wally Bixby)

Examination of the Impact of Yoga and Mindfulness Training on Brain Cognition and Electrical Activity

Alexandra J. Solhjoui (Dr. Svetlana Nepocatych)

The Effects of Bosu Balance Training on Postural Sway in Women

Poster Session I....continued

Mark Timmel (Dr. Joyce Davis)

Short Term Effects of Tens on Balance in a Healthy Population

Danielle Scheinman & Melanie Witman (Dr. Paul Miller & Dr. Eric Hall)

Do Differing Glycemic Index Breakfasts Affect Cognition?

Devon M. Clark (Dr. Cynthia Fair)

“I Definitely Want Grandbabies”: Guardians of Adolescents With Perinatal HIV Reflect on Dating and Childbearing

Hayley L. D’Antuono (Dr. Kimberly Epting)

Gender Differences in Student Perceptions of Literacy Activities

Caitlin J. Tarantiles & Kelsey E. Liddle (Dr. Kimberly Epting)

A Search for Linguistic Relativity: Content Analysis of Essays from Bilingual Students

Maureen E. Dinnie & Sara Perry (Dr. Alexa Darby)

College Student Emotions in Academic Service-Learning (AS-L)

Jessica L. Katschke & Ursula G. Saelzler (Dr. Amy Overman)

Multi-Modal Gender Congruency Effects on Face-Name Associations Across Age Groups

Whitney R. Adrian (Dr. Kenneth Fernandez)

Attitudes on Immigration in North Carolina: Testing the Threat and Contact Hypothesis

James Carter (Dr. Sharon Spray)

An Evaluation of Gubernatorial Rhetoric in the South: How do Governors Convey Policy Issues?

Nicole Panaggio (Dr. Alexis Franzese)

The Public Health Implications of Family Completion Choices

Poster Session II

4:00pm - 6:00pm; Authors Present 4:15pm – 5:45pm

McKinnon Hall

Rachel Diver (Dr. Anthony Weaver)

A Needs Assessment for Girls Sport Programming in Alamance County

Sarah Lau & Ali Broadstone (Dr. David Buck)

Eroticization of Lesbians: The Link Between Benevolent Sexism and Prejudice Against Lesbians

Jordan Cottle (Dr. Eric Hall & Dr. Caroline Ketcham)

Potential Factors Influencing Performance on Immediate Post-Concussion Assessment and Cognitive Testing

Molly Burgoyne (Dr. Caroline Ketcham)

Observation of Classroom Performance Using Therapy Balls as a Substitute for Chairs in Elementary Children

Melanie Witman & Danielle Scheinman (Dr. Paul Miller & Dr. Eric Hall)

The Impact of Physical Activity Participation on Cognitive Function Following Different Breakfasts

Alexa Barriere (Dr. Yuko Miyamoto)

Transfection of Jurkat Cells with Talin siRNA

Anna Olsen (Dr. Tonya Laakko Train)

Survivability of Cystic Fibrosis Human Epithelial Cell Lines When Exposed to the Antifungal Caspofungin

Thomas Lampl (Dr. Victoria Moore)

Investigation of the Cellular Mechanism of Apoptosis in Acute Kidney Injury During Sepsis

Callan Andreacchi (Dr. Katherin Mullaugh)

Quantification of Ethanol in Rainwater

Erica Janik (Dr. Dr. Karl Sienerth)

Analysis of Nitrate Explosive in Water Using a New Method

Rajat Agarwal (Dr. Amanda Sturgill)

Microblogging the News: Covering A Crisis When Twitter is the Only Option

Elizabeth Ballard (Dr. Lucinda Austin)

On the Defense: How the NFL Fought to Regain Public Trust After the Concussion Crisis

DeAndra D. Young (Dr. Sirena Hargrove-Leak)

Pain-O-Meter: Exploring Engineering Mechanics in the Human body

Arianna J. Brown (Prof. Daniel Burns)

Historicizing Leonard Michaels' Counterculture Fictions

Sara Alpert (Dr. Barbara Gordon)

Students' Impressions in Comparing Alphabetic vs. Multimodal Composing

Poster Session II....continued

Sarah E. Cleveland (Dr. Daniel Wright)

Learning Science Versus Doing Science: Development of a Wine Chemistry Project

Kathryn J. Osborn (Dr. Mary Jo Festle)

NC Piedmont Debutante Balls (1960-1980): The Role of Gender in a Southern Tradition

J. Patrick Creghan (Dr. Charles Irons)

The Gettysburg Campaign and the Resilience of Confederate Nationalism

Kyrstin Wallach (Dr. Glenn Scott)

A Content Analysis of Twitter Use: Factors That Might Increase Music Sales During an Award Show?

Alex Simoneaux (Dr. Sirena Hargrove-Leak)

Determination of Propeller Performance

Colette Dong (Prof. Lauren Kearns)

Comparing the Activation of Two Bilateral Muscle Groups During a Passé Retiré en Relevé at and Away from the Barre

Omolayo N. Ojo (Dr. Tom Mould)

Achieving the Senegalese Dream: Transnational Narratives of Senegalese Migrants

Carling Andrews (Dr. Beth Warner)

Social Entrepreneurship Venture for Health & Happiness

David T. Han (Dr. Benjamin Evans)

Direct Measurement of Magnetic Forces Exerted on Magnetic Microbeads

Matthew D. Bausch (Dr. Benjamin Evans)

Heating Efficiency of Nanoparticles for Magnetic Hyperthermia

Alyssa M. Kendall (Dr. Maureen Vandermaas-Peeler)

Observations of Parental Guidance in a Children's Museum

Kate Massey (Dr. Maureen Vandermaas-Peeler)

Parental Guidance of Early Science Learning in a Children's Museum

Yvette F. Bean, Rebecca A. Kennedy & Carl E. St. Goar (Dr. Linda Wilmschurst)

The Influence of Prospective Memory and Metacognitive Skills on Self Determination and Psychological Well Being in College Students With and Without Significant Attention Problems

Kylee Regan Bushway (Dr. Linda Wilmschurst)

The Effect of Cell Phone and Social Media Use on Adolescent Girls' Self-Concept and Psychological Well Being

Poster Session II....*continued*

Pamela C. Gutermuth (Dr. Geoffrey Claussen)

The Role and Denial of Dispensationalism in Christians United for Israel

Art Exhibit

4:00pm – 6:00pm; Authors Present 4:15pm - 5:45pm

McKinnon Hall Stage

Claire Kelly Bonnell (Prof. Jack Smith)

Upcycling & The Seasons

Session I (10:40 am - 12:20 pm)

LaRose Digital Theatre (Moderator: Dr. Chris Leupold)

10:40 am Mat Goldberg (Dr. Chris Leupold)

Exploration of Authentic Leadership, Core Evaluations & Perceived Leadership Effectiveness

11:00 am Mat Goldberg (Dr. Chris Leupold)

Leadership Perceptions Among People Facing Homelessness

11:20 am Raymond A. Haack (Dr. Maurice Levesque)

Engaging Conflict: How Expectations, Personal Agency, and Belief in Multiple Pathways Influence Conflict Management

11:40 am Alex Ward (Dr. Maurice Levesque)

A Natural Restorative: The Effects of Natural Environments on Ego Depletion

12:00 pm Paxton K. Syrek & Lisa M. Picklesimer (Dr. Gabie Smith)

Risk Perception and Study Abroad in Women

Koury Business Center 200 (Moderator: Prof. Joel Hollingsworth)

10:40 am Colleen Brockmyre (Prof. Joel Hollingsworth)

Accurate and Timely Absolute Location for Augmented Reality Mobile Applications

11:00 am Thomas Robbins (Prof. Joel Hollingsworth)

Analyzing a Specialty Computer Lab Using Raspberry Pi

11:20 am Christine M. Dierk (Prof. Joel Hollingsworth)

Real-Life Musical Composition Through Virtual Means: A Mobile Application Controlled Ukulele-Playing Robot

11:40 am Christine M. Dierk (Dr. Bjoern Hartmann)

Determining Proximity Through High Frequency Emission and Detection

Koury Business Center 208 (Moderator: Dr. Harlen Makemson)

10:40 am Michelle L. Alfini (Dr. Harlen Makemson & Dr. Laura Roselle)

Moscow Gets the Cold Shoulder: Framing of the 1980 Olympic Boycott in U.S., Soviet and British Media

11:00 am Helen Meskhidze (Dr. Harlen Makemson & Dr. Laura Roselle)

Musicians as Diplomats: Studying Domestic Media Coverage of Jazz Musicians' Cultural Tours

11:20 am Allison Weiler (Dr. Harlen Makemson & Dr. Laura Roselle)

The 1957 Little Rock Crisis, Regional Newspaper Coverage, and Cold War Frames

11:40 am Tess Duncan (Dr. Glenn Scott)

Winning a War of Ideals: The Neglected Use of Artistic Expression in Cultural Diplomacy

Session I (10:40 am - 12:20 pm) ...continued...

Koury Business Center 211 (Moderator: Dr. David Vandermast)

10:40 am Lauren E. Sutherland (Dr. Tonya Laakko Train)

The effects of Aflatoxin B1 on Jurkat T-Cell Growth, Viability, and Activation

11:00 am Helen L. Wright (Dr. Dave Gammon)

How Does the Singing Style of Male Mockingbirds Vary Between Breeding Stages?

11:20 am Meaghan L. Fabrycki (Dr. David Vandermast)

Patterns of Tree Mortality and Replacement on Elon University Forest

11:40 am Diandra M. Verbeyst, Jessica L. Bechhofer, Nicole M. Burns, & Rebecca C. Rosemond (Dr. Janet MacFall)

Characterization and Distribution Patterns of Spirobranchus Giganteus in South Caicos, Turks AND Caicos Islands

12:00 pm C. Barona DiNapoli (Prof. Steve Moore)

Evaluating the Carrying Capacity of Elon University's Land in Supporting the Dietary Needs of the Student Body and the Feasibility of Various Food Distribution Outlets

Koury Business Center 242 (Moderator: Dr. Andrew Greenland)

10:40 am D. Patrick Brown (Dr. James Barbour)

The Economic and Political Efficacy of the Privatization of Intercity Rail

11:00 am Nathan Dean (Dr. Steve DeLoach)

Do the Pecuniary Costs of Employer-Provided Health Insurance Negatively Affect Labor Market Outcomes?

11:20 am Garret I. Mann (Dr. Steve DeLoach)

Middle East Miracle: Are Recent High Levels of Growth Sustainable?

11:40 am Angeline M. Jackson (Dr. Andrew Greenland)

Obesity Epidemic Across Developing Countries

Koury Business Center 244 (Moderator: Dr. Kathy Matera)

10:40 am Natalie M. Clark (Dr. Kathy Matera)

Estrogenic Hormones: Their Interactions with Lactoperoxidase and Potential for DNA Mutations

11:00 am Austin Sowell & Alex Bruch (Dr. Joel Karty)

Elucidating the Mechanism for Periodic Precipitation (Lesigang Rings)

11:20 am Jeremy M. V. Guinn (Dr. Victoria Moore)

The Role of BCL-2 Proteins in Chemoresistance of Prostate Cancer

11:40 am Taylor A. Davis (Dr. Victoria Moore)

Analysis of BCL-2 Proteins During Heart Development

Session I (10:40 am - 12:20 pm) ...continued...

Koury Business Center 310 (Moderator: Dr. Svetlana Nepocatych)

- 10:40 am Kelly L. Brand** (Dr. Paul Miller & Dr. Eric Hall)
The Impact of Quercetin Supplementation on Cognition During Vigorous Exercise in College Students
- 11:00 am Eliza A. Hughes** (Dr. Wally Bixby)
Physical Activity Patterns in Elementary School Children
- 11:20 am Haley E. Hawkins** (Dr. Caroline Ketcham)
Balance Training for Collegiate Dancers and Cheerleaders
- 11:40 am Jill C. Wozniak & Erin Macbeth** (Dr. Svetlana Nepocatych)
The Effects of Up Accelerometers on Physical Activity, Motivation and Sleep in Women
- 12:00 pm Leah Jennings** (Dr. Svetlana Nepocatych)
The Effect of a Rewards Based Intervention on the Nutritional Knowledge and Dietary Behaviors of Adolescent Girls

Koury Business Center 346 (Moderator: Dr. Michael Carignan)

- 10:40 am Jordan B. Greene** (Dr. Michael Carignan)
Voltaire and the Enlightenment Response to Superstition
- 11:00 am David R. Lincoln** (Dr. David Crowe)
To Fight and Die as Lions: Jewish Resistance in Warsaw, Treblinka and Vilna
- 11:20 am Claire L. Mayo** (Dr. David Crowe)
The Evolution of Charles de Gaulle as Leader of La France Libre During World War II (1940-1942)
- 11:40 am Zachary Fisher** (Dr. Nancy Midgette & Dr. Janet Warman)
How Segregation Ended Segregation: The Contributions of Historically Black Land-Grant Colleges to the Civil Rights Movement

Koury Business Center 353 (Moderator: Dr. Cassie Kircher) – Philip Carret Thomas Jefferson Essay Winners

- 10:40 am Avery McGaha** (Professor Michael Strickland)
A Crusade Against Ignorance: Thomas Jefferson's Enduring Values in the Digital Age
- 11:00 am Greg Melanson** (Dr. Charles Irons)
Public Education's Departure from Its Original Intentions
- 11:20 am Yasmine Arrington** (Drs. David Fletcher & Amy Johnson)
It Is Still Relevant: Public Education's Role in Promoting the Common Good in the 21st Century

Yeager Auditorium (Moderator: Prof. Lauren Kearns)

10:40 am **Connor M. Hamilton** (Prof. Jack Smith)
Commedia Dell'Arte – An Oral History and Influence

11:10 am **Julie Crothers** (Prof. Lauren Kearns)
Performing Self: The Intersection of Choreography, Improvisation, and Autobiography

Session II (12:40 pm - 2:20 pm)

LaRose Digital Theater (Moderator: Dr. Alan C. Scott)

12:40 pm Virginia Oberle (Dr. Buffie Longmire-Avital)

“Condoms are the Standard, Right?”: Exploring ATI Protection With Young Adult Black Women

1:00 pm Sean M. Walmer (Dr. Alan Scott)

Assisting Blind Pedestrians with Finding the Crosswalk and Aligning at Roundabouts and Mid-Block Crossings

1:20 pm Cara McClain (Dr. Maureen Vandermaas-Peeler)

Outdoor Explorations with Preschoolers: The Role of Nature Experiences in Young Children’s Psychological Development and Environmental Awareness

1:40 pm Joanna M. Orefice & Amy E. Gatto (Dr. Cynthia Fair)

“I’m Not Fragile. I’m Not Limited”: Career Aspirations of Adolescents and Young Adults Living with Perinatally-Acquired HIV

2:00 pm Elizabeth C. Bacher (Prof. Amanda Tapler)

Student Perceptions of Diet Quality and Nutrient Content in the US and India

Koury Business Center 200 (Moderator: Dr. Shannon Duvall)

12:40 pm Elizabeth Bilz (Dr. Shannon Duvall)

Analysis and Software for the Leap Motion Device

1:00 pm Amber K. Smith (Dr. Megan Squire)

Diffusion of a New Collaborative Tool for Social Programming: The Example of Pastebin

1:20 pm Schuyler K. Goodwin (Dr. Shannon Duvall)

The Microsoft Kinect and Physical Therapy

1:40 pm Miles A. Camp (Dr. Shannon Duvall)

Using a Mobile Device Application to Facilitate Speech Therapy

Session II (12:40 pm - 2:20 pm) ...*continued...*

Koury Business Center 208 (Moderator: Dr. Qian Xu)

12:40 pm Jason T. Waterman (Dr. Qian Xu)

How Source and Bandwagon Cues Affect Information Processing and Attitude Formation in Twitter Marketing

1:00 pm Heather Harder (Dr. Lucinda Austin)

Are All Calories Created Equal? A Case Study of the Coca-Cola Company's Communication in the Fight Against Obesity

1:20 pm Tessa J. Jones (Dr. David Copeland)

Young Adults' Behaviors & Opinions Regarding Cell Phone Addiction & Their Ability to Communicate in Society

1:40 pm Baron A. Smith (Dr. David Copeland)

Conveyance of Brand Identiteis and Portrayal of Minority Groups in 2013 Superbowl Automobile Advertisements

Koury Business Center 211 (Moderator: Dr. Scott Proudfit)

12:40 pm Kelsey Camacho (Dr. Cassie Kircher)

A Lifetime of Migration: Writing About Hispanic Identity in the Western United States

1:00 pm Elizabeth Purvis (Dr. Kathy Lyday)

Redmond O'Hanlon: The Man, The Folklore, and His Impact on Irish Cultural Identity

1:20 pm Kim Lilienthal (Dr. Jessie Moore)

Using Critical Thinking to Enhance Second Language Acquisition: A Case Study in the Role of Group Work in Mainstream Classes

1:40 pm Michelle Nussbaum (Dr. Scott Proudfit)

The Caulfield Effect: An Interdisciplinary Examination of Adult Identification in Young Adult Literature

2:00 pm Avery McGaha (Prof. Michael Strickland)

Melting Down the Rhetoric of Climate Change

Session II (12:40 pm - 2:20 pm) ...continued...

Koury Business Center 242 (Moderator: Dr. Gregory Lilly)

12:40 pm Christopher Grippo (Dr. Gregory Lilly)

The Economics of the Cryptocurrency Community: What is the Future of Bitcoin?

1:00 pm Bryn C. Khoury (Dr. Gregory Lilly)

The Effectiveness of Break Implementation for Repetitive Cognitive and Data-Entry Tasks

1:20 pm Nathaniel Clark James (Dr. John Burbridge)

K-12 Educational Publishing: The Present and Future of a Changing Industry

1:40 pm Danielle White (Dr. Matthew Valle)

Strategic Management Decisions for Profit Maximization in the Motion Picture Industry

Koury Business Center 244 (Moderator: Dr. Sean Giovanello)

12:40 pm Cleo L.C. Dan (Dr. Sean Giovanello)

Abandoning the Bomb and Embracing the Pen: A Comparative Case Study of Euskadi Ta Askatasuna and the Irish Republican Army

1:00 pm Julia Schast (Dr. Sean Giovanello)

Why Treaties Die: A Study of United States Senate Rejection of the Ratification of Multilateral Treaties

1:20 pm Caroline M. Henley (Dr. Michael Matthews)

Pinochet's Neoliberal Legacies and the Chilean Student Movement

1:40 pm Mackenzie Mann (Dr. Michael Matthews)

Manifestations of Mapuche Cultural Resistance in Chile

2:00 pm Lauren M. Speranza (Dr. Laura Roselle)

Rewriting the Past: How the Memoirs of the Ex-Red Brigades Contributed to the Collective History of the Anni Di Piombo

Koury Business Center 310 (Moderator: Dr. Chad Awtrey)

12:40 pm Nicole Miles, Chris Shill, & Erin Strosneider (Dr. Chad Awtrey)

Degree 12 2-Acid Polynomials with Mass 3

1:00 pm Erin K. Strosnider (Dr. Chad Awtrey)

Galois Theory of Degree 14 P-Acid Polynomials

1:20 pm Nakhila S. Mistry (Dr. Chad Awtrey)

Centralizers and Galois Groups of P-Acid Polynomials

1:40 pm Christopher Schill (Dr. Chad Awtrey)

Degree 5 Polynomials and Their Solvability By Radicals

Session II (12:40 pm - 2:20 pm) ...*continued...*

Koury Business Center 346 (Moderator: Dr. Stephen Byrd)

12:40 pm Desiree J. Porter (Dr. Jeffrey Coker)

A Comparative Study of Student Motivations, Participation, and Outcomes Related to Five Forms of Experiential Learning

1:00 pm Raven N. Bennett (Dr. Prudence Layne)

Resisting Erasure: Representations of the Fat Black Woman in the U.S. Media

1:20 pm Leigh Iler (Dr. Stephen Byrd)

Research on RTI in Middle School

1:40 pm Sarah Elizabeth Spaeth (Dr. Joan Barnatt)

Building a Global Foundation: Undergraduate Elementary Teacher Education and it's Preparation of Global Educators

2:00 pm Julia E. Okada (Dr. David Crowe)

The Nuremberg Legacy Through the Lens of the John Demjanjuk Legal Saga

Koury Business Center 353 (Moderator: Dr. Olivia Choplin)

12:40 pm Alice Sudlow (Dr. Sophie Adamson)

The Varied Voices of Maghrébine Protagonists in French Young Adult Literature

1:00 pm Claire L. Mayo (Dr. Olivia Choplin)

The Saint Pierre and Miquelon Affaire

1:20 pm Emily A. Guernsey (Dr. Sarah Glasco)

Proust and Humor

1:40 pm Claire S. Long (Dr. Olivia Choplin)

Les Femmes Aux Yeux Des Hommes: Flaubert, Zola, Et Les Roles Des Sexes Au 19^E Siecle En France

2:00 pm Bethany Hill (Dr. David Neville)

Performing the Bride: Visuality, Female Authority, and the Sacred Spaces of Mechthild Von Magdeburg's Flowing Light of the Godhead

Session III (2:40 pm – 4:20 pm)

LaRose Digital Theatre (Moderator: Dr. Laura Roselle)

2:40 pm Michelle C. Landahl (Dr. Laura Roselle & Dr. Harlen Makemson)
The Fallout from Fallout: Comparing Scientist Testimonies to Government Narratives Surrounding Nuclear Fallout in 1961 and 1962

3:00 pm Claire A. Lockard (Dr. Laura Roselle & Dr. Harlen Makemson)
Is it Sex, or is it the Cold War? Analyzing Lesbian Pulp Novels Through a Cold War Lens

3:20 pm Margaret K. Miller (Dr. Laura Roselle & Dr. Harlen Makemson)
The Religious Cold War: Media Coverage of the Addition of “In God We Trust” and “One Nation Under God” to American Currency and the Pledge of Allegiance

3:40 pm Greg Honan (Dr. Laura Roselle)
Welfare Narratives in US political Rhetoric: Stories, Power, and Contestation

4:00 pm Ashley Fowler (Dr. Safia Swimelar)
Human Rights Norm Change: LGBT Rights in a Wider Europe

Koury Business Center 200 (Moderator: Dr. Sarah Glasco)

2:40 pm Sharyn A. Jacobs (Dr. Sarah Glasco)
What Lies Behind the Walls of France’s Palaces and Castles: When the Past Methods Meet Present Mind

3:00 pm Samantha Sampson (Dr. Sarah Glasco)
Ruins as Self-Preservation: Cities and Their Relation to Cultural Identity

3:20 pm Alexa M. Dysch (Prof. LD Russell)
The Table as France’s Most Sacred Space

3:40 pm Jennifer K. Brouder (Dr. Judy Esposito)
Exploring In-Country Perceptions of Family-Teacher Partnerships Among Costa Rican Mothers

4:00 pm Eryn A. Gorang (Dr. Bud Warner)
High School Career Development Programs in Low-Income United States and South African Schools: A Cross-Cultural Analysis

Session III (2:40 pm – 4:20 pm) ...continued...

Koury Business Center 208 (Moderator: Dr. Alexis Franzese)

2:40 pm Jeff S. Ackerman, Shakori D. Fletcher, & Ryan K. Greene (Dr. Prof. Janna Anderson)
The Ongoing Role of Original Principles in Internet Evolution: Internet Leaders Continue to Adhere to Early Ideals

3:00 pm Gloria So (Dr. Kenn Gaither)
From “Pockets of Poverty” to Potential Prosperity in Appalachia: Connecting Mass Media Narratives of Poverty Stereotypes to Authentic Appalachia Through Photovoice

3:20 pm Jill Capotosto (Dr. Barbara Miller)
Framing Climate Change: A Cross-Cultural Examination of Government Environmental Agencies’ Websites in Norway, China, Costa Rica and the United States

3:40 pm Marissa Rurka (Dr. Alexis Franzese)
Authenticity, Older Adults, and Sexual Orientation: Implications for Mental Health

Koury Business Center 211 (Moderator: Dr. Geoffrey Claussen)

2:40 pm Paige E. Ransbury (Dr. Geoffrey Claussen)
Jewish-Christian Dialogue Through Visual Rhetoric

3:00 pm Sarah Schmer (Dr. Lynn Huber)
Apocalyptic and Monstrous Revelations: The Temptation of Azazel in the Apocalypse of Abraham

3:20 pm Sarah Holland (Dr. Jeffrey Pugh)
Christianity in the Shadow of the Shoah: Exploring the Social Dimensions of Religion

Koury Business Center 242 (Moderator: Dr. Megan Isaac)

2:40 pm Brooke Jenkins (Dr. Nancy Midgette & Dr. Janet Warman)
The Consequences of Industrialism in Tennessee Williams’ *The Glass Menagerie*

3:00 pm James V. Fariello & Jacob K. Smith (Dr. Scott Wolter)
Temperature-Dependence on Coherent X-Ray Scatter Signatures

3:20 pm Katherine K. Day (Dr. Megan Isaac)
Sherman Alexie and the Hybridity of the Native American Adolescent in Educational Systems

3:40 pm Alice Sudlow (Dr. Megan Isaac)
Narratology in Young Adult Literature: The Complexity of Age

Session III (2:40 pm – 4:20 pm) ...continued...

Koury Business Center 244 (Moderator: Dr. Kirsten Doehler)

2:40 pm **Todd M. Calnan** (Dr. Jeff Clark)

High-Resolution Fractal Image Compression

3:00 pm **Nakhila S. Mistry** (Dr. Todd Lee)

A Modified Random Walker Ranking System for NCAA Men's Division I Basketball Teams

3:20 pm **Kimberly Peterson** (Dr. Kirsten Doehler)

Survey Administration and Results for Friendship Adult Day Services

3:40 pm **Jacob Kavanaugh & James Vincent Fariello** (Dr. Scott Wolter)

X-Ray Diffraction Signatures of Energetic Materials

Koury Business Center 310 (Moderator: Dr. David Copeland)

2:40 pm **Katherine Blunt** (Dr. David Copeland)

The Power of the Fourth Estate: Media Framing of Hitler at the Height of Conflict

3:20 pm **Katy Steele** (Dr. David Copeland)

Palestinian-Arab Media Frames and Stereotypes of "the Other" Israeli-Jews

3:40 pm **Stephanie Butzer** (Prof. Colin Donohue)

Wild Disturbances: Rights of Survival in Predator Control

4:00 pm **Jennie Hook** (Dr. Julie Lellis)

Disability Representation in Independent Narrative Film

Koury Business Center 346 (Moderator: Dr. Victoria Fischer Faw)

2:40 pm **Gabriel M. Estes** (Dr. Todd Coleman)

A Comprehensive Analysis of Arvo Part's Magnificat

3:00 pm **Nicole Payne** (Dr. Victoria Fischer Faw)

¡QUÉ VIVA EL RITMO!: Exploring the African Rhythmic Foundations of Afro-Cuban Music

3:20 pm **Brooke E. Winters** (Dr. Victoria Fischer Faw)

Establishing a Musical Dialogue with Non-Verbal Exceptional Children

3:40 pm **Wesley I. Rose** (Dr. Victoria Fischer Faw)

Franz Liszt and The Battle Against Tonality

4:00 pm **Michelle Warshany** (Omri Shimron)

Bells and Whistles: Train Representation in Contemporary Classical Music

Session III (2:40 pm – 4:20 pm) ...continued...

Koury Business Center 353 (Moderator: Dr. Mathew Gendle)

2:40 pm Jack D. Halligan (Dr. Eric Hall & Dr. Caroline Ketcham)
The Effect of Concussions on Cognitive Function in Asymptomatic NCAA Collegiate Student-Athletes

3:00 pm Graham D. Cochrane (Dr. Caroline Ketcham & Dr. Eric Hall)
Balance and Cognitive Load in College Athletes

3:20 pm Krysten P. O'Hara (Dr. Mathew Gendle)
Magnesium Supplementation and Test Anxiety

3:40 pm Andrew F. Fischer (Dr. Kathy Matera)
Alpha Synuclein Aggregation Regulation in Vitro By DL-Norepinephrine in Parkinson's Disease

4:00 pm Rebecca M. Schneider (Dr. Kathy Matera)
The Oxidative Mechanism of Docosahexaenoic Acid: The Relationship to Attention Deficit Hyperactivity Disorder

AFRICAN AND AFRICAN-AMERICAN STUDIES

“RESISTING ERASURE: REPRESENTATIONS OF THE FAT BLACK WOMAN IN THE U.S. MEDIA”

Raven N. Bennett (Dr. Prudence Layne) Department of African and African-American Studies

Numerous studies exist to demonstrate the ways in which Western aesthetics of whiteness and slenderness govern the portrayal of Black women in various media, including film, television, journalism and advertising. Few studies, however, examine the strategies that some fat, Black women have successfully employed to resist their literal and figurative erasure from these media. Using Africological scholarship as exemplified in the work of Molefi Asante, William Nelson and Winston Van Horne, the womanist theory of Alice Walker among others, and the Fat Studies work of Andrea Shaw, this project traces the evolution and representation of fat, Black women in Hollywood beginning with the Mammy figure represented by Hattie McDaniel in *Gone with the Wind*. Oprah, Queen Latifah, Monique, Amber Riley, Gabourey "Gabby" Sidibe, among others, exemplify some women who represent fat and Black aesthetics in the face of vitriolic attacks on their race, gender, size and even their sexuality. Yet, all these women have enjoyed enormous financial and professional success and validation. How do they persist and succeed? This research investigates that question. It traces the historical and cultural representation of fat Black women in the media, from the Mammy figure and her role in the domestic realm to her appropriation by Black men (in particular Tyler Perry as Madea, Martin Lawrence as Big Momma, and Eddie Murphy as Rasputia) as the angry, gun-toting, take-no-prisoners protector of all she surveys. These stereotypes and appropriations contribute to the fat, Black woman's erasure in the same ways as white and slender Western aesthetics. Ultimately, the goals of this paper are to assess the resistance strategies and their effectiveness in the fat, Black woman's fight to resist discrimination, conformity, and erasure by reshaping her narrative. In separating herself from the mammy image that lurks in her shadows and from the money-making portrayals by black male actors in drag, she will be able to play roles that unfairly stereotype her. She is not Madea, Rasputia, or Big Momma. She is naturally and authentically herself and should be inerasable and unshakable.

BIOCHEMISTRY

THE ROLE OF BCL-2 PROTEINS IN CHEMORESISTANCE OF PROSTATE CANCER

Jeremy M. V. Guinn (Dr. Victoria Moore) Department of Biochemistry

Apoptosis is an advantageous process that multicellular organisms use to maintain cellular homeostasis. This programmed cell death follows a controlled routine that allows an organism to divest itself of damaged or infected cells. A series of proteins play an important role in apoptotic regulation; where the Bcl-2 family of proteins is of the utmost significance. These proteins are primarily responsible for governing mitochondrial outer membrane permeability, and have either

an inhibitory effect on apoptosis (anti-apoptotic), or aid in the activation of programmed cell death (pro-apoptotic). Upregulation of anti-apoptotic proteins allow infected cells to survive and proliferate. This uncontrolled proliferation leads to many known diseases including prostate cancer. Being the second most common cancer and the second leading cause of cancer death among men, prostate cancer has become a widespread focus topic in biochemical studies. With a firm understanding of the causes of this disease came a focus shift to Bcl-2 protein interactions in chemo-sensitive and chemo-insensitive prostate cancer cell lines. Observing alterations in protein expressions of these cell lines, pre-treatment and post-treatment, can lead to a more concrete understanding of the mechanisms of chemoresistance, which in turn can lead to improved chemotherapeutic drugs to combat this disease. Observations of protein expressions have been made using chemo-insensitive PC3 and chemo-sensitive C4-2 prostate cancer cell lines along with immunoprecipitation and Western Blotting techniques. It has been found that PC3 cells have an overexpression of baseline anti-apoptotic protein levels when compared to C4-2 levels. It has also been found that PC3 cells show significant expression of Actin, a protein important for apoptosis signaling, whereas C4-2 cells showed no significant expression. Previous studies done by Rachel Wilson have also shown an increase in pro-apoptotic proteins Bim and Bid in etoposide treated C4-2 cells, and a decrease in expression of these proteins in treated PC3 cells. Further treatment analysis will allow for a deeper understanding of Bcl-2 protein response to chemotherapeutics, and will move us closer to identifying the cause of the chemo-insensitive apoptotic block.

BIOLOGY

TRANSFECTION OF JURKAT CELLS WITH TALIN siRNA

Alexa M. Barriere (Dr. Miyamoto) Department of Biology

The goal of the project is to determine how decreasing talin in Jurkat cells affects cell proliferation. Jurkat T cells are a type of leukemia used to study cell signaling and are used because they grow quickly and are easy to culture. Talin is a large cytoskeletal protein that links integrin's, which mediate attachment between a cell and its environment. By determining the effects of decreased talin, this could be a way to inhibit the spread of abnormal T cells thus aiding in the understanding of leukemia.

Jurkat T cells were transfected with talin siRNA (small interfering RNA). siRNA interferes with the expression of specific genes with complementary nucleotide sequences by preventing protein synthesis. Transfection is an artificial way of getting talin siRNA into the Jurkat cells. Triplicate samples of controls or talin siRNA were done in a 6-well plate each experiment (replicated three times). Cell counts were taken at 48 hours to see if decreased talin affected cell proliferation. Numbers were averaged and graphed. In addition to the 6-well plates, two trials were completed in 10 cm plates with talin or control siRNA samples. Green fluorescent protein was transfected with the siRNA allowing images, at 48 and 72 hours, to be taken of the transfected cells shape differences. The average cell count of the controls was 121 and talin was 103. Although the treatment with siRNA was not significant at 48 hours ($p=0.0879$) there was a difference with the cells becoming less round at 72 hours. Talin is a large and stable protein which may require more time to be removed or decreased by the siRNA, thus effects on cell proliferation may not be affected until 72 hours post transfection. Further studies of cell counts on siRNA transfected T

cells at 72 hours post transfection and analysis of talin protein levels are required. This will confirm if talin was successfully reduced and is the cause of decreased cell proliferation

PATTERNS OF TREE MORTALITY AND REPLACEMENT IN ELON UNIVERSITY FOREST

Meaghan L. Fabrycki (Dr. David Vandermast) Department of Biology

Forests of continuity (FOC) are underappreciated and poorly recognized resources in successional landscapes. An earlier study described 6 ha of forest within the boundaries of a 22.5 ha old farmstead that is now Elon University Forest (EUF), with the compositional and structural characteristics of a forest that appears to have never been clearcut. The trees in this patch of forest are common late-successional species, are large and old for their species, and tip-mound depressions and standing dead trees indicate that succession here is dominated by gap-dynamics rather than response to historical clearcutting. To further our understanding of FOC, this study compares sapling (stems >1.4m tall and <10 cm dbh) composition and structure between the FOC and the earlier successional forests surrounding it on EUF. Our results indicate that the FOC has a significantly different sapling population than forests recovering from clearcutting. In particular, the FOC has more saplings (3295/ha vs. 1838/ha, $p=0.036$) that are more likely to be shade-tolerant, late-successional species such as mockernut hickory (*Carya alba*) and white oak (*Quercus alba*) than the younger forest. In contrast, the younger forest had far more yellow-poplar (*Liriodendron tulipifera*) and red maple (*Acer rubrum*). FOC also had higher diversity, more sapling species and lower evenness than did the younger forest. NMS ordination and cluster analysis on sapling composition grouped plots in the FOC as distinct from the younger forest plots.

THE EFFECT OF VALPROIC ACID ON NOTCH SIGNALING IN INTESTINAL CELL DEVELOPMENT IN *DANIO RERIO*

Kasey M. Llorente (Dr. Jennifer K. Uno) Department of Biology

Inflammatory bowel disease (IBD) is a classification of autoimmune disorders affecting approximately 1.4 million people in the United States between the ages of 15 and 40. Characterized by chronic GI distress and a reduced standard of living, IBD is caused by an interaction between environmental factors and a genetic predisposition. However, an exact mechanism explaining its onset has yet to be uncovered. Recent studies have found that a reduced number of mucus secreting cells is typical in people affected with IBD. It has further been determined that the differentiation of intestinal cell types into either absorptive or secretory is governed by a signaling pathway, known as Notch, wherein an intracellular domain behaves as a coactivator for transcription. Despite extensive research, there remain gaps in knowledge of how this pathway is activated or inhibited in people who experience chronic IBD, as well as what mechanism governs which cell type is produced. The purpose of this study was to induce the Notch pathway with the expectation that a corollary shift in the expression of secretory versus absorptive cell types in the gut would be observed. An unrelated study showed that Valproic acid (VPA), an organic compound commonly used in the treatment of neurological disorders, was discovered to activate the Notch pathway in the regulation of neuronal cells. Moreover, commonly reported side effects of VPA treatment include many GI dysfunctions, indicating the possibility that VPA affects Notch signaling in the intestines. Zebrafish (*Danio rerio*) models were used to observe this effect. A dosage curve was generated to determine the

optimal concentration of VPA to administer to the zebrafish. Four concentrations—100 μM , 500 μM , 1000 μM , 1500 μM —were delivered twice a day, due to the short half-life of VPA (9-16 hours), over the course of three days. The results showed that 500-1000 μM was the optimum level to have an effect without overdosing the zebrafish. Further testing is currently in progress. Following VPA treatment, intestinal tissue will be extracted and a PCR analysis will be run to determine any fluctuations in the expression of the Notch receptor.

SURVIVABILITY OF CYSTIC FIBROSIS HUMAN EPITHELIAL CELL LINES WHEN EXPOSED TO THE ANTIFUNGAL CASPOFUNGIN

Anna M. Olsen (Dr. Tonya Laakko Train) Department of Biology

Cystic Fibrosis (CF) is a genetic disease that causes mutations in the CF transmembrane regulator protein (CFTR), and it is the most prevalent life-shortening disease among Caucasians. Over 1,000 mutations to the CFTR gene have been identified, with the delta F508 mutation being the most common. As treatment options for CF have advanced, the average lifespan has lengthened which has resulted in patients being more likely to contract bacterial or fungal infections, which further jeopardizes their health. Chronic airway inflammation, a side effect of CF, can cause damage to respiratory tissue and in extreme cases can lead to respiratory failure. While case studies of CF patients using antifungals have been performed, we do not have a clear understanding if any changes in toxicity or inflammation are occurring at a cellular level after exposure. CF patients already face chronic infections and high levels of inflammation, therefore it is important to determine whether antifungals have any direct effects on CF cell survivability or inflammatory responses. Caspofungin is an antifungal that is commonly prescribed to treat respiratory fungal infections in both CF and non-CF patients. Initial experiments were performed to determine whether caspofungin impacts cell viability using human CF lung epithelial cell lines IB3, containing the F508 mutation, and the genetically corrected line C38 (used as a control). IB-3 and C-38 lines were exposed to no treatment, 0.1 $\mu\text{g/mL}$, 1 $\mu\text{g/mL}$, or 100 $\mu\text{g/mL}$ of caspofungin. After exposure, cells were quantitated and stained with fluorescently-labeled annexin V to detect apoptosis (programmed cell death) by flow cytometry. Even at concentrations ten-fold higher than clinical doses (100 $\mu\text{g/mL}$) there was no statistical increase in apoptosis. These results suggest that caspofungin does not significantly induce apoptosis in CF cells after 24 hour exposure at 0.1 $\mu\text{g/mL}$, 1 $\mu\text{g/mL}$, and 100 $\mu\text{g/mL}$ concentrations. Future experiments will investigate whether caspofungin impacts inflammatory protein levels within CF cells.

A COMPARISON OF SEED LONGEVITY OF EASTERN UNITED STATES TREE SPECIES FOR SEEDS OF VARYING AGES

Jillian C. Pieciak (Dr. Vandermast) Department of Biology

There are now major efforts underway to preserve plant seeds for long periods of time. Though these efforts are expensive and involve technology not readily available to the average person, seed storage should be made more accessible for preservation purposes. This study focused on the longevity of seven tree/shrub species native to the southeastern US: yellow-poplar (*Liriodendron tulipifera*), sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), eastern white pine (*Pinus strobus*), rosebay rhododendron (*Rhododendron maximum*), eastern hemlock (*Tsuga canadensis*) and red spruce (*Picea rubens*). Fifteen-year-old seeds stored in a household refrigerator at approximately 3°C since being purchased in 1997 were stratified. New seeds of

each of these species were also stratified. After stratification we planted the seeds in the Elon University greenhouse and monitored germination for 2 months. Our results indicate that both sugar maple (80% old seed, 83% new) and yellow-poplar (4% old and 5% new) germinated, suggesting seeds of these species can remain viable for at least 15 years. Results of the other species were equivocal: no older seeds germinated but some younger seeds did. A tetrazolium chloride test indicated survivorship (6.7-60% viability) for all species. We feel that the low germination is attributable to damping-off in the greenhouse after planting. Fungal growth was a problem on seeds during stratification and could have contributed to the poor germination results. The results suggest that individuals can preserve seeds of at least some eastern forest woody species.

DYNAMICS OF RNA-BINDING PROTEINS

Ann M. Quigley (Dr. Michael Terribilini), Department of Biology

RNA binding proteins play crucial roles in many cellular processes especially gene expression. The induced fit model has been used to describe the conformational change undergone by many proteins upon binding to RNA. X-ray crystallographic structures illustrate the conformational adjustments that proteins undergo in the process of binding, with transitions in motion inferred in the progression of the unbound state of the protein to the bound state in complex with the partner molecule. Though crystallographic data can be used to understand the apex of motion, it cannot examine the dynamic changes that are induced upon binding. Computational models that correspond to the real-time motion of the protein allow for exploration of the dynamic motion of binding sites of specific proteins instead of relying on static representations of the molecule. The elastic network model (ENM) is one such computational dynamic model that uses a simplified representation of the protein structure and intramolecular interactions to estimate large-scale motions of a protein. Previous work with ENMs has demonstrated the agreement between the model and experimental data on protein dynamics and has been effective in analyzing protein-protein interactions. The dynamic motion of RNA binding proteins was explored to observe whether or not binding sites exhibited consistent and distinct behaviors from nonbinding sites present on the same protein. Dynamics data was simulated with an ENM of known RNA-protein complexes and the motion of binding and non-binding residues was analyzed. This study used two datasets of RNA-binding proteins; first a small paired set where both the bound and unbound structures of the protein were available, and second, a larger set where only the unbound structure was available. The paired dataset was used to determine the correlation between the ENM data when starting with the unbound conformation compared to the bound conformation because the ENM is known to be influenced by the starting conformation. However, the data indicated a very high correlation indicating the ability to start with either the bound or unbound conformation of the protein. Using the larger dataset of proteins in complex with RNA, it was determined that RNA binding residues are more dynamic than nonbinding surface residues. This observed trend was applicable regardless of the amino acid type involved. These findings suggest that the intrinsic dynamic motion of the protein may play a pivotal role in protein-RNA recognition.

THE EFFECTS OF AFLATOXIN B1 ON JURKAT T-CELL GROWTH, VIABILITY, AND ACTIVATION

Lauren E Sutherland (Dr. Tonya Laakko Train) Department of Biology

Aflatoxins are metabolites of mold commonly found in food supplies in areas with a climate conducive to mold growth, particularly in developing countries where food storage is less regulated. The metabolite aflatoxin B1 (AFB1) has been identified as a carcinogen known to cause liver cancer. Animal studies have suggested that AFB1 may also have a negative impact on immune function, but the effects on human cells have not been thoroughly studied. This study investigated the effect of AFB1 on T lymphocyte activation, growth and viability. After treatment of a Jurkat T-cell line with 10 μ M AFB1 for 24 hours, microscopic viability counts and flow cytometry showed that cell concentrations decreased by 50%. Additionally apoptosis was shown to increase by approximately 50% (from an average 8.14% to 12.5%) using Annexin-V staining and flow cytometric analysis. This suggests that increased cell death contributes to the observed reduction in cell concentration. Western Blot analysis of Jurkat T-cells pre-treated with or without AFB1 followed by stimulation with phorbol myristate acetate and phytohemagglutinin (PMA/PHA) showed the ERK MAP Kinase activation pathway was not significantly modulated by AFB1. These results suggest AFB1 might promote immunosuppression by significantly reducing in T-cell concentrations, at least in part, by inducing apoptosis.

HOW DOES THE SINGING STYLE OF MALE MOCKINGBIRDS VARY BETWEEN BREEDING STAGES?

Helen L. Wright (Dr. Dave Gammon) School of Arts and Sciences, Department of Biology
During their spring breeding season, male Northern Mockingbirds sing continuously for up to several hours each day while frequently switching between different song types. Singing behavior is thought to influence female mate choice. An earlier observational study found that males present a greater variety of song types during the courtship stages of the breeding season. Using song data from nine free-living male mockingbirds on Elon University's campus, I replicated this earlier study and also measured the duration of song sequences within a sampling period. Although I did not find support for the earlier study regarding song variety, I did find that males produced longer durations of song when females were fertile. This increase in song duration during female fertility periods suggests song duration plays a role in female mate choice and that males producing longer durations of song would be favored by natural selection.

CHEMISTRY

QUANTIFICATION OF ETHANOL IN RAINWATER

Callan E. Andreacchi (Dr. Katherine M. Mullaugh) Department of Chemistry

In recent years the United States has dramatically increased the amount of bioethanol used in fuel. Despite this change in our fuel use habits, little is known about the potential effects of bioethanol fuel use on the atmosphere. To better understand the environmental impact of bioethanol use in the U.S., more measurements of ethanol's occurrence in precipitation are needed to provide insight into how ethanol is cycled in the atmosphere. Rainwater was collected in Elon, NC on an event basis in accordance with recommendations from the National Atmospheric Deposition Program. After collection and any necessary sample preservation,

chemical analysis of ethanol, pH and dissolved organic carbon (DOC) was carried out. Our ethanol analysis utilized solid-phase microextraction (SPME) to concentrate the low level of ethanol found in rain samples on small fibers. These fibers are heated in the inlet of a gas chromatograph (GC) to release ethanol from the fiber so it can be detected and quantified by GC. This method is sensitive enough to quantify the low concentration of ethanol typically found in rainwater at our location (approximately 0.05 – 1 μM). Samples analyzed at our location in summer 2013 had a volume-weighted average ethanol concentration of $0.7 \pm 0.2 \mu\text{M}$ ($n = 4$), which is significantly higher than the level of ethanol found in rain during the same time of year in coastal North Carolina (Kieber, 2014). This is likely due to increased anthropogenic and biogenic inputs in our more populated and inland region.

ESTROGENIC HORMONES: THEIR INTERACTIONS WITH LACTOPEROXIDASE AND POTENTIAL FOR DNA MUTATIONS

Natalie M. Clark (Dr. Kathryn Matera) Department of Chemistry

Lactoperoxidase (LPO) is an enzyme that provides a defense system against foreign pathogens in the human body. When combined with hydrogen peroxide, the iron in the heme prosthetic group of LPO is capable of oxidizing these pathogens; however, LPO can also oxidize other organic molecules made by the body, such as estrogenic hormones, consequently creating free radicals. Therefore, LPO has been implicated in carcinogenesis as a result of hormone oxidation. To examine the propensity of LPO to oxidize hormones, enzyme kinetics with LPO were completed with both estradiol and estriol. Previously conducted binding studies indicated that the hormone estrone did not bind to LPO; therefore, this enzyme was excluded from kinetics studies. Enzyme kinetics were measured with ultraviolet-visible spectroscopy by monitoring the change in absorbance of hormone over time as it was oxidized. A difference spectrum was calculated at the wavelengths at which the largest change was observed due to hormone oxidation. Trials for each concentration of hormone were done in triplicate and used to determine the K_M , a measurement of binding and enzyme activity, for both estradiol and estriol in the presence of LPO. In addition, gel electrophoresis was used to analyze the oxidative effects of LPO and estradiol on DNA. Based on the gel electrophoresis results, the oxidized hormone was further analyzed to determine if it was, in turn, oxidizing the DNA or actually covalently binding to DNA. Estriol was tested minimally as its experimentally determined K_M value of 2.256 mM indicated a lower affinity for LPO than estradiol, with a K_M value of 0.2693 mM. 17 β -Estradiol EIA kit (Enzo Life Sciences) was used to determine the number of estradiol covalently bound to the DNA in the presence of LPO. Calculations for covalently bound estradiol to pBR322 resulted in a 21:1 ratio, indicating that estradiol binds in large molar excess to DNA.

LEARNING SCIENCE VERSUS DOING SCIENCE: DEVELOPMENT OF A WINE CHEMISTRY PROJECT

Sarah E. Cleveland (Dr. Daniel Wright) Department of Chemistry

At the heart of any educational endeavor is the need to train future practitioners of the field. In science, therefore, emphasis must be placed on the activities where students not only learn science, but do science – the laboratory. Organizations like the National Science Teachers Association (NSTA), the National Research Council (NRC) and the National Association for Research on Science Teaching (NARST) promote the importance of laboratory work at all levels but realize how laboratory teaching is presented affects the impact. Traditional approaches may

illustrate lecture material but do not necessarily place students in the position where they are doing science. A project-based laboratory approach being developed at Elon presents students with a genuine problem and challenges them to design their own investigations, work collaboratively and communicate their findings. Success has been seen in the development of a simulated crime scene. Current work continues on the development of a second multi-week project using wine as the basic element. The goal of this work is allow students to investigate acid content, alcohol content and antioxidant ability in a variety of wines using techniques typically accessible by first year students. Protocols for acid content (both total acid and volatile acid) have been tested, a preliminary attempt at measuring antioxidant ability is ongoing, but finding a successful approach to analyze alcohol content spectrophotometrically has proven to be elusive. Though the method of standard addition shows a relationship between absorbance and alcohol in numerous wine samples, evaluation of the percent alcohol in unknown samples shows major inconsistencies.

ANALYSIS OF BCL-2 PROTEINS DURING HEART DEVELOPMENT

Taylor A. Davis (Dr. Victoria Moore), Department of Chemistry

Of all of the organs in the human body, the heart is one of the most vital. Should the heart or the blood vessels around the heart fail to develop properly, congenital heart defect occurs. Approximately eight of every 1,000 newborns are affected by such heart defects; however, the cause of these defects is often unknown. Apoptosis, or programmed cell death, is controlled by the BCL-2 family of proteins, which can either inhibit or propagate apoptosis. While it is known that apoptosis occurs throughout embryogenesis as organs develop, the specific role of the BCL-2 proteins during heart development has not been significantly explored. We hypothesize that levels of BCL-2 proteins change during heart development and that different proteins are critical at different development points. This study uses whole hearts dissected from chick embryos harvested at different developmental days post fertilization. As formative events take place, BCL-2 protein levels were examined to uncover the correlation between increase or decrease of BCL-2 proteins and a cardiac developmental stage. Protein samples were analyzed using Western blotting followed by densitometry to quantify which anti- and pro-apoptotic proteins were present. To further identify differences in protein expression among specific regions, hearts will be dissected at various areas such as the apex, ventricles and atria, and proteins from each region analyzed. Established techniques will then be used to overexpress key anti-apoptotic proteins during development *in ovo*. Similarly, key pro-apoptotic proteins will be knocked down in order to examine their role in heart development. Our data indicate that during organogenesis expression of both pro-apoptotic and anti-apoptotic BCL-2 proteins changes during heart development, but that expression significantly decreases once it is completed. Data collected from this project will contribute to a more complete understanding of heart development, which could lead to improved treatment of congenital heart defect as well as other heart pathologies.

ALPHA SYNUCLEIN AGGREGATION IN VITRO BY DL-NOREPINEPHRINE IN PARKINSON'S DISEASE

Andrew F. Fischer (Dr. Kathryn Matera) Department of Chemistry

Aggregation of α -synuclein has been identified in the pathogenesis of Parkinson's disease and is initiated by the folding of the natively unstructured α -synuclein monomer into a pathogenic

amyloidogenic form. Several small polyphenol molecules, including oxidized derivatives of dopamine, have been shown to inhibit the formation of fibrils and break apart existing fibrils into oligomers. The present study seeks to elucidate the mechanism of this potentially toxic fibril inhibition and oligomer stabilization. Using insulin, a model amyloid protein, and the α -synuclein peptide, a thioflavin T assay has demonstrated the fibril disaggregation properties of autoxidized dopamine and DL-norepinephrine. Furthermore, silver stain and western blotting techniques have provided more information about the size and structure of α -synuclein oligomer complexes. Aggregation regulation by oxidized dopamine derivatives could be a target in future neurodegenerative disease therapies.

DETERMINATION OF CONTENT AND OXIDATIVE PROPERTIES OF FLAVONOIDS IN POPLAR HONEY

Britta M. Halvorson & Madeline C. Wise (Dr. E. B. Grimley) Dept. of Chemistry

The objective of this research is to separate, identify, and correlate the specific flavonoids present in poplar (*Liriodendron tulipifera*) honey, as well as analyze the oxidative properties in formerly identified flavonoids. This is important because flavonoids have previously been identified as having antibiotic or anti oxidizing properties in over 450 types of honey and other edible products. However, poplar honey, which is native to this part of the United States, has not yet been reported. The presence of six flavonoids; quercetin, luteolin, kaempferol, apigenin, chrysin, and galangin, have been identified based on UV-Vis spectroscopy and retention times obtained using reverse-phase high performance liquid chromatography (RP-HPLC). To confirm the identity of these compounds and numerous others, ^1H NMR (nuclear magnetic resonance) and electrospray mass spectrometry will be used. The use of ^1H NMR, UV-Vis, and mass spectrometry will provide structural information about the flavonoids that are present in poplar honey. Another method employed in this research is the silylation of flavonoids. Silylation can be defined as the substitution of a hydrogen atom bound to a hetero atom (-OH, =NH, -SH) by a silly group, forming a silicon hetero atom bond, without any further alteration of the molecule. Once all six previously-identified flavonoids have been silylated, they will be run through both RP-HPLC and GC-MS to both identify and quantify the phenolic compounds present in Poplar Honey (Komaitis, 2006). In addition to these identification methods, oxidative properties will also be analyzed in this research. A significant difference has been found in the oxidative sensitivity of different flavonoids, so additional study in this area will provide valuable information about the oxidation of flavonoids specifically in poplar honey. Thus far, flavonoids Quercetin and Chrysin in poplar honey have exhibited HPLC peaks and shown significant differences in oxidation. With this baseline knowledge, we can move forward in identifying additional flavonoids and continue to track changes in oxidation for these compounds.

FUNCTION AND ORGANIZATION OF THE CELL MEMBRANE

Jessica W. Harris (Dr. Sara Triffo) Department of Chemistry

Cell function depends on the ability of cells to communicate with surrounding cells. This communication is key to biological processes and vital for daily activities. Cells communicate through membrane signaling; the membrane, which receives these signals, is comprised of many different lipids and proteins. While some membrane proteins that send and receive cell signals are embedded in the membrane, others are held in place by lipid anchors or long carbon chains

inserted into the lipid membrane. The role these anchors play in membrane organization and how that organization affects cell communication is the central focus of this research. Certain lipids including cholesterol in mammalian cells and ergosterol in yeast cells are able to organize together and form distinct domains, which are referred to as sterol-rich domains. Some lipids and lipid-anchored proteins will localize within these sterol-rich domains, which directly impacts communication. However, it is unknown what governs this localization. Some theorize that the identity of the protein and specific protein-protein interactions control where it localizes within the membrane. However, others hypothesize the type and combination of lipid anchors dictate membrane organization. This project aims to explore one of these theories by discovering if the identity of lipid anchors plays a direct role in the organization of the membrane. Previous research has demonstrated that fission yeast have sterol rich domains that are comparable to those found in human cell membranes. For this reason, *S. pombe*, fission yeast, will be used as a model organism. Using fluorescent microscopy techniques, fluorescent markers will be attached to lipid anchors allowing for the detection and visualization of these anchors relative to other membrane components, specifically sterol rich domains. After studying different compositions of lipid anchors, insight will be gained to determine if lipid anchor structure and identity contributes to cell membrane organization and sterol rich domain localization.

ANALYSIS OF NITRATE EXPLOSIVE IN WATER USING A NEW METHOD

Erica Janik (Dr. Karl Sienerth) Department of Chemistry

Recent research has established the importance of developing a new method for identifying and quantifying toxic explosive compounds in the environment onsite. Current available methods are limited in terms of portability or specificity, meaning that they can neither accurately differentiate one explosive material from another nor provide information about the amount of compound present. One method that has demonstrated promise of being both portable and specific is fluorescence quenching. Recent research in our laboratory provides evidence that a similar method to fluorescence quenching, electrochemiluminescence (ECL) quenching, is even more sensitive, reliable, and cost and time efficient. While the same “energy-transfer” effect is seen in both methods and the same measurements (of emitted light) are made, the methods differ in how the initial energy is provided. Rather than using a laser, as in the fluorescence method, the ECL method provides energy with an electrical current. Because the supplied energy is concentrated to a much smaller area than it is in the fluorescence method, slight differences in light intensity as well as larger ranges of light intensity emissions can be detected with ECL. My research has shown that there is a linear relationship between the ECL signal and the concentration of certain nitrate explosives. Further, I have begun to determine the maximum levels of precision, accuracy, and selectivity with which various explosives (PETN, RDX, HMX, and TNT) can be determined using the ECL quenching method. Additional research will focus on establishing reproducible numbers with a smaller volume cell as well as exploration of binary mixtures.

INVESTIGATION OF THE CELLULAR MECHANISM OF APOPTOSIS IN ACUTE KIDNEY INJURY DURING SEPSIS

Thomas J. Lampl (Dr. Victoria Moore) Department of Chemistry

Sepsis, a condition that affects 750,000 people per year, is characterized as a severe inflammatory response to infection. Cellular messengers, called cytokines, trigger an immune

response that promotes inflammation. With a death rate of about one-third, this disease creates many complications in the clinical setting (Angus et al., 2001)(Murphy, 2000). By understanding how patients develop sepsis, researchers can determine how to minimize the number of cases, as well as deaths, per year. Previous studies have shown that apoptosis in immune cells suppresses the immune response (Wesche-Soldato et al., 2005). Furthermore, there is evidence that the Bcl-2 family of proteins has a key role in the cell death (apoptosis) that occurs during sepsis, however the exact cellular mechanism by which apoptosis operates during sepsis is not known. This study aims to elucidate this cellular mechanism through a cell culture model of sepsis. Cultured kidney cells were treated with recombinant cytokines, and isolated mitochondria, an organelle associated with apoptosis as well as cellular energy production, from treated and untreated samples were collected. Analysis of treated and untreated samples offers evidence of cell death and mitochondrial perturbation. Mitochondria were assessed using a fluorescent dye and a plate reader that can track changes in fluorescence. Additionally, MTT assays, a gold standard in the field of cell death, were used to measure viability of treated and untreated cells collected at various timeframes. Assay results show a small, but significant, decrease in cell viability for cultured cells treated with recombinant cytokines versus untreated cells. From fluorescent plate reader assays, the fold difference in fluorescence between treated and untreated mitochondria can be measured. Comparison between these values demonstrated evidence that the decreased cell viability seen in MTT assays is due to less healthy mitochondria. This gives credence to the hypothesis that cytokines released during sepsis are directly related to mitochondrial health and apoptosis. Consistent and reproducible results from this study show that this model is useful for studying cell death, and it can easily be applied to a disease model, such as an *in vivo* model that uses kidney cells from mice with induced sepsis.

FIVE-COORDINATE METAL COMPLEX SUBSTITUTION REACTION

Thomas F. Riley & Christopher G. Battaglia (Dr. E. Grimley) Dept. of Chemistry

The objective of this research is to study the ligand substitution process in trigonal bipyramidal transition metal complexes. The complexes contain the tetradentate ligand, *tris*-[(*o*-dimethyl)arsinophenyl]phosphine, Ptas, monodentate ligands, and a transition metal ion. Previous studies in this and other laboratories have indicated that the mechanism is neither clearly associative nor clearly dissociative in their fundamental character. This indicates the involvement of a mechanism involving an intermediate complex of reduced coordination. The purpose of this research is the search for evidence of an intermediate via proton nuclear magnetic resonance spectrometry and by UV-Visible Fast Mixing Kinetic Spectrometry. Results will contribute to an enhanced understanding of both the substitution process in general and to more specifically determine the potential role of a here-to-fore undetected intermediates. Elucidation of the mechanism of substitution of the monodentate ligand by another monodentate ligand will be investigated (a) by performing traditional temperature controlled kinetic experiments in methanol using the HP 8452 Photodiode Array UV-Vis spectrometer and Global Works kinetic software (Olis, Inc.) and (b) performing variable temperature ¹H NMR line broadening techniques and the JOEL 500 MHz spectrometer (Varian, Inc.). Thus far, we have analyzed literature reports and determined kinetic characteristics of the nickel-chloro complex. We created an inventory of the complexes synthesized from Dr. Grimley's previous research, and using various techniques, we are studying and comparing the complexes reactive behaviors. The

kinetic behavior of the nickel-chloro complex resembles that of similar complexes from previous laboratory studies. We are synthesizing a nickel-bromo complex for study because bromide ion is a better leaving group and the complex would allow us to do a comparable study to Dr. N.J. McNeil's thesis.

SYNTHESIS AND STUDY OF NEW IRIIDIUM-CENTERED COMPOUNDS

David W. Scammon (Dr. Karl D. Sienerth) Department of Chemistry

Electrochemistry involves the use of electricity to cause chemical reactions to occur, but often at the cost of significant energy. One way to reduce the energy requirement is to use catalysts – that is, chemicals that help desired chemical reactions to take place with less electricity. Past research has shown that certain chemical compounds of the metal rhodium demonstrate those catalytic electrochemical properties. Iridium and rhodium are in the same family of the periodic table and display similar chemical tendencies, but because iridium is larger in size, its compounds have the potential to be better catalysts than those using rhodium. Using procedures developed from previously reported rhodium and iridium compounds, I synthesized two new iridium-centered compounds. Since the compounds had never been reported before, it was necessary to characterize them with spectroscopic methods, and also to investigate possible methods for purifying the products of the experiments. Once a reasonable method of purification is established, the compounds will be tested to determine if they can serve as electrochemical catalysts. This presentation will focus on the methods and results of the synthesis and characterization of the two new iridium organometallic compounds, and will include some preliminary studies on the electrochemistry of the new substances.

THE OXIDATIVE MECHANISM OF DOCOSAHEXAENOIC ACID: THE RELATIONSHIP TO ATTENTION DEFICIT HYPERACTIVITY DISORDER

Rebecca M. Schneider (Dr. Kathryn Matera) Department of Chemistry

The pathophysiology of attention deficit hyperactivity disorder can be described by abnormalities in blood samples, including decreased levels of docosahexaenoic acid, increased xanthine oxidase activity, and increased levels of malondialdehyde. This research focuses on the likelihood of a mechanism involving the oxidation of docosahexaenoic acid caused by xanthine oxidase resulting in oxidation product formation, which may include malondialdehyde. The rate of oxidation was observed by monitoring the increase in absorbance at 234 nm and 270 nm on a spectrophotometer. The absorbance at both wavelengths was observed to increase to a maximum value and then decrease, suggesting that a rearrangement in double bonds within the lipid is occurring. The increase in absorbance is less substantial when xanthine oxidase is absent, indicating that the oxidation is caused by xanthine oxidase and not the result of autoxidation. Hydrogen abstraction caused by xanthine oxidase likely causes the rearranging of double bonds, however the location of this abstraction on docosahexaenoic acid has not been identified. A continuation of this research will consist of determining the mechanism and products of this reaction.

ELUCIDATING THE MECHANISM FOR PERIODIC PRECIPITATION (LESIGANG RINGS)

Austin Sowell & Alex Bruch (Dr. Joel Karty) Department of Chemistry

Since their discovery in 1896, the precise mechanism of periodic precipitation (Liesegang) reactions has remained largely unresolved. Liesegang reactions produce bands of precipitate, with regions in between that appear devoid of precipitate. Ross et al. found that colloidal particles of the precipitate are formed both in band-forming regions and in band-free regions, but are later absent in band-free regions. Two prevailing theories can account for the disappearance of these colloidal particles from the band-free regions: autocatalytic growth theory and coagulation theory. To test these theories, we produced bands of CdS from 0.008M CdCl₂ in 0.6% agar and 1.5M (NH₄)₂S. UV-vis spectrophotometry was used to measure the size of the colloidal particles as a function of time. Specifically, blue shifts in the absorption band at 426 nm correlates with colloidal particle size. These results will be analyzed to determine whether they corroborate the autocatalytic growth theory or coagulation theory.

COMMUNICATIONS/JOURNALISM

MICROBLOGGING THE NEWS: COVERING A CRISIS WHEN TWITTER IS THE ONLY OPTION

Rajat Agarwal (Dr. Amanda F. C. Sturgill), School of Communications

As news media are evolving strategies for incorporating new technologies for gathering and disseminating the news, social media have become a part of the mix. Because the ability to tell stories over social media is not restricted to experts, scholars have suggested that social media are more useful for engaging users and for creating a sense of community around issues in a particular area. One aspect of news in the emerging social news environment that has not been as well studied is the coverage of breaking news. This paper examines the coverage of a shooting during a unique event in which a college newspaper was locked down and only able to communicate via Twitter.

Research questions included

RQ 1: Did the tweet coverage engage others more than express to others?

RQ 2: How much of the tweet coverage made use of photographs and videos?

RQ 3: Did the tweet coverage present information on behalf of officials?

RQ 4: Was the tweet coverage used to promote the newspaper itself?

All tweets during the incident from the student newspaper were analyzed, with two coders participating and an intercoder reliability of 93 percent. Content analysis of the newspaper's tweet stream suggests that the coverage fits largely into patterns found in coverage of other breaking news, although a significant number of tweets were used to push users to the newspaper's regular web presence, once it again became available.

ON THE DEFENSE: HOW THE NFL FOUGHT TO REGAIN PUBLIC TRUST AFTER THE CONCUSSION CRISIS

Elizabeth A. Ballard (Dr. Lucinda Austin) School of Communications

The National Football League made strategic decisions to combat legal allegations and regain the public's trust after what many refer to as "the concussion crisis." Highly publicized cases of NFL players diagnosed with Chronic Traumatic Encephalopathy (CTE) and other traumatic brain conditions, as well as several accounts of player suicides, motivated the League to place concussion science at the forefront of its public relations efforts. This case study outlines the issues associated with the concussion crisis and uses a content analysis methodology to assess the channels, strategies, and tactics used by the NFL to convey strategic messages and protect its image in the eyes of former and current players, sports fans, youth athletes, and other stakeholders. By examining how the issue is presented in over 20 online and print news stories and PBS' controversial *Frontline* documentary, *League of Denial*, this case explores the key strategies the NFL chose and the implications of those decisions. Case study findings expand upon the terms of the concussion settlement as one of the NFL's key strategies. Findings also reveal the NFL's decisions to market safety over violence, assure current and former players protection, and increase youth head health safety initiatives. Additionally, the case examines how PBS' controversial *Frontline* documentary, *League of Denial*, has impacted the public's view of the NFL and the concussion crisis matter as a whole.

WILD DISTURBANCES: RIGHTS OF SURVIVAL IN PREDATOR CONTROL

Stephanie J. Butzer (Professor Colin Donohue), School of Communications

Predator control is not only one of the fastest growing concerns in the United States, but it is also one of the most underreported. The coverage that is available can be misleading and portray only one side of the story, leading to more questions and confusion. Because most news reports rarely investigated the issue beyond its surface, questions arose about what incidents have plagued predators and ranchers and how wildlife organizations usually present just their side of the issue and not the whole story. For many Americans, predator control elicits images of a wolf stealing a lamb or cow from a ranch in the western states. Those who don't interact with wolves and coyotes on a regular basis often believe they need not worry about these predators. Investigation of the issue of predator control revealed instances of endangered and protected wolves becoming comfortable around humans, the detrimental impacts on an ecosystem that doesn't feature wolves and coyotes, and the deaths of millions of wild and domestic animals from indiscriminate lethal management methods. To investigate the topic, the author conducted research and explored the issue firsthand, interviewing on the phone and in person more than 40 people – government officials, ranchers, farmers, environmentalists, and hunters – from all across the country. The discussions ranged in topics, viewpoints, and personal experiences. The author was able to identify the future of the issue, hidden conflicts, important solutions, and flaws in a governmental system. Predator control is a much bigger issue than most people realize and one all Americans should recognize because without a successful coexistence, entire ecosystems and industries will perish.

FRAMING CLIMATE CHANGE: A CROSS-CULTURAL EXAMINATION OF GOVERNMENT ENVIRONMENTAL AGENCIES' WEBSITES IN NORWAY, CHINA, COSTA RICA AND THE UNITED STATES

Jill E. Capotosto (Dr. Barbara Miller) School of Communications, Department of Environmental Studies

Climate change is one of today's most pressing global issues; however, response efforts will never be successful without public adoption of environmentally conscious attitudes that support policy and behavioral changes. Public attitudes toward environmental initiatives may be developed and shaped, in part, by communication efforts of environmental institutions and government agencies. This study involves a cross-cultural examination of the communication frames utilized by government environmental agencies to communicate with citizens about climate change. The countries of focus—China, Costa Rica, Norway and the United States—were selected because they vary greatly in their scores on Yale University's Environmental Performance Index, as well as across important cultural dimensions (as identified by Geert Hofstede and public relations scholars) that impact how individuals interpret and respond to messages. This study involves a mixed methods content analysis of environmental agency websites from each of these four countries to examine the ways that climate change is framed, including climate change causes and responsibility, the need for climate change solutions, each country's response to the issue, and environmental values as identified by environmental communication scholars (i.e., biospheric, egoistic, and/or social/altruistic). Qualitative findings reveal the sites for Norway and Costa Rica, both feminine countries with high environmental performance, emphasize responsibility for the country's contribution to climate change and underscore international response measures, with approximately 4 and 9 percent of the sites devoted to international cooperation, respectively. Over 17% of the Chinese site discusses international cooperation; however, much of this content does not discuss China's own response to climate change. Meanwhile, the U.S. EPA site devotes only 0.2% of its content to international cooperation measures in response to climate change. Rather, its focus is on individual-level responses, such as changing light bulbs. Of all four sites studied, the U.S. EPA website provides the most thorough scientific explanation of climate change causes and impacts. Results from this study identify how these governments are framing climate change within their respective cultural contexts, thus laying the groundwork for future research into the most effective frames for climate change initiatives based on cultural values.

REVOLUTIONIZING THE NEWSROOM: HOW ONLINE AND MOBILE TECHNOLOGY HAS CHANGED BROADCAST JOURNALISM

Nicole M. Chadwick (Dr. David Copeland) School of Communications

This study interviewed journalists across the United States in 2013 to find out how online and mobile technology have changed television journalism in the past decade and what new technology and trends they expect in the future. Interviews with thirteen television journalists indicate that web presence and mobile apps are getting more important in most cases; they try to license others' digital assets for both television broadcast and the web; they use the Internet and social networking to generate better stories and reach out to younger audience. The results of this study also imply the responsibility of journalists to learn new technology, change daily work habits and adapt to new job requirements in order to maintain job security and succeed in their career.

WINNING A WAR OF IDEALS: THE NEGLECTED USE OF ARTISTIC EXPRESSION IN CULTURAL DIPLOMACY

Tess I. Duncan (Dr. Glenn Scott) School of Communications

Bombs and soldiers are not the only option when “terrorism” is the enemy. The arts offer another type of diplomatic resource. In February 2013, former Secretary of State Hillary Clinton observed that art, “reaches beyond governments, past the conference rooms and presidential palaces, to help us connect with more people in more places. It is a universal language in our search for common ground, an expression of our shared humanity.” This power to connect to people’s humanity can alter international perceptions. In a 2005 Report of the U.S. Advisory Committee on Cultural Diplomacy, authors were so taken with the power of the arts in shaping the country’s international perception that they termed cultural diplomacy the “linchpin of public diplomacy.” This paper critically analyzes this U.S. Advisory Committee’s recommendations through a contemporary global lens, weighing applications to current diplomatic situations and introducing the need for a new era of arts-driven public diplomacy. It examines research of public policy and communications scholar Nancy Snow, whose work analyzes U.S. ability to spread knowledge, wisdom, and empathy through cultural exchanges. Her historical context and application to modern day relations reveal a precedent for reform. The U.S. has historically made arts diplomacy a major component of public policy, but that priority has slipped. This paper contends that as “soft weapons”, the arts should be deployed more effectively to win the war of ideals. In much the same way that scholar and anthropologist Benedict Anderson (1983) studied the development of print capitalism and the national print-language in *Imagined Communities*, this paper advances the concept of an international art-language and asserts that a new step in the adoption of human rights and democratic governance can occur through the promotion of artistic works.

THE ONGOING ROLE OF ORIGINAL PRINCIPLES IN INTERNET EVOLUTION: INTERNET LEADERS CONTINUE TO ADHERE TO EARLY IDEALS.

Jeff S. Ackermann, Shakori D. Fletcher, & Ryan K. Greene (Janna Anderson) School of Communications

Do leaders in the ongoing technical and social evolution of the Internet continue to give voice to the principles expressed by its earliest innovators? Long-form, ethnographic video interviews were conducted in August 2013 at the Internet Engineering Task Force meeting in Berlin, Germany, with 23 people from among 2013 Hall of Fame inductees, Internet Engineering Task Force (IETF) leaders and the Internet Society Board of Directors. These Internet developers, pioneers, and evangelists were interviewed in a formal, five-question process and asked to describe their views on the current state of the Internet, to identify challenges and opportunities, and to describe the best actions to take for a positive future. A six-student research team from Elon University recorded responses totaling more than five hours of content; the print transcripts total more than 75 pages. The interviews were posted as part of the Imagining the Internet Center’s documentary coverage of the 2013 Internet Hall of Fame Induction. Researchers later coded the qualitative content by implementing the Internet Society’s list of six “principles that guide our work” (in brief: the ability to connect, speak, innovate, share, choose, and trust), which have been generally recognized by Internet architects and diffusion experts since the emergent years of the organization in the early 1990s. Without being prompted about the principles, each of the interviewees mentioned several in his or her responses. For example 96 percent of the Hall

of Fame inductees mentioned the continuing ability to innovate as crucial. The ability to connect (Internet accessibility on an equal and open basis for all), the ability to trust (to be able to safely and freely send and receive knowledge), and the ability to speak were also among the most-mentioned principles these leaders emphasized in sharing their thoughts about the past, present, and future of the Internet.

GET IT FIRST, GET IT FAST, GET IT IN FEWER THAN 140 CHARACTERS: LOCAL VS. REGIONAL EFFECTS ON ACCURACY, SOURCING OF BREAKING NEWS

Dana A. Gullquist (Dr. Amanda Sturgill) School of Communications

Although media companies have long used new technology to keep the new in news, the rapid evolution of social media today has made it vital for news outlets to adapt to meet reader expectations (Laird, 2012). As part of a 24-hour online media cycle (Carvajal & Garcia-Aviles, 2008), social networks have become a tool for communicating (Stassen, 2010) and disseminating news, often outside of the control of the information's originators. The pressure to break news first is particularly important with crisis news stories. This paper considers Twitter as a mechanism for conveying news. Twitter, corporately, is encouraging the increase in news dissemination using its service. In addition to reaching users quickly with messages, Twitter, like other social media, has the potential to foster two-way relationships between news gatherers and their audiences (Stassen, 2010). Following on work of Author (2013), this study looks at the coverage of a breaking event, defined by Page (2010) as news that happens as it is being told. Tweets and re-tweets related to a news event covered by a local newspaper and two regional newspapers were compared with relation to interactivity, content, accuracy, and sourcing. All data was entered into SPSS to calculate frequencies for each category, and to look for differences between the news outlets and between original and retweet tweets. Analysis is presently underway. Findings include that the local publication interacted less, published more tweets about aftermath events like vigils, fewer tweets about national response and fewer tweets about the shooting itself. However, the local publication was 100 percent accurate.

Are All Calories Created Equal? A CASE STUDY of the Coca-Cola Company's Communication in the Fight Against Obesity

Heather L. Harder (Dr. Lucinda Austin) School of Communications

According to nutrition professor Barry Popkin, "The biggest single source contributor to child and adult obesity in the USA is sugar-sweetened beverages" (Harvard School of Public Health, 2012). With sugary drinks frequently attacked as a leading contributor to the obesity problem, soft drink sellers face intense scrutiny. Industry leader the Coca-Cola Company knew it had to join the conversation, and, in January 2013, the company launched its Coming Together anti-obesity campaign. Through a content analysis of responses to Coca-Cola's campaign, mainly from health professionals and the media, this study found the public largely perceived Coming Together as a public relations ploy at damage control, rather than a genuine attempt to fight obesity. Where did Coca-Cola go wrong, and how could Coca-Cola or a company in a similar situation have done better at communicating its support of a major issue? This case study examines Coca-Cola's use of blog posts, media interviews, and video and print advertisements to communicate its commitment to fighting obesity, as well as the public's response. In addition, this case measures Coca-Cola's anti-obesity efforts against the "Page Principles," a set of principles of public relations management followed by the Arthur W. Page Society. The study

concluded that, based on the seven Page Principles, Coca-Cola's communications regarding obesity appeared disingenuous and, therefore, failed to achieve the desired results. Coca-Cola adhered to the principles of proving its commitment with action and listening to customers. However, its failure to acknowledge scientific evidence demonstrated a disregard for the truth and a failure to manage for tomorrow. This study argues that Coca-Cola's anti-obesity campaign would have been better received if the company had fully adhered to the Page Principles.

DISABILITY REPRESENTATION IN INDEPENDENT NARRATIVE FILM

Jennie L. Hook (Dr. Julie Lellis) School of Communications

Research explored the question "How are disabled characters represented in independent narrative film? The research was conducted as a part of Elon University's StudyUSA program during the month of January. The class was the Sundance Experience, during which a group of twelve students traveled to Park City, Utah to attend the Sundance Film Festival. During the two-week festival, eighteen independent film screenings were attended with the goal of analyzing films that featured characters with disabilities, both seen and unseen. A catalog of film descriptions and online research were used to select which films to see. Even films without an explicitly named disabled character featured a more diverse selection of accurately represented disabled characters. Characters with disabilities in the independent films at Sundance did not have their disability exploited in the storyline. A character's disability was not the defining characteristic of their character. The characters were strong, functioning, and integral parts to the story being told – they just happened to be disabled. This accurate style of representation was possible because independent films typically push the boundaries a little further than mainstream media. Audience members that choose to watch independent films seem to be more open-minded towards the content, including more diverse characters and suggestive dialogue. In the future, this research could be expanded to include mainstream films, which usually feature more stereotypical portrayals of disabled characters.

Young Adults' Behaviors & Opinions Regarding Cell Phone Addiction & Their Ability to Communicate in Society

Tessa J. Jones (Dr. David Copeland) School of Communications

Compared to decades ago, cell phone use in today's society plays an essential role in communications throughout the world. The technological revolution that many Americans are consumed by has drastically changed the way humans interact and communicate with one another. Primary and secondary research was conducted to gauge the level of addiction and awareness young adults have towards cell phone use. Published scientific experiments were analyzed to learn about the emotional consequences young adults encountered when their cell phone was absent. Elon University students were involved in a survey and field observations, which revealed honest opinions and behaviors. Findings show that people are becoming more aware of their own personal habits and behaviors regarding interaction with their devices, and some people believe the fixation surrounding instant and constant communication will diminish by the time Generation Y has their own children. Additionally, results show that there are negative psychological effects that develop from the need of self-gratification achieved through excessive cell phone use. Levels of stress are increased for some when they don't have access to their cell phone because they are unable to instantly communicate the way they are used to. On the other hand, some students make a conscious effort to leave their cell phones at home to regain the freedom they once had over their own thoughts and emotions. Overall, this research

report gives insight into the addictive world of technology, and the severe impacts cell phones have on societal behavior.

A WIDENING DIGITAL DIVIDE: INFRASTRUCTURE AND GOVERNMENTAL CONTROL IN AN AGE OF EXPANDING INTERNET USE.

Joseph R. Bruno & Brian A. Mezerski (Professor Brian Walsh) School of Communications, Elon University, Elon, NC 27244.

The *digital divide* defines the difference between populations that either have or lack access to information technologies. A major dimension and debate of the divide concerns Internet accessibility. As well-developed regions gain increasing access to advancing technology while underdeveloped regions have little to no infrastructure, the question remains: who in the future will control global Internet access, and what factors of access need controlling? Data was collected through surveys and interviews conducted at the World Technology Policy Forum & World Summit on the Information Society joint conferences in May 2013 in Geneva, Switzerland. In conjunction with *The Imagining the Internet Center*, brief video interviews were recorded with a sampling of 63 conference attendees, representing telecommunications ministers, government officials, business representatives and concerned civilians from all sectors across the world. Survey questions addressed concerns on Internet governance and policy, as well as the threats and benefits presented by the projected doubling of Internet users in the next few years. Data was also gathered through content analysis of participant responses, as well as through literature review. An overwhelming number of respondents (73%) shared the philosophy that governments or organizations should not control access to the Internet and controlling bodies need to move towards an Internet completely free and open to all people. Coding analysis revealed key phrases, including: *open, secure, global* and *no vested interest*. Two major themes developed regarding conflicts that arise with increased global Internet access. First, respondents stated technology and infrastructure across the globe needs to be developed to allow more people to have access. Second, government control was seen as a hindrance to Internet access, and the control should be removed. Interviewees held that everyone can and should take advantage of the Internet no matter where they are, no matter what language they speak or what place they are in society. A consensus, as well as a sense of urgency, must now arise to deal with issues of infrastructure and governmental control; otherwise, existing global socio-economic disparities may be further deepened.

CONVEYANCE OF BRAND IDENTITIES AND PORTRAYAL OF MINORITY GROUPS IN 2013 SUPERBOWL AUTOMOBILE ADVERTISEMENTS

Baron A. Smith (Dr. David Copeland) School of Communications

The fact that brands have unique identities and brand personalities is well known and researched. However, the extent to which a brand's personality or identity might manifest itself in its advertising is less known. To address this question, this study examined how differently brand identities were conveyed in 10 automobile advertisements from the 2013 Superbowl. It also analyzed the portrayal of women, gender roles and sexual orientation in the advertisements, to determine if various brands had differing portrayals of these groups, and if those portrayals related to a brand's projected identity. A qualitative content analysis revealed that the advertisements communicated clear brand identities through storytelling, contained stereotypical

gender roles, sexualized or marginalized portrayals of women, and a lack of portrayals of non-heterosexual orientations.

FROM “POCKETS OF POVERTY” TO POTENTIAL PROSPERITY IN APPALACHIA: CONECTING MASS MEDIA NARRATIVES OF POVERTY STEREOTYPES TO AUTHENTIC APPALACHIA THROUGH PHOTOVOICE

Gloria E So (Dr. Kenn Gaither) School of Communications

General public discourse suggests Appalachian people are often trapped in an ideological construct of hillbillies because of the circulation of Appalachian stereotypes in American visual culture. This research examines media narratives of poverty stereotypes in Eastern Kentucky through Photovoice, a participatory action research method that combines photography and social action. This research asks, how do local community members visualize and frame issues of poverty in Appalachia compared to mass media outlets? Using qualitative research methods including ethnography, participatory action interviews, and media narrative analysis, the study determines if past stereotypes persist today and if those stereotypes affect how Appalachians see themselves. The purpose of the research is to encourage participant and viewer action through the visualization of social issues and to provide tools to help people share their stories. The research compares the framing of the media coverage through narrative analysis and content analysis during the period in which President Johnson declared the War on Poverty through a national outlet, *The New York Times*; and a local Appalachian newspaper, *The Mountain Eagle* in Whitesburg, Kentucky, where Johnson launched the War on Poverty in January 1964. The research connects this past narrative analysis research to reexamine the present and study the power of media narratives and their lingering effects by looking at whether Appalachian people are still marginalized through media narratives. The research includes interviews with 10 community members in Eastern Kentucky about media perceptions, two workshops and group discussions, and the implementation of Photovoice, which involves participant-produced photography to facilitate empowerment education, and two photo exhibitions in local communities. When scholars consider how images contribute to definitions and perceptions of how people connect to their environment and interpret the lessons of images, they ask the crucial question: Who has the power to take images of others for their own uses? Consequently, regions such as Appalachia have been portrayed as fundamentally different from mainstream society because they are typically recorded from an “outsiders” perspective. In contrast, this research reveals a much needed other side to the story by placing the power and control in the hands of local community members.

PALESTINIAN-ARAB MEDIA FRAMES AND STEREOTYPES OF THE “OTHER” ISRAELI-JEWS

Katy A. Steele (Dr. David Copeland) School of Communications

This study sought to take the pulse on the modern Israeli-Palestinian conflict by analyzing primary sources from online Palestinian news organizations. Thirty articles were selected including editorials, opinion and news analysis pieces. The author categorized them based on six prevalent topics and 18 subtopics, or frames. “Land Rights” emerged as the most prevalent topic, while “Dominance,” “Inhumane,” “Military violence,” and “True victim,” as the top four frames. The study found that the Israeli-Palestinian conflict is largely defined in terms of land and territory; violence attributed to the Israeli military generates a stereotype that many

Palestinians apply to all Israeli-Jews; and stories seek to appeal to emotion and evoke sympathy in order to legitimize the Palestinians' claim of true victimization.

A CONTENT ANALYSIS OF TWITTER USE: FACTORS THAT MIGHT INCREASE MUSIC SALES DURING AN AWARD SHOW?

Kyrstin McKenzie Wallach (Dr. Glenn Scott) School of Communications

Can Twitter be used in marketing an artist's music during award shows? To answer this question, the author examined four artists at the 2013 MTV VMAs -- Robin Thicke, Justin Timberlake, Drake, and Kanye West--who experienced a peak of references on Twitter during the show. Based on a content analysis of the tweets and secondary research, the study found that tweets converged toward the same topics, supporting Social Influence Network Theory. This study also found that the director's filming directions during the award show might also influence the trends on social media during the show.

HOW SOURCE AND BANDWAGON CUES AFFECT INFORMATION PROCESSING AND ATTITUDE FORMATION IN TWITTER MARKETING

Jason T. Waterman (Dr. Qian Xu) School of Communications

The advent of social media as a prominent marketing tool has changed the way in which marketers must make persuasive appeals to consumers. As consumers' relationships to their media evolves, the psychological reasoning by which they are persuaded evolves in conjunction. The present study examines the role of heuristic cues in social media marketing regarding consumers' information processing, attitude formation, and decision-making. Prior research has established bandwagon cues and source cues as influential in the persuasiveness of traditional marketing, but this study proposes that these cues might have different implications in social media marketing. A 2x3 between-subjects experiment was conducted to explore the individual and interactive effects of bandwagon and source cues in tweets on the social media platform of Twitter. One hundred thirty-six participants were assigned to one of the six conditions to view a relationship building social media message. The persuasive message shared via Twitter was the same across all conditions but varied in the manipulations of source and bandwagon cues. The study found that when company was the source of a commercial message, consumers generated a more positive response towards the company message than when a friend of the consumer had shared the same message. Specifically, participants perceived the company as having a higher source expertise and brand attitude when the company tweeted the message as opposed to a friend or a celebrity. This is quite contrary to research on the role of source cues in traditional marketing. Significant results also emerged for participants' affective and behavioral responses to the bandwagon cues and the interaction effects between the source and bandwagon cues. Both the underlying theoretical mechanisms and the practical implications for future social media marketing are discussed in the paper.

THE FALLOUT FROM FALLOUT: COMPARING SCIENTIST TESTIMONIES TO GOVERNMENT NARRATIVES SURROUNDING NUCLEAR FALLOUT IN 1961 AND 1962

Michelle C. Landahl (Dr. Harlen Makemson and Dr. Laura Roselle) School of Communications and Department of Political Science

The Cold War: a time characterized by accusations and suspicions, atomic dangers and militaristic bluffing. As the threat of nuclear war grew, so did the influence of the media throughout the United States. During this time, perhaps no issue the media addressed was quite as volatile as the idea of nuclear fallout. But while many were asking what the papers were saying about nuclear radiation, did anyone question exactly *who* the press consulted for their reports on fallout? In this mass of confusing misinformation, one wonders whether or not scientific sources were actually consulted about fallout and, when consulted, what they said. Were scientists brought in to support the government, or were they interviewed as “the other side” for a different take? This project set out to discover who said what to ultimately answer the question “Did scientist testimony during the key Cold War years of 1961 and 1962 reflect or contradict the government narrative about fallout and its consequences?” In pursuit of answers, one hundred newspaper articles published between the years of 1961 and 1962 by *The Washington Post*, *The New York Times*, and *The Wall Street Journal* were collected. From there, “fact” based testimonies about fallout and fallout’s effects were sorted and analyzed based on the source’s affiliation to different organizations and the speaker’s occupation. The results revealed that, out of the one hundred articles selected, over 70% contained information that came from government sources, while only 24% of the facts were reported by scientists themselves. Further analysis revealed that of the twelve government employed and twelve non-government scientists, more government scientists disagreed with the government narrative, while more non-government scientists agreed. Overall, twelve scientists renounced while twelve reinforced the government narrative surrounding fallout. This study not only unites very different research fields, but it also exposes trends never studied before and opens doors for more groundbreaking research to take place. Today, it makes us question who is really reporting the information we hear every day...and whether or not we should listen.

MUSICIANS AS DIPLOMATS: FRAMES USED IN DOMESTIC NEWS COVERAGE OF INTERNATIONAL JAZZ TOURS

Elena Meskhidze (Dr. Harlen Makemson and Dr. Laura Roselle) School of Communications

Throughout the Cold War, the Eisenhower administration sent jazz musicians like Dizzy Gillespie, Dave Brubeck, and Benny Goodman overseas as part of the government-sponsored cultural exchange programs. Such tours intended to combat communism by presenting an appealing image of democracy and America abroad. Though there is much scholarship about the reception of these tours abroad, there is little about their representation in domestic news media. Understanding both their reception and domestic portrayal will better our understanding of the importance of cultural diplomacy and its significance overseas during the Cold War. This study analyzes the coverage of jazz cultural tours by different sources from 1950 to 1963, the years within which the chosen musicians were sent on tour. The study addresses the following question: *How were different media sources portraying jazz musicians’ cultural tours?* To address this question, various media sources, including national newspapers, North Carolina student/community newspapers, and a national magazine, were analyzed. Articles from these sources were coded according to the different frames that they exhibited; the three major frames were international appeal, nationalism, and success. This study found that the frames used by the different media sources were more dependent on musician than type of source. *The New York Times* and *Time* magazine tended to cover Goodman the most since he was so popular, and

because the frame used with Goodman was usually one of international appeal, the two news sources exhibited that frame the most. *The Washington Post* used frames of international appeal, success, and nationalism more equally because it covered both Goodman and Gillespie with equal frequency. All three frames were used to cover these musicians so all three were adopted by *The Washington Post*. These differences found between the various national news sources were unexpected. There was also a notable absence of articles discussing the tours from the North Carolina college/community perspective. Cultural diplomacy was a complex front on which the Cold War was fought and analyzing coverage of jazz cultural tours gives insight into the traditional frames used to represent this front of the Cold War.

THE 1957 LITTLE ROCK CRISIS, REGIONAL NEWSPAPER COVERAGE, AND COLD WAR FRAMES

Allison C. Weiler (Dr. Harlen Makemson and Dr. Laura Roselle) School of Communications and Department of Political Science and Policy Studies

The Civil Rights Movement played a prominent role in the ideological and political battle that the United States was waging against the Soviet Union and communism from 1945-1990. Communists, Civil Rights activists, and United States politicians wielded media as a weapon in order to promote their individual agendas (Romano, 2009). Framing theory, in general, has been applied in studies related to media coverage and the Little Rock Crisis (Bullock, 2007). However, the field calls for a more specific study to examine the differences between northern and southern framing, as well as the prevalence of Cold War themes in such framing. This study's primary focus is in exploring how the north versus south regional divide in the United States affected newspaper editorials and the framing of Cold War issues surrounding the Little Rock Crisis in September 1957. It also aims to examine public opinion on the newspapers' portrayals of the crisis within the Cold War context as well as how regional differences helped shape these opinions. This study utilizes qualitative and quantitative analysis methods to compare the editorials and letters to the editor related to the crisis in one northern newspaper (*The New York Times*) with those of three southern newspapers (*The NC News & Observer*, *The Arkansas Democrat*, *The Arkansas Gazette*) during the month of September, 1957. The editorials and letters to the editor were coded for Cold War themes in order to see how the newspaper and public framed the crisis either pro-integration or pro-status quo. The results were then compared across the north-south regional divide. The findings suggest that both the northern and southern newspapers' editorials framed the Cold War themes relevant to the Little Rock crisis towards an integration stance. However, the findings in the letters to the editor suggest that while the northern writers were largely in favor of integration, the southern writers were split between favoring integration and the status quo. In terms of this study it is concluded that the north-south regional divide didn't largely affect the editorials in the newspapers, however it did affect the content of the letters to the editor.

COMPUTING SCIENCE

ANALYSIS AND SOFTWARE FOR THE LEAP MOTION DEVICE

Elizabeth R Bilz (Dr. Shannon Duvall) Department of Computing Sciences

There are several readily-available input devices made for entertainment purposes, and companies are freely giving the ability to develop using these devices. One of these is the Leap Motion, a new device which can process gestures based on one's hands and can be used to perform actions based on what the hands are doing. This research uses the Leap Motion without the computer screen in order to make things that are ordinarily not interactive, become interactive. The hope is that this will be used as an educational tool for children that will be cheap and easy for parents to install in their homes. The software will let children point at something in the room and have a sound play or perform some other action. This has great potential for helping children because it will provide immediate feedback for them and is more interesting for them than if it were occurring on a computer screen, as the objects are real rather than virtual. The research looks specifically at how accurate the Leap Motion is with respect to pointing. Software will be presented that will make it easier for software developers to use the Leap Motion to create interactive spaces. The research presentation will include a working demo which will concentrate on using the Leap Motion to determine what is being pointed at on a wall poster. We will then make available the software to enable people to use it in contexts with no computer screen. Finally, we will present the findings on the capabilities and limitations of the Leap Motion device.

ACCURATE AND TIMELY ABSOLUTE LOCATION FOR AUGMENTED REALITY MOBILE APPLICATIONS

Colleen C. Brockmyre (Professor Joel Hollingsworth) Department of Computing Sciences

Augmented Reality (AR) is the technique of adding virtual artifacts to the real-world through the use of a mobile device. AR often requires knowledge of the user's exact location. GPS is used to determine that location. GPS works great for applications that perform over large areas, but has serious limitations for smaller movements. We have developed a pedestrian dead-reckoning assisted GPS system that provides both the necessary accuracy and the faster rate which is required by small-scale movement-based AR applications. Pedestrian dead-reckoning (PDR) refers to a system of measuring direction and movement through sensors inside the mobile device, such as the accelerometer. The PDR system that we developed converts accelerometer data into position values. We use PDR to alleviate the limitations of GPS. This hybrid system can produce the device's absolute location up to five times per second, even when moving. Small-scale movement-based AR mobile applications are now possible.

USING A MOBILE DEVICE APPLICATION TO FACILITATE SPEECH THERAPY

Miles A. Camp (Dr. Shannon Duvall) Department of Computer Sciences

The goal of this research is to determine if technology is an effective aid in assisting speech therapy. This software intends to help facilitate at-home practice of speech exercises, track completion of practices, and archive practices for long-term assessments. Personal computing devices, especially mobile devices, have been able to make common tasks that were once boring or difficult to complete feel more fun while offering increased benefits. This software will motivate the patient to complete exercises, aid patients in improving their speech, and increase communication between regular in-person sessions. With this software, patients use an application on a mobile device to view, record and listen to assigned practices, and they are required to record their voice pronouncing each word in the practice. Once the assignment is

finished, the patient can listen to him or herself saying each word. The speech pathologist uses a website to track the patients' progress in a practice, provide feedback, assign and manage practices, and attach notes on patients archived recordings. The presentation will show the result of gathering feedback from speech pathologists and patients on the use of the software. The results will determine if patients benefit from the software. The project is the first application that is delivering this service to speech pathologists and their patients. The entire service will be made available online for use and further evaluation.

DETERMINING PROXIMITY THROUGH HIGH FREQUENCY EMISSION AND DETECTION

Christine M. Dierk (Dr. Björn Hartmann) Department of Electrical Engineering and Computer Science at the University of California, Berkeley

Smart kiosks, physical kiosks that users can interact with through their mobile devices, are becoming increasingly prevalent as mobile technology advances. These kiosks often require the user to be physically near the machine. While geolocation and GPS are the most common measures for determining proximity, they are not always reliable and can present several problems. In this presentation, we will discuss an alternate solution for determining a user's proximity to one of these machines: high frequency emission and detection. Kiosks emit a specific frequency, 22000 Hz in this case, and mobile applications use this frequency to determine proximity to the machine. We evaluated this method and applied it to Umati: the communitysourcing vending machine, introduced by Kurtis Heimerl and other researchers at the University of California, Berkeley. We found it to have a range of about 15 feet. These results indicate that frequency emission and detection can successfully determine the proximity of a mobile device to a smart kiosk.

REAL-LIFE MUSICAL COMPOSITION THROUGH VIRTUAL MEANS: A MOBILE APPLICATION CONTROLLED UKULELE-PLAYING ROBOT

Christine M. Dierk (Professor Joel Hollingsworth) Department of Computer Science

Computational devices are finding their way into many aspects of our real world. These devices are frequently used to either simplify some process or enhance the ability of the person using the device. We will explore the design, implementation, and implications of a mobile-application controlled ukulele-playing robot. The main purpose of our research is to seamlessly integrate virtual and real spaces in a way that enhances the skill and ability of the user. To accomplish this, we designed and implemented an Android tablet application for the construction of ukulele chord progressions. Our primary focus was designing a user interface that was intuitive, such that a novice could easily compose chord progressions. Our next task was to create the physical robot: our main goal being the preservation of natural sound. Finally, we integrated the two components using wireless sockets. In this talk, we will discuss the complementary nature of software and hardware, as well as the implications for such a robot in terms of user ability and alternative methods of learning.

THE MICROSOFT KINECT AND PHYSICAL THERAPY

Schuyler K Goodwin (Dr. Shannon Duvall) Department of Computing Sciences

Physical Therapy requires that the patient complete daily exercise to facilitate the healing of their injury. However, sometimes it is hard for the patients to motivate themselves to do the exercises and difficult to see how it is affecting the healing process. Therefore, we would like to investigate the strengths and limitations of using the Microsoft Kinect to allow patients to assess their own physical therapy progress at home. Other research has been determined the Kinect's accuracy for certain exercises, and we will be furthering that analysis with our research. The first phase of this research was to assess the validity between the Microsoft Kinect and 3D motion analysis systems in measuring joint angles in the sagittal plane during gait. Twelve young adults performed 10 walking trials, at their self-selected speed, and data was collected by both the Kinect and a 12-camera setup in the Physical Therapy Department's Biomechanics Lab. However, in comparison the Kinect showed poor accuracy in calculating the joint angles in the sagittal plane. However, previous work shows that for elbow exercises in which the subject is face-on to the Kinect, the Kinect data is in good agreement with the ones obtained from sophisticated measurement devices. The next phase in the research is to determine, given these findings about the Kinect's accuracy, whether or not a game can be developed to motivate at-home physical therapy for those exercises in which the Kinect is accurate. The game is based on the player being the orchestrator of a one-man band. It will feature mini-games and the score is based on the improvement in the exercises featured in the games. The presentation will include a demo of the game we developed and preliminary feedback from users and Physical Therapy professionals. Further we will draw conclusions about what is important in motivating a patient in Physical Therapy, how motivational the game is, and how effective the game is at showing the healing progress.

ANALYZING A SPECIALTY COMPUTER LAB USING RASPBERRY PI

Thomas A Robbins (Professor Joel Hollingsworth) Department of Computing Sciences

The essential question addressed by this research is: "How can we best present the usage of a specialty computer lab? What is the data that can be collected from the lab and how can we present illustrations of the lab's day-to-day use?" The first step was considering what information offered by a computer is most useful to anyone interested in seeing how a computer lab is being used. Generally, the list of processes running on a machine is a quick and easy way to gauge what's being worked on. To retrieve the specifics, software is written and installed onto each machine in Carpenter lab. This software periodically polls the computer's processes to see how it is being used. This allows the setup to run without requiring anyone in one place at a specific time. Non-user specific data is then uploaded to the Raspberry Pi which interprets it and displays it on the web, and in turn, to a screen. Despite the Pi's size (imagine a 2" thick credit card), it is capable of receiving the twelve sessions of input and publishing it to a website in a manner so that the information is easy to view. This card-sized device can also fit behind a television screen and directly transmit what it finds. The information is displayed in a way to show comparisons to calendar dates (academic and otherwise) to understand trends and correlations for lab use. Once other methods of illustration and graphing are found, they'll be offered as additional options of viewing. This implementation combines disciplines in both software and web based developments. This involves 12 independent computers accessing relevant data, formatting it for distribution across a network and sending it to a Raspberry Pi device. Although intended to display within the lab, the live findings can be accessed outside of the building using the website.

DIFFUSION OF A NEW COLLABORATIVE TOOL FOR SOCIAL PROGRAMMING: THE EXAMPLE OF PASTEBIN

Amber K. Smith (Dr. Megan Squire) Department of Computing Sciences

Pastebins services are web sites designed to make it easier to share (and in some cases execute) code snippets among developers. This research describes how software developers using three different social media to communicate (mailing lists, IRC, and Stack Overflow) react and adjust to this new supplementary collaboration tool, called a pastebin service. Mailing lists and IRC (Internet Relay Chat) channels are both heavily used between software development teams to easily communicate between all members. They are slightly different in the fact that IRC channels are used for quick simple questions or comments similar to instant message systems while mailing lists generally have more content and are used for tasks such as sending updates or voting on ideas with all members. In comparison, Stack Overflow is a question and answer web site for the general public. Anyone can view and answer your question even if they are not on your software development team. Using mailing list archives, IRC logs, and a database dump from Stack Overflow, we examine the adoption of this pastebin tool by social programmers through the lens of classic Diffusion of Innovation (DoI) theory. We then compare the way social programmers on three different types of social media decided whether to accept or reject the new pastebin tool. We find that the common reasons social programmers give for accepting and rejecting pastebin are mostly typical and follow the DoI closely: the tool provides relative advantage, simplicity, etc. We also find that the most prevalent stated reason for rejection of the pastebin is one of compatibility of values; there is an expectation that a tool designed to supplement the developers' own communications should have the same level of longevity and permanence as the original communication channel. Additionally, we confirm the DoI's diffusion under interconnected communication networks: on Stack Overflow, individuals in "communication proximity" also tended to react to the innovation in similar ways.

DANCE

PERFORMING SELF: THE INTERSECTION OF CHOREOGRAPHY, IMPROVISATION, AND AUTOBIOGRAPHY

Julie Crothers (Lauren Kearns) Department of Performing Arts

In performance, there are always two selves on stage: the performing self and the self being performed. The aim of this research is to eliminate the space between the two, fostering a performance that is raw, poignant, and moving. This dance research examines the intersections that lie between choreography, structured improvisation, and autobiographical spoken word. It is an exploration into identity, examining the uncompromising ways we are often identified and defined by our physicality, by our ability or our apparent lack thereof. Created using various improvisational tasks, textural investigations, and a wide range of movement dynamics, this eleven-minute solo utilizes dance and text to portray the dancer's personal experience - she is a dancer with one arm. Through its presentation of a nonconventional body in a dance setting this research also incorporates learned choreographic tools along a non-linear narrative. Strategically, it is used as a vehicle through which to project a particular social perspective, specifically in regard to society's construction of a 'right body'. Viewers of this work are invited to stare, to

question, to examine, and to have any preconceived notions challenged. This research is important to the dance cannon through its contributions to the never-ending quest to discover what is possible for bodies, performance, and dance.

COMPARING THE ACTIVATION OF TWO BILATERAL MUSCLE GROUPS DURING A PASSÉ RETIRÉ EN RELEVÉ AT AND AWAY FROM THE BARRE

Colette Dong (Professor Lauren Kearns) Department of Performing Arts

The ballet barre is a tool used to train and prepare dancers for performance away from the barre. Ideally, muscle activation at and away from the barre should be similar if not the same. However, many dancers are unable to perform the same tasks once the added stability provided by the barre has been taken away. This study aims to examine if four muscles are being used differently at and away from the barre. The activation of the rectus abdominis and the thoracolumbar fascia was collected bilaterally via Delsys EMG while subjects balanced in the position known as passé retiré en relevé at and away from the barre. Eight university dance majors (19.4 ± 1.29 years) trained in ballet volunteered for this study. Three measurements were obtained using EMG surface electrodes: voluntary contraction, muscle activity at the barre, and muscle activity away from the barre. Subjects held a passé retiré en relevé for 10 seconds with the right hand on the barre for 2 trials and again for 10 seconds without holding the barre for 2 trials. Data was analyzed using Delsys EMG Analysis Software. EMG signals were normalized against previously collected voluntary contraction. The calculated data attributes the results to the movement manipulation ($p > .05$) but no significant effects for any measure were discovered.

ELON CORE CURRICULUM

A COMPARATIVE STUDY OF STUDENT MOTIVATIONS, PARTICIPATION, AND OUTCOMES RELATED TO FIVE FORMS OF EXPERIENTIAL LEARNING

Desiree J. Porter (Dr. Jeffrey S. Coker) Department of Elon Core Curriculum

This study explores student motivation, participation, and educational outcomes related to the five “Elon Experiences”: internships, study abroad, service-learning, and leadership experiences. There is a wide variety of literature that examines each Elon Experience individually. However, there is little information available regarding the various combinations of the experiences, why students choose certain experiences over others, and their relative value. Students at Elon University are required to complete two units of experiential learning as part of the core curriculum, and most students complete many such experiences. This rich experiential learning environment creates the opportunity to explore multi-experience research questions. A study of graduating seniors used paper surveys, interviews, and Elon Experiences transcripts to explore what drives students to choose one experience over another, the obstacles hindering student decisions the relative value of each experience, and other questions. The results of this study suggest that the experiential learning decisions and outcomes of every student are influenced by many factors, both consciously and unconsciously, including majors and career goals, the perceived value of the different opportunities, learning goals, financial need, minority status, ancestry, and involvement in other campus activities. Given the complexity of motivations and perceptions, there seems to be great merit in creating a robust set of experiential learning

opportunities so that students can match their interests and aspirations with the opportunities available. In addition, before students do an experience, their mental image of that experience is based largely on cultural stereotypes, thus institutions should promote the benefits of each experiential learning opportunity in a balanced way that promotes multiple facets of a liberal education.

ECONOMICS

THE ECONOMIC AND POLITICAL EFFICACY OF THE PRIVATIZATION OF INTERCITY RAIL

David “Patrick” Brown (Dr. James Barbour) Department of Economics

Since the creation of the National Passenger Railroad Corporation (“Amtrak”) in 1971, passenger rail transportation in the United States has been almost exclusively a government sponsored enterprise. In the forty years that have passed since this consolidation of twenty major passenger rail operations under the Amtrak umbrella, the question has sporadically risen whether Amtrak and its service should be returned to private management. The feasibility of the re-privatization of the American passenger rail system is examined in this project, with an emphasis on the Southeastern United States. International examples of passenger rail privatization are first reviewed, as well as theories why support for privatization has not gained traction domestically. This paper bridges the gap between the economic and political debate over the future of Amtrak; focusing on a region of the network that has been overshadowed by others such as the Northeast Corridor and California. In order to determine the potential success of intercity passenger rail in the Southeastern United States, the characteristics of the major cities in the region were compared with other American cities where light and commuter rail have achieved success. Cities without light rail such as Richmond, Raleigh, Greensboro, Charlotte, and Atlanta in the Southeast are contrasted with Salt Lake City, Albuquerque, Dallas/Fort Worth, Seattle, and Los Angeles, where light rail has received a positive response. Demographic and economic variables such as GDP per capita, cost of living, poverty rate, total population, and population density are compared using statistical analysis. Other relevant characteristics considered include the relative cost of gasoline and the availability of “close-in” transit services (buses or metros which can carry travelers to their final destination). At this time, the statistical analysis has not been completed, but the hypothesis remains that intercity passenger rail is not expected to be successful in the Southeastern United States. Even if this turns out to be the case, this analysis will contribute to our understanding of passenger rail privatization, as well as provide a case study that may prove useful in developing policy regarding the future of Amtrak.

DO THE PECUNIARY COSTS OF EMPLOYER-PROVIDED HEALTH INSURANCE NEGATIVELY AFFECT LABOR MARKET OUTCOMES?

Nathan J. Dean (Dr. Stephen DeLoach) Department of Economics

Projections for 2014 US healthcare inflation sit at around 6.5 percent, four times greater than that of price inflation. As health insurance costs continue to increase more rapidly than wage rates, firms often respond by adjusting their employee compensation and/or their demand for labor. The hypothesized tradeoff between employer provided health insurance and wages is uncontroversial, yet puzzlingly difficult to prove. The small pool of economists that have

estimated a negative relationship have used models plagued with weak instruments and omitted variable bias. More specifically, research fails to control for individual health-status, which results in a bias and overestimation of the effects of health insurance on wages. I build on previous work by adding a variable for self-reported health status. I estimate multiple two-stage-least squares models with 2009 cross-sectional data from the Survey of Income and Program Participation. By introducing health status, I find no evidence that a negative relationship exists between employer-provided health insurance and wage rates.

THE ECONOMICS OF THE CRYPTOCURRENCY COMMUNITY: WHAT IS THE FUTURE OF BITCOIN?

Christopher G. Grippo (Dr. Gregory Lilly) Department of Economics

Bitcoin, an open-source peer-to-peer payment system was first opened to trading in 2009. The main idea of a cryptocurrency is that it promotes internet transactions without the need for any central authority intermediation. In addition, this virtual currency enables trader anonymity, which is frequently desired. When the currency was first issued, the value of one Bitcoin was less than \$0.01. About a year and a half later it had weekly periods where it would grow 1000%. The value of a Bitcoin eventually peaked at \$1250 in November of 2013, but it has dropped down to a steady ~\$650-\$800 range. The early adopters in the Bitcoin community primarily consisted of tech enthusiasts, libertarians, and high-risk investors. Tech enthusiasts were mainly involved because they liked the idea of implementing an entirely virtual type of money. Libertarians are most enthusiastic because of the decentralization of the currency, which reduces the possibility of government manipulation. The risk-seeking investors are most interested because of the current volatility of a Bitcoin. Of course these three groups are very small in size, so if the demand for Bitcoin is to grow significantly, there has to be “mainstream” acceptance of Bitcoin and cryptocurrencies in general. Using the institutional characteristics of cryptocurrency systems, and some theories of the demand for money, I will argue that cryptocurrency acceptance will eventually become widespread and eventually will be used as a significant portion of the world’s currency. In order to reach this conclusion I will explain how recent (and well-known) negative shocks to Bitcoin demand such as “Silk Road”, “Silk Road 2.0”, and “Mt. Gox”, have failed to kill Bitcoin values even when collapse seemed inevitable.

OBESITY EPIDEMIC ACROSS DEVELOPING COUNTRIES

Angeline M. Jackson (Dr. Andrew Greenland) Department of Economics

This paper investigates how urbanization affects obesity in a cross-country setting. As a country becomes more urbanized, there is potential movement away from the agricultural sector. This may cause a reduction in physically intensive labor, an increase in sedentary lifestyles and unhealthy dietary changes. A panel regression of 185 countries from 1960-2012 is used to determine how urbanization corresponds to BMI rates and through which underlying pathway it might be operating. Proxies for sedentary lifestyles, changes in wealth and exposure to high sugar foods are used to investigate these potential pathways. The impact of each pathway will determine how policy makers react to the overall problem of obesity. These results may be particularly important for policy makers who may want use urbanization induced rises in BMI as a possible indicator of future increases in diseases linked to high BMI.

THE EFFECTIVENESS OF BREAK IMPLEMENTATION FOR REPETITIVE COGNITIVE AND DATA-ENTRY TASKS

Bryn C. Khoury (Dr. Gregory Lilly) Department of Economics

This research aims to address the impact of specific strategic implementations such as employee incentive and breaks on worker productivity and inefficiencies. Considering businesses within an economy have less of a say in market wage but have complete control in the amount of employees hired, this paper also analyzes the impact of *less* employees working at a faster pace versus *more* employees working at a slower pace and their impact on the amount of errors performed. The importance of examining methods of labor efficiency through these strategic implementations is to complement Kahneman's (1973) *Theory of Attention* and how humans perform with motivational and stress-relieving stipulations. Testing will include 64 total subjects divided into two main groups where one group will be performing the cognitive tasks at a slower pace while the other is under a more strenuous time constraint. Both groups will experience none, one, or two of the possible strategic implementations while performing their tasks. Testing has not yet occurred; therefore, results have not yet been recorded.

MIDDLE EAST MIRACLE: ARE RECENT HIGH LEVELS OF GROWTH SUSTAINABLE?

Garret I. Mann (Dr. Stephen DeLoach) Department of Economics

In this paper I aim to determine if the above average GDP growth rate in the Middle East over the last 20 years is sustainable. I will also attempt to answer the question of where the high growth rate originates. The majority of the Middle East has experienced astounding growth rates in GDP over the last 20 years when compared with the rest of the world. Where the world average growth rate is 2.76%, the Middle East average is 4.49%. From 1991-2011 the amount of total patents applied for per year in the Middle East increased about 100% of its 1991 value (World Data Bank). I collected appropriate data for a Solow Growth model of the Cobb-Douglas sort for seven countries in the Middle East over the periods 1991-2001, and estimated a first difference model with research and development in the form of total patent applications serving as a proxy for Solow's endogenous factor (Solow, 1957). I then apply growth accounting to my results in order to examine the economic proliferations of each of the countries and determine their respective sustainability. I conclude that the majority of the growth in the Middle East is unsustainable, and that research and development in the form of patent applications marginally augments real GDP. However, I surmise that patent applications as a proxy for innovative ambition, human capital as a proxy for innovative ability, and an uncertain proxy for innovative achievement could together answer many questions about economic and technological growth in the future.

EDUCATION

RESEARCH ON RTI IN MIDDLE SCHOOL

Leigh A. Iler (Dr. Byrd) Department of Education

The concept of response to intervention (RtI) was introduced in the second reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004 as an alternative method to identify

students with learning disabilities and to improve instruction for all. It is a school-based program that provides students with additional assistance in math and reading through an increasing tiered instructional approach.

- Tier 1 is universal general classroom research-based instruction that involves progress monitoring.
- Tier 2 is strategic instruction and progress monitoring that is provided to students who do not respond well to Tier 1.
- Tier 3 is intensive instruction and progress monitoring that is provided to students who do not respond well in both Tiers 1 and 2.

Due to its recent implementation, there is still much to be discovered about RTI in schools. The purpose of this project is to investigate the effectiveness of intervention scripts and tutors during Tier 1 for students in sixth grade mathematics.

During this four-week study, interventions were administered twice each week, lasting 45 minutes each. Original intervention scripts were created based upon best practices found in research, which engaged students in explorations with fractions.

The study consisted of sixteen sixth grade students that were divided into four equal groups, each with one facilitator. Three college students served as tutors and delivered the interventions to the three experimental groups. The control group received regular classroom instruction by the general educator. The researchers assessed fidelity of the interventions using a checklist.

Benchmark data offered pre and post results. Progress monitoring assessments were given once a week to chart the development of the experimental groups. Tutors were interviewed and students answered brief surveys before and after the study. Tutors also completed weekly journal entries. Data analysis has revealed both quantitative and qualitative results based upon student assessments, fidelity checks, and participant interviews. Foreseeable conclusions include suggestions for intervention support and effective tutoring practices to promote student success.

CREATING A GLOBAL COMMUNITY: BUILDING A GLOBAL FOUNDATION: TEACHER PREPARATION OF GLOBAL EDUCATORS

Sarah E. Spaeth (Dr. Joan Barnatt) School of Education

Teachers, scholars, and policymakers question how globalization student learning and teacher preparation. Zong, Wilson, and Quashiga (2007) state that ethnocentrism hinders acting in accordance with the growing interdependency in our world. Further, Merryfield et. al. (2008) claim that global education combines people's thoughts and actions based upon consideration of affects on the planet as a whole. Despite the importance of preparing of global citizens, the implementation of high-stakes standardized tests, with a focus on literacy and math, is marginalizing the integration of global education in K-12 curriculum. In undergraduate programs seeking to prepare future teachers, global education often receives similarly minimal attention, particularly in elementary level programs. This study addresses the issue of whether elementary teacher candidates are ready to engage students to become global citizens. A mixed-methods study was conducted to assess the global competence of undergraduate teacher candidates, using the Cultural Intelligence Scale (CQS) (Ang, et al., 2008). Forty-three participants were administered the CQS survey; five participants were then chosen for semi-structured interviews, reflecting the range of mean survey scores. Survey data indicated that teacher candidates lacked critical knowledge to competently address cultural interactions, though they were motivated and confident to engage in such interactions. Interviews indicated that this gap was addressed, in

part, through such experiences as travel abroad and opportunities encouraging awareness of diversity. Study results help to further stimulate inquiry about how to enhance the concept of “worldmindedness” in the pedagogical practices of teacher candidates, ultimately to engage students in the primary school grades about the world around them.

ENGINEERING

TEMPERATURE-DEPENDENCE ON COHERENT X-RAY SCATTER SIGNATURES

James V. Fariello & Jacob K. Smith (Dr. Scott D. Wolter) Department of Physics, Dual-degree Engineering Program

We are collaborating with major research institutions through funding by the Department of Homeland Security to develop x-ray scatter imaging technologies aimed at enhancing airport security. The overarching objective of this initiative is to design, test and implement next generation luggage scanners that base detection on x-ray scattering and attenuation phenomena. Airport luggage scanners currently rely on x-ray contrast imaging and the expertise of TSA technicians operating this equipment to uncover potential threat substances. Coherent x-ray scatter imaging is able to simultaneously determine the positions and diffraction properties of luggage items with high statistical reliability and minimal technician oversight. This presentation will address temperature dependence of coherent scatter spectra. Our measurements thus far have been performed at room temperature. However, luggage items may be exposed to temperatures in excess of $\sim 40^{\circ}\text{C}$ in the heart of summer and below $\sim -10^{\circ}\text{C}$ over the winter months. Cold storage of medicines and food stuffs is another consideration. Solubility and phase transformations are possible for many materials within this temperature regime. We will overview diffraction spectra for common luggage items and substances used in the production of home-made explosives in the temperature range of -15 to 50°C . In situ temperature control is made possible by use of stacked thermoelectric devices integrated into our Bruker D2 Phaser x-ray diffractometer located in our laboratory at Elon. This temperature control module utilizes a water-cooled copper block with integrated thermoelectric devices and a specially designed substrate holder to analyze both solids and liquids. Among the substances evaluated are pure water, sugar/water, ethanol/water, diesel #2, glycerol, and petroleum jelly (the latter three substances are constituents in homemade explosives). Thus far, our efforts have resulted in the generation of a self-consistent database of over 200 diffraction spectra and contributions to substance classification strategies and modeling/simulations efforts by our collaborators.

DETERMINATION OF PROPELLER PERFORMANCE

Alex T. Simoneaux (Dr. Sirena Hargrove-Leak) Department of Physics, Dual Degree Engineering Program

Underwater remotely operated vehicles (ROVs) have been the signature design project for first year engineering students for the past several years and have been introduced to non-majors in the Winter Term course Experience Engineering. This project builds upon the foundational work of students in the aforementioned courses. The students are tasked with completing objectives utilizing the vehicles and tools they have constructed. Currently, they are given a standard set of propellers to use, and the overall goal of this research is to provide them with statistics from

various propeller configurations and allow each team to make an informed decision of which set up would be ideal for their ROV. The first goal for this research is to design and build an experimental apparatus for collecting thrust and electrical current data for propellers. Baseline results from another study are available; therefore, initial success will be achieved if those results can be reproduced. Then, data will be collected for a number of possible propeller types and configurations to explore the relationship between the propeller type, configuration, thrust, and motor current. The project is still in progress, therefore conclusive information is not currently available, however will be presented at the SURF program.

X-RAY DIFFRACTION SIGNATURES OF ENERGETIC MATERIALS

Jacob K. Smith & James V. Fariello (Dr. Scott D. Wolter) Department of Physics, Dual-degree Engineering Program

In conjunction with the Department of Homeland Security, Tyndall Air Force Base, and Applied Research Associates, Inc., a test plan was recently approved for measurement of energetic materials at a facility in Florida using a portable x-ray diffraction system. An initial visit was made in late November, 2013 where a number of explosives (both conventional and homemade) were analyzed. The data obtained will be used to support efforts for a program entitled Coded Aperture X-ray Imaging. This project is progressing towards the development of next generation airport security luggage scanners. Detection of threat and non-threat substances in luggage is based on x-ray diffraction phenomena and development of classification algorithms. This requires the collection of threat substances such as explosives. We will present x-ray diffraction spectra for many of the energetic materials including those in the table below in reference to their atomic or molecular structure and crystallinity. Interestingly, for many of the conventional explosives such as TNT, RDX, and PETN, these are molecular compounds that exist in one of the Bravais lattice types. The diffraction features are typically easily identifiable for atoms residing in such a lattice, but not so for molecules on the lattice sites. This is due to the size and orientation of the molecules which generally causes polytype phases to exist at room temperature and additional diffraction features. We will discuss these differences which are important considerations for the classification algorithms under development. Many of the conventional and homemade explosives are mixtures (solid/solid, solid/liquid, liquid/liquid) where the spectra is a convolution of the component phases. Interesting insights will be made regarding the energetic properties of explosives and their chemical composition and structure.

Energetic Materials				
PETN	Black powder	Semtex-10	Smokeless gun powder (double base)	Potassium chlorate/sawdust
TNT (pressed, cast, and flake)	Composition-C4	ANFO (Ammonium nitrate fuel oil)	Cast booster	Potassium chlorate/flour
Dynamite	Composition-B	Military dynamite	Nitromethane	Semtex-1A
Ammonium nitrate	Detasheet	Tamptite	Potassium chlorate	TATP
RDX	Ammonium nitrate based water gel	ANNM (Ammonium nitrate nitromethane)	HMX	HMTD

PAIN-O-METER: EXPLORING ENGINEERING MECHANICS IN THE HUMAN BODY

DeAndra D Young (Dr. Sirena Hargrove-Leak) Department of Engineering

The human body can be taken for granted in our daily tasks without realizing the damage one can cause. The objective of this research is to explore the concepts of physics principles in application to the human body with the hope of protecting the body from early deterioration. A model will be assembled, which represents the spinal column. This project explores the effects of back angle and weight loading on the tension in the back. This data may then be related to actual circumstances or events that commonly occur. For example during the winter season, it is common to experience back pain due to shoveling snow or engaging in a casual snow fight. Some other everyday injuries will be considered such as heavy lifting at work, gym workouts, and carrying an overloaded book bag.

This investigation can demonstrate many concepts learned in both engineering and physics courses. Ultimately, this project seeks to take all of this information to develop a laboratory case study that may be used in the Engineering courses and published with the NCCSTS. The project is still in progress, so findings/results and discussion are forthcoming in the actual presentation.

ENGLISH

STUDENTS' IMPRESSIONS IN COMPARING ALPHABETIC VS. MULTIMODAL COMPOSING

Sara O. Alpert (Dr. Barbara Gordon) Department of English

Composition and communication have always been related, but not synonymous terms. Composition has long been assumed to be simply a medium that utilizes words to produce a paper. However, with the digital age and the influx of new media, the line between composition and communication has increasingly blurred. Media presentations are proliferating in first-year writing courses and in courses across the disciplines, supplementing, and at times even replacing, traditional paper assignments. Many faculty members embrace this change and/or believe it is necessary. Composition scholar Cynthia Selfe argues that communications in the 21st Century increasingly include images and sound, not just words, and some rhetorical situations require, or benefit from, the inclusion of media. Others note that multimedia assignments allow students to utilize their creativity and produce compositions that expand their knowledge on the subject matter at hand, as well as learn new aspects of composing. Students' views on multimedia assignments are only recently becoming known. Pamela Takayoshi in "Thinking About Modality" quotes students as saying that these types of assignments are "refreshingly different.. meaningful... relevant." Yet, would this necessarily mean that when given a choice, students would choose a media presentation over a paper? To find out if they would and why, we asked these research questions:

1. Which would first-year writing students prefer to compose, a paper or a media presentation?
2. What factors determine students' preference?

3. What might these factors and students' comments reveal about their learning and their composing processes?

In order to investigate these questions, we surveyed over 100 Elon students in first-year writing courses about their preferences. From there, we interviewed 8 students in order to ask follow-up questions and delve deeper into their answers. We also input the data into SPSS and Atlas.ti in order to evaluate both the qualitative and the quantitative data.

Through our findings, we found that although first-year students are nearly equally divided when choosing between composing a paper or a media presentation, our preliminary results indicate students' experience of, and composing processes for, each are different. This has implications about the nature of assignments and instruction that can and should be offered in first-year writing courses.

HOW SMALL BUSINESSES CAN LEVERAGE SOCIAL MEDIA SITES FOR MORE SALES

Emily R. Bishop (Dr. Jessie L Moore) Department of English

The essential question addressed by my research is “how can small businesses leverage social media sites for more sales?” In my field, Professional Writing and Rhetoric, studying theory and real-world examples of how people interact with one another allows professionals to refine their written, oral, and online presentation skills. Retailers are using new ways to reach out to their customers, specifically via social media, and consumers are finding new ways to purchase goods. The purpose of my question is to find specific social media strategies for small businesses to use in an online space. By examining these strategies, I will be able to give small businesses an overview of the ways they can leverage specific sites (Facebook, Twitter, and Instagram) to improve sales. In Professional Writing and Rhetoric, I have been taught how to approach a variety of situations by knowing the context, purpose, message, and audience. Regardless of the medium, being able to clearly articulate your message to the intended audience will change the way individuals interact with one another. This will also change how small businesses interact with their customers. To investigate my research question, I interviewed professionals and students in Sales, Integrated Marketing Communications, and Professional Writing and Rhetoric on their knowledge of rhetoric, professional sales, and online strategies. I also conducted surveys of small businesses, students, and professionals; read articles; and held a focus group for students who had been successful in using social media. Since this is my capstone project, my in-progress research will be completed by April 24, 2014. But, based on my initial research, I expect to find a range of rhetorical strategies. For example, a message can be interpreted in three different ways: from the writer's perspective, the audience's perspective, and a third party's perspective. Understanding these strategies helps small businesses leverage social media.

HISTORICIZING LEONARD MICHAELS' COUNTERCULTURE FICTIONS

Arianna J. Brown (Professor Daniel Burns) Department of English

My poster presentation recovers a neglected dimension in criticism surrounding the work of American author Leonard Michaels by asking to what extent his short fiction advances an implicit sociohistorical critique of the emergent 1960s counterculture. Limited to formalist and reception-based accounts of Michaels' stylistic brilliance and underrated position among other

significant postwar Jewish American writers, scholarship on the author's work typically subordinates his candid accounts of the period's politics to appraisals of his considerable gifts as a craftsman of wit, eloquence, and compression. In contrast with this evaluative tendency, my analysis draws on early affect studies, critical race theory, and narratology to reveal a latent reactionary sensibility in Michaels' treatment of "free love's dark side." Far from the suggested cool, aloof and nonjudgmental narrative personae by other proponents, I contend that Michaels' narrative voice and tone, which utilize a deliberately unstable nature, betray *subtle* ideological resistance to the era's progressive attitudes. Specifically, I support my argument through a comparative reading of Michaels' fictionalized memoir *Sylvia* (1992) and a notoriously harrowing early story, "Manikin" (1968)—both of which depict the rhetorical agency of marginalized characters as little more than useful fictions. Ostensibly a proto-feminist commentary on the aftermath of a female college student's sexual assault, "Manikin," complicates (and ultimately confounds) protagonist Melanie Green's experience of physical and emotional violence with the competing variables of class-consciousness, institutional sexism, xenophobia, and various race and ethnicity-based microaggressions. Likewise, Melanie's "real-life" counterpart, a promiscuous woman known only as "Agatha" in Michaels' thinly veiled fiction about his tragic first marriage, *Sylvia*, seeks out precisely these intersections as a form of ritual masochism perpetuated by white upper-class guilt. Solidly situated within literary theory and cultural studies, my research draws parallels between two otherwise distinct characters using Marxist critic Raymond Williams' notion of "structures of feelings." Through this lens I conclude that Leonard Michaels' short fiction is not only thoroughly steeped in the social issues of its times, but also that it expresses a tacit tolerance for the environmental circumstances determining the bodily traumas experienced by women regularly in the period—liberation notwithstanding.

A LIFETIME OF MIGRATION: WRITING ABOUT HISPANIC IDENTITY IN THE WESTERN UNITED STATES

Kelsey M Camacho (Dr. Cassie Kircher) Department of English

In 2010, the government estimated that more than 80% of America's crop workers are Hispanic. As an English major with a Hispanic father who worked as a migrant worker, I'm interested not only in the culture of these identities, but also in how they are portrayed in writing. Hispanic identities more generally appear in contemporary writing such as that of Junot Diaz, but the presence of migrant workers and their experiences working is lacking in literature. My project aims to help fill this void. This project focuses on Hispanic border identities—specifically migrant workers—in the Western United States. I decided to center my research on my paternal family, immigrants to the US from Mexico who spent a significant amount of their lives as migrant workers in various Western states. The lens I use to examine identities similar to those of my family is the literary genre of creative nonfiction, a type of writing that is commonly used to portray raw human truths in an artistic and all-encompassing way. My fundamental research questions are these: how are Hispanic border identities and places in the West portrayed in creative nonfiction writing? How can I use the genre to write about, share, and understand my own family history?

Diversity is being increasingly emphasized in contemporary society, from educational institutions, such as Elon, to workplaces. My focus on Hispanic ethnicity allows me to witness the creation and continuation of a minority group's identity—a group that has oftentimes been marginalized and that has been displaced from its country of origin and planted into a lifetime of migration and labor throughout the Western United States.

The methods of this project include conducting ethnographic research on members of my paternal family through interviews and personal observation, including a trip to the Western states where my father worked as a migrant farmer. Writing about the intersection of my identity with my father's identity, I produced a collection of seven personal essays and a newfound understanding of my own roots. My presentation focuses on how I converted observations of my family's past into creative nonfiction.

SHERMAN ALEXIE AND THE HYBRIDITY OF THE NATIVE AMERICAN ADOLESCENT IN EDUCATIONAL SYSTEMS

Katherine K Day (Megan Isaac) Department of English

This research sought to examine the impact of education on and off of Native American reservations. The research was conducted through studying the work of Sherman Alexie, including the young adult novel, *The Absolutely True Diary of a Part Time Indian*, in addition to several short stories from his collections and also the critical work of Bhabha, *The Commitment to Theory*. The critical literary theory of Homi Bhabha addresses the concept of "hybridity" as the blending of two cultures. While Bhabha's theory specifically discusses the hybridity of the Orient who was conquered by the West, there are instances in which this theory can be applied to Native American adolescents. In looking at the work of a contemporary author, Alexie, there are several examples of the impact the White and reservation educational systems on Native American students. Through their education, Native Americans essentially become hybrids, taking on White education and culture, while maintaining Indian culture as well. Through extensive research of these texts, in addition to the study of Native American educational structures throughout the history of the United States, the hybridity of the Native American culture makes itself apparent. Native Americans through their education become somewhat a part of the White culture, while simultaneously holding tightly onto their Native American traditions and customs. Through studying the works of Sherman Alexie, it becomes apparent that Bhabha's hybridity concept can be reapplied to Native American adolescents.

THE CONSEQUENCES OF INDUSTRIALISM IN TENNESSEE WILLIAMS' *THE GLASS MENAGERIE*

Brooke E. Jenkins (Dr. Nancy Midgette & Dr. Janet Warman) Department of English

In the late 1920's, a group of Southern writers began to compile a series of essays promoting an agricultural lifestyle with which rapidly growing industrialism was in direct conflict. Known as the Southern Agrarians or the Twelve Southerners, these writers, associated with Vanderbilt University in Nashville, TN, expressed their convictions about the South and its future in *I'll Take My Stand: The South and the Agrarian Tradition* (1930). Largely in response to merciless criticism of the South from Northern writers, the Agrarians sought to defend their home by presenting an argument for the superiority of agrarian society over the industrial culture of the North. The Twelve Southerners framed industrialism as the enemy of traditional Southern values and of humanity. Fourteen years after the publication of *I'll Take My Stand*, Tennessee Williams' *The Glass Menagerie* premiered in Chicago, Illinois, introducing in the character of Tom Wingfield a realization of the fears expressed by the Southern Agrarians. While existing scholarship relating to the play focuses largely on interpersonal relationships, the research to be presented explores Williams' commentary on the negative effects of industrialism, primarily through Tom's explicit declarations, the character's desire for adventure, and the playwright's

own production notes, setting and character descriptions, and stage directions. In relating Williams' depiction of the South to the views expressed in *I'll Take My Stand*, this presentation provides evidence in support of the Agrarians' arguments within a debate that permeated much of Southern literature in the early-to-mid-twentieth century.

USING CRITICAL THINKING TO ENHANCE LANGUAGE ACQUISITION: A CASE STUDY ON THE ROLE OF GROUP WORK IN MAINSTREAM CLASSROOMS

Kimberly A Lilienthal (Dr. Jessie Moore) Department of English

For English language learners (ELLs) to achieve success and agency in learning in mainstream classrooms, teachers must establish strategies for inclusion and support. "Inclusion" in learning environments happens through equitable teaching methods that allow students to reach their full potential. Critical thinking activities, such as group work, can empower ELLs to speak and write about what is important to them (Cary, 2007; Faltis & Coulter, 2008; Nagappan, 2001). Group work requires students to think about "how" and "why," justify their opinions to peers, and demonstrate learning in creative contexts (McNeil, 2010), intrinsically motivating students to learn English to promote their own self-expression (Marinova-Todd, Marshall, & Snow, 2000; Huie & Yahya, 2003). Teachers often struggle to implement these activities within a standardized curricular structure. How can teachers best utilize critical thinking to enhance ELLs' English language acquisition in mainstream classrooms? To answer this question, I conducted participant-observer case studies with three fifth-grade ELLs and their teacher. I observed questioning patterns in the classroom, interviewed participants, and evaluated student language development in reading, writing, speaking, and listening. Results demonstrate a high frequency of student-led discussion in teacher-facilitated group projects, and a lower proportion of class periods in which the teacher is lecturing and questioning students individually. The case study presented here demonstrates how the student expressed greater confidence in the his contributions to small groups than larger group settings by more willingly volunteering ideas and playing a role in the group's processes. ELLs and their learning processes are among the most widely underrepresented topics in education pedagogy research (Faltis, 1993). These research results will create new collaborative knowledge with teachers and administrators that models language instruction in similar classroom contexts. One student's experiences throughout the semester demonstrate how specific group work structures are more successful in inspiring critical thinking. Connections between the critical thinking skills gained and language development can inform how educators can support English language development and create an inclusive mainstream classroom encouraging these students' transition into high school and college – two environments that could benefit from a deeper understanding of bilingual student learning needs.

THE CAULFIELD EFFECT: AN INTERDISCIPLINARY EXAMINATION OF ADULT IDENTIFICATION IN YOUNG ADULT LITERATURE

Michelle T. Nussbaum (Dr. Proudfit) English Literature

Overwhelmingly in recent years, adults have connected with young adult (YA) novels in passionate ways. Through looking at popular YA novels that adults have shown interest in—*The Catcher in the Rye*, the *Harry Potter* series, and "problem novels," such as *The Perks of Being a Wallflower*—I attempt to explain the connection adults have to youth characters and to the "coming of age theme." Using close reading I reveal common literary elements among these stories. Then, with the help of psychological research, I examine the ways in which adults

identify with teenage protagonists. Finally, through sociological study, I explore how this connection affects adults within social structures. This explains how certain adult fans become possessive and obsessed with characters, such as Holden Caulfield, while others find community in groups of likeminded readers, as seen in *Harry Potter* fandom.

Linking what I have termed “problem novels” through narrative qualities and shifts over time has revealed bibliotherapeutic undertones within many popular YA novels. This bibliotherapy focuses on identifying and classifying issues as well as encouraging young adults to find a fostering niche that defines them as an individual. A close reading of *The Catcher in the Rye*, through a lens supported by the theories of Mark Silverberg and Jay Martin, suggests that Salinger’s talent for manipulating a connection between the reader and his protagonist produces a kind of “fictive personality” for the reader, which strongly links them to Holden Caulfield. Finally, an analysis of *Harry Potter* fandom suggests that part of the series’ appeal comes from the presence of social groups within the novels and also from fan groups formed around the novels. Ultimately this project reveals that: YA novels provide a specific kind of psychological connection for adult readers; the story of a fifteen-year-old produces a fresh yet nostalgic view on subjects that people consistently encounter in their lives; and finally the “YA” label is simply a signifier and should not separate these texts from the larger category of “literary.”

REDMOND O’HANLON: THE MAN, THE FOLKLORE, AND HIS IMPACT ON IRISH CULTURAL IDENTITY

Elizabeth V Purvis (Dr. Kathy Lyday) Department of English

Ireland has a rich folklore tradition integral to the Irish cultural identity. This research explores the connections between the historical life of Redmond Count O’Hanlon, notorious seventeenth century Irish brigand, and the folktales written featuring O’Hanlon in the framework of a heroic outlaw. While there has been research conducted on the heroic outlaw in Irish folklore, this research presents the first exploration of Redmond O’Hanlon’s transformation from a historical figure into a literary character. Through a qualitative analysis of several original pieces of folklore, seventeenth century court and civil records, as well as texts written discussing Irish folklore and O’Hanlon, this study seeks to understand the dynamic between the historic and literary character, as well as how this individual has informed the Irish cultural identity.

NARRATOLOGY IN YOUNG ADULT LITERATURE: THE COMPLEXITY OF AGE

Alice T. Sudlow (Dr. Megan Isaac) Department of English

Young adult literature is expected to focus on protagonists between the ages of twelve and eighteen, focalizing teenagers’ stories through an adolescent viewpoint. Because authors in this genre are generally adults, adult perspectives influence these adolescent viewpoints. Critics have observed that the voice of the “hidden adult” is generally sublimated into an identity-less third person narrator. However, authors of young adult literature are manipulating narrative voices in more complicated ways, un-sublimating the adult voice in challenging narrative structures. This research examines the construction of age and voice in five innovative young adult novels. Five contemporary realist young adult novels are selected for their critical and popular appeal, as well as their diverse and complex narrative structures: *The Book Thief* by Markus Zusak (2006), *Jacob Have I Loved* by Katherine Paterson (1981), *The Fault in Our Stars* by John Green (2012), *Marcelo in the Real World* by Francisco X. Stork (2009), and *Postcards from No Man’s Land* by Aidan Chambers (1999). Secondary source reading includes discussions of literary theory and

analyses of primary texts. The five novels are analyzed through the lenses of narratology and aetonnormativity, a children's literature specific theory. This research demonstrates that young adult authors un-sublimate the adult voice in a variety of ways. These include separating the youthful protagonist and the ageless narrator, creating an age gap between a young protagonist and a first person narrator by using a distant past reflective voice, and placing a protagonist/narrator in situations that will cause him to mature early. In some cases, a protagonist/narrator with atypical neurology circumvents primarily age-based identification. Finally, some authors employ a wide mix of voices representing diverse ages, backgrounds, genders, nationalities, sexual orientations and other identity markers to represent the young adult experience through multiple perspectives. Young adult literature is not wholly the realm of young adult voices; rather, authors un-sublimate the adult voice to explore diverse ways of interpreting adolescence. Presenting a "pure" young adult voice is not the goal of these texts; rather, they reveal the ways in which adolescence can be accessed through the lens of a variety of ages.

THE ACADEMIC AND SELF-SPONSORED WRITING LIVES OF HIGH SCHOOL STUDENTS: IMPLICATIONS FOR WRITING CURRICULA & PEDAGOGY

Kyle W. Whitaker (Dr. Paula Rosinski) Department of English

The main goal of this study was to learn more about the various types of writing that high school students compose on a daily basis and to understand the ways that they assign value to these types. A group of sophomores and juniors (n=31) at The Elon School and a group of juniors (n=16) at Williams High School in Burlington took an online survey in which they identified the types of writing, chosen from a list of 15 different genres, that they had completed in the past week. Students were then given the same list of writing types and were asked to rank them based on how often they participated in those kinds of writing. Rhetorical information about the location, audience, and technology used for these most frequent types of writing was collected in questions following this ranking. Students were next asked to rank the same list of 15 genres based on how much they valued each type; similar rhetorical questions were asked about the types identified as most valuable. Following this survey, focus group interviews were held with small groups of students at The Elon School (n=16) and Williams High School (n=15) to identify trends in students' perceptions surrounding academic and self-sponsored writing. These survey and interview data suggest an initial disconnect between the types of writing students identified as composing most frequently and the types they identified as most valued. 65% of students reported texting more frequently than other writing; only 26% of students claimed that this writing was most valuable to them. An inverse trend can be seen with academic papers, which 21% of students reported composing most frequently, while 50% claimed it was most valuable. Analysis of focus group interviews suggests that students assign value to writing based on the purpose of the text, not just where or when it was composed. These findings support Kathleen Yancey's (2009) call to embrace the growing complexities of students' writing lives.

ENVIRONMENTAL STUDIES

EVALUATING THE CARRYING CAPACITY OF ELON UNIVERSITY'S LAND IN SUPPORTING THE DIETARY NEEDS OF THE STUDENT BODY AND THE FEASIBILITY OF VARIOUS FOOD DISTRIBUTION OUTLETS

C. Barona DiNapoli (Professor Steve Moore), Department of Environmental Studies

As the dramatic impacts of global climate change become more apparent, many have begun to examine the growing threat these changes pose to world-wide food security. Shifting global climates have already caused shifts in agricultural trends around the world, forcing us to rethink our future sources of food. Thus has emerged the local food movement, based around finding local sources of food to minimize the negative environmental impacts associated with the transportation of food products as well as developing a deeper understanding of the sources of one's food. When we source our food from our own community, we strengthen our relationship with other community members and have a greater influence over the ways in which our food is produced. Undoubtedly, Elon University will be forced to face these issues in the coming decades and should therefore begin exploring local source of food. With an emphasis on Loy Farm, this project will begin with an examination of the productivity potential of the land that Elon owns. Essentially, it will use GIS technology and data regarding soil fertility to answer the question: to what extent can the land that Elon University owns support the dietary needs of the student body? It will then explore various outlets for distributing campus-grown food to the Elon community, such as incorporating it into our dining halls or creating a farm stand to operate out of the Elon Community Church Farmers Market. The project will explore how other college campuses have implemented similar projects involving campus-grown food to evaluate the feasibility of such a program on Elon's campus. Working with Aramark, the research team will ultimately design a plan for implementing such a program here at Elon. This research project will shed some light on the ability of Elon University to support its student body with food grown on its own land and begin to create a timeline for putting this plan into action.

MELTING DOWN THE RHETORIC OF CLIMATE CHANGE

Avery F. McGaha (Professor Michael Strickland) Department of Environmental Studies

In the last four decades, global climate change has risen to international recognition as one of the most important challenges humanity must face in the twenty-first century (Hansen et al., 2013). Despite politicized arguments in Congress and sparse coverage in popular news media, the danger and urgency of climate change is acknowledged by leaders such as the World Bank and even President Obama, who routinely presses for comprehensive action to curb carbon emissions at home and internationally (White House, 2013; World Bank, 2012). This trend is matched by increasing knowledge from the scientific community. However, as experts on the history of science remind us, a growing wealth of knowledge in the world of science does not easily translate into public understanding or political engagement. Much like climate change, for example, Charles Darwin's insight is still widely rejected or misconstrued in the United States despite nearly a century of unequivocal evidence (Liu, 2013; Newport, 2012; NRC, 2008). Darwin is also credited with his skill as a communicator. His 1859 book *On the Origin of Species*, written for a general audience, is hailed as a classic in the field of science communication. Today scientists and journalists have followed this important precedent, writing

over one hundred books about climate change. They recognize, in Darwin's words, "how necessary it is that any new view should be explained at considerable length in order to arouse public attention" (Darwin, 2010, p. 84). Because climate change is a complex global phenomenon, effectively communicating the scale and urgency implied by scientific literature is a uniquely formidable task to accomplish in writing. My research asks what rhetorical tools authors can employ to distill the complex scientific concepts inherent in climate issues and render these accessible to a non-expert audience. To explore these tools I conduct a rhetorical analysis of 40 popular books on climate change buttressed by an investigation into the literature of the history and public understanding of science. Ultimately, I find that story-telling and metaphor are especially powerful tools that can improve how communicators talk—and help the rest of us think—about global climate change.

CHARACTERIZATION AND DISTRIBUTION PATTERNS OF *SPIROBRANCHUS GIGANTEUS* IN SOUTH CAICOS, TURKS AND CAICOS ISLANDS

Diandra M. Verbeyst (Dr. Janet MacFall) Department of Environmental Studies

Spirobranchus giganteus is an obligate associate of live coral reefs in tropical and subtropical oceans. *S. giganteus* get their name from their appearance. *S. giganteus* literally means "giant spiral branches." This appropriately named species is more commonly referred to as Christmas tree worms. The serpulid worms are sessile, but tend to aggregate in clustered areas on corals. The larval Christmas tree worms secrete and attach an opaque tube made of calcium carbonate to the host coral and are found perpendicular or parallel to the coral head surface. The relationship between live coral and *S. giganteus* is uncertain. There are suggestive positive effects of the relationship between corals and invertebrates. The species's depth distribution, relationship with host coral, distribution patterns, and color morph patterns were explored. Data were collected for *S. giganteus* at four SCUBA dive sites and six snorkel sites in South Caicos, Turks and Caicos Islands, from March to May 2013. Two 12 meter transect lines were laid out to observe the corals and worms at differing depths (2m, 10m, 20m), and a 12.6 meter rugosity chain was used to measure habitat complexity. Our hypothesis was that *S. giganteus* would be randomly distributed on coral species for settlement and growth, with the abundance of the species being highly influenced by fluid wave stimulus at shallower depths. Populations were expected to be densest on large coral heads of fringing reefs. Color, coral species occupied, trends in shade differences at hole diameter, and location were also recorded for 268 *S. giganteus* specimens. Data were compared with Caribbean and Pacific Ocean studies to determine whether coral species preferences existed in population studies. Primary findings showed that the density of *S. giganteus* is higher at shallower depths. *Montastraea annularis*, *Porites astreoides*, and *Agaricia spp.* are preferred coral hosts. *S. giganteus* tends to distribute as single worms on coral heads. This study is part of a 5-year research plan that sets the stage for ongoing data collection to learn more about *S. giganteus* in South Caicos, TCI.

EXERCISE SCIENCE

THE IMPACT OF QUERCETIN SUPPLEMENTATION ON COGNITION DURING VIGOROUS EXERCISE IN COLLEGE STUDENTS

Kelly L. Brand (Dr. Paul C. Miller & Dr. Eric E. Hall) Department of Exercise Science

BACKGROUND: The transient hypofrontality theory provides an explanation for the temporary decrements in executive function experienced during intense exercise. One approach to overcome this decline may be to identify a nutritional supplement that has the potential to attenuate the declines in cognition. Quercetin is a compound found naturally in various foods and results have been varied regarding its effects on cognitive function. **PURPOSE:** The purpose of this study was to examine the impact of quercetin supplementation on executive function during and following higher intensity exercise. **METHODS:** This study utilized a repeated measures design. Twenty-eight college age students participated in three sessions. During the first session, participants completed a graded exercise test (GXT) to determine ventilatory threshold (VT). Prior to sessions two and three, the participants consumed 500mg of quercetin or a matched placebo twice a day for three days. The supplements were randomized and counter-balanced. During sessions 2 & 3, participants reported to the lab, consumed their last dose of supplement, and cycled on a recumbent bike at VT for 30 minutes. During the exercise, they completed the Wisconsin Card Sort and modified Stroop Task cognitive tasks 20 minutes into the bout of exercise, immediately post exercise, and 20 minutes post exercise. **RESULTS:** There were no significant differences in Wisconsin Card Sort Test errors and modified Stroop Task timeouts between the supplement and control conditions. The number of errors in the modified Stroop during exercise were significantly higher in the quercetin condition ($p=.003$). Modified Stroop Task errors following exercise were not significantly different between the groups. **CONCLUSIONS:** The results indicate that quercetin was not effective in reducing the effects of the transient hypofrontality theory when administered in this fashion. This may be due to a number of factors including dose, formulation, and/or exercise task. Future research may utilize a different dose, dosing schedule, delivery mechanism, exercise regimen, or more sensitive cognitive task.

OBSERVATION OF CLASSROOM PERFORMANCE USING THERAPY BALLS AS A SUBSTITUTE FOR CHAIRS IN ELEMENTARY CHILDREN

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The academic success of students is a major concern in American culture; thus, there is constant pressure for new discoveries that can improve education. Many classrooms are beginning to substitute standard chairs with therapy balls, which help to improve students' focus and classroom performance, according to teacher and student reports. Therapy balls are a type of heightened sensory tool, which are often used in physical and occupational therapy as a strategy for individuals with learning difficulties. Heightened sensory tools increase the sensory information that the brain receives and have been effective at improving attention and classroom performance. However, no studies explain why these tools are successful. Researchers conducted an observational study in a classroom at a local elementary school that implemented therapy balls. For each observation, three independent researchers marked behavior over the course of an hour, which equated to three observations per student ($N=19$). The first observation

was conducted when students were using standard chairs, and two more were conducted when students used therapy balls during classroom activities. Researchers observed the behaviors of students on the given seating device, including academic task (on/off task), effort level, attitude, interactions, seated behavior (bouncing/rocking/stationary/other), and intensity level of participation in classroom activities. Preliminary analysis of the collected data demonstrates that 50% of observations when students were seated on standard chairs indicated on task behavior, while 85% of observations when students were seated on therapy balls were recorded as on task behavior. In addition, movement while seated increased on the therapy balls (35% of observations indicated stationary seated behavior) compared to the standard chairs (47% observations indicated stationary seated behavior). The increased rocking and bouncing seated behavior on the therapy balls suggests that the seating device helps to engage the vestibular system. Researchers hypothesize that by bombarding the vestibular system with increased sensory input, sensory processing can be improved to help students achieve an appropriate response to classroom demands by focusing on relevant stimuli. The results from the observational study will allow researchers to further investigate whether or not engaging the vestibular system can help to improve performance on functional school skills.

BALANCE AND COGNITIVE LOAD IN COLLEGE ATHLETES

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BACKGROUND: Impaired balance is a common symptom of concussions because an injury to the brain disrupts the function of the neuromuscular system. Research has also shown that sway, a measure of balance, is lower in previously concussed athletes and when a cognitive task is added in non-concussed athletes¹. However, it is unknown how a dual task will affect balance when vision and surface are also manipulated. **PURPOSE:** The goal of this study is to exam how cognitive load, vision, and surface affect balance in a group of 92 college athletes (31 with a previous concussion). **METHODS:** Sway index was measured during baseline concussion tests using a BioDex balance system and was recorded under four conditions: eyes open/eyes closed on firm surface, and eyes open/eyes closed on foam surface. The same four conditions were also repeated (randomized by block) in the dual task by adding a cognitive load (serial sevens task). Sway index was compared for single vs. dual task conditions, and across concussion history. **RESULTS:** Significant Main Effects were observed for Vision($p<0.001$), Surface ($p<0.001$) and a significant Vision x Surface interaction ($p<0.001$) as would be expected. A significant Distraction Main Effect was observed ($p<0.05$) with sway indexes increasing during the cognitive task and significant Distraction x Vision ($p<0.001$) and Distraction x Surface ($p<0.001$) interactions with sway increasing in distraction tasks. Sway scores increased when a cognitive task was added except for the most complex condition (closed eyes and foam surface) where they significantly improved. There was a trend for a Distraction x Surface x Vision x Group interaction ($p=.07$) with concussed individuals having lower sway scores in the most complex condition. **CONCLUSION:** A dual cognitive and balance task may be useful in testing the function of the neuromuscular system in collegiate athletes. This may be a useful measure of balance for concussion recovery and aid in return to play decisions.

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POTENTIAL FACTORS INFLUENCING PERFORMANCE ON IMMEDIATE POST-CONCUSSION ASSESSMENT AND COGNITIVE TESTING

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Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT) is a neuropsychological assessment commonly used to assist in return to play decisions after the diagnosis of a concussion in student-athlete populations. Athletes baseline test scores can be compared with their post-injury scores to determine whether cognitive functioning has returned to normal. An athlete's post-injury scores can be used as an added measure when determining if an athlete can begin the return to play protocol. **PURPOSE:** To determine factors that may influence performance on the Immediate Post-Concussion Assessment and Cognitive Testing. **METHODS:** 448 Division I collegiate student-athletes completed the ImPACT. These student-athletes came from football (n = 183), men's soccer (n = 54), women's soccer (n = 62), baseball (n = 53), softball (n = 21), men's basketball (n = 22), women's basketball (n = 22), women's volleyball (n = 18), and women's lacrosse (n = 13). The ImPACT calculates 4 test scores for verbal memory, visual memory, visual-motor speed and reaction time. This study examined whether the following variables would influence performance: gender, sport, history of concussion, history of speech therapy, diagnosis of ADD/ADHD or a learning disability (LD) and sleep. **RESULTS:** Significant gender differences were found with females scoring better on verbal memory (p<.001), visual-motor speed (p=.003), and reaction time (p=.01). There were significant between sport differences on verbal memory (p=.035) and visual motor (p<.001) scores. History of speech therapy was found to significantly influence visual memory (p=.01) and visual motor (p=.002) scores with those who had a history of speech therapy performing better. There was a significant sleep difference found with participants who slept more scoring better on visual motor (p=.047). History of concussion, diagnosis of ADD/ADHD or LD were not found to influence ImPACT scores. **CONCLUSIONS:** Results of this study suggest that users of these data should be cognizant of how different variables influence performance on these tests and the need for baseline testing in concussion management protocols.

THE EFFECT OF CONCUSSIONS ON COGNITIVE FUNCTION IN ASYMPTOMATIC NCAA COLLEGIATE STUDENT-ATHLETES

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Background: Previous studies have shown that cognitive performance deficits, such as reaction time, can last 7-14 days post-concussion (McClincy, Lovell, Pardini, Collins & Spore, 2006). Response accuracy has also been shown to decrease after an athlete has experienced a concussion (Sosnoff, Broglio, Hillman & Ferrara, 2007). Although previous studies show mixed results, we expect our study to show increased response times and decrease accuracy rates for the post-concussion tests. The purpose of this study is to observe the lingering effects of concussions on cognitive function in Division I NCAA student-athletes when asymptomatic. **Methods:** Over the past 3 years, 448 Division I NCAA collegiate student-athletes were given baseline tests at the beginning of their collegiate careers. The Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT), an auditory oddball and visual flanker tasks were used to assess cognitive performance. The ImPACT calculates 4 test scores for verbal memory, visual memory, visual-motor speed and reaction time. For the auditory oddball and flanker tasks, response accuracy and reaction time were measured. 29 participants suffered a concussion during this time. After experiencing a concussion, the student-athletes returned for cognitive assessment when reporting asymptomatic. **Results:** Participants reported being asymptomatic 9.3 ± 7.9 days post-concussion. For verbal memory, visual memory and visual-motor speed student-athletes

performed better following concussion; however, this was not significant ($p>.05$). Reaction time was not significantly different for the ImPACT, auditory oddball or flanker tasks. For the flanker task, response accuracy was improved, but not significantly, post-concussion in the congruent ($p=.094$) and incongruent conditions ($p=.078$). Conclusion: This suggests that cognitive function was equivalent following a concussion when asymptomatic. The slight improvements in performance may be due to greater motivation to perform.

BALANCE TRAINING FOR COLLEGIATE DANCERS AND CHEERLEADERS

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BACKGROUND: Dancers and cheerleaders require static and dynamic balance for optimal performance. This requires control of the body over the base of support, which is often one leg. Until recently, there was limited research on the role of balance training for these athletes. **PURPOSE:** The purpose of this research is to examine static and dynamic balance in single-leg and double-leg balance tests in dancers and cheerleaders. It is hypothesized that a 10-week balance training program will improve both types of balance. **METHODS:** Twenty-one members of Elon University's dance team ($n=12$) and cheerleading team ($n=9$) participated in this intervention study. The protocol included baseline testing, 10 weeks of balance training (2x/wk, 10min on Bosu balls and balance discs), and post-testing. Baseline and post-testing was conducted on a Biodex Balance System using the Athletic Single Leg Stability test (static stability of each leg) and the Limits of Stability test (LOS - dynamic test). Measures for LOS test included time to complete and neuromuscular control score which is a percentage with 100% being full control. Measures for Single leg stability test included a sway score. **RESULTS:** It was found that participants improved in general after comparing baseline and post-testing. Four dependent variables were examined: limits of stability (LOS) time, limits of stability (LOS) percentage, left leg score (LL), and right leg score (RL). These were studied in regards to training effect (baseline vs. post-test), group effect (cheer vs. dance), and group x training interaction. There was a significant training effect for LOS time ($F_{(1,19)}=23.96$, $p<0.001$), LOS percentage ($F_{(1,19)}=12.45$, $p<0.05$), LL score ($F_{(1,19)}=13.27$, $p<0.05$), and RL score ($F_{(1,19)}=5.90$, $p<0.05$). There was also a significant group x training interaction for LOS percentage ($F_{(1,19)}=5.08$, $p<0.05$), but not for LOS time, LL score, or RL score ($p>0.05$). There was no group effect for LOS time, LOS percentage, LL score, or RL score ($p>0.05$). **CONCLUSION:** There was an overall improvement in balance control of participants regardless of group from baseline to post-testing. Balance training interventions can improve balance control in collegiate dancers and cheerleaders, which can be used as a means of injury prevention in the field.

PHYSICAL ACTIVITY PATTERNS IN ELEMENTARY SCHOOL CHILDREN

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The prevalence of childhood obesity has been steadily increasing for decades, resulting in what is now called an "obesity epidemic". Roughly 25 percent of children are obese and of those, about 80 percent will go on to become obese adults. Obesity directly increases risk for mortality due to coronary artery disease (CAD), cancer, stroke, congestive heart failure, etc. In general, physical activity levels in children are inadequate, one of the direct causes of childhood obesity. As children spend a significant amount of their day in a school environment, it is important to determine the amount of physical activity that children achieve during school. Therefore, the purpose of this study is to examine the amount of activity achieved during a typical school day in

elementary school children. Physical activity assessment will be done with accelerometers, a device that tracks both total steps taken throughout the school day and total minutes of aerobic physical activity performed. Participants will be 1st, 3rd, and 5th grade students at a private school in Alamance County, NC. Participants will be asked to wear the accelerometers from the time they get to school in the morning until the school day is over in the afternoon. Data collection is currently under way and will continue. Preliminary data for 5th graders reveals that on average, students completed 7528 (+/- 3657) steps per day while at school. In addition, they completed an average of 18.8 (+/- 21.9) minutes of aerobic activity per day. In order to be determined active, elementary school children should achieve between 11,000 – 15,000 steps throughout the entire day. Thus, the 5th graders in this sample appear to be well on their way to achieving the appropriate number of steps to be considered active. Once data collection is complete, the physical activity guidelines will be consulted to determine if 1st and 3rd grade are both receiving adequate amounts of physical activity throughout the school day. Additional information has been collected from the parent/guardian(s) in order to provide insight into other variables that may influence amounts of physical activity performed.

THE EFFECT OF A REWARDS BASED INTERVENTION ON THE NUTRITIONAL KNOWLEDGE AND DIETARY BEHAVIORS OF ADOLESCENT GIRLS

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Background: The prevalence of childhood and adolescent obesity has tripled within the last 30 years. Overweight children are much more likely than their normal weight peers to become overweight adults and develop related health problems (such as cancer, cardiovascular disease and diabetes) later in their lives (Anderson & Butcher, 2006). It is critical to target children and adolescents when designing programs to combat rising levels of obesity in the country. **Purpose:** The purpose of this study was to investigate the efficacy of a rewards-based educational intervention on the improvement of nutritional knowledge and dietary choices of adolescent girls. Parental consent was obtained prior to the study. **Methods:** Our participants consisted of 8 girls ages 11-13 (12 ± 1), weight ($51.3 \text{ kg} \pm 10.8$), height ($155.5 \text{ cm} \pm 5.9$), BMI percentile rank (67.9 ± 36.4). Dietary behavior, nutrition knowledge and physical fitness levels were assessed for all participants. Baseline nutritional knowledge was assessed at the beginning of the intervention through a "Jeopardy" style quiz game. Post-questionnaires were administered on the last day of the intervention. In addition, participants were interviewed throughout the week about their typical dietary behaviors, daily physical activity and self-esteem. Educational activities with participants took place for approximately 2 hours each day; activities included a grocery store scavenger hunt, healthy baking demonstrations and relay races. Participants received charm bracelets and charms as rewards for participating in daily activities and games. **Results:** Nutritional knowledge increased for 6 out of 8 participants; however, it did not reach statistical significance ($p = .20$). Significant correlations were found between measures including pre-intervention dietary behavior (soda consumption per week and perceived importance of body weight: $r = -.827$, $p = .01$), self-esteem (weight and endurance: $r = .801$, $p = .03$) and fitness levels (weight and curl-ups completed in 30 seconds: $r = -.729$, $p = .04$). **Conclusions:** This study shows promising evidence that rewards can be used as a part of a successful nutrition education intervention. Further studies are needed to obtain statistical significance of the effectiveness of similar interventions.

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EXAMINATION OF THE IMPACT OF YOGA AND MINDFULNESS TRAINING ON BRAIN COGNITION AND ELECTRICAL ACTIVITY

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There has been an increased interest and research in the impact of yoga on various physiological, psychological, and cognitive factors. Results indicate that yoga can relieve symptoms of hypertension and vascular conditions and improve depression symptoms. The mechanisms of these changes are not completely understood, but it has been posited that neurochemical and electrical pathways in the brain and central nervous system are altered following yoga practice. Recent evidence suggests that yoga can lead to an improvement in focus and this has been linked to changes in the electrical patterns of the brain recorded with electroencephalography (EEG). Little evidence has examined the impact of yoga on cognition and brain activity, therefore, the purpose of this investigation is to examine the impact of a 4 week intensive yoga class on cognition and brain activity. Participants (n = 8) were registered for the 4 week summer session 2 yoga class taught on campus. Participants provided informed consent on a form approved by the University IRB. Before the start of the semester participants completed baseline testing consisting of a flankers task and a visual oddball task while brain activity was recorded with EEG. Participants then completed the 4 week yoga class, following all instructions for the practice of yoga in the class. Within two days of the end of the semester, participants returned to the lab and completed the same tasks as baseline. Data analysis is currently underway. This entails editing the EEG data down to an evoked response associated with the presentation of the stimulus. The resulting analysis will lead to a P3, a wave associated with the stimulus occurring approximately 33 milliseconds following the presentation of a stimulus. This will allow for the examination of the amplitude and latency of the wave. It is expected that following 4 weeks of yoga practice participants will have a shorter latency and increased amplitude of the P3, suggesting that they respond to the stimulus more efficiently.

DO DIFFERING GLYCEMIC INDEX BREAKFASTS AFFECT COGNITION?

Danielle B. Scheinman & Melanie Witman (Dr. Paul C. Miller & Dr. Eric E. Hall)

Dept. of Exercise Science

Consuming breakfast is thought to be a part of a healthy diet and to support optimal function. Literature has shown that skipping breakfast may impair problem solving, short-term memory, and attention. Conversely, nutrient dense breakfasts have been shown to have positive effects on scholastic performance. Therefore, the nutritional quality of breakfast may impact cognitive function. **PURPOSE:** To examine the effect of skipping breakfast (NB), eating a low-glycemic index breakfast (LGB), or a high-glycemic index breakfast (HGB) on cognitive function in college students. **METHODS:** Participants (n = 10; age = 20.6 ± 1.0 ; BMI = 23.5 ± 2.0) completed 3 test conditions. Each condition was separated by at least two days. The test conditions (NB, LGB, HGB) were randomized and counter-balanced. The testing protocol was identical for each condition with exception of the breakfast content. At each session, participants reported to the lab following an overnight fast. The participants then either consumed one of the two meals or skipped breakfast completely. The participants then had a 45 minute period where

they watched a video. Following the video, the Stroop test was performed. **RESULTS:** A repeated measures ANOVA revealed no statistical differences for the Stroop test performance between the breakfast conditions (NB: 48.7 ± 6.1 ; HGB: 47.8 ± 6.0 ; LGB: 49.1 ± 5.8 ; $p=0.34$).

CONCLUSION: The non-significant finding between the Stroop scores could be due to several factors. Among these factors are the low number of participants, the content of the breakfasts, or the sensitivity of the Stroop test. Even though the results were non-significant, it is worth noting that the participants performed best on the Stroop test following the LGB. This would be consistent with previous literature describing the importance of breakfast to support cognitive function.

THE EFFECTS OF BOSU BALANCE TRAINING ON POSTURAL SWAY IN WOMEN

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The purpose of the present study was to examine the effects of unstable surface balance training, using the Both Sides Utilized (BOSU) and aerobic step on postural sway in order to implement the use in training and rehabilitation programs. Methods: 27 females participated in the study, mean age 40.6 ± 12.0 y, body mass 72.0 ± 14.0 kg, height 164.0 ± 7.7 cm, BMI 26.5 ± 4.5 , and relative body fat $33.1 \pm 7.4\%$. Participants were divided into two groups and performed a 10 minute exercise routine on either STEP (control) or BOSU for a total of 12 training sessions. Participants reported to the lab for pre-test, post-test and first supervised training session. Pre- and post-testing consisted of postural sway tests performed on the Biodex Balance System under four conditions with eyes open and closed, hard and soft surface. Results: The results of the study indicated a significant difference ($p = 0.006$) between pre- and post-test scores for sway index under eyes open soft surface condition regardless of training device (pre-test 0.84 ± 0.180 and post-test 0.74 ± 0.152 for STEP and BOSU, respectively). However, no significant difference was observed for pre- and post- sway index scores between STEP and BOSU under eyes open hard surface, eyes closed hard surface and eyes closed soft surface conditions ($p > 0.05$). Conclusions: Results of the study suggest that the balance training program helped to improve postural sway on soft surface but not on hard surface. This balance training routine could be an addition to intervention techniques used to improve balance, prevent falls, consequent injuries, and related disabilities among women.

SHORT TERM EFFECTS OF TENS ON BALANCE IN A HEALTHY POPULATION

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Transcutaneous electrical nerve stimulation (TENS) is a common and inexpensive treatment used for decreasing pain associated with muscular injuries. A small amount of electricity is delivered to a muscle using an adhesive skin patch and the electrical current interferes with signals sent by pain receptors. It also increases blood flow to the area, which can promote healing. Previous research has found that instability due to lower leg muscle fatigue can be improved with the use of TENS however the effect of TENS on balance and stability in healthy individuals is unknown^[1]. To test the effect of TENS on healthy muscle, 15 participants 19-24 years old range completed a stability test both with and without TENS. A familiarization session preceded the two treatment and testing sessions scheduled one week apart. The treatment condition (with or without TENS) was randomly assigned at the first testing session. It was hypothesized that TENS would result in significantly improved stability scores. While the

average score with TENS (M=63.400) was slightly better than non-TENS (M=63.267); data analysis showed no significance ($p=0.975$). Increasing the number of participants may have an effect on this trend. Sampling an older, healthy population may also have an effect on results as it is well known that balance and stability decline with ageing^[2]. This is an important study because an improvement in balance due to daily treatment of transcutaneous electrical nerve stimulation to the ankles could be a simple and cost effective solution to prolonging the loss of balance associated with aging.

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THE IMPACT OF PHYSICAL ACTIVITY PARTICIPATION ON COGNITIVE FUNCTION FOLLOWING DIFFERENT BREAKFASTS

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It has been suggested that eating breakfast may have beneficial impacts on cognitive function. When an individual skips breakfast, they run the risk to experience impaired problem solving, reduced short-term memory, and an inability to focus. However, when an individual consumes a nutrient dense breakfast, the literature indicates that they may experience enhanced academic performance. Additionally, participation in regular physical activity (PA) has been shown to support cognitive function. Consequently, the nutritional quality of breakfast and the PA behaviors of an individual may be related to their cognitive function. **PURPOSE:** To examine the relationship between cognitive function, PA participation, and cognitive function in college students. **METHODS:** Participants ($n = 10$; age = 20.6 ± 1.0 ; BMI = 23.5 ± 2.0) completed 3 test conditions. The participants also completed a self-report PA questionnaire. Each test condition had a different breakfast (no breakfast (NB); a low-glycemic index breakfast (LGB); or a high-glycemic index breakfast (HGB)). Each condition was separated by at least two days. The test conditions (NB, LGB, HGB) were randomized and counter-balanced. The testing protocol was identical for each condition with exception of the breakfast content. At each session, participants reported to the lab following an overnight fast. The participants then either consumed one of the two meals or skipped breakfast completely. The participants then had a 45 minute period where they watched a video. Following the video, the Stroop test was performed. A one-tailed Pearson product moment correlation was used to identify any relationships. **RESULTS:** The analysis suggests that there may be an inverse relationship between PA participation and Stroop test scores when a LGB ($r = -.53$; $p=.06$) or NB ($r = -.50$; $p=.07$) were consumed. There didn't appear to be any relationship between PA level and Stroop test scores following the HGB ($r = -.35$; $p=.16$). **CONCLUSION:** The inverse relationship seen between PA participation and Stroop test scores following the HGB and NB conditions and the lack of a relationship following the LGB may be explained by several factors. Among these factors are the low number of participants, the content of the breakfasts, or the sensitivity of the Stroop test. It may also indicate that the nutritional needs to support cognitive function may be different for

those participating in greater amounts of PA and those who participate in less PA. Therefore, it may be interesting to examine the impact of consuming a breakfast designed more specifically to address the nutritional needs of an active individual on cognitive function.

THE EFFECTS OF UP ACCELEROMETERS ON PHYSICAL ACTIVITY, MOTIVATION, AND SLEEP IN WOMEN.

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Purpose: To assess the effects of UP accelerometer use on physical activity, motivation and sleep patterns in women. **Methods:** 20 females were recruited to participate in the study, age (34 ± 12 y), weight (71 ± 15 kg), height (164 ± 6 cm), BMI (26.4 ± 5.6), relative body fat ($30.8 \pm 98.2\%$), resting blood pressure ($109/75 \pm 10/6$ mmHg) and heart rate (77 ± 13 b/min). Each participant completed three testing sessions. Pre- and post-test consisted of physical activity, motivation and sleep questionnaires, physical characteristics assessment and a 3-minute YMCA step test. Session 2 consisted of randomly assigning participants to either a 10,000 or a personal step goal group along with education on how to use the UP accelerometer application. In addition, three weeks of physical activity and sleep logs were collected. **Results:** A repeated measures ANOVA was performed to determine the difference between average weekly steps taken, hours of sleep per night and motivation scores for weight control. A significant time effect was observed for number of steps taken ($p = 0.005$) regardless of assigned group. Steps taken during weeks 2, 3, and 4 of intervention were significantly higher compared to the baseline week ($p = 0.001$, $p = 0.034$ and $p = 0.043$, respectively). However, a non-significant time effect was observed for hours of sleep ($p = 0.75$) and motivation score for weight control ($p = 0.51$). **Conclusions:** Based on the results of the present study, a significant increase in steps taken per day was observed in both groups. Short-term use of UP accelerometers increased the amount of physical activity, however, did not have an effect on sleep patterns or motivation for weight control in women.

FOREIGN LANGUAGES

PROUST AND HUMOR

Emily A. Guernsey (Dr. Sarah Glasco) Department of World Languages and Cultures

This research explores humor in the work of the renowned early 20th century French author and critic, Marcel Proust. Though widely recognized for the now iconic madeleine scene that inspired a flurry of scholarly research on what is now known as involuntary memory and sensory memory, my objective was to read *Combray*, the first book of the first volume of his most famous work *In Search of Lost Time* from another perspective. This is not from a psychoanalytical perspective but rather through the lens of humor. Proust's work is lauded as a literary masterpiece and yet regarded as subdued and serious. However, when one reads the text without these preconceptions, there is evident humor present. Proust uses multiple forms of humor, such as dark humor, satire, incongruity, and even physical humor in the characters portrayed. By uncovering and analyzing these forms of humor, one develops a deeper appreciation for the text and a greater connection to the unique yet relatable characters presented.

The general lack of scholarly works that address this humor within the Proustian attests to the originality of my research. In addition to a primary source on Proust and humor, many secondary resources on the subject of humor in general (which types of humor exist, how do we define them, and why are they humorous) proved invaluable for this project. Through this research, I was able to make the clear distinction between bawdy comedy, which is not present in the text, and mature humor. Proust uses light humor that can slip past the reader without acknowledgement; this humor has aided his creation of a fuller, brighter, more compelling text, and my research highlights this distinctly new interpretation of one of France's most important modern writers.

WHAT LIES BEHIND THE WALLS OF FRANCE'S PALACES AND CASTLES: WHEN THE PAST METHODS MEETS PRESENT MIND

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This project explores the presence and importance of palaces and castles in modern French culture. Research focuses specifically on the palaces and castles most prominent in France and on a community trying to build a new castle and preserve history in the town. The project details the Palace of Versailles, the elaborate and extravagant castle on the outskirts of Paris built by King Louis XIV, as well as the Louvre, a modern museum but once a fortress and palace, which I visited, researched and photographed while studying abroad in France in January 2014. The past and present co-exist in harmony in France, and my research discusses one woman's reality and a project she took on in order to have a positive economic impact on her local community. With a goal to build a castle and community as a medieval replica using the same techniques as in the thirteenth century, my project reveals the significant economic impact of the project as well as the sacredness of the medieval art forms used in the construction. As this community of townspeople and craftsmen has developed over these past 25 years, the sacredness of the art, craft and history have superseded the original need that instigated the project. This study was completed through scholarly research, which included cultural and religious studies texts as well as articles sourced on line.

LES FEMMES AUX YEUX DES HOMMES: FLAUBERT, ZOLA, ET LES ROLES DES SEXES AU 19E SIECLE EN FRANCE

Claire S. Long (Dr. O. Choplin) Department of French Language

My research seeks to examine the role of women in the 19th century French literary tradition. More precisely, it addresses the fate of the female protagonists in two novels written by canonical male authors of the century, *Madame Bovary* by Gustave Flaubert and *La Curee* by Emile Zola. The protagonists in each of these works deviate from the expected norms of femininity for their time, and subsequently die as a result. Thus, from a Feminist literary perspective, it is essential to research the representation of these women within their respective works, and also the importance these representations within the context of their time. In order to do so, I first researched the historical context of the novels, focusing on the roles and expectations of women, as well as the events and social occurrences that formulated these sexual norms. Additionally, I obtained extensive amounts of biographical information on Zola and

Flaubert, as well as reading excerpts of their personal letters and autobiographical information to determine their social standings and political views. Lastly, I used textual analysis, and specific excerpts to support my findings. Ultimately, I found that Flaubert and Zola's works undoubtedly intended to criticize and expose the social hierarchies of 19th century France. Each author used female protagonists as a vehicle for these commentaries, and to implicitly criticize a society in which the only option for a transgressive female was death. While Flaubert was certainly not a feminist, nor Zola to an extent, each author demonstrated that society in the 19th century was flawed, and that women often suffered as a result.

THE SAINT PIERRE AND MIQUELON AFFAIRE

Claire L. Mayo (Dr. Olivia Choplin) Department of French

On Christmas Eve 1941, without firing a shot, Vice-Admiral Émile Henri Muselier militarily occupied the islands Saint Pierre and Miquelon in the name of Charles de Gaulle and evicted those working for the collaborative French government at Vichy. The Allies strongly reacted to the occupation, for their foreign policy did not accord French sovereignty rights to General de Gaulle and his *la France Libre* (Free French movement). However, after two intense months of political debates and poor press, the Allies abandoned the Saint Pierre and Miquelon Affair in order to focus on the urgent details of the Allied advance in the European and the Pacific theaters. Since the Allies easily relinquished the controversy after engaging in a heated political debate led by the United States Secretary of State Cordell Hull, one must ask, "Why did the occupation of two small island cause an enormous, international controversy among the Allies?" My research seeks to answer that question by assessing recent scholarship and by evaluating letters from Charles de Gaulle written from December 1941 - April 1942 to the Vice-Admiral and the French ambassador at Washington for *la France Libre*. My scholarship underscores the importance of the political debate that established Charles de Gaulle as the political and military leader of *la France Libre* and *la France Libre* as the true representative of French interests during World War II. In the end, the two islands off of the coast of Newfoundland played an insignificant role in the war effort against the Axis Powers, but the successful occupation of Saint Pierre and Miquelon symbolically proved the legitimacy and sovereignty of *la France Libre*.

RUINS AS SELF-PRESERVATION: CITIES AND THEIR RELATION TO CULTURAL IDENTITY

Samantha E. Sampson (Dr. Sarah Glasco) Department of World Languages and Cultures

The layout of cities, one of the major conduits and representations of culture, holds keys and clues to understanding the identity of a group of people. Cities in the ancient world were more inclusive, fostered relationships between people, and provided collective sacred spaces—in this sense, Nîmes, a French city near the Mediterranean, once manifested itself as sacred through its individual landmarks, and as a whole. This project explores the relationship between the layout of cities and human societies in terms of sacredness. As religious practice cannot be separated from social and cultural practice, the historic Roman colony of Nîmes provides a distilled look at the anthropological impact of a city's monuments on human communal gatherings. With its various monuments, Nîmes provides a timeline, from its founding as an Augustinian colony during Rome's golden age, through the Middle Ages, and current place in the Gard region of France. This exploration and examination of the city of Nîmes illustrates how the extracted

ideals and identities of ancient Roman ruins differ from issues and identities in today's modern cities, as well as how assimilation into the Roman empire relates to assimilation in today's modern countries. The primary research methodologies for this project included in-depth examination of scholarly texts on both French culture and the concept of sacred space as well as study and photography of the sites in France during the month of January 2014.

THE VARIED VOICES OF MAGHRÉBINE PROTAGONISTS IN FRENCH YOUNG ADULT LITERATURE

Alice T. Sudlow (Dr. Adamson) Department of World Languages and Cultures

Stories written for and about teenagers capture moments of transformation in the lives of adolescents. Young adult literature provides readers with an intimate look at the ways in which protagonists process and react to their world. Often their lives are not easy, and they must develop strategies to cope with rough circumstances. One tool chosen by some teenage narrators in English language novels such as *The Fault in Our Stars* by John Green and *The Absolutely True Diary of a Part-Time Indian* by Sherman Alexie is humor. Whether witty, sarcastic, jocular, pun-filled, cartoony, or a host of other varieties, humor helps protagonists survive and maintain hope in the face of such dark situations as illness, poverty and death. Humor is a common literary device in English language young adult novels; this research investigates its parallel use in “la littérature des jeunes,” French young adult literature. Two French language young adult novels, *Kiffe Kiffe Demain* by Faïza Guène and *Confidences à Allah* by Saphia Azzeddine, were chosen for their maghrébine (North African) female protagonists, a commonality of theme that allows them to be closely compared. A close reading of the novels was performed to examine the protagonists' humor, voice and coping strategies. This research demonstrates that Doria and Jbara, the two protagonists, utilize several tools for coping with their difficult situations. In *Kiffe Kiffe Demain*, the most prominent tools are a combination of imagination and humor. In *Confidences à Allah*, Jbara imposes her voice on the reader and prays to Allah to alleviate her frustration and hurt at her circumstances. For each protagonist, regardless of the tools she uses, whether escapist imaginings or direct address to a mute reader, envisioning a space in which she is noted and important is essential. Humor is but one mechanism that maghrébine young adult protagonists use to understand and cope with their world.

“PERFORMING THE BRIDE: VISUALITY, FEMALE AUTHORITY, AND THE SACRED SPACES OF MECHTHILD VON MAGDEBURG'S *FLOWING LIGHT OF THE GODHEAD*”

Bethany E. Hill, (Dr. David Neville) Department of World Languages and Cultures

My project examines textual images of the bride in the medieval mystic Mechthild of Magdeburg's *Das fließende Licht der Gottheit* (The Flowing Light of the Godhead), through the lens of gender and visual culture studies. A close reading of these images is enriched by an art historical analysis that compares illuminated depictions of brides and women in surviving *Sachsenspiegel* (Mirror of the Saxons) manuscripts with German medieval cathedral sculpture. In comparing written images of the bride with iconic ones, the project explores dominant textual and visual discourses of religion, power, and gender common during the German High Middle Ages in order to understand how these discourses may have been reinforced or subverted through Mechthild's use of bridal imagery. Finally, by expanding current research on visual culture and

medieval female monasticism, the project will be a unique contribution to German medieval studies and medieval art history. As a way of framing Mechthild's use of bridal imagery in *Das fließende Licht der Gottheit* within the larger social contexts of the German High Middle Ages, my SURE project focused its interpretive efforts on images and textual passages in the *Sachsenspiegel* concerned with the property rights, inheritance rights, and legal capacities of married women. My analysis of these images read the stylized gestures and positions of the figures alongside the text to identify the cultural factors that determined the social gender roles of brides and women in the German Middle High Ages. Building upon the foundation of my SURE work my Lumen project expands the analysis to figural representations of women in German gothic cathedral sculpture. Analysis of a variety of images in the *Sachsenspiegel* depicting married women reveals patterns in the ways that women were expected to act and behave, and the amount of authority or agency they were granted in society. My presentation will highlight the seven general characteristics that emerged from this analysis, my Lumen field research, and the current status of my project.

HISTORY AND GEOGRAPHY

THE GETTYSBURG CAMPAIGN AND THE RESILIENCE OF CONFEDERATE NATIONALISM

J. Patrick Creghan (Dr. Charles Irons) Department of History and Geography

This study aimed to distinguish differences in morale between the generals/general staff and the rank-and-file soldiers of the Army of Northern Virginia leading up to and directly following the Gettysburg Campaign. This question also has implications for broader debates about the nature of Confederate nationalism and the viability of the Confederacy. Some historians, such as Paul Escott and Drew Faust, have argued that Confederate nationalism began to wane by the end of 1862 and severely undermined the Southern war effort. Others, such as Gary Gallagher and Aaron Sheehan-Dean, argue instead that Confederate nationalism did not begin to decline until 1864, and only then as a result of battlefield defeats and not issues on the home front. In order to gauge the depth of commitment to the Confederacy of general officers, I examined their published correspondence (both military and personal), much of which was accessible in Elon University's McLendon Rare Book and Special Collections. To find rank-and-file soldiers' statements about Confederate nationalism, I examined manuscript collections at the University of North Carolina (Southern Historical Collection) and Duke University (David M. Rubenstein Library). I focused only on three North Carolina regiments from the Army of Northern Virginia (1st, 11th, and 26th) and select generals. For newspapers, I utilized an online database for *The Daily Dispatch*, which was located in Richmond, and UNC's North Carolina Collection for *The Daily Progress*, which was located in Raleigh. I utilized these sources to corroborate the themes discovered in correspondence between the home front and soldiers. The generals, soldiers, and newspaper editors whose writings I consulted did not lose faith in the Confederacy as a result of the failure of the Gettysburg Campaign. My documentation of their surprisingly uniform commitment to the Confederacy is strong evidence in support of Gary Gallagher's argument for the strength of Confederate nationalism. My findings show that in the summer of 1863 the Confederate people still believed strongly in their cause and their ability to be victorious. By

showing that white North Carolinians still believed in the cause throughout the summer of 1863, this research suggests that Confederate nationalism was resilient, indeed.

HOW SEGREGATION ENDED SEGREGATION: THE CONTRIBUTIONS OF HISTORICALLY BLACK LAND-GRANT COLLEGES TO THE CIVIL RIGHTS MOVEMENT

Zachary B. Fisher (Dr. Nancy Midgett and Dr. Janet Warman) Department of History

In 1862, in the midst of the Civil War, the United States Congress voted to pass the Morrill Act, which donated federal land and money to each state for the creation of a public college focused on agricultural and technical knowledge. In 1890, the passage of the Second Morrill Act mandated equal access to public higher education for black as well as white students. States could either integrate their original land-grant college or build a separate institution for black students. Seeking to preserve their highly segregated society, the majority of Southern states chose the second option. Although historians have long recognized that historically black colleges and universities were influential in the civil rights movement of the 1950s and 60s, the importance of the institutions developed from the Second Morrill Act has not been specifically studied. Through my research, I examined primary resources, including school newspaper articles and interviews of student leaders, as well as secondary resources to determine the impact of land-grant HBCUs. My research revealed that students at these institutions, primarily North Carolina A&T, Florida A&M, and South Carolina State, were crucial to the progression and success of the civil rights movement. The sit-in movement, which was revitalized by the Greensboro Four at NC A&T, provided black students across the South with an effective model for peaceful demonstration. This movement led directly to the formation of the Student Nonviolent Coordinating Committee, which gave student leaders from land-grant HBCUs the opportunity to garner national political attention through their efforts. These students also gained respect from adult leaders in the NAACP and often influenced the strategies of the national civil rights movement. Florida A&M students were the first activists to use prolonged imprisonment to their advantage, and NC A&T students popularized the use of appeals to patriotism and mainstream Christianity. Toward the end of the 1960s, SC State students exemplified the transition of the civil rights movement toward more aggressive actions. This research reveals that Southern states' decisions to segregate public land-grant colleges actually contributed to the end of legalized segregation more than half a century later.

VOLTAIRE AND THE ENLIGHTENMENT RESPONSE TO SUPERSTITION

Jordan B. Greene (Dr. Michael Carignan) Department of History

The primary purpose of the research is to determine a beginning point from which to analyze the evolution of Voltaire's philosophies and influences between 1733, when the *Letters Concerning the English Nation* were published, and 1764, when he published the *Philosophical Dictionary*. In order to establish this basis, the project involves a close reading of Voltaire's *Letters Concerning the English Nation* searching for themes of religious criticism and superstition and juxtaposing the findings with those from a close reading of the *Philosophical Dictionary* searching for the same themes. Initial findings have demonstrated that in the *Letters*, Voltaire indicates clear skepticism and criticism of the established Christian order, especially Catholicism in France. His primary attack on religion is threefold. First, the Christian Church is horribly corrupt. Second, that it is incompatible with reason, and therefore the ideals of the

Enlightenment. And third, that the Church emphasizes doctrine over morality, meaning that it does not encourage morality in its followers as long as they comply with the rites and rituals. This three-pronged attack also seems to be the crux of Voltaire's argument in the *Philosophical Dictionary*, indicating that Voltaire stays true to his ideas and beliefs even thirty years later.

TO FIGHT AND DIE AS LIONS: JEWISH RESISTANCE IN WARSAW, TREBLINKA AND VILNA

David R. Lincoln (Dr. David Crowe) Department of History

It has been suggested by some that during the Holocaust many Jews simply went to their deaths like "sheep to the slaughter," with the ruthless efficiency of Nazi Germany allowing these killers to send tens-of-thousands at a time to meet their grisly fate. With the number of murdered Jewish men, women and children exceeding at least 6 million, it does seem as though resistance must have been staggeringly slight, but this is simply not the case. From the ghettos, forests and extermination camps of Eastern Europe Jews fought for the survival of their friends, families and culture with fierce determination. My research seeks to dispel the notion of Jewish passivity during the Holocaust for all time, so that we may better understand this greatest of all human tragedies. As the Warsaw Ghetto Uprising is the best known of the three cases I have studied, I will not dwell on it during my presentation. Instead I would like to present the audience primarily with the story of the Treblinka uprising. Its setting and events perfectly illustrate the obstacles facing Jewish resisters, as well as their determination and desperation in overcoming these challenges. From the story of Vilna I will tell the fascinating tale of Jacob Gens and Abba Kovnar, who waged an intellectual battle inside the city's ghetto for the hearts and minds of its inhabitants. Gens is a painfully tragic figure, and Kovnar an incredibly eloquent one. The two combine to offer a narrative that surpasses the very best of fiction. This extensive research project was made possible in large part by the Yad Vashem archives massive online catalogue of primary source documents from German and Jewish sources alike, as well as many outstanding books on the Holocaust.

THE EVOLUTION OF CHARLES DE GAULLE AS LEADER OF LA FRANCE LIBRE DURING WORLD WAR II (1940-1942)

Claire L. Mayo (Dr. David Crowe) Department of History

In the aftermath of the German conquest of France in 1940, Charles de Gaulle fled his homeland for Great Britain and entered the public light as the military and political leader of *la France Libre*. *Le Musée des lettres et manuscrits* recently released a large cache of de Gaulle's official and personal letters documenting his efforts to establish his legitimacy from 1940-1942 as the internationally recognized head of *la France Libre* in London. Until that time, de Gaulle relied heavily upon British support and worked to sever the Allies' trust in the Vichy government. The letters show his festering troubles with American political leaders as seen in the controversy over the French territories of St. Pierre and Miquelon off the coast of Newfoundland. French historians are just beginning to interpret the letters, which are largely unexplored by American scholars. My research is one of the first to use these letters and contextualize them with the current scholarship on Charles de Gaulle and *la France Libre*. The top-secret letters were released in 2011, but since there are no English translations available to the public, I translated a portion of the collection for use in my Senior Thesis. The principal goal of my thesis is to answer

the question, “How did Charles de Gaulle evolve as a political leader and establish his leadership of la France Libre as the only legitimate fighting French force while in exile in Great Britain from 1940-1942?” The conclusions drawn from my extensive research show that de Gaulle’s insistence on French sovereignty clashed with American expectations for the contribution of St. Pierre and Miquelon to the Allied war effort. To enhance his authority, de Gaulle unified experienced French generals under his leadership so that his authority over them strengthened his credentials. In the end, these top-secret letters underscore Charles de Gaulle’s lack of political experience and consequential mistakes in his initial years of leadership, but the letters also reveal his evolution to become one of France’s greatest politicians.

The Nuremburg Legacy Through the Lens of the John Demjanjuk Legal Saga

Julia E. Okada (Dr. David Crowe) Department of History

The Nuremberg trials left a lasting legacy and precedent establishing legal procedures to bring perpetrators of crimes against humanity to justice. Yet flaws in this legacy stemming from the inconsistency in charges and convictions of such perpetrators have left questions as to how effective legal outlets for international criminal justice are to the realities of crimes against humanity and genocide. A case study of the three-decade long saga of the John Demjanjuk legal cases provides an historical reference point to conclude whether or not past and current domestic and international legal systems were and are capable of carrying out justice addressing crimes against humanity to all perpetrators and collaborators. By analyzing the John Demjanjuk legal cases in the United States, Israel and Germany from 1977 to 2011, and by evaluating contemporary movements in relation to international criminal justice and crimes against humanity, it can be said that the John Demjanjuk case was an exception, rather than the rule, to prosecuting low-level participants in crimes against humanity from a legal standpoint. The Nuremberg Trials failed to create a historical legacy of forming a modern international criminal justice system to indict all individuals, regardless of rank and their place of residence, for their role in crimes against humanity through sufficient legal means. Methodology of this research consults primary sources such as legal transcripts from these trials, supplementing the research with peer-reviewed scholarly bodies of work (journal articles, books, etc).

NC PIEDMONT DEBUTANTE BALLS 1960-1980: THE ROLE OF GENDER IN A SOUTHERN TRADITION

Kathryn J. Osborn (Dr. Mary Jo Festle) Department of History and Geography

Since their inception in the 19th century, debutante balls have been a venue in which traditional gender roles were celebrated in elaborate rituals amongst the elites in society. This was especially true in the South, where historians have characterized gender roles as more traditional and resistant to change. In the 1960s, American feminists criticized traditional gender roles and demanded more opportunities for women and in some places there was a corresponding decline in the popularity of debutante balls. The research question for this project asked whether there was evidence of any changes related to gender in two piedmont North Carolina debutante balls between the 1960s and the 1980s. Did feminism affect the Terpsichorean Ball and the Durham Debutante Ball? To answer that question, I examined materials in the archives of the Southern Historical Collection and the Duke Special Collections, including the Durham Debutante Programs from 1960-1980, the Terpsichorean Ball Handbook from 1975, photographs from the balls, and first-hand accounts from Durham residents during the time of the balls. I argue that there were some subtle changes: by the 1980s the role of marriage, motherhood, and the power

structure between males and females that had been prominent within the debutante balls in the 1960s diminished due to women delaying marriage and motherhood for college and a career and changing cultural values about the roles of men and women. Attitudes towards beauty and service shifted only slightly due to changing cultural values, however. Although the balls contained to support some patriarchal values and traditional gender roles, the balls made small adjustments to afford women more opportunities that feminists desired.

HUMAN SERVICES STUDIES

EXPLORING IN-COUNTRY PERCEPTIONS OF FAMILY-TEACHER PARTNERSHIPS AMONG COSTA RICAN MOTHERS

Jennifer K. Brouder (Dr. Judith Esposito) Department of Human Service Studies

As the Latino/ Hispanic population is the largest growing demographic in the United States, issues related to cultural competency affecting this population have become more and more pertinent. Because a large proportion of Latino/ Hispanic families in the United States have children within the U.S. school system, a cultural disconnect can exist between Latino/ Hispanic students, families, and the non-Latino/Hispanic teachers. This disconnect is often formed by perceptions of culture, cultural practices, and unmet expectations on either side. In order to better understand the cultural perceptions and expectations of Latino/Hispanic families coming into the U.S. schools system, we decided to look more closely at parent/teacher relationships in a Latin American country, specifically Costa Rica. By searching outside of the United States, we sought to capture the essence of these relationships and partnerships in order to gain a better cultural understanding of and sensitivity to the family-teacher partnerships that exist within our own country, while remaining sensitive to the fact that there is extremely significant in-group diversity within the Latino/Hispanic demographic. The purpose of this study is to explore the perceptions of the relationships and partnerships formed between students, families, and teachers within an in-country context. We conducted a focus group of five Costa Rican mothers of school-children, in which we discussed those relationships within both private and public school settings. The focus group produced a fruitful discussion in which we were given the opportunity to become familiar with the expectations, assumptions, and various roles and responsibilities that exist among family-teacher partnerships in San José, Costa Rica.

“I DEFINITELY WANT GRANDBABIES”: GUARDIANS OF ADOLESCENTS WITH PERINATAL HIV REFLECT ON DATING AND CHILDBEARING

Devon M. Clark (Dr. Cynthia D. Fair) Department of Human Service Studies

Currently there is a maturing cohort of youth perinatally infected with HIV (PHIV) who were not expected to live beyond childhood. Due to the more effective treatments, youth with PHIV are now living well into young adulthood and becoming parents. However, upon diagnosis early in life, many families were told that their child's prognosis was grave. Parents/guardians focused on the day-to-day management of medications, and doctor's appointments rather than preparing a child for the challenges of adolescence. Little is known about the experiences of guardians who are now in the position of providing support and guidance to their teen as they begin to explore

the developmental tasks associated with adolescence/young adulthood including intimate relationships, sexuality, and possible childbearing. Eighteen guardians (17 females) including biological mothers (9), relatives (5) and adoptive/foster mothers (4) who cared for adolescents with PHIV over the age of 14 were interviewed for the study. The semi-structured interview included questions on views regarding their adolescent's engagement in romantic relationships, sexual behaviors, and childbearing, as well as the guardian's knowledge of mother-to-child-transmission. Transcribed interviews were coded for emergent themes. Results indicated that the majority of guardians discussed sexual health and dating with their adolescent. However, guidance regarding disclosure of the adolescent's HIV status varied. Biological mothers and relatives cautioned against disclosure, contrary to foster/adoptive mothers. Most guardians wanted their adolescent to experience parenthood. Reasons affirming childbearing included the belief their child would be a good parent, indication that their child desired to be a parent, childbearing as a normative experience, and decreased HIV-related stigma. Knowledge of mother-to-child transmission was varied. Biological mothers and most relatives did not know the risk of transmission, as opposed to all foster/adoptive mothers who accurately stated the risk was 1-2%. The type of guardian influenced the content of the conversations and messages conveyed to their adolescent with PHIV. Therefore it is imperative to provide sexual and reproductive health education to guardians because they are a source of information for their adolescents who will be faced with reproductive decisions as they mature.

HIGH SCHOOL CAREER DEVELOPMENT PROGRAMS IN LOW-INCOME UNITED STATES AND SOUTH AFRICAN SCHOOLS: A CROSS-CULTURAL ANALYSIS

Eryn A. Gorang (Dr. Bud Warner), Department of Human Services

Though high school students from South Africa and the United States are moving in the same direction towards graduating and seeking a career, the steps they take in the career development process varies based on their cultural context. This research analyzed the career development process for low-income high school students in South Africa and the United States, students' post-graduation plans, and determined which career development practices serve students the best. A convenience sample was used to collect data. Surveys were administered to 130 students and five administration members. Twenty South African students, 15 United States students, and five administrations members were interviewed. Quantitative data from surveys was analyzed using SPSS while interviews were transcribed and analyzed using AtlasTI software. Research found that in South Africa, career development was focused exclusively within the Life Orientation classroom and was teacher-led, while in the United States, career development programs were more extensive and run by the school administration. South African students almost exclusively planned to attend a four-year university post-graduation (94.2%), while fewer students had the same ambitions in the United States (46.7%). Teachers, family members, and "self" were regarded as the most influential factors in career choice. Professions were particularly popular career choices in South Africa (75.7%), especially when compared to the United States (38.3%), since many U.S. students preferred trade careers. Over 90% of students in both countries stated they felt prepared to graduate and a majority felt confident that they would receive a job post-graduation. Overall, career options were limited for both sets of students and many faced challenges due to their racial and/or socioeconomic background. However, students in South Africa tended to be more idealistic in regards to their futures, despite limited choices and a countrywide high rate of unemployment, while students in the United States tended to be more practical with a clear-cut vision for what they hoped to do after graduation. Increased parental involvement and collaboration between teachers and

administration on career development programs were discussed as possible solutions to best support students in the future.

INDEPENDENT MAJOR

SOCIAL ENTREPRENEURSHIP VENTURE FOR HEALTH & HAPPINESS

Carling B. Andrews (Professor Samantha DiRosa, Dr. Beth Warner, & Dr. Barth Strempek)
Independent Major

I. Research Question: How to best structure a social entrepreneurship center fostering health and happiness?

II. Purpose: The project combines the ideas of social innovation, cultural entrepreneurship, community organizing, and social entrepreneurship to create an organization that fosters social change in our society around the ideas of holistic health, happiness, and community.

III. Research Methodology: The research project had two primary elements. The first included an exploration of current social issues, social innovation, social entrepreneurship, and business/non-profit planning. The second part was to conceptually develop an organizational business plan for a social entrepreneurship venture. This research included:

- Identifying relevant issues related to health and happiness
- Clarifying the purpose of the center
- Identifying relevant service and product offerings
- Conducting market research into the need and demand for center services
- Identifying existing and potential competition
- Developing financial projections including revenue forecasts and cost projections
- Determining the feasibility of non-profit status

IV. Conclusion: This research project resulted in an organizational plan that included multiple stages of growth. The initial stage, also to provide a proof on concept, will be a small cafe offering healthy food options, educational materials, meditation and mindfulness training, and community building experiences. The final stage is the creation of large-scale community centers offering a wide-range of services and experiences focused on improving individual happiness levels, health, as well as fostering connections to other individuals and the surrounding community.

V. Significance: With more than 10% of Americans taking antidepressant medication, an organization that fosters personal development and educates individuals on a holistic view of health and happiness has the potential to have a positive effect on the surrounding community as well as society.

INTERNATIONAL STUDIES

ABANDONING THE BOMB AND EMBRACING THE PEN: A COMPARATIVE CASE STUDY OF EUSKADI TA ASKATASUNA AND THE IRISH REPUBLICAN ARMY

Cleo L.C. Dan (Dr. Sean Giovanello) Department of Political Science

This project examines the process by which two Western European ethnonationalist terrorist organizations, Euskadi Ta Askatasuna (ETA) and the Irish Republican Army (IRA), transitioned from terrorism to nonviolence in the pursuit of nationalist policy goals. This project seeks to place both ETA and the IRA's political interaction within a larger framework of how terrorist organizations end, with the hopes of contributing to scholarship from a policy perspective. This study utilizes Alexander George's research methodology of "structured, focused comparison", which is a format widely utilized in foreign policy analysis and security studies (George & Bennett, 2005). This study finds that the most significant factors that influenced both the IRA and ETA to renounce violence include: the emergence and intensification of global terrorism, decreased public support, and the search for political legitimacy through the formation of pro-independence political wings. Both cases demonstrate the importance of the link between political participation and the subsequent decline of terrorist activity. These findings will potentially provide policymakers with policy-oriented suggestions on how governments can most effectively address domestic terrorism through democratic and exclusively peaceful strategies.

PINOCHET'S NEOLIBERAL LEGACIES AND THE CHILEAN STUDENT MOVEMENT

Caroline M. Henley (Dr. Michael Matthews) Department of International Studies

After the death of the Chilean dictator Augusto Pinochet (1973-1990) on December 10, 2006, the nation, although successfully transitioning into democracy, nevertheless continued to pursue the neoliberal economic policies first championed by his regime. Introduced as a radical experiment in hard-line neoliberalism, the government undertook a series of reforms that, among other things, privatized education. Supporters of these policies maintain that the country's GDP rose dramatically while opponents highlight the severe human rights abuses and the extreme economic inequality that characterized their society since its introduction. The Pinochet-era, then, has spurred a divided memory among Chileans and continues to cast a shadow over the present-day debates about the country's economic policymaking. My research explores how the conflicting memories of the Allende and Pinochet governments polarized Chilean society and how this polarization is reflected in the current student movement. Through my research, I examined primary sources related to the student movements such as manifestos, pamphlets, etc., as well as newspaper articles from both Chile and abroad covering the movement. Additionally, I utilized secondary literature to contextualize these materials. I analyzed the language and discourse used by student leaders and their opponents to investigate how the memory of the Pinochet-era contributed to the current grievances of the student movement. Finally, I framed the research using Pierre Nora and Steve Stern's theories of memory. Both argue that memory represents a subjective, often emotional, awareness of a still present past within a community. The implementation of these policies has left behind a collective, yet conflictive, memory of the Pinochet era. While supporters of neoliberalism focus on the economic advances the country experienced, opponents want to recover their rights of democratization, mobilization, and nationalization. Using the concept of "memory knots," symbolically powerful past events, helps explore the struggle to define a collective memory. The connection of the powerful events has explained the mobilization of student action. Conclusively, the resurfacing of the student movement in 2011 defined the university as a memory knot of a polarized society. Student protest demand a new framework of education and constitutional reform in an attempt for social mobility.

MANIFESTATIONS OF MAPUCHE CULTURAL RESISTANCE IN CHILE

Mackenzie R. Mann (Dr. Michael Matthews), Department of International Studies

Culture creates and enforces dominant ideologies, which legitimize the power and authority of the state. At the same time, culture can serve as a form of ideological resistance that challenges dominant discourses and defies state hegemony. Through cultural venues, subaltern peoples have the power to weaken the authority of dominant groups, shape resistance movements or instigate open confrontations of defiance, or even work to overturn state rule. The Mapuche, Chile's most prominent indigenous people, are recognized for their legacy of resistance. While Chile's democratic transition in 1990 created a space for the Mapuche to make demands and express opposition to state policies, they continue to face state repression and violence, ethnic persecution, and socioeconomic marginalization. Security forces have militarized Mapuche communities and have committed acts of violence, including murder, against their residents; the government has authorized the suppression of marches and protests and has failed to uphold international indigenous rights conventions; and the media has portrayed the Mapuche and their actions as "terrorist" or "subversive." How have Mapuche artists responded to these injustices, and how do they express a collective sentiment of resistance through their work? Are manifestations of cultural resistance effective tools of the Mapuche movement? This study addresses these questions, examining Mapuche cultural resistance from Chile's democratic transition to the present. Incorporating relevant literature on the topic, interview responses, and examples from contemporary poetry, hip-hop, and theatre, this research considers how Mapuche cultural resistance has challenged dominant narratives about indigenous identity, state indigenous policies, Chilean colonization of the Mapuche, neoliberal globalization, and the Mapuche movement. It will show how the Mapuche, through such cultural venues, have articulated, interpreted, and confronted conditions of oppression and injustice, and how they have been able to question state authority, legitimize their people's demands, and undermine historical processes of homogenization and forgetting. The conclusions of this project will offer insight into how culture can serve as a force of nonviolent resistance for subaltern groups, including other indigenous peoples in the Americas, and will address the scholarly lacunae on the subject by identifying the broader themes of resistance expressed through Mapuche cultural venues.

ACHIEVING THE SENEGALESE DREAM: TRANSNATIONAL NARRATIVES OF SENEGALESE MIGRANTS

Omolayo N. Ojo (Dr. Tom Mould) Department of International Studies

Evidence of migration can be seen throughout the West African city of Dakar, Senegal. As an active sending nation, many people in Dakar have family or friends that reside in another country. While research has been conducted on the transnational space that is created by these migrants, the narratives that are shared within the space have hardly been explored. Using ethnographic methods of participant observation and semi-structured interview, this research examines the stories about migration that are shared in Dakar by and about Senegalese migrants. In-depth conversations were held with 23 people in Dakar who lived abroad or have family and friends abroad. Open coding was then used to identify the themes, patterns and functions of these narratives in the lives of migrants and their families. Initial analysis points to themes surrounding migration as a means of achieving "The Senegalese Dream"—material wealth, public display and sharing of that wealth, marriage, and respect within the community any narratives describe

going to “El Dorado”—referencing any Western nation—as a particularly effective means of achieving this dream. While some of these themes have been briefly identified in previous literature, my research also suggests a growing counter-narrative tradition critiquing the unrealistic expectations people have about Western nations. These narratives depict a “naïve” populace easily duped by unrealistic expectations. Related to the high expectations for success abroad is the lack of information shared by migrants with their families about the specific details of their lives. Coupled with high unemployment, these narratives of El Dorado contribute to a culture of Senegalese people, particularly young men, desperately trying to emigrate in search of a better future for themselves and their families. The dominant narrative also affects migrants who feel that they cannot return home until they have conformed to the story and can show outward signs of working towards “The Senegalese Dream.” Accordingly, this research reveals the importance of archetypal and counter narratives about migration as they highlight how people navigate idealized and realized expectations for migration in an increasingly transnational world.

WHY TREATIES DIE: A STUDY OF UNITED STATES SENATE REJECTION OF THE RATIFICATION OF MULTILATERAL TREATIES.

Julia E. Schast (Dr. Sean Giovanello), Interdisciplinary Department of International Studies.

On December 4, 2012, the United States Senate took a vote on whether to provide advice and consent to ratification of the United Nation’s Convention on the Rights of Persons with Disabilities (CRPD). By failing to receive the required two-thirds majority of votes in favor of its passage, the resolution faced outright defeat and the CRPD became the fifth multilateral treaty ever to be rejected by a vote in the United States Senate. Prior to this vote, the two most recent multilateral treaties rejected by the Senate were the Comprehensive Nuclear Test Ban Treaty (CTBT) and the Law of the Sea Convention (LOST). The defeat of the CTBT in 1999 marked the first formal rejection of an arms control treaty. The rejection in 1960 of LOST’s Optional Protocol concerning dispute settlement has contributed to the treaty’s failure to achieve ratification since then despite subsequent revisions. As multilateral treaties become more common in today’s globalized world, it is important to understand the factors that cause these treaties to face delay and defeat in the United States Senate. To answer the question of why the Senate rejects multilateral treaties, this paper relies on qualitative case-study research of the ratification debates for the CTBT and LOST. These cases focus on the effects of the following variables: international events, the role of the President, the nature of executive-legislative relations, the internal structure of the Senate, and the role of public opinion and interest groups. In particular, this paper utilizes the method of structured, focused comparison to present a comparative analysis of the reasons behind Senate rejection of the CTBT and LOST. This analysis suggests that the most significant factors in obstructing ratification are the lack of active Presidential advocacy, the impact of partisanship on the relationship between the President and the Senate, and the influence of individual Senators holding key leadership positions who oppose ratification. These results indicate that, if politicians apply the policy relevant generalizations drawn from this study, they can shape the future ratification processes of multilateral treaties.

REWRITING THE PAST: HOW THE MEMOIRS OF THE EX-RED BRIGADES CONTRIBUTED TO THE COLLECTIVE HISTORY OF THE ANNI DI PIOMBO

Lauren M. Speranza (Dr. Laura Roselle) Department of International Studies

In order to combat today's terrorist organizations and the fallout associated with them, it is necessary to understand the histories of terrorism and how they are constructed. This research highlights the function of terrorist autobiographies in revealing their motivations, justifications, regrets, and mistakes, as well as a tool to re-write history to cope with the aftermath of terrorism. Examining the legacies of four principle figures of the Italian Red Brigades (Alberto Franceschini, Renato Curcio, Mario Moretti, and Barbara Balzerani), this study investigates the extent to which the perspectives of these former terrorists were integrated into the collective history of the period, the *anni di piombo* (1968-1985). Comparing their self-depictions to media portrayals, through a qualitative content analysis of their memoirs and coverage of their ideas in a prominent Italian newspaper, the research illuminates the strategy of public self-reflection for ex-terrorists. The study reveals that the former terrorists were able to communicate their own ideas through the media; however, the degree to which the perspectives were actually integrated into history differed based on the individual, their goals, and the content of the memoirs. Sentiments of remorse, regret, and the desire for re-integration greatly increased positive media coverage and public acceptance, allowing a larger contribution to history. The exploration also sheds light on how media tendencies and biases influence the conception of history.

MANAGEMENT

STRATEGIC MANAGEMENT DECISIONS FOR PROFIT MAXIMIZATION IN THE MOTION PICTURE INDUSTRY

Danielle A. White (Dr. Matthew Valle) Department of Management

The purpose of this research is to develop and test a model to predict film production revenue and profit. Implications for film production studio portfolio selection processes will be discussed. Given the large number of film projects that studio executives must vet for selection within the studio portfolio, and the large budgets at stake to produce them, understanding what makes a film successful proves an important area for study. Film success has previously been measured by box office revenue, but profit is a more accurate measure of success in business terms. By expanding on previous revenue research, the development of a profit prediction model will allow studio executives to select film projects, and portfolios, with a higher likelihood of profit maximization. The paper details the antecedent factors purported to lead to film revenue and profit. Hypotheses are offered regarding the impact of various antecedent factors, and the model was tested using archival data from industry sources. Analyses include a description of the impact of antecedent factors on revenue and profit for a sample of films produced during a 4 year period. Implications are offered regarding the development of more robust project portfolio selection models for film studios. Data (N=374) gathered from archival industry sources were subjected to regression analyses. Data includes information on eleven antecedent factors proposed as part of the prediction model. Subsequent analyses review profitability models by sub-groups (e.g., major studios vs. independent studios) and the differences between an industry focus on revenue versus profit. The research has indicated a disparity between predictors of revenue and predictors of profit. The antecedent factors correlated to profit maximization are summer release date, audience reviews, and award recognition. The regression analysis defined a model which can be used for future profit prediction. Using the model, the studios were ranked by how closely their films followed the model. Data on what was correlated to the three profit

indicating factors were collected and used to explain how to continue the trend of profitable films. While previous research have focuses on antecedent factors related to revenue, the factors that predict profit are more specific and are a better indicator for success.

MARKETING

K-12 EDUCATIONAL PUBLISHING: THE PRESENT AND FUTURE OF A CHANGING INDUSTRY

Nathaniel C James (Dr. John Burbridge) School of Business Department of Marketing

The essential question addressed by my research is, what will the K-12 educational materials market look like in twenty years? This study is significant because it provides an in-depth analysis of a growing and rapidly changing sector of the economy. Furthermore, this is an industry that impacts every child that goes through the K-12 educational system. The findings from this study will prove useful to industry insiders, educators, and parents alike, as it will eliminate much future uncertainty and allow for better decision making. The methodology used to complete this project was comprised of both secondary and primary research. The secondary research involved a rigorous analysis of various industry journals, trade publications, academic articles, news articles, and several other sources. My findings resulted in a detailed analysis that included a Porter's Five Forces model as well as a Structure-Conduct-Performance analysis. The primary research in the study involved interviewing a panel of experts comprised of educators, administrators, and industry insiders. Utilizing the results from both my secondary and primary research, I then created a scenario describing the future of the industry. This scenario was developed using a well-known corporate strategic planning technique known as scenario planning. The resulting scenario was then critiqued by the panel of experts, and then revised to make a final version. Some of the major findings of the project are: the K-12 market for educational content will become almost totally digitized in the next 20 years, with few traditional print materials lingering where absolutely necessary. This will result in an overall lowering of entry barriers that will present opportunities for new entrants to the market. Niche firms and large technology firms previously unaffiliated with the industry will enter the marketplace, and the large multinational publishers that presently dominate the industry will respond with strategic mergers and acquisitions to realign their organizations.

MATHEMATICS AND STATISTICS

HIGH-RESOLUTION FRACTAL IMAGE COMPRESSION

Todd M. Calnan (Dr. Jeff Clark) Department of Mathematics and Statistics

Fractal patterns are extremely common in nature. By dividing an image into smaller pieces, we can compare the pixel values of these smaller pieces and exploit the fractal properties of the image as a way of digitally compressing the original image. This compression allows for faster transportation of very large images. Current methods of fractal image compression sacrifice

resolution for compression speed. We are developing a method that favors resolution for images such as medical X-rays or paintings that demand a high degree of accuracy. This is done with a program we have written using Python based on previous research that focused more on compression speed.

DEGREE 12 2-ADIC POLYNOMIALS WITH MASS 3

Nicole Miles, (Dr. Chad Awtrey), Department of Mathematics and Statistics

First introduced by mathematician K. Hensel at the end of the 19th century, p -adic numbers have become an important topic in mathematics research, with applications to physics and cryptology (the making and breaking of codes). Of particular interest to current mathematicians are the arithmetic properties of the solutions to polynomial equations that have p -adic coefficients. These arithmetic properties are encoded by an object known as the polynomial's Galois group, which is named after mathematician E. Galois. Current research has produced an understanding of the Galois groups of p -adic polynomials up to and including degree 11. Previous research by Elon undergraduate Chris Shill '14 extended these results by studying a special collection of degree 12 2-adic polynomials; i.e., those whose mass is either one or two; the mass of a polynomial is a measure of the size of the polynomial's Galois group (the higher the mass, the larger the Galois group). Consequently, our work focuses on degree 12 2-adic polynomials with mass three. During the course of our research, we have accomplished the following: (1) Using the leading software for p -adic computations, we created a collection of algorithms to gather information about our degree 12 2-adic polynomials; (2) We used these algorithms to compute important data about each of our polynomials; (3) Finally, we used methods of Galois to determine each polynomial's Galois group.

CENTRALIZERS AND GALOIS GROUPS OF P-ADIC POLYNOMIALS

Nakhila S. Mistry (Dr. Chad Awtrey) Department of Mathematics and Statistics

Fix a prime number p and a positive integer n . An important problem in mathematical research is to completely classify the arithmetic properties of degree n polynomials, where the coefficients of the polynomials are p -adic numbers. P -adic numbers are closely connected to prime numbers which are involved in cryptology, or the making and breaking of codes. To classify these properties, researchers are interested in determining the following:

- (1) the number of "distinct" polynomials of degree n (this number is necessarily finite by a classical result);
- (2) the Galois group of each distinct polynomial arising from the previous step (the Galois group is an algebraic object that encodes arithmetic information concerning the roots of the polynomial).

Previous researchers have used ad hoc techniques to determine Galois groups of polynomials for degrees n , where n is less than or equal to 14, but they only considered one degree and one prime at a time. For example, a group of Elon researchers has recently determined an algorithm for computing Galois groups of degree 12 2-adic polynomials as well as an algorithm for computing the Galois groups of degree 14 2-adic polynomials. It is important to note that the algorithms used in each case were different. In our work, we have used ideas from Galois theory to develop a technique for computing Galois groups that is independent of both the degree and the prime,

which is of particular interest to researchers in this area. We illustrate the utility of our technique by discussing its application to Galois groups of degree 15 p-adic polynomials. Our research uses implementation of software in order to apply our results to previously unknown cases in this area.

A MODIFIED RANDOM WALKER RANKING SYSTEM FOR NCAA MEN'S DIVISION I BASKETBALL TEAMS

Nakhila S. Mistry (Dr. Todd Lee) Department of Mathematics and Statistics

Every year around mid-March millions of people in America “fill out a bracket” for the NCAA Men’s Division I Basketball Tournament. This tournament, also known as March Madness, is played each spring in order to determine the National Champion. Before March Madness starts, 68 teams are placed into a single-elimination bracket based on their ranking and region. The 32 Division I conference champions receive automatic bids into the tournament, while the 36 other teams are awarded seeds based on an NCAA selection committee. The bracket is set up so that lower ranked teams play the higher ranked ones. Because there are 68 teams in the tournament, there are 2^{67} ways that the tournament could play out. That number of pennies would carpet the surface of the earth ... twice! No one so far has been able to pick a perfect bracket mostly due to the likelihood of upsets. Lower ranked teams beat higher ranked teams because rankings fail to appropriately take into account current win trends of lesser-known teams. Our research aims to determine a more reliable method of ranking the NCAA Men’s Division I Basketball Teams that better reflects the outcome of the national championship tournament. Our methodology is based on a relatively new ranking system created for Division I Football teams. This ranking system, the random walker method, uses a Markov process where every team has fans, but each fan is constantly changing allegiance according to randomly picked games played by their current favorite team. When the fan picks a game, they will decide whether or not to change allegiance, weighting their decision towards the team that won. We modified this ranking system by both taking into consideration score difference and how long ago the game was played. These considerations were parameterized and optimized using past seasons. The final results will be seen with the upcoming tournament.

DEGREE 5 POLYNOMIALS AND THEIR SOLVABILITY BY RADICALS

Christopher R. Shill, (Dr. Chad Awtrey), Department of Mathematics and Statistics

Finding solutions of polynomial equations is a central problem in mathematics. Of particular importance is the ability to solve a polynomial “by radicals”; i.e., using only the coefficients of the polynomial, the four basic arithmetic operations (plus, minus, times, division), and roots (square roots, cube roots, etc.). For example, consider the quadratic polynomial equation, $ax^2 + bx + c = 0$. The existence of the well-known quadratic formula proves that all quadratic polynomials are solvable by radicals. In addition, degree three polynomials and degree four polynomials are also solvable by radicals, as shown in the 16th century. However, the same is not true for all polynomials. In the first half of the 19th century, mathematicians proved that not every degree five polynomial is solvable by radicals. Therefore, we are left with the following question: how do we determine which degree five polynomials are solvable by radicals? To answer this question, we study an important object that is associated to every polynomial. This object, named after 19th century mathematician Evariste Galois, is known as the polynomial's

Galois group. The characteristics of the Galois group encode arithmetic information regarding its corresponding polynomial, including whether or not the polynomial is solvable by radicals. In our work, we therefore focused on determining an algorithm for computing the Galois group of a degree five polynomial. This extends and generalizes previous research of D. Dummit, who developed an algorithm for determining whether a degree five polynomial is solvable by radicals or not. Using the methods of Galois along with the leading software package for Galois group computations, we designed and implemented a new algorithm for computing the Galois group of a degree five polynomial.

GALOIS THEORY OF DEGREE 14 P-ADIC POLYNOMIALS

Erin K Strosnider, (Dr. Chad Awtrey), Department of Mathematics and Statistics

The mathematical area of Galois theory evolved from the ideas of French mathematician Evariste Galois. These ideas revolutionarily combine two seemingly unrelated areas (field theory and group theory) to analyze the structure of the roots of polynomials. Consequently, research in Galois theory has many applications to other areas of mathematics and science, making it an important and vibrant area of current research. One application of Galois theory is to the study of p-adic polynomial equations. The p-adic numbers are based on the prime numbers (i.e. 2, 3, 5, 7, 13, 17, etc.), and their applications range from cryptography to quantum physics. Current research has studied the Galois theory of p-adic polynomial equations up to degree 11, with Elon undergraduates analyzing several cases within degree 12. Therefore, our research focuses on degree 14 polynomial equations (degree 13 turns out to be straightforward precisely because 13 is a prime number). The most interesting cases arise when the prime p divides 14. Consequently, we are primarily concerned with degree 14 polynomials with 2-adic and 7-adic coefficients. We have employed the following methodology: (1) We used advanced software to determine the number of distinct polynomial equations. (2) We developed algorithms to compute important arithmetic properties of these polynomials. (3) Finally, we analyzed the data using Galois theory. Our research has resulted in the following outcomes. We have found 590 distinct degree 14 2-adic polynomial equations and 654 distinct degree 14 7-adic polynomial equations. Using Galois theory, we have classified each of these polynomials based on the structure of their roots. As such, our work has resulted in two research papers, and both have been accepted for publication in a high-quality, peer-reviewed mathematics research journal.

SURVEY ADMINISTRATION AND RESULTS FOR FRIENDSHIP ADULT DAY SERVICES

Kimberly C. Peterson (Dr. Kirsten Doehler) Department of Mathematics and Statistics

My research was conducted for a service-learning course, which focused on survey sampling methodology. For this course, I partnered with a local organization titled Friendship Adult Day services (FADS), an adult day program for aging adults in the Burlington community. FADS has recently experienced a decline in enrollment. To combat this decline, FADS is considering adding services that would be desirable to potential participants as well as a potential location change. A survey was designed, administered, and results were analyzed in order to aid the organization in making these decisions. To reach the target population, the survey was distributed through various means such as door-to-door at Burlington Housing Authority, church newsletters, and emails to Elon faculty. Goals of the survey included being able to provide FADS with information on what services are most popular among the community and to provide

the organization with data on what affect a location change would have on enrollment. Of the potential services that could be added, an on-site nurse was the most favored followed by a walking-path, which indicated FADS should place its highest consideration on those services. As a location change would allow for interaction with a day care but a potential increase in driving time, we looked at the results to see if the interaction was desired within the community and how far individuals were willing to drive. It was discovered that interacting with children was the least favored additional service and only 6.5 percent of people were willing to drive more than 30 minutes. As a result, FADS was advised against a location change.

MUSIC

A COMPREHENSIVE ANALYSIS OF ARVO PÄRT'S MAGNIFICAT

Gabriel M. Estes (Dr. Coleman) Department of Music

Arvo Pärt's creation of the minimalist style, tintinnabuli, was perpetuated by his dissatisfaction with the stylistic trends of 20th century contemporary classical music. Pärt employs only two unique voices within his music, achieving a harmonic complexity that challenges the necessity of meaningful music to be technically advanced. This project examines Arvo Pärt's choral work *Magnificat*, using analytical processes and theories concluded by researchers including John Roeder's "Transformational Aspects of Arvo Pärt's Tintinnabuli Music," to reach an understanding of tintinnabuli's characteristics, emotive intentions, and tangible presence in the composer's music. I will reveal the differences between Roeder's recent understanding to a past research paper (1996) by Allen Simon who discusses the structure and musical characteristics of *Magnificat* in "Deterministic Techniques in Arvo Pärt's *Magnificat*." In effect, this research project contributes a major work of Pärt's to the preexisting analyses conducted by other authors and scholarly articles. Through examination and in-text musical examples I share an understanding of Pärt's unique compositional techniques, philosophies of composing authentic music, and the meaningful implication that a composer can create profound musical ideas using minimalism. As sources, this project uses interviews between musicologists and Pärt (Arvo Pärt in Conversation, 2012), academic analyses of his notable works (Roeder, 2011), (Zivanovic, 2012), among others, essays dissecting the distinct musical style and examining his most significant compositions (The Cambridge Companion to Arvo Pärt, 2012), and refers to videos filmed of Pärt's daily life. A creative aspect accompanies this research, applying these methodological findings necessary for me to compose a piece in the style of tintinnabulation.

Keywords: Arvo Pärt, tintinnabulation, minimalism, composition, *Magnificat*, Roeder

¡QUÉ VIVA EL RITMO!: EXPLORING THE AFRICAN RHYTHMIC FOUNDATIONS OF AFRO-CUBAN MUSIC

Nicole E. Payne (Dr. Victoria Fischer Faw) Department of Music

The development of Afro-Cuban culture, a unique blending of Spanish and African elements, became a force in the development of Cuban identity in the 19th century. During this time period, Cuba became the foremost center for the importation of slaves in the Caribbean (Fiol and Manuel, 2007). There is much scholarly debate as to how much of the original African culture was retained after the traumatic experience of the Middle Passage and the relocation to a new

continent in an enslaved lifestyle. What remained of their culture was merged and incorporated into the predominant Cuban *criollo* culture (Nodal, 1983.) Black religions in particular became a means of saving cultural elements including dances, songs, and oral traditions. The Africans retained their culture through their sacred *batá* drums, rhythms, and *cantos* used in religious ceremonies (Fiol and Manuel, 2007). Through the process of syncretism, African culture merged with the culture of Spanish origin creating the fundamentals of what would become Afro-Cuban culture. One of the most important representations of oppressed cultures is music. Afro-Cuban music developed as a unique combination of the Spanish and African musical elements, and served as a means for the preservation of African and Yoruba culture as well as foundation for the larger Afro-Cuban culture. This study will focus on the African rhythmic origins of Afro-Cuban music. Through the isolation and performance of secular and non-secular rhythms, along with a study of their cultural context, this study will explore the extent of the African foundations of Afro-Cuban music, and how it became the basis of a new, expressive, and complex musical tradition.

FRANZ LISZT AND THE BATTLE AGAINST TONALITY

Wesley I. Rose (Dr. Victoria Fischer Faw) Department of Music

Like many of the great Romantic composers of the 19th-century, Franz Liszt (1811-1886) often embedded his own biographical context into his programmatic music. Liszt's solo piano piece *Unstern! Sinistre, Disastro* of 1885 exemplifies the height of musical innovation and personal narrative. As part of a comprehensive undergraduate project on the music of Liszt, the central purpose of this research is to identify what led Liszt to compose *Unstern*. Combining biographical evidence with a theoretical study of this work is essential for a complete interpretation. Theoretical study of Liszt's late works, which in many ways summarize his compositional development and life-story, shows an innovative composer far ahead of his time. Putting these innovations in a biographical context reveals the influences that led to the striking compositions of Liszt's old age. Arnold Schoenberg's "Franz Liszt's Work and Being" (1911) describes Liszt in history as "one of those who started the battle against tonality, both through themes which point to no absolutely definite tonal center, and through many harmonic details whose musical exploitation has been looked after by his successors." This battle and legacy is clearly observable in *Unstern*. Structural, harmonic, and motivic analysis of *Unstern* was completed in order to identify and interpret its innovative qualities. *Unstern*'s structure dismantles the predominance of the octave divided asymmetrically in music, which was the essential harmonic characteristic of music since the time of J.S. Bach in the Baroque period. Music historians and theorists traditionally associate the shift from asymmetry to symmetry with the music of the early 20th-century. A symmetrically organized tonal plan in *Unstern* shows Liszt well ahead of his time in 1885. A review of Liszt's letters and his students' diary entries from 1885 also contributed to a full view of *Unstern*'s biographical context. This piece summarizes his personal depression and his inward turn to religion while facing death. With *Unstern*, Liszt synthesized his lifelong struggle for religious solace from a world in which he was widely known as a charlatan piano virtuoso. Simultaneously, he set the stage for a new era of musical innovation in the 20th-century.

BELLS AND WHISTLES: TRAIN REPRESENTATION IN CONTEMPORARY CLASSICAL MUSIC

Michelle A Warshany (Dr. Omri Shimron) Department of Music

My project sought to analyze the ways in which train sounds have been incorporated into musical compositions and to investigate why composers are attracted to the idea of trains. I selected three train pieces: *The Great Train Race* by Ian Clarke, *Ghost Train* by Eric Whitacre, and *Different Trains* by Steve Reich. Using aural and score analysis, I observed the following parameters: melodic structure, harmonic structure, rhythmic structure, timbre, and musical texture. Additionally, I identified which specific train noises were used and how the composer chose to notate them. I began with aural analysis because of the sonic nature of the train. Trains have specific sounds that are easily identifiable, especially in comparison with compositions of a more abstract nature. While listening to a piece, I noted the kinds of sounds I heard, and the times at which they occurred, paying attention to conspicuously train-like sonorities. When I analyzed the score, most of my findings from the aural analysis were confirmed. I discovered composers tended to use unusual performance indications and extended techniques to notate sounds both within and beyond the traditional notation system. While each of the three pieces I studied revolves around the same idea, the composer's style is evident in the way he conveys these sounds. Steve Reich exemplifies Minimalism in music, a style he pioneered in the 1960s. The work features voice recordings of passengers reflecting on their train experiences from the 1930s-40s against a backdrop of continuous string quartet accompaniment. Eric Whitacre uses 20th/20st century techniques such as cluster harmonies, as well as nontraditional instruments, such as the waterphone, to imitate train sounds. Ian Clarke uses extended flute techniques. In his work, the performer is asked to employ techniques such as multiphonics and singing and playing, to achieve the train sound on one instrument. As a result of my analysis and research, I concluded that dissonance as it pertains to train sounds was and is an important part of 20th/21st century music. Trains possess inherently dissonant musical traits such as the whistle, wheels, and steam. These sounds make trains a perfect vehicle for contemporary compositions.

ESTABLISHING A MUSICAL DIALOGUE WITH NON-VERBAL EXCEPTIONAL CHILDREN

Brooke E. Winters (Dr. Victoria Fischer Faw) Department of Music

Music therapy is a highly recognized form of therapeutic enrichment and treatment for exceptional children. When working with this population, music therapists strive to reach three main goals: to achieve awareness of the self and the environment, to establish communication to express that awareness, and to develop a skill that is meaningful to others (Kessler, 1967). A smaller population within the label of "exceptional" includes non-verbal children, or children who do not verbalize. In working with the non-verbal population, establishing a form of communication is both especially challenging and yet especially essential; communication development becomes the number one priority for technicians working with this population. Through a survey of the literature of the use of music therapy with this population, the concept of establishing a musical dialogue emerged. Establishing a musical dialogue provides a unique avenue for these children to communicate. This presentation will investigate three different methods used by music therapists to establish a musical dialogue—dialogue through client initiated movement and vocalization, dialogue with a specific instrument, and dialogue through improvisation—and will explore their documented effects on individuals of this population.

PERFORMING ARTS

COMMEDIA DELL'ARTE – AN ORAL HISTORY AND ITS INFLUENCE

Connor M. Hamilton (Professor Jack Smith) Department of Performing Arts

I investigated the impact and influence of *commedia dell'arte* on contemporary theater and other popular entertainment forms. This question interested me because of the rich history of *commedia dell'arte*, with its origins in the Italian Renaissance. It was significant to me to find that *commedia dell'arte* was heavily influenced by the art, philosophy and culture of the Renaissance. My research helped me recognize what those influences were, and to then to try to extrapolate what form *commedia dell'arte* might take in the future of the entertainment industry. My research fell in to three primary areas dealing with *commedia dell'arte* as a performance art form. First, the use of stock characters as the building blocks for the largely improvised scripts. Secondly, the use of specific character masks that allowed experienced audience members to recognize the character types and their individual traits. Lastly, I explored the physical, comedic bits – known as *lazzi* – which has helped to define the characters and has created a model for modern improvisational comedy. All of these areas of research have direct ties to many modern forms of popular comedic entertainments. In my research findings, I discovered that *commedia* has had an enormous influence on modern entertainment and that *commedia* elements have stood the test of time. For example, modern television situational comedies, such as *How I Met Your Mother* and *The Big Bang Theory*, have created characters with persistent *commedia* stock character qualities. They have also employed the *lazzi*-type physical movements within the scenes. Considering the critical acclaim of these programs, and their likelihood for broadcast syndication, it stands to reason that *commedia dell'arte* themes will live on for now and continue to strongly influence the future of comedic entertainments.

PHYSICS

HEATING EFFICIENCY OF NANOPARTICLES FOR MAGNETIC HYPERTHERMIA

Matthew D. Bausch (Dr. Ben Evans); Department of Physics

Magnetic hyperthermia offers new potential for treatment of cancerous tumors. In this therapy, a biocompatible magnetic material is localized inside the body, then heated *in vivo* upon exposure to a high-frequency magnetic field. The resulting thermal energy ablates tumor cells with minimal damage to surrounding tissue. The goal of most studies dealing with hyperthermia is to optimize the heating efficiency of an ensemble of magnetic nanoparticles. Heating efficiency is, in general, very sensitive to many parameters including both the physical and magnetic properties of the particles. However, optimizing the properties of the *individual particles* is not the only consideration for hyperthermia. Recently, an emphasis has been placed on the role of *collective behavior*. In particular, when particles become concentrated, inter-particle interactions can have a significant effect on heating efficiency. However, studies which examine the effects of particle concentration often do not control for aggregation of the nanoparticles, so these studies vary widely in their conclusions. In contrast to most studies, we have the ability to isolate

the effect of concentration on heating efficiency. We use a novel magnetic-nanoparticle/silicone composite material which is homogenous at the nanoscale, and can be produced with nanoparticle concentrations varying smoothly from 0-50% wt. (0-17% v.) without any particle aggregation or agglomeration. The small-scale homogeneity of our iron oxide nanocomposite enables us to isolate the effect of concentration from clustering behavior. We calculate heating efficiency for samples of varying concentration using an induction heater and infrared thermometer and determine heating efficiency as a function of nanoparticle concentration. Our data show that there is a local maximum value for heating efficiency, and that as the concentration becomes high there is a leveling effect. Also our data show that the behavior at the low end of the concentration spectrum is very difficult to determine using our method, as such a small amount of material is present. This data set contributes to a better fundamental understanding of concentration and collective behavior affects on heating efficiency of magnetic materials, resulting in better and more effective use of materials in magnetic hyperthermia therapy.

DIRECT MEASUREMENT OF MAGNETIC FORCES EXERTED ON MAGNETIC MICROBEADS

David T Han (Dr. Benjamin A. Evans) Department of Physics

Magnetic microbeads hold a number of useful applications especially in the field of medicine. These include the delivery of drugs to different areas in the body, targeted hyperthermia therapy for treatment of cancerous tumors, and magnetic pulling experiments or separations which require large magnetic forces. We have fabricated our own kind of magnetic microbeads which are more magnetic than the commercially available ones and therefore will improve their utility in all these applications. The goal of my current research is to demonstrate that our microbeads (made from a unique magnetic material called FFPDMS) will enable a larger magnetic force than the commercially available products. To achieve this goal, I tested a control group (MyOnes and M-280s manufactured by Dynal), which represented the commercial beads, and our experimental beads (FFPDMS). Both groups were placed in a water solution and pulled with a fixed magnet while being recorded with video microscopy. Using video tracking software, I was able to measure the average speeds of each group of spheres as they were pulled with a magnet. These measured speeds were used to calculate the magnetic forces, allowing me to compare the efficacy of our microbeads to that of leading competitors.

BIOSENSOR FOR POINT-OF-CARE MEDICAL DIAGNOSTICS

Jaden Wilkes (Dr. Benjamin Evans) Department of Physics

Point of Care (POC) diagnostic devices are biosensors which enable a clinician to provide a rapid diagnosis at the time and location of care. In this work, I have designed a new type of biosensor which consists of an array of micro-posts surrounded by an aqueous solution of magnetic microbeads. The device is designed such that the presence of a selected analyte will cause the beads to chemically bind to the posts, which results in a detectable optical signal. As a proof-of-principle, I designed a device to detect streptavidin because the streptavidin to biotin linkage is very well-known, and is one of the strongest non-covalent linkages in biology. This biosensing mechanism is not as sensitive as many in development today, but since it is easily generalizable and easily readable it would be ideal for point-of-care medical diagnostics in remote areas without access to diagnostic laboratories.

POLITICAL SCIENCE AND PUBLIC ADMINISTRATION

ATTITUDES ON IMMIGRATION IN NORTH CAROLINA: TESTING THE THREAT AND CONTACT HYPOTHESES

Whitney R. Adrian (Dr. Kenneth Fernandez) Department of Political Science

This study examines the relationship between public attitudes on immigration and demographical conditions in the United States. Using North Carolinians as the sample population, the study utilizes survey data from the Elon University Poll to merge individual level information with county data collected from the U.S. Census, the North Carolina Secretary of State, and the North Carolina Department of Agriculture and Consumer Services. The study uses this multi-level information to test the threat and contact hypotheses in order to determine how increased interaction with immigrants affects individuals' attitudes towards them. The threat hypothesis analyzes the social impacts that an increase in immigration brings with it that create feelings of animosity among natives who feel that their opportunities to prosper will be hindered by foreigners. The contact hypothesis argues that an increase in contact with minority groups helps people to overcome negative stereotypes. By comparing individuals' answers to certain questions with information about the county in which they live, the study aims to determine which contextual factors may lead to alternative perspectives on immigration: when increasing diversity leads to increased hostility and when it leads to more tolerant attitudes. Although our systematic review of the existing literature from 2000 to 2010 demonstrated that the scholarship has not reached any consensus between the threat and contact hypotheses, our results so far have found evidence for the threat hypothesis. In all, our results show that a person's social, political, and economic context plays a significant role in how they feel about immigrants.

AN EVALUATION OF GUBERNATORIAL RHETORIC IN THE SOUTH: HOW DO GOVERNORS CONVEY POLICY ISSUES?

James Carter (Dr. Sharon Spray) Department of Political Science

Governor George Wallace once proclaimed, "If any demonstrator ever lays down in front of my car, it'll be the last car he'll ever lay down in front of." While crude, his statement embodies the direct rhetoric that Governors' implore in State of the State addresses. Governors have long used their annual address to provide a synopsis of the state and to present their policy initiatives' to the public and legislature, their narrative is also strategically conveyed. Adlai Stevenson, former governor of Illinois, mused "You will find that the truth is often unpopular and the contest between agreeable fancy and disagreeable fact is unequal. For, in the vernacular, we Americans are suckers for good news." That could explain why governors implore strategic rhetoric and selection of policy issues given a variety of circumstances. This research builds on existing literature, by seeking to understand and establish a connection between the policy proposals expressed in Governors' State of the State speeches and the degree of rhetoric associated with their respective proposals. To date, there have been few studies that systematically explore the language that Governors use when setting their states' agendas. This study's primary research question is, "What factors best explain the use of rhetoric and agenda setting by Governors during State of the State speeches? Using content analysis, this study analyzes 99 Southern Governors' State Addresses delivered 2001-2007. Speeches are rhetorical coded for: generic

rhetoric, policy rhetoric, credit taking, valance statements, policy proposal, metaphor, religious reference, and symbolism/stories. In addition to coded rhetorical categories, statements will also be tallied by developmental (taxes, education, economic development) and redistributive policies (senior citizens, and healthcare). The study hypothesizes that under conditions in which governors have a slimmer majority governors present fewer policy proposals and will increase policy rhetoric and valance rhetoric. Additionally, this research hypothesizes that the content of a Governor's speeches is directly attributable to the historical policy liberalism of the state. Specifically, Governors from higher policy liberalism states will favor redistributive policy (healthcare and senior citizens) agendas and Governors from lower political liberalism states will favor developmental agendas (education, taxes, and economic development).

HUMAN RIGHTS NORM CHANGE: LGBT RIGHTS IN A WIDER EUROPE

Ashley M. Fowler (Dr. Safia Swimelar) Department of Political Science

Within international human rights, lesbian, gay, bisexual, and transgender (LGBT) rights in particular are gaining salience both domestically and internationally. While Europe has gone relatively far in the protection of LGBT norms, there is variation among European Union (EU) members and hopefuls. For example, although the Netherlands recognizes same-sex couples, many LGBT individuals fear for their safety in the Balkans. This project will analyze the process by which LGBT rights norms diffuse and become more accepted among states and publics and ask, what internal and external factors account for the differences in LGBT rights in two particular countries, Croatia and Lithuania? This paper is informed by fieldwork that includes dozens of interviews with human rights representatives, policymakers, and LGBT community members in the respective countries and secondary literature on the topic. In addition to filling a gap in the academic study of LGBT rights, this project has practical implications for strategies of LGBT social movements and policymakers. This project ultimately found that no single variable can account for all change and that it instead is the interplay of variables that explain changes in public policy and attitudes.

WELFARE NARRATIVES IN US POLITICAL RHETORIC: STORIES, POWER, AND CONTESTATION

Greg M. Honan (Dr. Laura Roselle) Department of Political Science and Policy Studies

This research examines welfare or public assistance policy narratives in the United States by political elites (politicians, senior government officials, and policymakers), national and local media, and local policymakers in Alamance County. Specifically, I conduct qualitative and quantitative analyses of political elites' speeches as well as news articles on public assistance, and conduct interviews with County officials. In contrast to previous research, this research is focused not only on elite policy narratives but also on how local policymakers construct and interpret their own narratives. This is important because the scholarly literature has not addressed the degree to which national elite narratives have influenced local narratives about welfare and public assistance (Hancock, 2004). Through this research I hope to gain a better understanding of how political elites influence public assistance narratives, and how media and local policymakers in Alamance County and Durham County understand, change, and use these narratives. National narratives were determined by analyzing national policymakers' speeches, such as Ronald Reagan and Bill Clinton, and select media coverage from The New York Times and Washington Post. Preliminary findings from research at the local level suggest many stories

about public assistance in Alamance County share striking resemblance to the elite policy narratives during the Reagan administration and as recent as the 2012 election cycle. It is common for local policymakers in these counties to cite stories about “welfare queens” as a basis for their policy decisions. Many of these stories involve food stamp fraud, the purchase of luxury items by welfare recipients, and public assistance as a disincentive for work.

IS IT SEX, OR IS IT THE COLD WAR? ANALYZING LESBIAN PULP NOVELS THROUGH A COLD WAR LENS

Claire A Lockard (Dr. Laura Roselle) Department of Political Science

During the Cold War, gay and lesbian narratives were generally silenced in the media. However, the lesbian experience was portrayed in pulp novels throughout the late 1950s and early 1960s. Scholars of these novels have categorized them into two main groups: pro-lesbian and homophobic. Expanding upon this scholarship on homosexuality during the Cold War and lesbian representation specifically, this study consists of an analysis of one pro-lesbian pulp (*Odd Girl Out* by Ann Bannon) and one homophobic pulp (*The Third Way* by Sheldon Lord) in an attempt to answer the following question: *How do Cold War themes appear in each novel and is this appearance different depending on the category?* Current scholarship on lesbian pulp novels lacks examination through an explicit Cold War lens; reading these pulps with the Cold War specifically in mind might better explain the content of the novels and address the reasons for the portrayal of lesbians in certain ways. This study offers a clear connection between the Cold War and the lesbian pulps of that era, grounding itself in feminist literature and the gendered theory of international relations. The study was conducted using a content analysis; both novels were read and examined for Cold War themes such as spying, paranoia, and fear. However, because the study remained open to the content of the books, different themes were discovered throughout the research. It was found that though neither novel referenced the Cold War specifically, both contained the theme of voyeurism, which connects to the Cold War era fear of being watched by the government. *Odd Girl Out* contained more explicit Cold War content, while *The Third Way* seemed more focused on narrative than political climate, though a theme of negotiation was also identified. This study lays the groundwork for larger-scale future scholarship on lesbian pulps.

MOSCOW GETS THE COLD SHOULDER: FRAMING OF THE 1980 OLYMPIC BOYCOTT IN U.S., SOVIET AND BRITISH MEDIA

Michelle L. Alfini (Dr. Roselle and Dr. Makemson) Political Science and School of Communications

This study analyzes U.S., British and Soviet news coverage of the 1980 Olympic boycott to compare the frames used by the media of these countries. The study looks at news articles published in each country between May and August to show the differences in coverage in the months immediately leading up to the Games, during the boycotted Games and immediately following the Games. Previous research analyzed framing of the 1980 Olympic boycott in U.S. and Soviet media; however, no previous research addressed Great Britain, an interesting case in which the government supported the boycott, but the Olympic team attended the Games anyway. The study consists of quantitative and qualitative analyses. The quantitative aspect consists of content analysis in which the articles were coded based on which frame they exemplified best: International Conflict, International Cooperation, Success, Failure, Athletes or Olympics. To find the qualitative results, the researcher closely analyzed the individual articles of the more

prominent frames to determine whether or not these frames served different functions in the different media systems and if so, what those different functions were. The results of the research reveal that in each nation, the coverage was mainly focused on the effects of the boycott on athletes and the Olympic games as well as the implied failure of the boycott. The Soviet media was more likely to focus on the boycott's failures and negative effects, while the U.S. media was more likely to focus on the ways that the boycott affects its athletes as well as how Western Europe contributed to the boycott's shortcomings and conveyed underlying tensions among the Western allies as a result of the boycott. The British media focused on ways that its nation fit into the narrative of the boycott through coverage of the boycott's effects on their athletes or through coverage that claimed the British Olympic Committee's decision led to the boycott's failure. This research provides a basis for comparing U.S., Soviet and British coverage of the Olympics during a time of great tension, which can be used to analyze coverage of the 2014 Sochi Games.

THE RELIGIOUS COLD WAR: MEDIA COVERAGE OF THE ADDITION OF “IN GOD WE TRUST” AND “ONE NATION UNDER GOD” TO AMERICAN CURRENCY AND THE PLEDGE OF ALLEGIANCE

Margaret K Miller (Drs. Harlen Makemson and Laura Roselle) School of Communications and Department of Political Science

Throughout the fifties and sixties, the government and media attempted to present the Cold War with a religious element: as a battle between godly and godless ideals. However, research on the religious Cold War is scarce. In an attempt to begin to rectify that, this research analyzes one small aspect of religion in the Cold War: newspaper coverage of the addition of “in God we trust” and “under God” to America's paper money and Pledge of Allegiance. By doing this, the researcher sought to determine if the correlation between religious ideals and anti-communist ideals prevalent at the time was evident in the reasoning given for these additions. Articles and Letters to the Editor from 1954 through 1957 in *The New York Times*, *The Washington Post*, and *The Christian Science Monitor* were collected and analyzed. For each source, the length, presence or absence of reasoning, types of reasoning and overall stance were determined. Type of reasoning included explicit and implicit mentions of the Cold War. After detailed analysis of the sources, the research contained a significant amount of both explicit and implicit Cold War reasoning for the additions. The research also brought up the prevalence of historical reasoning within the sources. General scarcity and brevity of the sources was confirmed and was in concordance with the theory that religion and Anti-Communism were synonymous enough in the mind of the public to warrant strangely little explanation for the religious additions. The stances of the sources also support the theory that the Cold War was prominent in shaping the religious ideology of America.

PSYCHOLOGY

THE INFLUENCE OF PROSPECTIVE MEMORY AND METACOGNITIVE SKILLS ON SELF DETERMINATION AND PSYCHOLOGICAL WELL BEING IN COLLEGE STUDENTS WITH AND WITHOUT SIGNIFICANT ATTENTION PROBLEMS

Yvette F. Bean, Rebecca A. Kennedy, Carl E. St. Goar (Dr. Wilmhurst) Department of Psychology

Attention Deficit Hyperactivity Disorder (ADHD) is a disorder that can impair an individual's performance on tasks involving sustained mental effort and goal directed persistence, due to deficits that may be evident in one or more of the following areas: inattention, impulsivity and hyperactivity (APA; DSM-5, 2013). Although initially thought to be primarily a disorder of childhood, it is now recognized that ADHD can persist into adulthood. For students transitioning to college, impairments in executive functions (EF) can cause significant problems academically, due to impairments in the core EF processes (such as: *working memory*, *sustained attention*, *behavioral inhibition*) that can serve as barriers to successful execution of problem solving tasks, sustaining effort over time, and the ability to regulate thoughts and behaviors, including the ability to monitor response effectiveness. This study examined the effects of prospective memory and metacognitive skills on self-determination and psychological well being in college students with and without high attention problems. Participants initially participated in an informal structured interview which asks questions about attention problems, perceived support from family and friends, study habits, time management, and provides a check list of potential student needs. Students were asked to complete a number of questionnaires that looked at psychological well being, autonomy, relatedness and environmental mastery, ability to plan, organize, shift between tasks, and regulate emotional responses, and total self concept. Three other tasks were also used to look at the metacognitive skills of shifting, inhibition, and updating working memory. In contrast to our original hypothesis the ability to shift attention was the only executive function where there was no significance difference between the two groups. Environmental mastery also proved to be a significant weakness for those with high attention problems. Those with high attention problems self-rated themselves lower on their ability to concentrate and focus in the classroom Results also showed that emotional support was lacking from the father in those with high attention problems. These results may suggest that collegiate individuals with high attention problem may need more emotional support in order to feel in control of their environment.

THE EFFECT of Cell Phone and Social Media Use on Adolescent Girls' Self-Concept and Psychological Well-Being

Kylee R Bushway (Dr. Linda Wilmhurst) Department of Psychology

Adolescent access to technology and social communication has grown over the past decade, especially with Internet use increasing over 10% in just the past 10 years (Madden, Lenhart, Daggan, Cortesi, & Gasser, 2013). Researchers have found that parents can use cell phones as a positive communication tool with the child, thus facilitating compromise and openness (Blair & Fletcher, 2010). Yet, researchers have also found that online forms of communication were the strongest predictors of negative social outcomes (Pea et al., 2012). So what are the effects of cell phone/social media on adolescent girls? Given previous research, effects can be both beneficial and harmful to adolescents, suggesting a need for more research in the area. In this study, 21 middle school girls (11-13) in Alamance County, NC were assessed using the Tennessee Self-Concept Scale (TSC), the Oxford Happiness Index (OHI, Short Form), and questions provided by the researchers regarding social media/cell phone use and perceptions. Results showed that Total Self Concept (TSC) was higher in "no cell phone usage" (Mean=44) compared to those with limited use (Mean=39.5) or unlimited use (Mean=41). This suggests a negative correlational trend between access to cell phones and overall self-concept. Total Self Concept

(TSC) was higher in “no social media usage” (Mean=47) compared to limited use (Mean=44) or unlimited use (Mean=45). Overall Happiness (OHI), revealed higher scores in “no social media usage” (Mean=38.6) compared to limited use (Mean=34.73) or unlimited use (Mean=37.2). This suggests another negative correlation between social media access and overall self-concept and happiness. In addition, analyses of questions provided by the researcher revealed that 61.9% of girls agreed that peers use cell phones to bully and 70% agreed that peers use social media to bully. Yet, 57.1% agree that they use/need a cell phone to stay connected with family/friends and 71.4% agree that cell phones makes it easier to plan with friends. This suggests cell phones as a positive communicative tool for teens, but should be monitored closely for negative behavior, such as bullying. Further analyses are needed to replicate trends found between cell phone/social media use and overall well-being of adolescent girls.

GENDER DIFFERENCES IN STUDENT PERCEPTIONS OF LITERACY ACTIVITIES

Hayley L. D’Antuono (Dr. L. Kimberly Epting) Department of Psychology

Research on the so-called “boy crisis” in education (e.g., Sommers, 2000) has focused on findings suggesting that achievement differences between genders may be partially due to boys’ lack of interest, motivation, and self-efficacy in literary tasks – i.e., reading and writing – and perhaps even in school as a whole (Coddington & Guthrie, 2009; Orr, 2011; Smith, Smith, Gilmore, & Jameson, 2011). As notions of meaningful cognitive gender differences persist (even if greatly exaggerated; Hyde, 2005), males and females may come to have quite different perceptions of the nature, value, and difficulty of literacy activities. Yet despite implicit assumptions, virtually no research has considered whether students’ perceptions of these tasks are gendered. Thus, this study investigated students’ perceptions of various literacy activities in terms of the following qualities: usefulness, coolness, difficulty, stimulation, and gendered-ness (masculine/feminine and girlish/boyish). A total of 377 students from two liberal arts colleges participated in the study. Participants completed a survey in which they rated four literacy activities – reading, writing, revision, and grammar – on six semantic differential scales. Results showed that the presence of gender differences in ratings depended upon the literacy activity. Generally, males indicated literacy activities as somewhat feminine/somewhat masculine, while females indicated them to be somewhat feminine/feminine. Furthermore, males rated revision and reading less useful than did females, and males rated reading and writing as less cool and less stimulating in comparison to females. These findings suggest that attitudes of male and female students may differ regarding different literacy activities they perform throughout their academic careers, resulting in different challenges for teachers.

COLLEGE STUDENT EMOTIONS IN ACADEMIC SERVICE-LEARNING (AS-L)

Maureen E. Dinnie & Sara Perry (Dr. Alexa Darby), Department of Psychology

Higher education faculty have turned to academic service-learning (AS-L) pedagogy for the educational and personal benefits it provides to students. Research has shown that students engaged in AS-L courses advance their cognitive and written language skills, critically examine their attitudes towards diverse populations, and advance their understanding of larger societal issues (Astin, Vogelgesang, Ikeda, & Yee, 2000; Eyler, Giles, & Braxton, 1997). Yet, while research in psychology has established the importance of emotions in learning and academic achievement (Goetz, Frenzel, Pekrun, Hall, & Lidtkey, 2007; Pekrun, 1992; Pekrun, Goetz,

Frenzel, Barchfeld, & Perry, 2010), researchers studying AS-L have little understanding of the role of emotions in AS-L courses. By ignoring emotions that exist and shape learning, we threaten to shirk our responsibility as educators and limit the potential for real academic learning. Indeed, neglecting emotions in our classrooms and service-learning experiences may leave students to do their most difficult work alone. (Felten, Gilchrist, & Darby, 2006, p. 43) Noyes and Darby (in preparation) found that “A majority of the emotional experiences occurred on site (73.01%), with fewer related to the general experience (10.38%), class experiences (9.69%), and working on assignments (6.92%)” (p. 16). As theorized by Felten, Gilchrist, and Darby (2006), students enrolled in AS-L courses experience a range of emotions, especially at their AS-L site. The purpose of this study is to continue the investigation of students’ emotional experiences in AS-L courses. The research questions guiding the study are:

1. What situations elicit emotions from students in AS-L courses?
2. What emotions do students experience in their AS-L courses?

Participants included 12 undergraduate students who were currently enrolled in AS-L courses at a midsize liberal arts institution. Each student participated in an hour-long interview about their emotional experiences in their AS-L course. Interviews were then transcribed verbatim. In the inductive analysis process, we coded each transcript, compared our coding, looked for categories across the transcripts, and identified the themes that emerged (Boeije, 2010). Results showed that participants experienced heightened emotions of worry and shock during their initial experience at their service site. They also discussed a continuum of emotions while working with their on-site supervisor. Students also identified emotional responses to student and client achievement, working with the general population, personal reflection, working with students with behavioral issues, and course design and faculty interaction. These findings expand previous research that highlighted the importance of emotion in AS-L classes (Felten, Gilchrist, & Darby, 2006; Noyes & Darby, in preparation). These results suggest that students in service-learning classes have a variety of emotional responses while working on site during their course, demonstrating the need for faculty to provide emotional support for students during their service-learning courses along with the current academic support.

EXPLORATION OF AUTHENTIC LEADERSHIP, CORE EVALUATIONS & PERCEIVED LEADERSHIP EFFECTIVENESS

Mathew R. Goldberg (Dr. Chris Leupold) Department of Psychology

The purpose of the study is to explore the interrelationships among authentic leadership, core-evaluation (CE), and self-perceived leadership effectiveness. Authentic leadership (AL) has recently become a popularized theory of leadership that focuses on self-awareness, unbiased processing, relational authenticity, and authentic actions. This study explored AL in the college-age population, as well as its relationship with how individuals evaluate themselves and other people in general. Broadly speaking, CE (Judge, Locke, & Durham, 1997) refers to an individual’s deep-rooted feelings through the perspective of oneself, others, the world. One dimension, core self-evaluation (CSE) refers to the self-perception of one’s general worthiness and is a latent factor underlying self-esteem, generalized self-efficacy, neuroticism, and locus of control. A second dimension, core other-evaluation (COE) refers to the general perception that an individual has of other people and is a function of trust, agreeableness, collectivism and other orientation (Lemelle, 2010). Participants included 115 undergraduate students (27 males and 88 females) from a co-curricular student leadership development program at a private liberal arts university in the southeast. All of the participants participated in a workshop on StrengthsQuest (Louis, 2012). Participants completed established scales to assess their levels of AL, CSE, and

COE and answered questions that assessed their relative insights into their own personal awareness and effectiveness as leaders. As hypothesized, results indicated significant relationships among AL, CSE, and COE. AL displayed a moderate-to-strong correlation with CSE and COE, which indicates that students who had more positive views of themselves and others were more inclined to be authentic leaders. Perceived leadership effectiveness also significantly correlated with perceived accuracy of insights into one's self as a leader; a weaker but still significant correlation was found between perceived self-awareness scores and one's insight into his or her leadership effectiveness. This research deepens the leadership literature on AL, CSE, and COE constructs, as these measures have to date been restricted to professional adult. Implications of these findings and how they will be applied to students' leadership development will be discussed.

LEADERSHIP PERCEPTIONS AMONG PEOPLE FACING HOMELESSNESS

Mathew R. Goldberg (Dr. Chris Leupold) Department of Psychology

The purpose of the study is to explore leadership perceptions among people facing homelessness. The study assessed participants' leadership perceptions through a survey concerning leader identity, leadership development, and strength-recognition. The study tested how these held beliefs are connected with core-evaluation, (Judge, Locke, & Durham, 1997), which refers to an individual's deep-rooted feelings through the perspective of oneself, others, and the world. One dimension, core self-evaluation (CSE) refers to the self-perception of one's general worthiness and is a latent factor underlying self-esteem, generalized self-efficacy, neuroticism, and locus of control. A second dimension, core other-evaluation (COE) refers to the general perception that an individual has of other people and is a function of trust, agreeableness, collectivism and other orientation (Lemelle, 2010). Participants included 65 (39 males, 21 females, and 5 unidentified) individuals ranging from 20 to 73 years in age at a homeless day center in Greensboro, NC. Forty-three respondents self-identified as homeless, but all met the center's standard of homelessness. Participants completed established scales to assess their levels of CSE and COE and answered questions about leadership perceptions, goal-setting behavior, and demographic information. As hypothesized, results indicated significant relationships among beliefs of leadership. For example, people who believed failed experiences defined people's ability demonstrated a fixed mindset about leadership and were less likely to score high on believing in leadership development. Conversely, individuals who scored higher on positive leadership beliefs such as believing people can learn from their mistakes, were more likely to rate themselves higher on perceived self-awareness. In addition, a weak positive correlation was found between individuals reporting positive leadership beliefs and showing a greater ability to articulate their strengths to others. Similarly, individuals' reporting greater ability to articulate their strengths had a strong positive correlation with CSE scores. Overall, this research points to the fact that leadership is an important topic among people facing homelessness and shows that beliefs can affect ability. This research is significant because it deepens the leadership literature among an understudied population, challenges stereotypes among homeless adults, and discusses a change in the current social interventions.

ENGAGING CONFLICT: HOW EXPECTATIONS, PERSONAL AGENCY, AND BELIEF IN MULTIPLE PATHWAYS INFLUENCE CONFLICT MANAGEMENT

Raymond A. Haack (Dr. Maurice Levesque) Department of Psychology

Research on optimism has shown that those with more positive outlooks experience benefits in a wide range of areas, from physical health to active emotional coping (Scheier & Carver, 1985). The growing field of positive psychology is bringing attention to many of these benefits, but little research has been done to investigate how positive expectations impact conflict management. Rahim (1983) and others (e.g., Blake & Mouton, 1964) have described five individual preferences for managing conflict: contending, accommodating, collaboration, inaction, and compromising, but there is a lack of research investigating how they manifest as different behaviors in naturalistic lab-based conflicts. To better understand how individual differences in optimism affect the expression of conflict management preferences, undergraduates engaged in a controlled team negotiation simulation involving a border dispute between two countries. Their degree of optimism was assessed beforehand with the Life Orientation Test (Scheier & Carver, 1985), which measures positive future expectations, and the Hope Scale (Snyder et al., 1991), which investigates how personal agency informs those expectations and whether individuals can imagine multiple pathways to goal attainment. Conflict management preferences were measured with the Rahim Organizational Conflict Inventory (Rahim, 1983), which provides an individual's score on each of the above conflict management preferences. During the simulation, participants were assigned to a team of 2-4 and told that they will be negotiating with a neighboring team in order to maximize the benefit for their nation in a territory dispute. They were told that they will negotiate by exchanging written proposals by way of the researcher, but both teams were participating in identical procedures and never interacted with each other. Teams developed initial conflict resolution proposals and then responded to an experimenter-generated proposal supposedly written by the other team that represents a contending conflict preference. Individuals completed reflection questionnaires at different points in the process, in order to better understand how optimism might be influencing the way they engage with conflict. Results suggest that optimists may be more likely to persist in conflict situations. Optimism was associated with higher ratings of the likelihood of reaching an agreement, both prior to reaching a proposal and after developing a response to the other team's contending proposal. Correlations also showed that optimists tended to express a belief that the other team liked one's own team and to rate the other team as less difficult.

MULTI-MODAL GENDER CONGRUENCY EFFECTS ON FACE-NAME ASSOCIATIONS ACROSS AGE GROUPS

Jessica L. Katschke & Ursula G. Saelzler (Dr. Amy Overman) Department of Psychology

Older adults have more difficulty than young adults in linking together pieces of information in memory, a phenomenon defined as the associative deficit (Naveh-Benjamin, 2000). Recent research in young adults also suggests that associative memory may rely on different cognitive and neural mechanisms depending on whether the elements to be associated are perceived as separate items or as belonging to a unified whole (unitization; Haskins et al., 2008). The present study investigated unitization in young and older adults by examining memory for face-name associations. The associations were modified based on gender to determine to what extent unitization is affected by whether a name could plausibly belong to the same person as the face with which it is paired. The experiment consisted of 10 study phases each followed by a test phase. Each study list consisted of 32 face-name pairs in which the gender of the face either matched or did not match the gender of the name. Each test phase contained a 32-item test list that consisted of both intact and rearranged face-name pairs within each gender congruency condition. Participants indicated whether each test pair had been presented on the study list. Overall, young adults performed better on face-name pair recognition than older adults,

consistent with prior studies (e.g., Naveh-Benjamin et al., 2009). Signal detection analyses indicated that both young and older adults were better at correctly determining previously seen gender-congruent face-name pairs than gender-incongruent face-name pairs. Further, older adults, but not young adults, displayed a greater response bias to accept gender-congruent pairs as old. The results can offer information on how to aid older adults in maintaining their memory as they age by providing strategies for them to practice and everyday biases to avoid.

OBSERVATIONS OF PARENTAL GUIDANCE IN A CHILDREN'S MUSEUM

Alyssa M. Kendall (Dr. Maureen Vandermaas-Peeler) Department of Psychology

Sociocultural theories emphasize the importance of parental support for young children's cognitive development. Children learn and make discoveries in informal learning environments such as museums, and research indicates that when they engage in shared thinking with adults they have more opportunities to learn compared to children engaged with peers or by themselves (Cooper, 2011; Crowley et al. 2001). However, there is limited research on experiences that help children develop math and science knowledge outside of the classroom (LeFevre et al. 2009; Crowley et al. 2001). The purpose of this study was to observe naturally occurring parent-child interactions in a science museum. Visitors with children ages 3-7 years old were observed attending the "Flip It, Fold It, Figure It Out! Playing with Math" exhibit at the Museum of Life and Science. There were 54 observations of dyads (adult-child) and triads (adult and two children) recorded in this study. Adult-child interactions and behaviors were recorded at each station. Post-observation interviews were conducted with 21 participants to assess the adult's perception of the child's learning and enjoyment of the activities. Results of the observed interactions in the exhibit indicated an average duration of 15.15 minutes (ranging from 4 to 40 minutes) and families visited 1.93 (ranging from 1 to 4) of the six observed stations within the exhibit. Adults engaged in an average of 6.43 instances of engagement-related behaviors (e.g., asking child questions) and an average of 5.67 non-engaged behaviors per interaction (e.g., talking on cell phone). In the post-observation interviews, mean adult-rated enjoyment was 4.33 on a 5-point scale (1 = did not enjoy and 5 = greatly enjoyed). Mean adult-rated child enjoyment was 4.48. Mean adult-rated child learning on a 5-point scale (1 = child did not learn anything and 5 = child learned a lot) was 3.52. Further analyses of the interactions are in progress. The results contribute to a growing body of literature concerning the nature of adult guidance and levels of adult-child engagement within a museum context. Findings may be used by the Museum of Life and Science to enhance learning experiences for visitors in regards to children's development.

EROTICIZATION OF LESBIANS: THE LINK BETWEEN BENEVOLENT SEXISM AND PREJUDICE AGAINST LESBIANS

Szengar S. Lau & Alexandra E. Broadstone (Dr. David M. Buck) Department of Psychology

This study examines the relationship between heterosexual men's attitudes toward lesbians and ambivalent sexism. Ambivalent sexism is comprised of two types of sexism: hostile and benevolent. Hostile sexism is a traditional negative attitude towards women (e.g., women are untrustworthy, scheming, etc.). Benevolent sexism is a set of stereotypic beliefs about women that appear positively valenced, but still restrict women to traditional gender roles, including those regarding moral and sexual purity (e.g., women should be put on a pedestal, a man is not complete without a woman, etc.; Glick & Fiske, 1996). It is logical to assume that negative attitudes toward lesbians would be related to negative attitudes toward women generally.

However, we hypothesize that because homosexuality could be interpreted as violating the purity norm set by benevolent sexism, heterosexual men's attitudes toward lesbians should be particularly related to benevolent rather than hostile sexism. Further, this study explores how the perceived erotic value of lesbian behavior could mediate this relationship. To the extent that heterosexual men perceive lesbian behavior as erotic rather than impure, they should possess more positive attitudes toward lesbian women. Data were collected from twenty-nine heterosexual-identified male participants. Results support the hypothesis that benevolent sexism, not hostile sexism, predicts attitudes toward lesbians, such that greater benevolent sexism predicts more prejudice against lesbians. Also, eroticization of lesbianism mediates this relationship. This suggests that the negative attitudes toward lesbians that benevolent sexists hold appear to be tied to beliefs about the appeal of female sexuality. Heterosexual men who stereotype women as pure are less likely to eroticize lesbians, and they have more negative attitudes toward lesbians because they are perceived as deviating from prescribed acceptable sexual behavior.

PARENTAL GUIDANCE OF EARLY SCIENCE LEARNING IN A CHILDREN'S MUSEUM

Kate E. Massey (Dr. Maureen Vandermaas-Peeler) Department of Psychology

Early introduction to science is important for later understanding and excites children's natural curiosity (Eschach & Fried, 2005; Greenfield et al., 2009). Parental guidance in everyday activities can boost early learning by helping children draw connections between informal activities and current knowledge (Crowley et al., 2001). Museums can provide an ideal place for this guidance to occur, though parents are often unsure of how to assist learning and deepen connections in this context (Schauble et al., 2002). This study observed interactions between parents and their children in one museum exhibit to explore the impact of parental instruction on conversation and child learning during the activity. Families were randomly assigned to one of two groups: one group received no instruction guide, and the other group received questions and topics that could be used to promote further learning and conversation during the activity. Parents and children explored the exhibit together at their own pace, and interactions were recorded with a video camera for later observation. Participants completed a brief follow-up interview after finishing the exhibit. Video observations were coded and analyzed for parent guidance, parent-child conversations, and child learning. Parents in the instruction group provided nearly twice as many prompts ($M=6$) for predictions before the activity than parents in the no instruction group ($M=3.2$). They also asked more 'why' questions, encouraging their children to explain or reason about the volume comparisons. Overall, children in the instruction group had more opportunities to respond to higher numbers of parent prompts, and responded correctly to explaining and reasoning prompts more often ($M=80\%$) than children in the no instruction group ($M=40\%$). Based on post-interview questions, there was no significant difference in parent or child enjoyment of activities between groups (76% of all children chose 'happy' rating when asked about personal enjoyment). These findings show that more detailed instructions lead parents to provide more questions and engage in deeper conversations with their children while exploring museum exhibits, thus enhancing children's opportunities for learning in the museum setting. Museums and parents alike can use this information to help deepen children's learning in informal contexts.

OUTDOOR EXPLORATIONS WITH PRESCHOOLERS: THE ROLE OF NATURE EXPERIENCES IN YOUNG CHILDREN'S PSYCHOLOGICAL DEVELOPMENT AND ENVIRONMENTAL AWARENESS

Cara M. McClain (Dr. Vandermaas-Peeler) Department of Psychology

Children's direct experiences with nature have decreased dramatically, and today's children are growing increasingly isolated from the natural environment (Kahn, 2002; Louv, 2008). Research shows that nature experience is associated with improved cognitive abilities, resistance to depression, strengthened self-confidence and deeper friendships (Louv, 2008). Through nature play experiences, children learn to enjoy time outdoors and prepare for participation in environmental preservation (Chawla & Cushing, 2007). Nature experience is crucial because a sense of belonging to a larger nature community is a key component for environmental protection (Mayer & Frantz, 2004). Despite this, few studies have examined the influences of nature experiences on preschoolers. The present research was a one-year longitudinal case study of a Reggio-inspired preschool that provides a variety of outdoor experiences on a daily basis. Eleven preschoolers were filmed for 50 hours over the course of a year at a school's garden, creek, and a local river. Parent surveys, teacher interviews, and child interviews were also collected at the beginning and end of the school year. Three key research questions were examined. First, what are the influences of various environmental features on children's physical behaviors, their positive and negative peer interactions, and their cognitive development related to environmental awareness? Second, how does experience in natural settings influence three preschoolers' development with regard to personal challenges, scientific discovery, stewardship, and social behaviors? Third, how do teachers and parents guide and support children's interactions in nature? Initial findings from the observational data indicated that while outdoors children participated in complex pretend play, showed self-awareness with regard to environmental features, exhibited far more positive than negative social behavior, generated scientific theories around discoveries, and engaged in environmental stewardship. Teachers and parents provided extensive support for children's nature experiences. The findings suggest that children's understanding of nature is based on their direct experiences, supported by adult guidance and encouragement. Additional results are in progress. The findings of this research will contribute to the fields of education and development, particularly with regard to the importance of nature experiences for children's physical, socio-emotional and cognitive development in early childhood.

“CONDOMS ARE THE STANDARD, RIGHT?”: EXPLORING STI PROTECTION WITH YOUNG ADULT BLACK WOMEN

Virginia D. Oberle (Dr. Buffie Longmire-Avital) Department of Psychology

Black American women are disproportionately affected by HIV (CDC, 2008; DeCarlo & Reznick, 2009), such that they make up 12% of the female population in United States, yet account for 66% of all the new HIV infections among American women (CDC, 2008). Research has consistently found that condoms, as a barrier method, are the premier form of STI protection for those who choose not to abstain from sexual intercourse (Holmes, Levine, & Weaver, 2004; Cates & Steiner, 2002; Crosby et. al., 2003). Previous studies have focused on condom use among higher-risk (e.g., lower-income, injection drug using, and sex workers) Black American women. However, there is limited literature analyzing the condom use patterns of seemingly

low-risk Black American women who are sexual active but engage in no other concurrent higher exposure-risk behavior. The purpose of this research was to examine why condoms are the preferred method of STI protection for seemingly low-risk heterosexual Black American women as well as what control these women have in the negotiation process. An online-based survey was disseminated through the use of social media sites (such as twitter, facebook, tumblr) during spring 2013. The survey asked women to provide their demographic information as well as their sexual health history and relationship characteristics within the last 12 months. One-hundred and twenty-seven non-married heterosexually active women with a mean age of 23 responded to the survey. Approximately 80% of the women were in college or graduates. They also had a high rate of previous HIV testing (68.5%). Grounded Theory informed the use of Atlas t. i. 6.0; a qualitative analysis software. Three themes emerged regarding why the women in this sample used condoms as their primary form of protection: (1) the reliable status quo (2) pregnancy prevention; and (3) condoms being cost effective and “easily accessible”. Findings are discussed in terms of their public health significance for this seemingly lower-risk population.

MAGNESIUM SUPPLEMENTATION AND TEST ANXIETY

Krysten P. O’Hara (Dr. Mathew Gendle) Department of Psychology

Many students in college suffer from test anxiety. Current pharmacological treatments for test anxiety (such as benzodiazepines) produce significant side effects such as drowsiness and cognitive impairment. Therefore, there is a significant need for anxiolytic agents that do not produce such effects. One candidate compound is elemental magnesium. Magnesium is vital to the function of NMDA receptors in the hypothalamic-pituitary-adrenocortical (HPA) axis, which mediates responses to stress. Episodes of transient high anxiety (such as during final exams) are associated with temporary hypomagnesian states that result from increases in urinary magnesium excretion. This double-blind study assessed the possibility that oral magnesium citrate could reduce test anxiety during finals, presumably through the reversal of stress-induced hypomagnesian states that impair NMDA receptor function and dysregulate the HPA axis. A total of 122 university undergraduates were enrolled, each completed two pretest measures of anxiety, the AMAS-C and the Westside Test Anxiety Scale. Five days before their first final exam, each participant randomly received a five-day course of oral magnesium citrate (300 mg/day) or matched placebo. On the night before their first final exam, all participants completed the Spielberger State Anxiety Inventory. The level of self-reported anxiety on the night before the participants’ first final exam did not differ between the placebo and magnesium groups ($p = 0.69$). A number of possible factors could have produced this null finding, and future research needs to be conducted before the specific cause of this null result can be identified.

RISK PERCEPTION AND STUDY ABROAD IN COLLEGE WOMEN

Paxton K Syrek & Lisa M Picklesimer (Dr. Gabie Smith) Department of Psychology

With growing numbers of students choosing to study abroad, examination of processes that affect positive and negative risk is of interest to researchers and to educators alike. Some studies have shown that though individuals may judge a decision to be risky, many people feel less likely to get in trouble when abroad (Uriely & Belhassen, 2006). Likewise, levels of risk-taking have been found to increase in those traveling in other countries (Aro et. al. 2009; Pedersen et. al. 2010). However, much of the research in this area has focused on health risk behaviors, rather than determining the attitudes that underlie risky decision-making in broader contexts. In the

current study we examined, risk perceptions in college students over the course of a semester abroad experience. Twenty female college students completed online surveys prior to leaving for a semester abroad, during their semester abroad, and after completion of their semester abroad. The Theory of Planned Behavior (Ajzen, 1991) and the Health Belief Model (Janz & Becker, 1958) contributed to the theoretical foundation for the current study. Specifically, concepts discussed in these theories were assessed in the survey research, including: beliefs regarding risky behaviors (e.g., behavioral beliefs); beliefs about consequences of a risky decision (e.g., perceived vulnerability); and intentions to take risk and participation in risk-behaviors. The survey instrument also included assessments of several personality and attitudinal variables (i.e., sensation seeking and perceptions of gender norms). Preliminary findings demonstrate that, as expected, intention to engage in risk-taking was predictive of subsequent behavior. Consistent with the past literature, the personality variable sensation-seeking was related to increases in risky behavior. Furthermore, perceptions of risk were highly correlated across all three surveys, suggesting that risk perceptions may be stable rather than changing due to situational context. At our presentation, we will discuss findings relating to the other variables in our data set.

A SEARCH FOR LINGUISTIC RELATIVITY: CONTENT ANALYSIS OF ESSAYS FROM BILINGUAL STUDENTS

Caitlin J. Tarantiles, Kelsey E. Liddle, (Dr. Epting), Department of Psychology

The present research investigated the theory of linguistic relativity, the idea that cognitions may vary depending on what language a person speaks or writes. The participants were bilingual in English and Spanish and each completed both a transcription task and a two-part essay writing task where one essay was written in English and one was written in Spanish. The essays required that the participants define and discuss two concepts known and understood by college students; they were designed to be equivalent in order to see the differences in essays based on language only. For this particular study, content analysis of the essays revealed some differences between essays in different languages. Results showed that essays written in Spanish were more likely to include personal examples, example locations, and school as a theme, when compared to English studies. Results may reflect some evidence of linguistic relativity, but also suggest differences due to native vs. non-native language.

ASSISTING BLIND PEDESTRIANS WITH FINDING THE CROSSWALK AND ALIGNING AT ROUNDABOUTS AND MID-BLOCK CROSSINGS

Sean M Walmer (Dr. Alan Scott) Department of Psychology

This research examined blind pedestrian's ability to locate crosswalks and establish an appropriate heading with and without surface treatments intended to assist such actions. There is little information on the effectiveness of cues in assisting blind pedestrians locating crosswalks but previous research has shown the difficulty these pedestrians have locating crosswalks at intersections and channelized right turn lanes. Additionally no research has been conducted concerning the ability of blind and visually impaired pedestrians to locate crosswalks at roundabouts and midblock crossings or the situational cues that may assist visually impaired individuals. The American with Disabilities Act requires sidewalks and crossings to be accessible to all individuals including those with visual impairments (U.S. Access Board, undated). This research assesses whether surface guidance strips make crossings more

accessible. Blind participants were led to 6 different crossings and individually approached each from alternating sides thus completing 12 total trials. For each participant, three of the crossings had guidance surfaces installed at them so that half of the trials would include the surface treatment. All participants were familiarized with the guidance surface prior to the experiment and used a long cane as their walking aid while attempting to locate the intersection. Each trial was conducted by staging the participant a random distance between 40' and 200' away from the crosswalk and having them attempt to locate the crossing and prepare to cross. What cues they used and in what order were recorded, as was the time taken to locate the crossing and number of times they passed the crossing while trying to locate it. Once the pedestrians signaled they had found the intersection and aligned to cross, their position and heading was recorded and they were guided to the next trial. Researchers only intervened if a participant wandered away from the street or was about to put herself in harm's way. Data collection has been completed and analysis to examine the effectiveness of the guidance strips is currently ongoing.

A NATURAL RESTORATIVE: THE EFFECTS OF NATURAL ENVIRONMENTS ON EGO DEPLETION

Alexander P. Ward (Dr. Maurice J. Levesque) Department of Psychology

Ego depletion is a short-term reduction in the ability of an individual to demonstrate volitional action after utilizing his or her resources to perform a task (Baumeister et al., 1998). Individuals experiencing ego depletion tend to experience adverse effects across a range of outcomes, such as perceived positive affect and increased fatigue. Researchers have studied a number of interventions to reduce the effects of ego depletion, (e.g. Wen Wan & Sternthal, 2007, Baumeister et al., (2006), etc.) but one unexplored intervention is natural environments. Studies have shown that even limited exposure to natural environments has positive effects on mood and physiological symptoms (e.g., Barton, Griffin, & Pretty, 2012; Tennessen & Cimprich, 1995). The purpose of this research is to examine whether natural environments attenuate ego depletion and/or increase the rate of recovery from ego depletion.

A 3 (ego depletion: minimal, mild and moderate) x 3 (natural environment: none, depletion task, post test) x 2 (pre and post-test design) was used. The ego-depletion task involved crossing out the letter "e" task with varying instructions and stimuli quality to manipulate amount of depletion (Baumeister et al., Study 4, 1998). The natural environment was manipulated by using a basic testing room (control) and a nature room outfitted with plants and other aspects of a natural environment. To measure the effects of depletion, participants completed two trials on a handgrip persistence task before and after the depletion task. Participants also completed multiple surveys concerning their mood, the ego depletion task, and the handgrip task. Preliminary analyses (3 x 3 x 2 ANOVAs) suggest that nature and depletion impact both positive and negative emotional states. Natural environments appear to affect the amount of depletion experienced as evidenced by the performance on the handgrip task, as the decline in performance was greater in the control condition as compared to the natural environment conditions. The results suggest that natural environments enhance recovery from ego depletion, but may not necessarily attenuate the amount of depletion experienced.

PUBLIC HEALTH STUDIES**STUDENT PERCEPTIONS OF DIET QUALITY AND NUTRIENT CONTENT IN THE US AND INDIA**

Elizabeth C. Bacher (Professors Amanda Tapler and Elizabeth Bailey) Departments of Public Health Studies and Health and Human Performance

The American diet is documented to be lacking in fruits, vegetables, and fiber, with an excess of fat, protein and sodium, among other deficiencies and excesses. Evidence suggests that consumers perceive their diets as close to meeting accepted dietary guidelines. Other data indicates that college students exhibit some of the poorest dietary habits of all. During previous Public Health Studies (PHS) practicum in India, students expressed concern about the nutritional value of Indian foods compared to American. However, evidence is lacking as to whether these concerns are justified. The purpose of this study is to examine students' perceptions of the healthfulness of their diets, and to compare the diets of students in the US vs. India. Ten students participating in the PHS practicum were recruited for this study. Each completed a food diary and questionnaire twice, before travel and then during the practicum, to assess perceptions of nutritional quality and to assess the nutrient content of their diets. Prior to travel, data suggested students had a basic understanding healthy eating and the majority believed it to be very important, though most did not believe they were eating optimally at Elon. Concerns of the group about eating in India involved lack of control over food options and being unaware of the contents of Indian foods. Post travel results suggest the majority perceived they ate less healthfully in India due to lack of options and excess intake of carbohydrates. However, dietary analysis of both diets did not support student perceptions. Analysis indicates the Indian diet was lower in calories from fat ($\bar{x}_{USA}=36\% \pm 4.9$; $\bar{x}_{India}=27\% \pm 7.9$, $p=0.0064$) and higher in calories from carbohydrates though still within the recommended range of 45-65% ($\bar{x}_{USA}=45\% \pm 8.3$, $\bar{x}_{India}=60\% \pm 13.1$, $p=0.0081$). A trend of improvement in sodium intake and empty calories was also noted. Neither diet met the dietary recommendations for college students for most nutrients, supporting previous evidence of poor dietary habits in this group. Use of this information in pre-departure orientation is warranted to relieve anxiety associated with dietary options while participating in the practicum in India.

“I’M NOT FRAGILE. I’M NOT LIMITED”: CAREER ASPIRATIONS OF ADOLESCENTS AND YOUNG ADULTS LIVING WITH PERINATALLY-ACQUIRED HIV

Joanna M. Orefice & Amy E. Gatto (Dr. Cynthia D. Fair) Public Health Studies

Children born with perinatally-acquired HIV (PHIV) prior to the widespread availability of antiretroviral treatment in the 1990's were not expected to survive childhood. However, today survival rates have drastically improved and they are living well into adolescence and young adulthood. They are faced with same developmental tasks such as pursuing postsecondary education opportunities and establishing careers as same-age peers, made more challenging by their chronic and stigmatizing illness. Limited research has examined the career aspirations of AYA with PHIV. Better understanding of their interests and experiences is vital to developing evidence-based interventions to support the maturing cohort of this unique population. A cross-sectional sample of 33 PHIV was recruited from two pediatric infectious disease clinics in the

southeast U.S.. The mean age of participants was 20.5 (range 15-30 years). The majority of participants were African-American (n=29, 87.8%) and female (n=23, 69.7%). Semi-structured interviews explored career aspirations, perceived support for career interests, and the influence living with HIV had on their aspirations. Interviews were transcribed and coded for emergent themes. The majority of participants stated that parents/guardians and providers were supportive of their expressed career decisions. Results indicated that participants had developed open relationships with their medical providers who supported their decisions as long as they remained healthy and took their medication. Providers helped them find jobs, construct resumes, and offered tangible resources in support of educational/career efforts. The majority of participants (19) indicated their HIV status had little to no impact on their career aspirations indicating they had been able to do everything that they wanted to do. Other participants, particularly those who had experienced more severe health complications, recognized that their HIV status could serve as a barrier and contributed to their inability to pursue certain careers. Finally, several indicated that their experiences living with HIV served as a call to fight against HIV-related stigma and discrimination and work as an advocate for others. As AYA with PHIV transition into the workforce it is important to look at the many factors that impact their career aspirations and career decisions in order to support them as the mature into adulthood.

RELIGIOUS STUDIES

THE TABLE AS FRANCE'S MOST SACRED SPACE

Alexa M Dysch (Professor L.D. Russell) Department of Religious Studies

The basis for this project revolves around the consideration of what defines sacred within a cultural context, and what transforms places into spaces. Specifically, in the social context of France, sacred spaces are developed and defined by their concentrated culinary culture. Through hands-on experiential research, I discovered firsthand the depth to which culinary practices embody overall French culture, in which the table is the most sacred of spaces. Like the French, I developed memories during my time in France that were created in concurrent association with their food. Food culture is a culinary concept unique to each society, country, organization and person. Comparatively, this research provided the opportunity to study French sacredness alongside that of the United States. Such analysis of multiculturalism led to a personal, global understanding and collaborative thinking. The study of two different cultures and their connection between the holy and the culinary led to an understanding that the lifestyles of both the French and of Americans are wholly defined by drastically different features that are strongly demonstrated through their eating habits. Essentially, the concept of culinary sacredness to the French is different than that of Americans, and demonstrates their innate cultural differences. Specific sources for this research include *Sixty Million Frenchmen Can't Be Wrong* by Jean-Benoit Nadeau and Julie Barlow, *Spaces for the Sacred* by Phillip Sheldrake and *The Ecology of Eating: Smaller Portion Sizes in France than in the United States Help Explain the French Paradox* by Paul Rozin, Kimberly Kabnick, Erin Pete, Claude Fischler and Christy Shields.

ALL THE WORLD'S A STAGE- FRENCH PERFORMANCE ART AS A SACRED SPACE

Jacqueline A. Falick (Professor LD Russell) Department of Religious Studies

The entire country of France has a history deeply rooted in art, both visual and performance, which is still extremely evident today. This research looks at various examples of performance art experienced while studying abroad throughout France, such as a spontaneous street dance performance on the Champs-Elysees, a burlesque show at the Moulin Rouge, and a light and music show in a five million year old cave, and explores the sacrality of performance art and the time/space continuum in which performance art is captured as sacred space. Throughout my time in France, I experienced and studied various sacred spaces, both traditionally conceived and unconventional, from Notre Dame Cathedral to wine cellars and the Moulin Rouge. I studied the notion that a space becomes a sacred place for an individual because of the memories created there, not solely based on the space's religious associations. This presentation will show how dance, music and lighting can transform a particular secular space into a sacred place. The primary research methodology for this project was the examination and analysis of scholarly texts.

THE ROLE AND DENIAL OF DISPENSATIONALISM IN CHRISTIANS UNITED FOR ISRAEL

Pamela C. Gutermuth (Dr. Geoffrey Claussen) Department of Religious Studies

This paper focuses on the role of Dispensationalism in the formation and theology of the Christians United for Israel, an 8 year old organization founded by televangelist and dispensationalist John Hagee of San Antonio Texas. Dispensationalism is a biblically based approach to history that sees different periods or dispensations during which God administers affairs in different ways, and with different tests. The ends and beginnings of different periods are marked by specific events, often major ones such as the banishment from the Garden of Eden, which marked the end of the first dispensation. For Christians United for Israel, an evangelical American Christian Zionist organization, it is a foundational theology. Surprisingly though, the role of Dispensationalism as a foundational theology is denied by the organization, and in this paper, I investigate the reasoning behind this theological denial. I draw on public statements and writings by Christians United for Israel members, the board of directors, and the founder, to analyze the reasons behind this denial. I argue first that the role of Dispensationalism in Christians United for Israel is as a uniting theology for the over 1.25 million members. My second argument is that Christians United for Israel denies the role of Dispensationalism because they fear that it will turn the opinions of the American and Israeli general public against them because of the generally negative public view of the theology. I considered the opinions of Americans and Israelis separately though, and in both cases, I found that Christians United for Israel did not try to hide the theology from these individuals as much, but for very different reasons for Americans and Israelis. For American politicians, I found that they were actually more likely to support Christians United for Israel because they personally agree with the theology. With Israeli politicians though, I found that they see Dispensationalism more as an asset, because of the sizeable pool of Americans who believe in this theology, and thus could be moved to help support Israel when called upon.

CHRISTIANITY IN THE SHADOW OF THE SHOAH: EXPLORING THE SOCIAL DIMENSIONS OF RELIGION

Sarah K. Holland (Dr. Jeffrey C. Pugh), Department of Religious Studies

A long history of Christian anti-Semitism allowed the Nazi regime to legitimate the persecution of Jews. This project explores how the tradition of Christian anti-Semitism laid the foundation for the Holocaust and how some were able to resist the enormous cultural pressure and appeal to hatred. Through the lens of sociological theories of religion, I will show how religion has historically functioned in society to legitimate practices and beliefs. Because anti-Semitic attitudes were grounded in the will of God, they went unquestioned by most Germans. Historical instances from Nazi Germany help us to see how reality was and can be perceived in a religious way that promotes hatred of the Other and thus explains why there was so little Christian resistance to the Holocaust. Anti-Semitism was rampant in Europe in the 1900s, but in Germany it had a particular religious legitimization provided by the German national hero, Martin Luther, who preached hatred for the Jews and promoted violent action towards them. A sect within German Protestantism, the German Christians, cited Luther's teachings as justification for the November pogrom of 1938, also known as Kristallnacht. This same group sought to align the church with Nazi ideology by removing all Jewish elements from Christianity and portraying Jesus as an Aryan. These examples and others illustrate how the majority of Christians lived within a worldview that reconciled their religion and their country's culture. However, even in the midst of this social construct there were some individuals, referred to in this presentation as rescuers, who resisted appeals to racist hatred. What created the social distance for these people to allow them to save Jews? Can there be lessons for how religion can shape the type of social agents who resist appeals to group hatred or destructive nationalism? This research finds that a critical distance between one's religion and culture was integral for Christian rescuers. This is an important lesson for the contemporary world and all who seek to prevent similar atrocities in the future.

SACRED SPACE AND HOW IT IS INFLUENCED BY PERSONAL EXPERIENCE

Colby A Meagle (L.D. Russell) Department of Religious Studies

The purpose of this research is to examine how sacred space is interpreted by both the traveler and by the citizen in similar and diverging ways. When traveling to France I experienced a variety of spaces that were recognized as sacred, as well as those that were less customary. I learned how personal experience and interaction with a place, paired with its history, influences its relationship to the community and to an individual. France is filled with spaces that have been historically recognized as sacred, such as the Cathedral of Notre Dame and the Basilica Sacré-Coeur. While these beautiful churches are undoubtedly sacred spaces, they are so for more than just their distinction as churches. My personal experience of them helped clarify that these places are also a kind of time capsule, and a testament to the history that they hold and the many people who came before, who also believed them to be sacred. In addition to the traditional spaces, I found that there were many natural places in France that were just as deserving of the title of sacred. These places included the beach, the subway, and even restaurants. These places were sacred because of my personal interactions with them, as well as the way they were treated by the French. My research explores how these places become sacred, and why it is right to call them so. My research is based on texts that I have read, academic research, and study abroad experience.

JEWISH-CHRISTIAN DIALOGUE THROUGH VISUAL RHETORIC

Paige E. Ransbury (Dr. Claussen) Department of Religious Studies

Jewish and Christian formations of identity span centuries of time, multitudes of forms and styles, and widely varied theological, social, and political reflections. This paper analyzes visual

artifacts such as paintings, carvings, and illustrated manuscripts for the various ways in which Jews and Christians constructed their own and each other's identities in art throughout time and space. I argue that through their depictions of religious and historical figures, events, and practices, Jewish and Christian artists erased, created, superseded, and reclaimed identity. Such depictions both reflected and shaped historical and social contextual factors. The significance of, for example, Albrecht Dürer's fair-skinned and blond-haired Jesus in *Christ Among the Doctors*, or the Winchester Psalter's representation of grotesque Jews, or the inclusion of Jewish prophets in Christian art, is more readily understood in the context of a long history of Jews and Christians attempting to form and understand their identities. Taken together, these pieces and others created consciousness and perpetuated narratives that had significant consequences in political and social spheres. Examining Jewish identity formation during the Holocaust calls attention to the striking consequences of removing Jesus from his Jewish context, propagating nasty stereotypes, and accepting supersessionist claims. Furthermore, the legacy of artistic "dialogue" between Jews and Christians often informs modern day explorations of Jewish and Christian religious and cultural identities through art.

APOCALYPTIC AND MONSTROUS REVELATIONS: THE TEMPTATION OF AZAZEL IN THE APOCALYPSE OF ABRAHAM

Sarah E.S. Schmer (Dr. Lynn Huber) Department of Religious Studies

Evil tempters in biblical traditions and descriptions of the monstrous are often used in ancient texts to illuminate the supposed wickedness of humankind. Such is the case with the figure of Azazel in the *Apocalypse of Abraham*. Composed in the first century CE (70-150 CE), this non-canonical Jewish biblical text continues to baffle reader's imaginations. In Second Temple Jewish literature, apocalyptic authors continued to react or reflect on the challenges that stemmed from the demolition of the Jerusalem temple in the year 70. Using the tools of close textual analysis, as well as understanding the historical milieu of the work, I explore how this text expresses this reality by depicting Azazel as the personification of impurity. Azazel shall also be discussed in relation to temptation, and the proposal that almost any soul may, at least partially be tempted toward evil. Scholars assent that Azazel is presented as a spirit who tempts moral beings in the direction of descending to his own lowly unclean level, these impulses may even be naturally instilled within all beings, however, are usually resisted. This addresses the idea that all souls have the ability to be lured toward wickedness. Andrei Orlov, David Sperling, and Basil Martin are among authors who agree that Azazel is presented as a representation of evil and impurity, as well as articulate that Azazel is a fallen angel, and present the way he may have fallen as to be the tempter of humankind. Azazel, the demon and fallen angel's relationship to Abraham within this text is one of tempter who interacts with victim, and is appropriately rejected, as a way to prove the righteousness and inherent goodness of Abraham. Within the Second Temple Jewish tradition, it is important to note that not all spirits are intended to create chaos, however, Azazel is certainly a spirit, fallen angel, and demon presented in a negative manner. This research is central in understanding ways in which traditions about Satan and evil surfaced in the ancient world through outlining the historical soil and context of the time period, as well as monster traditions in biblical contexts.

SOCIOLOGY/ANTHROPOLOGY

PERSONAL EXPERIENCE NARRATIVES OF PUBLIC AID RECIPIENTS: EMIC STRATEGIES FOR SUCCESS

Kristen A. Bryar (Dr. Tom Mould) Department of Anthropology

This research aims to give public aid recipients a chance to tell their personal stories in order to better identify barriers and strategies to self-sufficiency. As a part of the PERCS collaborative Voices of Welfare project, my research attempts to use these stories as counter-narratives to the often exaggerated portrayals of welfare in the media. The data was collected using semi-structured interviews of 18 residents or employees of Burlington Housing Authority communities. Participants were found using a convenience sample. The interviews included both closed and open coding, which helped identify popular themes among participants to inform later interviews. Strategies articulated by participants included: 1. Seeking further education, 2. Finding motivation to change circumstances, 3. Taking advantage of programs offered by Burlington Housing Authority, 4. Applying for disability, 5. Developing social networks for shared child care, and 6. Finding reliable transportation. Many of these themes are supported by a quantitative study conducted by Kathy Colville and Elon students in 2012, as well as in Karen Secombe's *So You Think I Drive a Cadillac* (2010). However, the data diverged from previous studies and literature along the theme of these negative views of welfare extending to those who receive it. Another divergent theme had to do with self-sufficiency and what it means to people. Participants expressed varying ideas about their American Dream, such as completing certain education programs, living in a safe environment for their children, and even feeling that the American Dream did not necessarily apply to them. This leads to the question of whether self-sufficiency is really what people are perceiving as a realistic, proximate goal. This knowledge can give public aid providers more insight into working with this population and also allow for policy makers to have a more realistic insight into issues concerning welfare. Perhaps most importantly, this knowledge can challenge some of the pervasive stereotypes that continue to shape public perception.

THE POWER OF THE FOURTH ESTATE: MEDIA FRAMING OF HITLER AT THE HEIGHT OF CONFLICT

Katherine E. Blunt (Dr. David Copeland) School of Communications

This research uses media framing theory to guide a historical analysis of how American news media facilitated the public's understanding of Hitler as he gained political influence and acquired a following between 1923 and 1929. I quantitatively and qualitatively analyzed media frames appearing in coverage of Hitler during this period in order to determine how popular news media both reflected and shaped public opinion of one of the most important world leaders of the twentieth century. Because media frames are capable of influencing public opinion and political socialization, it is imperative that we understand how mass media frame the nation's political adversaries, and, by association, the ideologies, cultures, and people they represent. Only a small number of scholars have examined the media's role in covering Hitler's early years and the coming of the Holocaust, and none has systematically analyzed coverage spanning this period of his political influence. My analysis revealed that the frames used to portray Hitler in the 1920s can be classified as "credible" and "non-credible." Subframes that supported Hitler's credibility generally emphasized his persuasive and oratorical ability, popular support, military

capability, diplomatic efforts, influential relationships, and, in some cases, the illegality of his actions. Subframes that undermined Hitler's credibility generally highlighted his non-German citizenship, artistic background, lack of popular support, lack of military capability, political impotency, and, in other contexts, the illegality of his actions. Prior to his failed "beer hall putsch" in 1923, the credibility frame was slightly more prevalent than the non-credible frame, but after the putsch, the non-credible frame dominated coverage, for reports often presented Hitler's failure to overthrow the government as evidence of his lack of political skill and frequently emphasized his Austrian heritage and his artistic background as proof of his supposed incompetence. Coverage of Hitler decreased significantly after his trial for treason in 1924. By the end of the decade, he and his party had become largely obscure in the eyes of the American media, and when he reentered the public eye in 1930, correspondents necessarily had to reintroduce him to the American public and reassess the scope of his influence.

THE PUBLIC HEALTH IMPLICATIONS OF FAMILY COMPLETION CHOICES

Nicole C. Panaggio (Dr. Alexis Franzese) Department of Sociology and Anthropology

Individuals and couples use a variety of different methods to discontinue reproduction and have varied ways of arriving at the decision that they do not want to add children to their family. This research focuses on investigating how the decision to complete one's family relates to trends in reproductive medicine and public health. Previous studies have focused on examining the utilization of contraceptive choices including permanent and non-permanent forms of birth control while largely neglecting the broader process of how individuals and couples make those choices within their larger family-building goals. This study will analyze perspectives on medical and biological methods to discontinue reproduction as they relate to the fields of healthcare and public health. Specifically, this study explores how men and women choose specific methods to discontinue reproduction and investigates reproductive choices as a holistic process with emphasis on not only the methods used to discontinue reproduction, but why families decide to discontinue reproduction and how their methods align with their broader objectives. Semi-structured interviews will be conducted with approximately two dozen adults to explore the intricacies of this decision-making process. The results of these interviews will be considered within the context of the public health and reproductive medicine literatures. The interview data are expected to provide important insights regarding what factors ultimately contribute to couple's decisions to discontinue reproduction and the implications of those choices for health and well-being. The implications of these choices will be analyzed in relation to the public health literature on contraceptive practices and reproductive medicine.

AUTHENTICITY, OLDER ADULTS, AND SEXUAL ORIENTATION: IMPLICATIONS FOR MENTAL HEALTH

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Studies have shown that rates of mental illness are generally higher for older aged individuals who identify as LGBT than for older aged individuals who identify as heterosexual. Authenticity, or the subjective perception that one's behavior reflects one's true self, may contribute to experiences of mental health and well-being across age groups. Furthermore, feelings of inauthenticity have been identified as factors that negatively influence mental health. This research explores whether the extent to which the members of each population feel as if they can be authentic may provide some insight into the discrepancy in mental health between

these two populations. Interviews were conducted with a community sample of approximately two dozen older aged (55+ years) individuals about their experiences of authenticity over the life course, particularly in terms of their development as someone who identifies as heterosexual or non-heterosexual. Both lesbian and gay participants as well as their heterosexual peers associate the process of coming to terms with their sexual identity with feelings of anxiety. The source of this anxiety for older aged lesbian and gay individuals, however, is both similar to yet distinct from the source of anxiety experienced by older aged heterosexual individuals. Overall, the results suggest that experiences of authenticity have a more significant influence on the experience of coming to terms with one's sexual identity for older aged lesbian and gay participants than for older aged heterosexual participants.

SPORT AND EVENT MANAGMENT

A NEEDS ASSESMENT FOR GIRLS SPORT PROGRAMMING IN ALAMANCE COUNTY

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In Alamance County, little is known about the availability and success of youth sport programming for low income girls. Thus, the focus of this project is to assess both the need for and feasibility of a youth sport program specifically targeting this audience. Semi-structured interviews (n=10) were conducted with Elon faculty, staff, and students as well as members of the Alamance County community who have a background in youth programing and development. Additionally, document and content analysis of literature relating to needs assessments, youth development through sport, and establishing youth sports programs was conducted. The analysis process uncovered themes about youth sport programming in the community, as well as what opportunities are available for low income female athletes and whether the interviewee's thought a female sport program is necessary. Preliminary themes indicate that a soccer program geared towards low income girls within Alamance County is not currently available. Throughout our research we have found that there are populations of underserved females within Alamance County that can benefit from a program that focuses specifically on meeting their needs. Learning how to reach these populations, properly mentor them, and create a program that is sustainable are our goals to best serve the participants. Also, imbedding ourselves with an established community organization has been recommended by subjects as a means to creating the best program possible. Additional subjects from Elon University and Alamance County will be interviewed and data analysis is ongoing.

THEATRICAL DESIGN AND PRODUCTION

UPCYCLING & THE SEASONS

Claire Kelly Bonnell (Professor Jack Smith) Department of Theatrical Design & Production

I have conducted research looking into how the recycling of fibers and materials while adding value is possible to implement into fashion, and in turn develop the production ways of the future. I have studied how fashion houses have used and are developing use of recycling. I have discovered how the connection between the reuse of fibers with seasonal and environmental changes affects the way humans dress. This studies how the new form of added elements creates value and reverence in addition to implementing seasonal affects and natural tendencies developing the design of garments. My goal is to work in upcycling (reusing resources but adding value) fibers and used materials in new and interesting ways to develop more creative and artistic ways of presenting fashion designs. By doing this, I will learn how to implement the manipulation and new ideas of previously consumed clothing, textiles, fibers, and more. I have prepared inspiration boards about the textures, ideas, and silhouettes I am interested in making. In order to prove this, I am building a half scale fashion exhibit with found materials and season elements. With the development of my own designs, I have discovered methodology behind developing fibers in new use is both environmentally friendly and of value in fashion. This new area of information is important because it is a necessary factor in the future of fashion due to the reduction of materials and need to find new methods of producing fashion and developing new areas of the retail industry.

