



4-2010

Undergraduate Scholarship in the College of Arts and Sciences Book of Abstracts 2010

Winthrop University

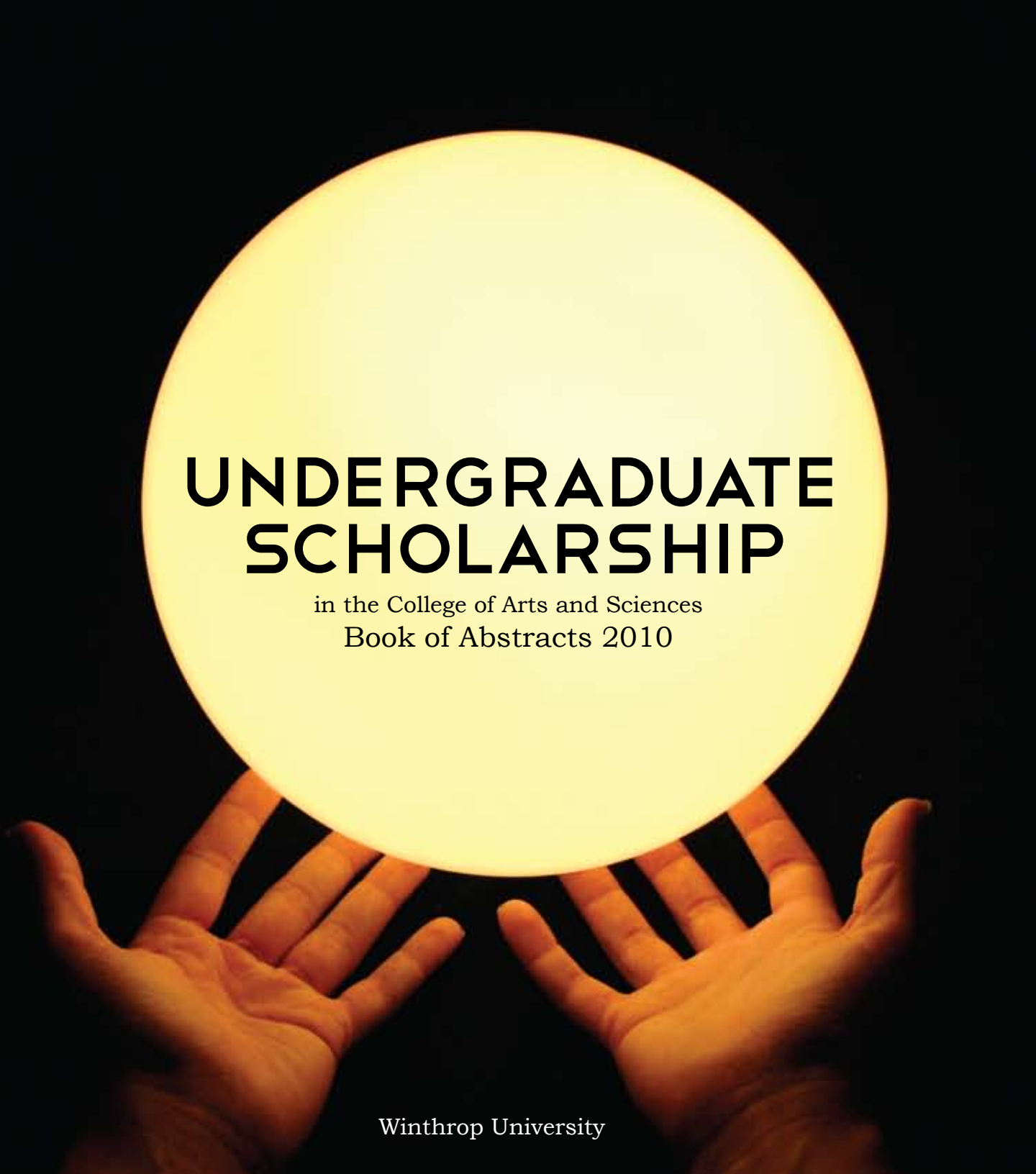
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A large, glowing yellow circle is centered in the frame, held up by two hands from below. The hands are positioned symmetrically, with fingers spread, supporting the circle. The background is solid black, making the bright yellow circle and the skin tones of the hands stand out. The text is centered within the circle.

UNDERGRADUATE SCHOLARSHIP

in the College of Arts and Sciences
Book of Abstracts 2010

INTRODUCTION

**“IT IS THE SUPREME ART OF THE TEACHER TO AWAKEN JOY
IN CREATIVE EXPRESSION AND KNOWLEDGE.”**

—*Albert Einstein*

**“THE BEGINNING OF KNOWLEDGE IS THE DISCOVERY OF
SOMETHING WE DO NOT UNDERSTAND.”**

—*Frank Herbert – U.S. science fiction novelist (1920-1986)*

The College of Arts and Sciences proudly presents the eighth issue of the *Book of Abstracts*, which highlights the work conducted by students in collaboration with faculty mentors. This collection of abstracts represents many hours of scholarly activity in which students further developed their research, critical thinking, and writing skills and engaged in learning well beyond the classroom.

We congratulate the students and their faculty mentors for the quality of their work and their willingness to share it with the academic community through publications in refereed journals and presentations at regional, national, and international meetings. We thank Evan Adams for editing the abstracts, Tori McLean, a Visual Communication Design major, for designing the cover, and Erinn Abarbanell and Beth Anna Graham, also Visual Communication Design majors, for laying out the book text.

This year, we also thank Dr. Thomas Caskey, Director & CEO of The Brown Foundation Institute of Molecular Medicine and Genetics, for his donation to the Winthrop University Undergraduate Research Initiative in honor of his mother, Inez Caskey, who is a Winthrop alumna (class of 1930). Dr. Caskey's generous gift helped in the production this book and established the Inez Bell Caskey Student Scholar Award.

Dr. Dwight D. Dimaculangan
Director of Undergraduate Research
College of Arts and Sciences

Dr. Debra C. Boyd
Dean of the College of Arts and Sciences

April 2010

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WINTHROP UNIVERSITY

UNDERGRADUATE RESEARCH INITIATIVE

COLLEGE OF ARTS AND SCIENCES

The Winthrop University Undergraduate Research Initiative (WUURI) supports a student-centered learning environment that fosters student research, scholarship, and creative activities. The Initiative encourages students and faculty mentors to collaborate in the design and implementation of projects and the dissemination of results.

DIRECTOR OF UNDERGRADUATE RESEARCH:

Dwight Dimaculangan, Ph.D.

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Kristi Westover, Ph.D. – *Biology*
Kimberly Wilson, Ed.D. – *Biology*

PUBLICATION ABSTRACTS

AN ESSENTIAL DISTORTION: THE FORM AND STYLE OF *THE SOUND AND THE FURY*

Published in The Sigma Tau Delta Review, Vol. 7, 2010

While William Faulkner's work has lent itself well to critical interpretations, Faulkner's unconventional use of form in his writing remains the reason that he is particularly interesting to study as a writer. Some have even criticized his work for this same unconventional use of style and form. Donald M. Kartiganer, for example, declared that Faulkner's "*The Sound and the Fury* is the quintessence of fragmentation failing to unify itself." This failure of unification that Kartiganer describes is not a failure at all. In fact, the way in which Faulkner achieves successful unity in his novel is one of the work's most appealing aspects. Faulkner's deliberate and varied execution of unorthodox and orthodox format and style is an essential piece to his novel, as important as the words on the page, ultimately achieving two things: the unique and believable genesis of separate and unique characters, alienated from one another, through use of creative form, and also the skillful juxtaposition of those "fragments" to create a unified work of fiction, not a fragmented one. This is proven by analyzing Faulkner's varied stylistic devices for his different narrators (the Compson brothers: Benjy, Quentin, and Jason), comparing and contrasting those devices (such as Benjy's lack of chronology to convey the character's lack of mental development, or Quentin's lack of conventional grammar and punctuation to convey his gradual demise into insanity), and finally presenting a case that these differently written fragments all seek to achieve the same goal: to create a full image of Caddy, a character who was Faulkner's inspiration for the entire novel from the beginning.

Dylan Phillips, 2010

*Department of English
(ENGL 324-Bickford)
Faculty Mentor:
Leslie Bickford, Ph.D.*

THE EFFECT OF CYTOPLASMIC MALE STERILITY ON THE EXPRESSION OF B AND C CLASS FLORAL-IDENTITY GENES IN PETALS, STAMENS, AND BUDS OF TOMATO SPECIES AND HYBRIDS

*Published in Report of the Tomato Genetics Cooperative, Vol.55, p.19-28, 2009
Presented at the Big South Undergraduate Research Symposium, Radford,
Va., April 2010
Supported by a Winthrop University Research Council Grant*

Kate Davis, 2010
Elizabeth Elmore, 2011

*Department of Biology
(BIOL 300, 471 -
Stoeva-Popova)
Faculty Mentor:
Pravda Stoeva-Popova, Ph.D.*

Cytoplasmic male sterility (CMS) is inherited from the female parent and results in inability to produce viable pollen. CMS is caused by mitochondrial dysfunction, which disrupts the normal expression of numerous nuclear genes necessary for development of male reproductive structures. According to the floral quartet model, the four consecutive whorls of floral organs develop in accordance with the expression of four classes of floral-identity genes (A, B, C, and E). TAP3, TM6, and TPI are B class genes, necessary for petal and stamen identity. The C class genes, including TAG1 and TAGL1, are essential for the proper formation of petals, stamens, and buds. Our goal was to compare the expression of B and C class genes in petals, stamens, and buds of tomato species and hybrids with varying pollen sterility. It was hypothesized that the floral-identity genes would be expressed in petals, stamens, and buds of the fertile sources and down-regulated in the CMS source. Using RNA extracted from each source, RT-PCR was performed. The expression of the genes was analyzed with gel electrophoresis and spot densitometry. All genes were expressed in the petals and stamens of the mature flowers and in the developing buds in the CMS plants, fertile homologue, and cultivated tomato. These results do not support the hypothesis that the altered expression of TM6, TAP3, TPI, and TAG1 is correlated to the male sterility phenotype; however, the differential expression of TAGL1 could indicate the involvement of retrograde regulation.

HONORS THESIS ABSTRACTS

EFFECTS OF ETHNICITY AND ACCULTURATION ON HISPANIC MEDIA PREFERENCE FOR SUPERMARKET PROMOTIONS

*Presented at the Southern Regional Honors Conference, Greenville, S.C.,
March 2010*

Much attention has been given to Hispanic consumers in recent decades due to the increasing size and buying power of the Hispanic market in the United States, which will make up one-fifth of the U.S. population and \$1 trillion in annual spending by 2020. However, while many studies have investigated the acculturation process or media preferences, little attention has been given to Hispanic preferences for receiving promotional materials. Using a survey instrument, this study examined Hispanic consumers' interaction with supermarket promotions: specifically, circulars (in the newspaper, in the mail, or in the store), advertisements (in the newspaper, on television, or on the radio), e-mails, and corporate web sites. Survey results found circulars in the mail were the most popular vehicle for the population as a whole and also for both Hispanic and non-Hispanic ethnicity groups. Within the Hispanic ethnicity group, Low Acculturation Hispanics also preferred circulars in the mail; only High Acculturation Hispanics preferred a different medium: circulars in the newspaper. The least popular category overall was corporate Web sites. It was also the least popular medium for the Hispanic ethnicity group, and within that, both Low and High Acculturation Hispanics. For the non-Hispanic ethnicity group, the least popular media vehicle was radio advertisements. These findings should assist marketers in reaching Hispanic consumers via the appropriate media vehicles.

Kristyn Edwards, 2010

*Department of Mass
Communication*

Honors Thesis Committee:

Marilyn Sarow, Ph.D.

Pedro Munoz, Ph.D.

Jane Thomas, Ph.D.

STUDENTS' REACTIONS TO PROFESSORS' FACEBOOK USE DEPEND ON PROFILE INFORMATION

Presented at the Southern Regional Honors Conference, Greenville, S.C., March 2010, and the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Aimee West, 2010
Jason Laboe, 2010

*Department of Psychology
Honors Thesis Committee:
Merry J. Sleight, Ph.D.
Kathy Lyon, Ph.D.
Donna Nelson, Ph.D.*

Mazer, Murphy and Simonds (2007) recently demonstrated that high self-disclosure, compared to low self-disclosure, on a fictitious professor's Facebook profile was related to students' expectations of a positive classroom environment and high levels of motivation. These findings raise the question of whether all types of self-disclosure would have the same effect. This study examined college students' perceptions of specific ways that professors might use Facebook. We created six Facebook profiles for a fictitious male professor, each with a specific emphasis: Republican, Democrat, religious, family-oriented, socially-oriented, or professional only. While viewing a printed version of one of the randomly distributed profiles, participants responded to questions that assessed their perceptions of the professors' teaching ability, classroom demeanor and appropriateness of self-disclosure, as well as their own Facebook use. Students responded most negatively, but sometimes with greatest interest, to professors' posting of social and political information. Appropriate use of Facebook increased students' respect for the professor and his classroom. These findings could be very helpful in guiding professor Facebook use.

ROE V. WADE AND ABORTION IN TODAY'S SOCIETY AN EXPLORATION OF PRECEDENT, CURRENT LAWS, AND INTERPRETATION

*Presented at the Southern Regional Honors Conference,
Greenville, S.C., March 2010*

Rachel Heidenberg, 2010

*Department of
Political Science
Honors Thesis Committee:
Michael Lipscomb, Ph.D.
Timothy Boylan, Ph.D.
Kelly James, Ph.D.*

This paper explores the history of abortion in the United States centered on the pivotal Supreme Court decision *Roe v. Wade*. This exploration includes a description and analysis of *Griswold v. Connecticut*, the Supreme Court decision that was used as a precedent in *Roe v. Wade*. Additionally, this paper examines subsequent decisions concerning abortion that have somewhat modified the reach of the *Roe v. Wade* decision, including *Webster v. Reproductive Health Services* and *Planned Parenthood of Southeastern Pennsylvania v. Casey*. *Webster* and *Casey* are articulated within the framework of *Roe v. Wade* and are examined to determine whether they violate an individual's guarantees to privacy and property rights as outlined by Amendments Nine and Fourteen of the United States Constitution. In asking this question, this

thesis argues that the standing law as determined by these Supreme Court cases does not go far enough to protect the privacy rights of

pregnant women. Additionally, the laws concerning abortion will be examined to determine their appropriateness in today's society and their Constitutional validity.

A CLOSER LOOK AT THE FACTORS THAT AFFECT MISDEMEANOR OFFENDERS

*Presented at the Southern Regional Honors Conference,
Greenville, S.C., March 2010*

This study examines the common belief that misdemeanor offences are usually committed by individuals from lower socio-economic classes. I suggest that this is a misconception and that individuals from all classes commit misdemeanors. The data are from the Monitoring the Future: A Continuing Study of American Youth (12th-Grade Survey), 2000-2008 (University of Michigan. Institute for Social Research Survey Research Center). I will focus on 12th grade students from the years 2000 to 2008. For the purposes of this study, a misdemeanor is less severe than a felony and includes such crimes as disorderly conduct, shoplifting, public drunkenness, or minor assault. In addition, conviction for a misdemeanor usually results in a fine or imprisonment in a jail for less than a year. I will examine evidence for the common belief about the characteristics of misdemeanor offenders and explore other influences on those who commit misdemeanors.

Kathryn Gregory, 2010

*Department of Sociology
and Anthropology
Honors Thesis Committee:
Jennifer Solomon, Ph.D.
Brad Tripp, Ph.D.
Jonathan Marx, Ph.D.*

THOU SHALL NOT KILL: VEGETARIANISM IN THE CHRISTIAN FAITH

*Presented at the Southern Regional Honors Conference,
Greenville, S.C., March 2010*

This paper explores the connection between vegetarianism and Christianity. Using data collected through the General Social Survey, this research attempts to locate denominational traits within the Christian faith that tend to attract vegetarian adherents. Also examining the apparent contradictions between scripture and practice within the Christian faith (such as how "Thou shall not kill" does not entail protection of animals), this research attempts to illuminate some of the factors that lead people to adopt certain dietary practices.

Leanna Greenwood, 2010

*Department of Sociology and
Anthropology
Honors Thesis Committee:
Jennifer Solomon, Ph.D.
Douglas Eckberg, Ph.D.
Jonathan Marx, Ph.D.*

THE EVOLUTION OF HAPPINESS

*Presented at the Southern Regional Honors Conference, Greenville, S.C.,
March 2010*

Amanda Tootill, 2010

*Department of Psychology
Honors Thesis Committee:
Kathy Lyon, Ph.D.
Heidar Modaresi, Ph.D.
Jeff Sinn, Ph.D.*

This research brings together several theories of the evolution of happiness and other positive emotions. The biological, psychological, and social function of positive emotions will be discussed by surveying David Buss' theory of evolution and research on the development of happiness. Buss' theory will then be analyzed to the extent it affects and applies to the human condition today.

COMPENSATORY HEALTH BELIEFS PREDICT OTHER NEGATIVE COGNITIVE STRATEGIES

*Presented at the Southern Regional Honors Conference, Greenville, S.C.,
March 2010*

Lilah Campbell, 2010

*Department of Psychology
(PSYC 450H-Sleigh)
Honors Thesis Committee:
Merry Sleigh, Ph.D.
Kathy Lyon, Ph.D.
Joseph Prus, Ph.D.*

Compensatory Health Beliefs (CHB) are a common strategy used to reduce the cognitive dissonance that arises from participating in behaviors recognized as unhealthy. The current research examines relationships between compensatory thinking and other cognitive and behavioral variables previously unresearched. Data was collected in two phases, using survey methodology. Study 1 explored relationships between the use of CHB, impulsiveness, and coping styles. Sixty adults with a mean age of 29.12 years (SD = 12.54) completed an 81 item paper questionnaire. Study 2 developed the inquiry by exploring relationships to health perception and knowledge. One hundred and forty adults with a mean age of 31.44 years (SD = 13.86) completed a 62 item online questionnaire. Participants who scored high on overall CHB were more likely to: engage in maladaptive coping strategies, including avoidant coping styles ($r = .38, p < .01$) and unhealthy coping styles ($r = .47, p < .01$), score higher on measures of impulsivity ($r = .43, p < .01$), be less well-informed about their general health ($r = -.21, p < .05$), eat fast food more often ($r = .22, p < .05$), and consider it safe to smoke more frequently ($r = .18, p < .05$). Participants with lower CHB scores considered themselves more well-informed about their general health ($r = -.21, p < .05$), including understanding the minimum recommended amounts of physical activity needed to maintain health ($r = -.35, p < .01$), and knowing the health risks of stress ($r = -.19, p < .05$). In addition, maladaptive coping was positively correlated with lack of general health knowledge ($r = -.22, p < .01$), less understanding of the risks of stress

and alcohol ($r = .20, p < .05$), less knowledge of the recommended daily amounts of physical activity needed for health, less frequent exercise ($r = -.26, p < .01$), and generally more unhealthy daily habits ($r = -.26, p < .01$). These findings contribute to a new area of investigation and may be useful to those who want to motivate behavior change.

KILLING THE ANGEL OF THE HOUSE IN WOMEN'S LITERATURE

Presented at the Southern Regional Honors Conference, Greenville, S.C., March 2010

In a poem he dedicated to his wife, Coventry Patmore develops the ideal feminine image of the Angel in the House. This woman is beautiful, graceful, pious, and pure, as well as a skilled housekeeper, wife, and mother; she is also silent and self-sacrificing, to the point of becoming absolutely self-less. In her essay "Professions for Women," Virginia Woolf declares that she has killed the Angel of the House in order to become a liberated woman; Woolf claims self-defense for her "crime," saying, "if I had not killed her, she would have killed me." In this paper, I argue that the Angel of the House is not only a Victorian image, but that she appears throughout history, even into modern times, taking on different forms to meet society's changing ideals. Through an analysis of literature written by women across different literary periods as well as secondary criticism concerning their works, I examine the recurrent theme of killing the Angel, or overthrowing the self-less ideal in order for female characters to discover the self and become liberated, as Virginia Woolf did. I also examine a number of consequences that stem from shirking the societal standard. The narrator in Charlotte Perkins Gilman's short story "The Yellow Wallpaper," for example, becomes liberated from the Angel of the House by transforming into the crazy woman in the attic; Edna Pontellier from Kate Chopin's *The Awakening* ultimately becomes fully liberated through her presumed suicide. The common thread running throughout all of my examined literature, from the Victorian era through modern times, is that once a female character turns away from her culture's standard for the perfect woman, she is permanently ostracized and forced into drastic transformations in order to preserve her newfound liberty.

ANGEL OR LUNATIC: VISUALIZING OPHELIA IN NINETEENTH-CENTURY ENGLAND

Presented at the Winthrop University Department of English Undergraduate/ Graduate Research Conference, February 2010, and Southern Regional Honors Conference, Greenville, S.C., March 2010

Ashley Galloway, 2011

*Department of English
(ENGL 330–Gerald)
Honors Thesis Committee:
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Amy Gerald, Ph.D.
Siobhan Brownson, Ph.D.
Rebecca Evers, Ph.D.*

Katherine Parrott, 2010

*Department of English
(ENGL 305–Fike)
Honors Thesis Committee:
Clara Kulmacz, Ph.D.
Gloria Jones, Ph.D.
Matthew Fike, Ph.D.*

During the nineteenth century, Ophelia's character was seen from two differing perspectives: as a mentally unstable woman and as an angelic innocent. This paper examines these interpretations in selected performances and paintings. In the nineteenth century, an increasingly scientific society saw suicide as a result of mental illness. The ways Ophelia was represented on the stage and in paintings mirror this interpretive duality. While some actresses and stage managers attempted to maintain Ophelia's innocence by censoring sexually suggestive dialogue and by depicting her mad scene with a sense of mental clarity, other actresses visited insane asylums to discover ways to represent Ophelia's madness accurately. Nineteenth-century artists similarly drew from those two perspectives when painting her offstage death. Romantic painters, like Eugene Delacroix, explored the darker, mentally unstable Ophelia; Pre-Raphaelites, like John Everett Millais, painted her as an angelic and innocent female. These performances and paintings have implications for the eternal debate surrounding Ophelia's death as a suicide. Regardless of how she was perceived in life, her death was universally seen as an accident because neither madness nor innocence was considered sufficient reason for self-murder.

GATHERING POEMS: A COLLECTION OF ORIGINAL POETRY

*Presented at the Southern Regional Honors Conference, Greenville, S.C.,
March 2010*

Dylan Phillips, 2010

*Department of English
(WRIT 316, 516H,
501, HONR 405)
Honors Thesis Committee:
Evelyne Weeks
Jane Smith, Ph.D.
Kelly Richardson, Ph.D.
Leslie Bickford, Ph.D.*

This collection comprises poetry that examines a wide range of topics from the value of hard labor to existential philosophy in traditional narrative verse with an emphasis on immediately accessible concrete images.

MEETING ABSTRACTS

HAMLET'S OPHELIA: THE CHANGING PERCEPTIONS OF FEMALE SUICIDE, DEATH, AND MADNESS IN THE ELIZABETHAN AND VICTORIAN PERIODS

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

In the past, Shakespeare scholars looked at Ophelia's life and death as a series of three steps: her madness, her drowning, and her burial. However, most New Historical approaches to the character downplay her madness and emphasize Elizabethan views of suicide and burial rites. This thesis pursues historical and cultural inquiry into as yet uncharted territory. I will examine perceptions of Ophelia in the Elizabethan period and the nineteenth century-specifically, the role of drowning and the changing views of suicide and madness in both periods. Sections include a review of literature on Ophelia's death, suicide in Elizabethan and nineteenth-century England, and finally the perceptions of her character in each period. In linking historical moments separated by three centuries, this strategy will enable a fresh approach to an old question: Was her death an accident or a suicide?

Katherine Parrott, 2010

*Department of English
(ENGL 305-Fike)
Faculty Mentor:
Matthew Fike, Ph.D.*

EXPRESSION OF TBX20 DURING DEVELOPMENT IN CIONA INTESTINALIS

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

T-box genes are a family of transcription factors which have been shown to have a variety of significant roles in embryogenesis and contain evolutionarily conserved DNA-binding domains. *Ciona intestinalis* is a primitive chordate and an ideal model system for characterizing basic vertebrate embryonic development, in part, because the genome of *C. intestinalis* contains the basic ancestral complement of genes that are involved in vertebrate development. Heart development in *C. intestinalis*

Hannah Floyd, 2010

*Department of Biology
(BIOL 471-Evans-Anderson)
Faculty Mentor:
Heather Evans-Anderson,
Ph.D.*

is very similar to early vertebrate heart development due to evolutionarily conserved regulatory mechanisms. However, unlike mammalian hearts, the adult *C. intestinalis* heart is a single tube that is capable of regenerating cardiac myocytes in response to stress or injury. The clinical implications for characterizing the molecular differences between mammalian and *C. intestinalis* cardiac myocytes may provide insights to developing effective gene therapies for a number of human cardiac pathologies, including congenital defects and cardiovascular disease. In vertebrates, Tbx20 has been shown to regulate cardiac myocyte specification and proliferation, while mutations and knock-outs of Tbx20 in vertebrates have been shown to induce several congenital defects, including severe myocardial hypoplasia. The expression pattern of Tbx20 has not been determined in *C. intestinalis*. In this study, we will examine the expression pattern of Tbx20 during development and in specific organs of adult *C. intestinalis* using RT PCR and in situ hybridization. We expect to find differential regulation of expression of Tbx20 in the regenerative myocardium of the *C. intestinalis* heart.

JAZZ MUSIC MAY DIFFER BETWEEN GENDERS IN ITS EFFECTS ON READING COMPREHENSION

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Aimee West, 2010

*Department of Psychology
(PSYC 302-Hayes)
Faculty Mentor:
Matthew Hayes, Ph.D.*

Previous research studying music's effect on people who work while listening to it has shown increases or decreases in scores on serial recall, accuracy rates, and reading comprehension, dependent upon the specific music used (Baddeley, Cocchini, Logie, MacPherson, & Sala, 2002; Boyle & Coltheart, 1996; Furnham & Strbac 2002; Hallam et al., 2002). In this study, 36 undergraduate students from Winthrop University were asked to read three excerpts and take a reading comprehension test. The tasks were performed under three music conditions: no music, instrumental jazz, and jazz with lyrics. Each participant participated in each condition with three different reading comprehension tests. In this study, music with lyrics was expected to result in the lowest reading comprehension scores while music without lyrics was expected to have the highest scores. To determine whether instrumental and vocal music conditions would result in lower reading comprehension scores than the control condition, a repeated measures analysis of variance (ANOVA) was performed on the comprehension scores. There were no significant differences between the three music conditions, $F(2, 70) = .704, p > .05$. However, there was a marginally significant effect between test scores of non-freshmen men and women. Results from a two-way ANOVA examining the effects between gender and year showed a marginally significant effect between test scores of non-freshmen men and women, $F(1,32) = 3.608, p < .01$. Although the hypotheses were not supported, the difference between non-freshmen

genders in scoring could imply a difference between genders as age increases. Further study is recommended to explore this difference. While no statistically significant results that supported the hypotheses were discovered in this particular study, new understandings arose from it. This study focused on jazz music and reading comprehension, but there are countless other combinations of musical genres and cognitive tasks that could lead to a discovery of music's specific effects. The possible differences in learning between genders as age increases holds significance for professors of college classrooms. Further study would benefit both learners and teachers.

COMPARING THE EFFICACY OF PEPTIDE-BASED INHIBITORS AGAINST THE EARLIEST OLIGOMERS OF AMYLOID-BETA PEPTIDE

Presented at the National Meeting of the American Chemical Society, Washington, D.C., August 2009

Supported by a Winthrop University Research Council Grant

Alzheimer's disease is characterized by senile plaques composed primarily of amyloid-beta peptide (A-beta). However, recent evidence suggests that disease progression is most closely linked to small oligomers, rather than large, fibrillar aggregates. Although fibril formation has been inhibited in bulk solution, little is known regarding the inhibition of the earliest association steps. We have used single-molecule fluorescence spectroscopy to characterize the efficacy of four known peptide-based inhibitors. Fluorescein-labeled A-beta(1-40) is tethered to functionalized cover slips (pM concentrations). Spatially resolved monomers and oligomers are individually examined; the number of peptides in each species is determined based on quantized photobleaching of the individual dye molecules. By constructing distributions of monomers and oligomers, we have compared the inhibitor compounds under neutral and acidic conditions (pH 7.4 versus 5.8). Collectively, these studies provide new insight into the potential for reversing or preventing A-beta association in its earliest stages.

Lyndsey Powell, 2010
Kyle Dukes, 2008

*Department of Chemistry,
Physics, and Geology
Faculty Mentor:
Robin Lammi, Ph.D.*

"MY PERFECT SOUL": OTHELLO'S FAILURE AT INDIVIDUATION

Presented at the Winthrop University Department of English Undergraduate/ Graduate Research Conference, February 2010

This paper uses Jungian psychology-specifically, individuation, projection, the shadow, the primitive, and the anima (and animus) to prove that Othello from *Othello* kills his wife because he cannot integrate his shadow

Ruchi Dadheech, 2010

Department of English

(ENGL 305-Fike)
Faculty Mentor:
Matthew Fike, Ph.D.

into his Self. As a result, he projects the object of his shadow onto Iago, and Iago is able to manipulate him. Once Iago becomes the pilot of Othello's life, Othello loses his ability to think logically and kills Desdemona. I discuss previous scholarship from H. Omer and M. Verona who compare Othello to a patient who has been maltreated by his "doctor," Iago. I present Matthew A. Fike's work to show that Othello (a primitive man) is predisposed to tragedy because he has never had the necessity to individuate in his non-western world. I also quote Terrell Tebbets who says that Othello does not come to terms with his unconscious. All of these quotations are used to corroborate the argument that Othello kills his wife so hastily because he has not individuated. To prove my thesis, first I say that Othello believes that he has a "perfect soul," showing that he is unaware of his shadow. As a result, this Moor becomes vulnerable to projecting the object of his shadow onto the Venetian, Iago. In only a few hours, Iago is able to persuade Othello into thinking that Desdemona, his wife, has cheated on him. Othello neglects his wife (anima) while esteeming Iago (the object of his shadow) and then kills Desdemona as an act to save her soul. The irony of believing that he has a perfect soul is his greatest fault. Because he does not individuate, he ends up muddled in thought, irrational in action, and loses all sense and control over his life. In the end, he cannot confront his act of killing Desdemona, and he is so far beyond individuation. His last act of redemption is to kill himself, creating yet another act of imperfection.

THE LOST COLONY AT ROANAKE: A SUCCESSFUL FAILURE

Presented at the Carolinas' Regional Phi Alpha Theta Conference, Conway, S.C., April 2010

James Guyett, 2010

Department of History
(HIST 473-Cornish)
Faculty Mentor:
Rory Cornish, Ph.D.

This paper originated in an independent study research class and concerns the failed first English settlement in Roanoke, N.C. in 1585. Two other attempts were made to resettle the colony in 1586 and 1587. Though all failures, this paper argues that the lessons learned by the English at Roanoke greatly influenced later attempts at creating a permanent settlement in Virginia and beyond. The attempts at English colonization in America were also put into the context of English colonization of Ireland and the lessons learned from European interaction with Native Americans. These lessons learned greatly influenced the form and substance the later colony at Jamestown took in 1607.

INVESTIGATING STRUCTURAL HETEROGENEITY IN DIMERS OF AMYLOID-BETA PEPTIDE

Presented at the National Meeting of the American Chemical Society, Washington, D.C., August, 2009

Supported by an RUII grant from the National Science Foundation

Recent evidence suggests that soluble amyloid-beta (ABeta) oligomers as small as dimers may be linked to the progression of Alzheimer's disease. We have used single-pair FRET measurements to investigate heterogeneity in surface-tethered dimers of ABeta(1-40), probing for preferred structures. Dimers are prepared by combining monomers singly labeled with donor and acceptor dyes; dimers prepared in solution (prior to surface-tethering) and on the functionalized surface have been examined. Donor and acceptor fluorescence are separated onto two detectors, such that co-localized spots in two-color images indicate dimers, as well as larger species, which are excluded based on their fluorescence intensity profiles (quantized photobleaching). By measuring donor and acceptor fluorescence as a function of time, we have determined time-dependent FRET efficiencies for dozens of individual dimers, permitting insight into inter-dye distances and dimer structures; these results are further complemented by comparison to published structures of simulated ABeta(1-40) dimers.

Chelsea Russell, 2010
Lyndsey Powell, 2010

*Department of Chemistry,
Physics, and Geology
Faculty Mentor:
Robin Lammi, Ph.D.*

HOLY GRAIL, HOLY THRONE: GALAHAD AND THE FISHER KING IN THE *HENRIAD*

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

The purpose of this paper is to examine how Shakespeare uses the legend of the Holy Grail in his creation of the *Henriad*. Whereas previous critics have noticed Shakespeare's allusions to the grail legend (e.g., the stabbing of Hotspur's thigh, Falstaff butchering of "Sir Lancelot Du Lake"), I expand on these allusions and suggest that the throne of England serves as the Holy Grail of the teratology and that Prince Hal functions as Galahad. Hal fulfills his role as Shakespeare's Galahad by achieving the throne and healing the wasteland created by his predecessors in *Richard II*. Around the time Shakespeare was writing the teratology, Hal was a ripe source for mythological distortion: "The mixed historical character of the Henry IV plays can be attributed to a lively legendary tradition about Hal. Stories about the youth of his hero, stories ignoring his official activity and concentrating on his private life, began accumulating shortly after he died" (Peter Saccio, *Shakespeare's English Kings: History, Chronicle, and Drama*).

Javy Gwaltney, 2011

*Department of English
(ENGL 305-Fike)
Faculty Mentor:
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MILTON'S AMMUNITION: THE IMPACT OF THE GUNPOWDER PLOT ON HIS WORKS

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

Laura Merritt, 2010

*Department of English
(ENGL 513-Fike)
Faculty Mentor:
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On November 5, 1605, a group of Catholic conspirators attempted to blow up King James and the Houses of Parliament to demonstrate their opposition to the King's Protestant faith. Their unsuccessful exploit became known as the Gunpowder Plot, and November 5th became a national holiday that is still celebrated today. It was an event that England could never forget, and I would like to assert that although the Gunpowder Plot occurred many years before John Milton's birth, it negatively colored his opinion of the volatile substance and harshly affected his depictions of it throughout his works. Milton's culture influenced him to associate the idea of gunpowder with the Catholic rebellion he so whole-heartedly disagreed with and tainted his idea of gunpowder throughout his literary career. From the Gunpowder Plot Poems he wrote when he was a young man to Samson Agonistes, this influence can be seen. In gunpowder, Milton has found a metaphor for the Catholic evil and Satan's weapons, a simple way to tie up the evils of history and religion and to express them in the great body of work that he would produce. His use of gunpowder not only reflects how his culture shaped him but a deeper and more confusing characteristic of the man. He was a rebel, and yet he condemns other rebels who do not fight for the same reason he fights. The Gunpowder conspirators wanted to reaffirm the power of Catholicism in England, and Milton wanted to proclaim the correctness of Protestantism. His original Gunpowder poems were the perfect ammunition for the creation of Satan's weapons in *Paradise Lost*, and his portrayals of both rebellions truly show who he was.

FEEDING BEHAVIOR OF *LEPTOGLOSSUS PHYLLOPUS* (HEMIPTERA: COREIDAE) DEVELOPMENTAL STAGES

*Presented at the Annual Meeting of the Southeastern branch of the Entomological Society of America, Atlanta, Ga., March 2010
Supported by a Winthrop University Research Council Grant*

Sarah Johnson, 2010

*Department of Biology
(BIOL 471, 472-Mitchell)
Faculty Mentor:
Paula Mitchell, Ph.D.*

Coreids in many parts of the world are causing major economic problems in the agriculture business. *Leptoglossus phyllopus* (Hemiptera: Coreidae) is a local leaf-footed bug that is considered a minor economic problem, but research on its feeding behavior could be useful in understanding congeneric species that pose a greater economic threat. The leaf-footed bugs were reared in the lab and aged by separating the juveniles (third, fourth, and fifth instars) after molt. The newly molted nymphs were fed for 24 hours and then starved for 24 hours. The adults ranged in age from

1-2 weeks. Frequency and duration of feeding in the leaf-footed bug were compared among several developmental stages using Electrical Penetration Graph (EPG) techniques and Windaq software. Duration of each probe (i.e., a single feed), time until first probe, and length of pathway of each probe between the developmental stages were also compared. Pathway measures the time spent moving the mouthparts through plant tissue to locate the feeding site. Feeding behaviors of third and fourth instar nymphs and adults on green beans were analyzed along with a separate statistical comparison of juveniles vs. adults. Although differences in waveform patterns were seen, preliminary results exhibited no significant differences in any variables measured, probably due to small sample size. However, there seemed to be a clear trend in juveniles vs. adults for probe duration, probe frequency, and time until first probe, which revealed a possibility that adults feed longer and more frequently than juveniles, and juveniles have a longer pathway than adults.

LOCALIZATION OF PROTEIN C SYSTEM RECEPTORS IN PROSTATE CANCER

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

Supported by an NIH Grant from the National Center for Research, the Hemby Foundation, and McKay Urology

Prostate cancer (CaP) is the second leading cause of death in men in the United States (Jemal 2009). CaP typically metastasizes to the bone and the brain. We investigated the expression and localization of two coagulation proteins thought to be involved in CaP metastasis. Thrombomodulin (TM) and Endothelial Protein C Receptor (EPCR) are two receptors normally found on blood vessel endothelial cells that help regulate the anti-coagulant pathway. Previous studies have shown that TM is expressed in patients with CaP and that it regulates CaP proliferation and invasion. We extended these studies to determine what types of cells in these CaP patients are making TM and also investigated the expression of the accessory receptor, EPCR. We used monoclonal antibodies and confocal microscopy to localize each protein on two CaP cell lines, PC3 and DU145. Both TM and EPCR were localized on the surface of PC3 and DU145 cell lines. Expression was uniform on both CaP cell types. We conclude that these anti-coagulant proteins that are normally only expressed by the endothelial cells lining blood vessels are also expressed by epithelial CaP cells. We are currently determining the function of these receptors in CaP cell adhesion and metastasis.

Chantelle Van Nostern, 2011

*Department of Biology
Faculty Mentor:
Laura Glasscock, Ph.D.*

RELATIONSHIPS AMONG STUDENTS' ATTIRE, ATTITUDE, AND PERFORMANCE IN THE CLASSROOM

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010, and the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Maria Schmelzer, 2010

*Department of Psychology
Faculty Mentor:
Merry J. Sleigh, Ph.D.*

Previous research demonstrated that students' classroom performance is affected by variables such as personality, self-efficacy, and self-esteem (Lane, Lane & Kuprianou, 2004; Williams, 1971). This study examined the relationship between students' classroom attire and their performance. We hypothesized that better students would display more professional attire. Participants were 111 adults with a mean age of 20.62 (SD = 5.13), equally divided among upper and lower classmen. Participants responded to a survey which assessed their preparation for and performance in class, as well as beliefs about appropriate attire for both professors and students. The survey also included Rosenberg's (1965) Sensitivity Scale and the Self-Entitlement Scale (Campbell et al, 2004). During a mid-morning class, each participant was secretly rated by the experimenters on their appearance (tidiness and clothing) on a one to five scale, with a higher number indicating greater professionalism. The Appearance Rating mean was 2.40 (SD = 1.02), and inter-rater reliability was over 90%. The higher the Appearance Rating, the earlier participants reported getting up prior to their first class, $r = .21, p < .05$, the older the participant, $r = .30, p < .01$, and the further along in school, $r = .23, p < .05$. Appearance Rating did not correlate with GPA, class participation, academic motivation, or beliefs about professors paying attention to student attire; however, the more participants agreed that they were thoughtful about their clothing, the higher their school effort, $r = .31, p < .01$. Participants rank ordered the starting time of class as the most influential variable in determining how long they took to get ready in the morning, whereas what their professors and classmates thought of them ranked as the two least important factors. Compared to men, women received higher Appearance ratings, $t(109) = -2.31, p = .023$, were more likely to judge professors based on how they dress, $t(109) = -2.16, p = .033$, were more likely to pay attention to what other students wear in class, $t(109) = -2.01, p = .047$, and spent more time getting ready in the morning, $t(108) = -3.12, p = .002$. Participants believed that age of the professor did not impact how much a professor noticed what students wear in class; however, female professors were believed to pay more attention to student attire than male professors. The more participants believed that professors notice what students wear in class, the more academically motivated they were, $r = .23, p < .05$, and the earlier their year in college, $r = -.19, p < .05$. The more participants judged a professor by what he wears in class, the more they reported paying attention to what other students wear, $r = .27, p < .01$, the more they like to be in charge, $r = .19, p < .05$, and the higher their sensitivity to criticism, $r = .25, p < .01$. The more entitled the participants, the worse they felt their professors dress for class, $r = -.25, p < .01$. The better participants believed their professors dress

for class, the lower their motivation, $r = -.23$, $p < .05$, the younger they were, $r = -.25$, $p < .01$, and the earlier in school, $r = -.22$, $p < .05$. Overall, we found little relationship between classroom attire and academic performance; students' decisions about what to wear for class were based on practical rather than academic factors. Female professors were believed to care about student attire the most, and students who believed professors pay attention to what they wear were more academically motivated. However, students who felt their professors dressed very professionally were less academically motivated. In other words, students seem to prefer professors who dress similar to themselves and pay close attention to their students, perhaps indicating approachability. A sense of entitlement, sensitivity to criticism, and a desire to take charge influenced students' perceptions of professor attire. These findings may be of interest to faculty and career development professionals as they help young adults transition from a college student identity to that of a young professional. Students could be encouraged to think about their attire as part of their professional image and to begin developing that image prior to entering the work force.

THE EVOLUTION OF A SONG: SONG OF SONGS 6:4-13

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

As a whole, the book of The Song of Songs describes the dialogues and monologues spoken between two lovers. But by looking closely at the context and the authorship of this book, it becomes evident that these passages present a multitude of different meanings and interpretations that have changed throughout time. One such passage, The Bride's matchless Beauty, found in Song 6, is such an example, for just by understanding the meanings behind the words chosen for the passage, one can see the different interpretations that developed because of how many hidden meanings exist for each word. It also becomes extremely challenging to narrow down these different interpretations to those closest to what the author originally intended at the time the passage was written, for the original author and date of the passage are unknown. Over time, this has led to a gradual evolution of the text's meaning in order to reflect the respective thought of each era. The purpose of this paper is to discuss this evolution.

Suzane Romano, 2010

*Department of Philosophy
and Religious Studies
(RELG 220-Judge)
Faculty Mentor:
Peter Judge, Ph.D.*

CHRIST AS AN ICON IN COLOSSIANS AND EASTERN ORTHODOX CHRISTIAN ART

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

Laura Ferguson, 2010

*Department of Philosophy
and Religious Studies
(RELG 350-Judge)
Faculty Mentor:
Peter Judge, Ph.D.*

Jesus Christ is described as an icon in the biblical letter from Paul to the Colossians (1:15). The notion of Christ as an icon of God in Colossians is given physical form in the image of Christ as a symbolic icon found in Eastern Orthodox or Byzantine Christian art. Paul's letter to the Colossians contains a Christ Hymn (1:15-20) that textually describes several functions of the Christ icon to illustrate his purpose as a representation of the invisible God, the first form of creation, the holy means by which he was created, the leader of the church, and the reconciler of sinful humans to God. Like the Christ Hymn, Byzantine icons also give us tangible interpretations of Christ and provide visual narratives of before, during, and after his lifetime on earth. Christ as an icon expressed in the biblical text and physical artistic representations tell stories of Christ's divine ability and his role in Christianity as God's incarnate son. The purpose of this paper is to draw comparable concepts of Christ's role in Christianity by means of analyzing the use of the word "icon," the Greek "eikon," in Colossians as analogous to the symbolic images of Christ in icons found in the Eastern Orthodox tradition from the 5th century onward.

RAPE MYTHS AND SEXUAL EXPERIENCES AMONG COLLEGE STUDENTS

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Laura Borell, 2010
Cecile Gadson, 2012
Jasmin Sanders, 2012
Erin Sim, 2012
Wales Watkins, 2012

*Department of Psychology
Faculty Mentor:
Tracy Griggs, Ph.D.*

One in four college-aged women will be a victim of sexual violence. Research on college rape prevention emphasizes rape myth acceptance, inaccurate beliefs regarding the use of alcohol and consent for sex, and bystander intervention as contributors. Rape myth acceptance refers to the adoption of attitudes and beliefs that tend to shift blame for sexual assault from perpetrators to victims, thus contributing to an ongoing cycle of victimization. Beliefs about consent for sex while under the influence of alcohol is important because at least half of all sexual assaults involve the use of alcohol, either by the victim, the perpetrator, or both. Lastly, the concept of bystander intervention suggests that when an individual is faced with an emergency involving a victim in a risky sexual situation, he/she holds the responsibility to help the victim, or at least try to interrupt the situation-both of which can be difficult when violence or alcohol are involved. The current study assesses relationships between these three variables, as well as how individuals might differ along these variables

based on gender and ethnicity. An online survey was conducted at a public, mid-sized university in the Southeastern United States. The sample (n = 264) consisted of primarily white (80.7%), female (85.6%), undergraduate (81.8%) students. Hypotheses were partially supported. Men were significantly more likely to endorse rape myths and to hold inaccurate beliefs about alcohol and consent for sex than were women. There was no significant difference between males and females with respect to one's likelihood to intervene. Whites were significantly more likely than non-whites to accept rape myths. While there was no difference between whites and non-whites, Asians were significantly less likely than Hispanics to intervene during a sexual assault. There was a significant negative correlation between rape myth acceptance and likelihood to intervene. Lastly, there was a significant negative correlation between rape myth acceptance and accuracy in beliefs regarding alcohol and consent for sex. Results suggest the need to target prevention programs toward destroying rape myths and creating more accurate beliefs about alcohol and consent for sex, particularly among men.

IDEOLOGICAL DISPOSITION AS A FUNCTION OF PARENTING PREFERENCE: AN EMPIRICAL TEST OF LAKOFF'S MORAL POLITICS

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

A meta-analysis by Jost et al. (2003) found that measures of conservatism such as the Right Wing Authoritarianism Scale (RWA) and the Social Dominance Scale (SD) correlated with a range of dispositions including death anxiety, openness to experience, and uncertainty tolerance. In general, conservatives tend to resist change and endorse social hierarchy. Lakoff (2002) presents an alternative understanding of conservatism, predicting conservatives are more likely to prefer the Strict Father Model (the father as main provider and family protector; children learn self-discipline, respect for authority, and self-reliance) whereas liberals prefer a Nurturant Parent Model (one or two parents who provide care and meeting children's needs for loving interactions; children learn self-discipline through empathy, mutual respect and moral support). We operationalized Lakoff's two models and compared them with these measures of conservatism and the real world issues of evolution and global warming. Sinn and Walters (2008) found that conservatism can predict wider cosmological beliefs, such as global warming and evolution. Results of our survey indicated nurturance significantly correlated with RWA and SD as well as belief in global warming and evolution. This evidence suggests Lakoff's model warrants additional study.

Sara Mallett, 2010
William Harlan, 2012

Department of Psychology
Faculty Mentor:
Matthew Hayes, Ph.D.

BODY ESTEEM, PARTNER BODY ESTEEM, AND RELATIONSHIP SATISFACTION

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Gabriel Smith, 2010
Schienita Gholson, 2010
Sara Kent, 2010

Department of Psychology
(PSYC 302-Sleigh)
Faculty Mentor:
Merry J. Sleigh, Ph.D.

We assessed women's body image and how that image related to their perceptions of their romantic partner's body. We hypothesized that adults who were satisfied with their own bodies would be more satisfied with their romantic partners' bodies and would report greater relationship satisfaction. Participants responded to the Body Esteem Scale (Franzoi & Shields, 1984); each participant responded once in relation to their own body and a second time in relation to their romantic partner's body. Results revealed that the higher the participants' Body Esteem, the more positively they rated their partner's body, $r = .55, p < .01$. The higher the Partner Esteem Score, the higher the relationship satisfaction, $r = .30, p < .05$, the more participants reported their needs were being met, $r = .37, p < .05$, and the more participants reported their relationship to be passionate $r = .45, p < .01$. We split the data file into men and women. Women's mean body esteem was 124.89 (SD = 20.0) and their body esteem for their partner was 139.09 (SD = 19.79). Men's mean body esteem was 130.47 (SD = 27.91) and their body esteem for their partners was 130.20 (SD = 21.56). A t-test revealed that women were more dissatisfied with their weight than were men, $t(55) = 2.23, p = .03$. There were no other gender differences. We compared Caucasians and African-Americans using an independent t-test. African-Americans had higher Body Esteem than Caucasians, $t(49) = -2.53, p = .015$. Our hypothesis was partially supported; participants who felt better about their own bodies felt better about their partners' bodies. Perhaps people seek out partners of similar attractiveness, or perhaps self-satisfaction leads to a more global attitude of acceptance. Men tended to see their body as equal to their partners'; however, women rated their partners more positively than they did themselves. Participants' views of their partner's body predicted relationship satisfaction, whereas participants' views of their own body did not, providing one possible explanation for gender differences in relationship satisfaction. These findings may be helpful for those who want to better understand body esteem and its role in romantic relationships.

IDENTIFICATION OF CONSERVED TBX20 TARGET GENES IN *CIONA INTESTINALIS*

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010, and the South Carolina Academy of Sciences Meeting, Charleston, S.C., April 2010

Supported by an NIH Grant from the National Center for Research Resources for S.C.-INBRE

Tbx20 is a member of the T-box family of transcription factors that is an important regulator of cardiac development during embryogenesis. In vertebrate hearts, Tbx20 regulates the expression of target genes that promote proper heart morphogenesis via the regulation of myocardial maturation and proliferation as well as valve development. As a urochordate, *Ciona intestinalis* is a primitive chordate ancestor to vertebrates and provides an intriguing animal model system to study the conserved regulatory mechanisms that direct heart development. Morphogenesis of the *Ciona* heart is very similar to early vertebrate heart development, presumably due to conserved genetic programs that regulate morphogenesis of the heart during embryogenesis. Interestingly, the genetic sequence of Tbx20 is highly conserved between vertebrates and *Ciona Intestinalis*. However, the function and transcriptional target genes of Tbx20 in *Ciona* have not been identified. Preliminary studies show that orthologs of many of the Tbx20 target genes that are well characterized in vertebrates can be found within the *Ciona* genome; however, activation and expression of these potential evolutionarily-conserved Tbx20 target genes has not been verified in urochordates. We have designed a series of oligonucleotide primers to specifically examine the expression of orthologous Tbx20 target genes in *Ciona* hearts throughout development. Furthermore, we have generated antisense RNA probes to examine the expression patterns of these genes. Our goal is to identify Tbx20 target gene expression during morphogenesis of the *Ciona* heart through RT PCR and in situ hybridization. Collectively, these studies will provide insight into conserved regulatory mechanisms of heart development and elucidate the role of Tbx20 in *Ciona*.

John Samies, 2010

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Ph.D.

MYOCARDIAL REGENERATION IN *CIONA INTESTINALIS*

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010, and the South Carolina Academy of Sciences Meeting, Charleston, S.C., April 2010

Supported by an NIH Grant from the National Center for Research Resources for S.C.-INBRE

James Tucker, 2011

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*Faculty Mentor:
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Ph.D.*

Ciona intestinalis is an invertebrate animal model system that provides many advantages in the study of heart development due to the relatively simple heart design, reduced genetic redundancy, and the possession of numerous genes homologous to those found in vertebrates. Cardiac myocytes in *Ciona* are reported to have the ability to regenerate new cells in order to replace old or damaged cells throughout the lifespan of the adult *Ciona*, an ability which does not occur in postnatal mammals. However, regeneration of cardiac myocytes in *Ciona* has not been verified using modern techniques. Whole-mount and section immunohistochemistry using proliferation marker phosphohistone H3 (PHH3) and sarcomeric muscle marker MF20 was performed to identify regions of cardiac myocyte proliferation and to determine the baseline rate of proliferation in the *Ciona*. Preliminary data show distinct regions of proliferation in the differentiated cardiac myocytes of the myocardium. Proliferating cardiac myocytes were found between the outer layer of pericardial connective tissue and inner layer of myocardium. This data suggests that a maturation gradient exists among cardiac myocytes within the *Ciona* myocardium, which is likely to contribute to regeneration. Myocardial regeneration will be stimulated by subjecting *Ciona* hearts to injury as well as hypoxic conditions, and cardiac myocyte proliferation will be assayed. Furthermore, 3D reconstructions of triple-labeled confocal images of regenerating *Ciona* myocardium and TEM ultrastructure analyses are currently underway. These studies will provide the foundation for further studies into the molecular differences between regenerative cardiac myocytes in *Ciona* and non-regenerative cardiac myocytes in mammals.

FLUFF FOR ART'S SAKE: AN EXAMINATION OF JOYCE'S USE OF PARODY IN THE "NAUSICAA" EPISODE OF *ULYSSES*

Presented at the American Conference for Irish Studies Southern Regional Meeting, Rock Hill, S.C., March 2010

Javy Gwaltney, 2011

*Department of English
(ENGL 510-Neary)*

This paper has two purposes: first, to examine the sources Joyce used in creating his parody of fluff literature (Mara Cummins' *The Lamplighter* and *Princess Novelette*) in the chapter "Naussica" and what enigmas lay beneath the mawkish text; and second, to argue against Garry Leonard's conception

of Gerty Macdowell as a cunning and victorious woman: "Far from being sexually naïve and one dimensional, Gerty has a keener understanding of sexuality than Bloom does because she understands that the anatomical act of sex is as irrelevant as whatever is inside the carefully advertised package" ("Advertising and Commodity Culture in Joyce"). MacDowell is instead a prisoner of both the literature she reads and the society in which she lives, a society that delights in voluptuous, whole women. Joyce's exaggerated parody of fluff literature reinforces the notion that MacDowell is prisoner.

Faculty Mentor:
Marguerite Quentelli-Neary,
Ph.D.

"ALL EXCELLENT THINGS ARE AS DIFFICULT AS THEY ARE RARE" - SPINOZA IN JOYCE

Presented at the American Conference for Irish Studies Southern Regional Meeting, Rock Hill, S.C., March 2010

When picking up *Ulysses* for the first time, the reader automatically assumes the protagonist will follow the Homeric archetype of Odysseus (Ulysses in Latin) from *The Odyssey*, and, after completing the novel, the reader feels vindicated in the assumption made at the start: Bloom ventures through Dublin, facing trials ("Circe") and conflicts ("Cyclops"), in an effort to get back home. Bloom, however, doesn't quite fit the image of heroism portrayed by Odysseus. Joyce's version of Odysseus has undergone two important changes: first, he has become enormously internalized and psychologically complicated; second, his heroism was directed chiefly against external enemies and forces and has become internalized as well; he is now a hero of the psyche or the soul, displaying the same intrepidity, resourcefulness, and indomitability against the threats of mental disintegration and anarchy that his assumed prototype had displayed against the disorders of the external world. But, where did the introspective aspects of Bloom's heroism come from? Who is Bloom's philosopher and, more importantly, how is Bloom, as a reflection to some extent of Joyce, affected by his philosophy? We read in "Sirens" that Bloom's father, Virag, had a book by Baruch Spinoza and that Bloom knew enough about Spinoza's philosophy to talk to Molly about it (284). Spinoza is mentioned by name four other times; the most telling of these is in "Ithaca" when Bloom makes it clear that he considers Spinoza to be "an apocryphal illustrious [son] of the law and [child] of a selected or rejected race" (687). I argue through an examination of Spinoza's life and writings that Spinoza is to Bloom as Aristotle and Aquinas are to Stephen, and that Spinoza also had a large impact upon Joyce.

Jason Rogers, 2010

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Ph.D.

ANTECEDENTS AND OUTCOMES OF WORK FAMILY CONFLICT

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010, and the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Krystle Swartz, 2011
Daniel Selvey, 2012

Department of Psychology
Faculty Mentor:
Tracy Griggs, Ph.D.

Work-family conflict (WFC) occurs when work and family roles are incompatible in some way (Greenhaus & Beutell, 1985). A study by the New York Times showed that 83% of working mothers and 72% of working fathers experienced WFC (Allen et al., 2000). This suggests that WFC is an important variable for both individuals and organizations. In this study, we examined job security, work arrangements, and feelings of safety as predictors of WFC, and life satisfaction, depression, anger, job satisfaction, and turnover intentions as outcomes of WFC. While research has already identified significant relationships between WFC and several of these variables, to date there is little or no research on the relationship between WFC and job security, feelings of safety, or anger. Data was gathered from a sample of 493 workers at a large organization in the hotel and tourism industry in the southeast. As hypothesized, results revealed negative correlations between job security and WFC, work arrangements and WFC, and feelings of safety and WFC. As expected, results also revealed negative correlations between WFC and life satisfaction, job satisfaction, as well as positive correlations between WFC and depression, anger, and turnover intentions. Our discussion of these findings focuses on the implications of these results for managing psychological and work-related outcomes of WFC. Overall, employees who perceive job security, flexibility, and safety are happier and more productive. This, in turn, leads to lower costs for the organization due to healthier employees and lower turnover intentions.

HAVING THE LAST WORD: KATE'S IRONIC CLOSING SPEECH IN WILLIAM SHAKESPEARE'S THE TAMING OF THE SHREW

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

Kelly Salyer, 2011

Department of English
(ENGL 305-Fike)
Faculty Mentor:
Matthew Fike, Ph.D.

There is disagreement among critics concerning Kate's closing speech in William Shakespeare's *The Taming of the Shrew*. Some believe that she is genuinely "tamed" and that her passionate condemnation of "peevish, sullen, and sour" women is sincere. Others, seeing greater depth and complexity in the speech, assert her intellectual independence and emphasize the speech's irony. The purpose of this paper is to argue that Kate delivers her final speech more ironically than sincerely. In the context of the couple's verbal sparring in previous scenes, her use of incorrect word placement, extreme over-enthusiasm, and fluent language in the final

speech is quite tongue-in-cheek. Such wordplay not only suggests that Kate and Petruccio are well-matched and that she has embraced her subordinate role but also shows that she is enjoying herself as she puts the other wives in their place.

ACTIVATION OF SMAD2 AND P38 PATHWAYS IS DIFFERENTIALLY REGULATED BY TGFB2 AND IS FURTHER REGULATED BY RETINOIC ACID IN NIH3T3 FIBROBLASTS

Presented at MU.S.C's Science Day, Charleston, S.C., November 2009

The Kubalak lab has previously shown in both NIH3T3 and isolated dispersed heart cells that retinoids can enhance Smad2 phosphorylation (pSmad2) in response to a 1-hour exposure to TGFbeta2. However, the effect of retinoids on TGFbeta2-mediated p38 phosphorylation (p-p38) is not known. This study was designed to compare TGFbeta2 activation of pSmad2 (canonical) versus p-p38 (non-canonical) and compare the effect of retinoic acid on these two pathways. In NIH3T3 cells there is a dose response effect observed for phosphorylation of Smad2 by TGFbeta2 with a half maximal response at 0.2 ng/ml TGFbeta2. In contrast, phosphorylation of p38 MAPK by TGFbeta2 occurred at a half maximal concentration of 0.02 ng/ml TGFbeta2. This suggests a differential sensitivity of these two pathways to TGFbeta2 activation by an order of magnitude. The data also suggests there is a concentration of TGFbeta2 that activates p38 MAPK but has no effect on accumulation of pSmad2. At higher concentrations, p38 and Smad2 pathways are simultaneously activated; however, p38 phosphorylation decreases at higher TGFbeta2 levels. Consistent with previous data published by the lab for pSmad2, retinoic acid had no effect on p-p38. However, retinoic acid blunts TGFbeta2-mediated signaling thorough the p38 pathway and also shifts its half-maximum dose response. Collectively these data show the differential sensitivity of canonical signaling through Smad2 and non-canonical signaling through p38 to TGFbeta2, and the differential effect of retinoic acid, which blunts p38 MAPK phosphorylation while enhances Smad2 phosphorylation.

Kimberly Sauls, 2010

*Department of Biology
Faculty Mentor:
Steven Kubalak, Ph.D.
(MU.S.C)
Faculty Sponsor:
James Johnston, Ph.D.*

REGULATION OF CARDIAC MYOCYTE PROLIFERATION THROUGH THE P13/AKT SIGNALING PATHWAY IN CIONA INTESTINALIS

*Presented at the Big South Undergraduate Research Symposium, Radford,
Va., April 2010*

Kimberly Sauls, 2010

*Department of Biology
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Heather Evans-Anderson,
Ph.D.*

A critical aspect of heart development is the regulation of cardiac myocyte proliferation through the FOXO1 gene. *Ciona intestinalis* is an invertebrate animal model system, which has similar development patterns as vertebrate animals but lacks genetic redundancy and provides a simplistic approach to studying the signaling mechanisms which direct cardiac myocyte proliferation. A unique characteristic of *Ciona* is the ability to regenerate cardiac myocyte tissue as an adult in response to damaged myocardium. Previously, it has been shown that FOXO transcription factors function in the regulation of cardiac myocyte proliferation and regulate themselves by the P13K/AKT signaling pathway in vertebrates. Our specific aim is to determine if p13K/AKT signaling affects FOXO expression in *Ciona*. Cardiac tissue from various stages of the *Ciona* life cycle will be treated with growth factors as well as P13K-specific inhibitory drugs, which function in either activation or inhibition of the p13/AKT signaling pathway. We hypothesize that through the inhibition of the P13K/AKT signaling pathway in *Ciona*, disruption of heart development and reduction of postnatal regenerative ability will result from the decreased cell proliferation. The proliferation patterns of Cardiac myocytes were determined by proliferation markers and the resulting abnormalities were examined and characterized.

RELATIONSHIPS AMONG THE USE OF COMPENSATORY HEALTH BELIEFS, IMPULSIVITY, AND COPING STYLES

*Presented at the Southeastern Psychological Association, Chattanooga, Tenn.,
March 2010
Received the Psi Chi Regional Research Award*

Lilah Campbell, 2010

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Compensatory Health Beliefs (CHB) are cognitive strategies that people use to reduce their guilt about participating in unhealthy behaviors (Rabiau et al, 2006). For example, a person who tells themselves that they will go to the gym later to compensate for eating something unhealthy is using a CHB. The existing research regarding the use of Compensatory Health Beliefs (CHB) has almost entirely focused on CHB's influence on behavior modification (e.g., Rabiau et al, 2006; Tut & Bban, 2008). Because this concept is relatively new, there is no published research on how CHB use relates to other cognitive factors that impact health. The purpose of the current

study was to explore this area by focusing on relationships among CHB, coping strategies and behavioral inclinations. Sixty adults with a mean age of 29.12 years (SD = 12.54) completed the Compensatory Health Beliefs Scale (Knauper et al, 2004), the Consideration of Future Consequences Scale (Strathman et al, 1994), the Coping Scale (Halverson et al, 1995), the Barratt Impulsiveness Scale (Patton, Stanford, & Barrett, 1995), and the Single-Item Self-Esteem Scale (Robins, Hendin & Trzesniewski, 2001). Participants who scored high on CHB were more likely to engage in maladaptive coping strategies, including avoidant coping styles ($r = .38, p < .01$) and unhealthy coping styles ($r = .47, p < .01$). They also scored higher on impulsivity ($r = .43, p < .01$), and lower on 'consideration of future consequences' ($r = -.44, p < .01$). High CHB also related to lower self-esteem ($r = -.34, p < .01$), more guilt associated with completing the survey ($r = .38, p < .01$), and higher agreement that physical activity was the unhealthiest aspect of participants' lives ($r = .37, p < .01$). CHB was not significantly associated with religious coping, healthy coping strategies, age, GPA, smoking, drinking, or body mass index. Our results suggest that compensatory health beliefs may best be conceptualized as an unhealthy coping strategy that is highly related to other unhealthy coping strategies. CHB did not relate to healthy coping strategies, suggesting that CHB are not substituting for healthy strategies; they may be co-occurring.

MISANDRY IN POPULAR MUSIC: PORTRAYALS OF MEN BY FEMALE ARTISTS FROM 1960-2008

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

An archival study of popular song lyrics from the years 1960-2008 was conducted to assess the frequency with which female artists referred to men in a positive or negative manner. Positive and negative depictions were defined by twelve categories. The negative categories were: Infidelity, Emotional Betrayal by a Man (neglect/not understanding/taking for granted), Physical Abuse/Violence by a Man, Disgust with a Man, Unappealing Traits of a Man (deception/confusion, and Objectification of Men. The positive complements were: Fidelity (trust of a man), Emotionally Supportive Man (love, caring), Positive Physical Contact/Physically Supportive (Kisses, Hugs, etc.), Desire for Man, Appealing Traits of Man, Cherishment/Respect/Treating a Woman Well. The study consisted of the two highest rated songs (by Billboard Top 40 Music Charts) by female artists from each year. The lyrics for these songs were collected via Lyrics.com. Each line of a song was considered one incidence and received a point for either a positive or negative portrayal, or neither. In order to ensure reliable interpretations of the categories, each song was evaluated by two independent raters. In the 48 years spanning the songs sampled, there was no significant increase in the number of negative portrayals of men by

Lilah Campbell, 2010
Heather Ernst, 2010
Aletheia Fadness, 2009

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female artists ($F(4,94) = .560, p >.05$). There was also no significant increase in the number of positive portrayals of men by female artists ($F(4,94) = 1.399, p >.05$). While the means of both positive and negative depictions of men gradually increased over the decades, neither increase was significant. There was a significant increase in the number of female artists scoring top 40 hits over the decades ($F(4,44) = 16.88, p <.05$). Although the original hypothesis of increasing misandry over time was not supported, the analysis did offer some interesting insights into the depiction of gender roles, the characterization of male-female relationships, and female identity within contemporary popular music. Despite recent media emphasis on the negative messages prevalent in modern music, it appears, for female artists at least, that those concerns may be exaggerated.

MILITARY VS. NON-MILITARY ADULTS' MILITARY KNOWLEDGE AND PERCEPTIONS

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Kristin Jessop, 2010

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Previous research has shown connections between attitudes toward the military and moral reasoning (Miller & Morrison, 1971), as well as connections between moral reasoning and political orientation (Graham, Haidt, & Nosek, 2009). The purpose of this study was to combine this previous research, which spanned three decades, by examining general knowledge and attitudes toward the military in relation to political orientation and moral judgments. We hypothesized that military personnel would be more knowledgeable about and have more positive attitudes toward the United States military. Participants completed a survey to assess general knowledge of and attitudes toward the military, and political orientation based on moral issues. We divided participants into those who had some association with the military (i.e., active duty or military dependent) and those who had no official military affiliation using an independent t-test. There were no differences between these two groups on knowledge score, liberal beliefs, conservative beliefs, and attitudes toward the military. Compared to civilians, military affiliated participants believed that military housing was worse than private sector housing, $t(38) = 2.39, p = .022$. Republicans were more likely to know the five branches of the military than were Democrats, $t(21) = 2.09, p = .049$. Men scored higher on the knowledge test than did women, $t(32) = 3.06, p < .01$. Men also were more likely to agree that military personnel are naturally more aggressive than civilians, $t(40) = 2.21, p = .03$. The less they believed the military is necessary for national defense, the more negative participants' attitude toward the military, $r = -.49, p < .01$, and the less participants supported the military in general, $r = .74, p < .01$. The older the participant, the less liberal their political views, $r = -.37, p < .05$. In general, knowledge of and attitudes toward the military were fairly

consistent across race, age, political affiliation, and military experience. This homogeneity may reflect the increased awareness of today's military as a result of highly publicized military activity, recruiting campaigns, and military themed entertainment media.

ENHANCING INTERPERSONAL COMMUNICATION: POSITIVE MOOD EFFECTS

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Our experiment investigated the impact of mood states on communication processes. Successful interpersonal communication is possible when communicators tailor messages to account for the perspective and knowledge-base of their audience (Clark & Murphy, 1982; Fussell & Krauss, 1989). Recent work suggests that interpersonal perspective taking is facilitated by positive mood (Nelson, 2009). If perspective taking impacts interpersonal communication, positive mood should also facilitate that process. This idea was tested in an experiment that examined the content of messages designed by persons experiencing a positive or neutral mood. Results revealed that positive mood promoted lengthy and literal descriptions in messages intended for another student but not for the self. This supports our expectation that positive mood would enhance perspective taking and the design of more comprehensible interpersonal communications.

Brittany Brock, 2011

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TECHNOLOGY USE AS A PREDICTOR OF FRIEND AND ROMANTIC RELATIONSHIP SATISFACTION

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

This study examined how technology use relates to young adults' satisfaction with friendships and romantic relationships. Young adults responded to a survey that assessed technology use and relationship satisfaction related to both their 'closest friendship' and their 'most significant romantic relationship.' Although the majority of our participants reported high levels of technology use, technology use was not associated with friendship satisfaction, relationship satisfaction, distance from romantic partner, or length of romantic relationship. In regard to their romantic relationships, the longer participants had been in the relationship, the less frequently they communicated with their partner over social networking sites, $r = -.35$, $p < .05$. The more passionate participants reported their relationship to be, the less they communicated over e-mail, $r = -.42$, $p < .01$, and the more participants reported sexting (sending sexually explicit

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Kacy Medline, 2010
Ashley Truss, 2010**

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text messages), $r = .60$, $p < .01$. Increased sexting also was associated with participants perceiving themselves as physically attractive, $r = .50$, $p < .01$. The more friendships participants formed online, the lower their relationship satisfaction, $r = -.33$, $p < .05$, the more they believed forming online friendships improves their personal life, $r = .48$, $p < .01$, and the more they looked forward to going online, $r = .30$, $p < .05$. Men were more likely to sext than women, $t(38) = 2.28$, $p < .05$. Women were more likely to change their Facebook status to reflect their mood, $t(41) = -2.09$, $p < .05$. In general, technology use did not relate to satisfaction in either friendships or romantic relationships; however, participants who formed friendships online were less satisfied with their romantic relationships. Sexting emerged as a common practice of men and in passionate relationships. Despite these differences, participants overall reported similar patterns of technology use regardless of their personal characteristics or relationship characteristics. These findings reflect the previously reported widespread use of technology among today's young adults. Technology may be important to young adults in maintaining relationships, but in our study it did not emerge as a critical factor in determining relationship satisfaction.

EVALUATIONS OF PSYCHOLOGY FACULTY ON RATEMYPROFESSORS.COM: COMPARISONS BASED ON INSTITUTION TYPE, LOCATION AND ACADEMIC RANKING

Presented at the 32nd Annual Meeting of the National Institute on the Teaching of Psychology, St. Pete Beach, Fla., January 2010

Emily Ohiser, 2010

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Our study examined Ratemyprofessor.com ratings of psychology faculty at colleges and universities across the country to assess whether they vary as a function of institution type, location and academic ranking. We utilized the Carnegie Classification System to categorize schools as liberal arts colleges, baccalaureate colleges, Master's universities and national universities. We randomly selected an equal number of public and private institutions of each type in the South, North, Midwest and West. We examined ratings of overall quality, easiness, helpfulness, clarity and attractiveness of faculty as a function of institution type, region, and academic ranking of the school. Results of our study support previous findings (e.g., Felton et. Al, 2008) that student perceptions of overall quality of a professor are tied to perceived easiness. It is noteworthy that very few differences in student ratings of faculty emerged as a function of institution type, location or academic ranking. Our data suggest that across the country and across various types of schools, faculty tend to be perceived in a similar manner. Differences did emerge when comparing public and private institutions, with higher easiness ratings and a greater number of ratings at public versus private schools.

BIRTH ORDER AND SIBLING CONFLICT RESOLUTION AS PREDICTORS AS ROMANTIC RELATIONSHIP STYLE

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Previous research demonstrated that birth order can affect the way a person treats their friends and romantic partner (Salmon, 2003; Sherman, Lansford & Volling, 2006). Similarly, birth order influences a person's romantic relationship style (McGuirk & Pettijohn, 2008). The purpose of the current study was to further explore these issues by examining young adults' conflict resolution in their romantic relationships and their childhood conflict resolution with their siblings. Results revealed that the more participants resolved arguments quickly with their siblings, the more likely they were to resolve arguments quickly with their romantic partner, $r = .34$, $p < .01$. The more participants relied on unhealthy coping mechanisms following a sibling conflict, the more they relied on unhealthy coping mechanisms following a partner conflict, $r = .67$, $p < .01$. In contrast, yelling at or having physical confrontations with a sibling was not related to yelling at or having physical confrontations with a romantic partner. We compared only, youngest, middle, and oldest children and found no differences between these groups on Closeness, Anxiety, Dependency, patterns of conflict, or patterns of coping. We asked participants a range of questions and asked them to indicate which sibling was most likely to match a particular characteristic (e.g., most popular, most academic). Out of 13 variables, participants selected themselves most often 11 times. The exceptions were that participants reported that younger brothers got the most attention from parents, and younger and older brothers got in the most trouble. In general, this study suggests that there are links between how siblings resolve conflict and how adults resolve conflict with their romantic partners. These patterns of conflict resolution were more predictive of adult romantic relationships than was birth order. When participants were asked to reflect on their childhood, they frequently chose themselves as most likely to describe a range of characteristics. This result might suggest a very egocentric viewpoint, where young children picture themselves as the center of family dynamics. Although this perception cannot be accurate for every child in the household, it may influence a child's self-image and later relationships with both siblings and romantic partners.

Omega Haynes, 2010
Connie Dumas, 2011
Brittany Brock, 2011

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RELATIONSHIPS AMONG WORLDVIEW, MOTIVATION, AND SEXUAL BEHAVIOR

*Presented at the Southeastern Psychological Association, Chattanooga,
Tenn., March 2010*

Received the Psi Chi Regional Research Award

Meagan Burns, 2011
Krysten Sobus, 2011
M. Katie Burkett, 2011

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Three decades ago, researchers reported that men and women were equally aroused by themes of love and lust (Fisher & Byrne, 1978) and that sexual activity increases during the time that students are in college (Zuckerman, Tushup, & Finner, 1976). The current study re-examined issues from the past, focusing on young adults' perceptions of visual images, and how those perceptions related to sexual activity, and sexual attitudes. Young adults were exposed to 10 color visual images presented for 20 sec each on an overhead projector. The images included pictures such as a set of wedding rings, a slept-in bed, and abstract imagery. After viewing each picture, participants rated the feelings it provoked in them on a continuum ranging from lust to love and on a second continuum from no arousal to high arousal. Participants then responded to a sexuality scale (Reich, 2006), a guilt scale (Wright & Gudjonsson, 2007), a personality assessment (Moran et al, 2003), and questions to assess sexual behavior and demographics. We computed a Lust Score, an Arousal Score, a Guilt Score, a Confidence Score, and an Openness Score for each participant. We found homogeneity among today's young adults; gender, race and class standing did not strongly predict sexual attitudes or behaviors. Similarly, a tendency to perceive lust or be easily aroused did not predict sexual attitudes or behaviors. Participants experienced similar levels of arousal regardless of whether they saw love or lust in the imagery. Despite these similarities, patterns did emerge. Participants who found the study arousing also found it boring, and these participants reported having more sexual partners and masturbating more frequently. Perhaps people who have ongoing experience with sexual arousal become desensitized or bored by it. The more participants viewed love, rather than lust, in the images, the more they reported depending on others; thus, a love perspective reflected affiliation more than did a lust perspective. Last, religion predicted sexual attitudes and behaviors. A better understanding of young adults' sexual motives and viewpoints may facilitate healthy choices and illustrate societal changes.

THE IMPACT OF WORKPLACE FRIENDSHIPS ON JOB RELATED STRESS

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Received the Psi Chi Regional Research Award

This study examined the role of friendships in the workplace as it relates to job satisfaction and job stress. Young adults responded to a survey that included the Job Satisfaction Scale (Macdonald & MacIntyre, 1997), the Workplace Friendship Scale to measure opportunities for friendship in the workplace (Dickie, 2009), the Occupational Stress Scale (2009) to measure how well participants handled stress at work, and the Dual-Role Tension Scale to measure the difficulty of maintaining friendships in the workplace (Bridge & Baxter, 1992). The more friends participants reported having at work, the higher their Workplace Friendship Score, $r = .55$, $p < .01$, the higher their Satisfaction Score, $r = .44$, $p < .01$, the lower their Stress Score, $r = -.27$, $p < .05$, the less likely they were to choose work over their friends in the workplace, $r = -.35$, $p < .01$, and the less likely they were to avoid talking about their friendship at work, $r = -.33$, $p < .05$. The more participants agreed that most of their friends work at the same place they do, the lower their Stress Score, $r = -.27$, $p < .05$. The higher the participants' Workplace Friendship Score, the lower their Stress Score, $r = -.57$, $p < .01$. The lower the Stress Score, the higher the Satisfaction Score, $r = -.65$, $p < .01$. The lower the Work Tension Score, the more friends participants reported having at work, $r = -.26$, $p < .05$, the fewer co-workers participant reported disliking, $r = .32$, $p < .05$, and the higher the Workplace Friendship Score, $r = -.41$, $p < .01$. The higher the Work Tension Score, the higher the Stress Score, $r = .31$, $p < .05$, and the lower the Satisfaction Score, $r = -.29$, $p < .05$. Our hypothesis was partially supported. Workplace friendships predicted employee satisfaction; however, in contrast to our prediction, it also decreased stress levels. At the same time, participants with workplace friends were more willing to let their friendships intrude on the workplace. In environments where friendships were difficult to maintain, employees experienced stress and decreased satisfaction.

ADULTS' SPIRITUALITY PREDICTS PERCEPTIONS OF SONGS VERSUS LYRICS ONLY

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

This study examined spirituality's influence on adults' reactions to and comprehension of music and lyrics. Forty young adults were randomly assigned to read the lyrics to three songs (Song A = A semi-charmed kind of life; Song B = Pills; Song C = Dreaming with a broken heart); 40

Krystle Swartz, 2011
A. Ryan Lecheminant, 2010
Megan Hyatt, 2010

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Jessica Lynn Stevens, 2010
Andrew Carrier, 2012
Tony Ramicone, 2011

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additional participants listened to 40 sec of the music and lyrics of the same three songs. After exposure to each song, participants responded to questions assessing their emotions towards and preferences for the song. Subsequently, participants responded to a survey to assess their intrinsic and extrinsic spiritual beliefs. Participants who listened to the music (versus lyrics only) were less offended by the message of Song A, $t(78) = 2.09$, $p < .05$, and Song C, $t(78) = 2.74$, $p < .05$. Perhaps because of its offensive nature, both groups were equally offended by Song B. Participants who listened to the songs, compared to reading the lyrics, also were more likely to enjoy all three songs ($p < .05$). The higher the Intrinsic Religion Score, the more offended participants were by the lyrics of Song B, $r = .24$, $p < .05$, and the more often participants reported being offended by music in general, $r = .36$, $p < .01$. Spirituality did not relate to other elements of music reaction or preference. The more diverse the participants' musical preferences, the less they reported being offended by music in general, $r = -.22$, $p < .05$. Compared to men, women were more offended by all three songs. In sum, these findings suggest that women and adults with an internalized spirituality are more easily offended by messages in music. However, spiritual beliefs did not emerge as an influential factor in predicting the types of music that young adults prefer. Our results also demonstrate that adults pay less attention to the messages in songs when the lyrics and music are combined and that this effect is even more likely when the offensive message in the song is more subtle than obvious.

RELATIONSHIPS AMONG STUDENTS' ATTIRE, ATTITUDE, AND PERFORMANCE IN THE CLASSROOM

*Presented at the Southeastern Psychological Association, Chattanooga,
Tenn., March 2010*

Maria Schmelzer, 2010

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This study examined the relationship between students' classroom attire and their performance. Participants were 111 college students with a mean age of 20.62 (SD = 5.13). Participants responded to a survey which assessed their preparation for and performance in class, as well as beliefs about appropriate attire for both professors and students. During a mid-morning class, each participant was secretly rated by the experimenters on their appearance on a one to five scale, with a higher number indicating greater professionalism. Appearance Rating did not correlate with GPA, class participation, academic motivation, or beliefs about professors paying attention to student attire; however, the more participants agreed that they were thoughtful about their clothing, the higher their school effort, $r = .31$, $p < .01$. Compared to men, women received higher Appearance ratings, $t(109) = -2.31$, $p = .023$, were more likely to judge professors based on how they dress, $t(109) = -2.16$, $p = .033$, and were more likely to pay attention to what other students wear in class, $t(109) = -2.01$, $p = .047$. Female professors were believed to pay more attention to student attire than male professors.

The more participants believed that professors notice what students wear in class, the more academically motivated they were, $r = .23$, $p < .05$, and the earlier their year in college, $r = -.19$, $p < .05$. The better participants believed their professors dress for class, the lower their motivation, $r = -.23$, $p < .05$, and the earlier in school, $r = -.22$, $p < .05$. Overall, we found little relationship between classroom attire and academic performance. Female professors were believed to care about student attire the most, and students who believed professors pay attention to what they wear were more academically motivated. However, students who felt their professors dressed very professionally were less academically motivated. In other words, students seem to prefer professors who dress similar to themselves and pay close attention to their students, perhaps indicating approachability. These findings may be of use in helping young adults transition from a college student identity to that of a young professional.

YOUNG ADULTS' EXPOSURE TO, INTEREST IN, AND FEAR OF SCIENCE

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

This study examined whether young adults' experience with science predicted their interest in or fear of science. Participants responded to the "Science-Anxiety Scale" (Mallow, 1994) and questions created by the research to assess exposure to and attitudes toward science. The possible range for the computed 'Fear of Science Score' (FSS) was 11 to 55, with a mean of 23.94 ($SD = 6.73$). Results revealed that FSS and perceived difficulty of science did not relate to participants' hours in lab science classes, grades in lab classes, exposure to science outside of the classroom, or number of family members with a science career. The more interested participants were in science, the more exposure they had to science, $r = .45$, $p < .01$, and the more family members participants had with a career in science, $r = .41$, $p < .01$. The less interested participants were in science, the higher their FSS, $r = -.29$, $p = .034$, and the more difficult they perceived science to be, $r = -.47$, $p < .01$. The more difficult participants perceived science to be, the less confident they would be in their ability to succeed at a scientific career, $r = -.53$, $p < .01$. The more attractive participants rated themselves, the more difficult they perceived science to be, $r = .35$, $p = .01$, whereas how intelligent participants rated themselves was negatively correlated with FSS, $r = -.38$, $p < .01$. Compared to men, women perceived science to be more difficult, $t(53) = -2.26$, $p = .028$, were less likely to take science as an elective class, $t(50) = -2.07$, $p = .043$, and were more likely to pursue a career in science, $t(53) = -2.13$, $p = .037$. The more exposure people had to science, the greater their interest in science; however, exposure did not decrease fear levels or perceived difficulty. Women were more likely than men to perceive science as difficult, and feeling attractive was linked to viewing

Maria Schmelzer, 2010
Cassie Rodenberg, 2009

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science as difficult; perceptions of difficulty were associated with decreased confidence. Despite this, women were more likely than men to desire a science career.

STUDENTS' PERCEPTIONS OF PROFESSOR FACEBOOK PROFILES DEPEND ON CONTENT

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Jason Laboe, 2010
Aimee West, 2010

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This study examined college students' perceptions of specific ways that professors might use Facebook. We created six Facebook profiles for a fictitious male professor, each with a specific emphasis: Republican, Democrat, religious, family-oriented, socially-oriented, or professional only. While viewing a printed version of one of the randomly distributed profiles, participants responded to questions that assessed their perceptions of the professors' teaching ability, classroom demeanor and appropriateness of self-disclosure. The social profile was perceived as less age appropriate than all other profiles, $F(5,87) = 7.40, p < .01$, and the social professor was rated as the easiest teacher, $F(5, 85) = 8.78, p < .01$. Participants reported that the social teacher should have revealed less than all other profiles, $F(5,87) = 7.50, p < .01$; however, they reported being more interested in the social teacher than all others, excluding the religious profile $F(5, 87) = 4.97, p < .01$. Students responded most negatively to the Republican teacher and least negatively toward the family profile, $F(5, 87) = 2.82, p = .021$. The Republican teacher was thought to be less friendly than all profiles but the Democrat, $F(5, 87) = 5.14, p < .01$. The more students believed the professor used Facebook appropriately, the more skilled they thought the teacher would be, $r = .25, p < .05$, the more difficult they expected the class to be, $r = .29, p < .01$, the more they felt they would respect the professor, $r = .46, p < .01$, and the more likely they were to take a class from that professor, $r = .28, p < .01$. Overall, upperclassmen reacted more positively to the presented profiles than did underclassmen, $t(90) = -3.24, p < .01$. In general, these findings suggest that what professors post on Facebook can influence students' perceptions of the professors and their classrooms. Students responded most negatively, but sometimes with greatest interest, to professors' posting of social and political information. Appropriate use of Facebook increased students' respect for the professor and his classroom. These findings could be helpful in guiding professor Facebook use.

LISTENING TO REASON: SWIFT'S SIMULTANEOUS AWARENESS OF A LITERAL AND FICTIONAL AUDIENCE IN "A MODEST PROPOSAL"

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

Jonathan Swift's infamous and controversial 1729 pamphlet "A Modest Proposal" delivered a disturbing call to action, asking readers to eat the children of Ireland. While it is unlikely that any reader ever interpreted the argument literally, and that the effect was mere amusement or nausea at best, Swift's decision to address socioeconomic failures in his homeland with vicious satire is still a point of critical debate. However, by distinguishing Swift's literal audience from the invoked fictional audience that he creates through an analysis of both literary criticism on "A Modest Proposal" and compositional theory pertaining to audience, and then further accepting the simultaneity of Swift's two audiences, and analyzing how Swift's addressing his fictional audience affects the literal audience's understanding of his argument, one can reveal Swift's literal meaning in "A Modest Proposal" as an indictment against Ireland's socioeconomic behaviors. Furthermore, the literal audience's rejection of the invoked fictional role becomes Swift's true call to action and his means for promoting a more practical proposal for solution.

Dylan Phillips, 2010

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"THINGS OF LIKE KINDE": SYMPATHY AND THE MIRROR STAGE IN *PARADISE LOST* AND *FRANKENSTEIN*

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

The purpose of this paper is to apply Lacanian theory to the mirror experiences of Eve in *Paradise Lost* and the monster in *Frankenstein*. Previous critics have interpreted Eve's mirror episode as a display of narcissistic vanity and have addressed its connection to the monster's similar experience. My thesis is that Eve goes through Lacan's mirror stage correctly and that her narcissism results in self-identification and a successful achievement of sympathy. The monster deviates from the normal experience of the mirror stage by failing to admire or sympathize with his mirror image, and his Satanic aggression is the result of an unfulfilled desire for sympathy from dissimilar beings with whom he erroneously identifies himself. Eve's mirror experience is not simply a display of vanity, but acts as an ideal example of Lacan's mirror stage constituting a crucial process in the development of her psyche. The monster does not experience the mirror stage properly because he fails to feel narcissism toward his

Alexandria Matheny, 2012

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image, and his identification with the De Lacey family leads him to displace his admiration and desire for sympathy. In Book 10 of *Paradise Lost*, Milton describes sympathy as being shared between “things of like kinde,” explaining why the monster’s desire for sympathy from beings who are unlike him constitutes a problem. Thus, his failure to follow Eve’s example of the mirror stage results in a frustrated desire for sympathy and invokes the Satanic aggression that brings him to the point of murder.

THE RETURN OF LOGOS: LANGUAGE AND MEANING IN *HAMLET*

*Presented at the Big South Undergraduate Research Symposium, Radford,
Va., April 2010*

James Funk, 2010

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Faculty Mentor:
Matthew Fike, Ph.D.*

The role of language in *Hamlet* has been the subject of some previous critical speculation. For example, James L. Calderwood deconstructs the play’s language, and Lawrence Danson focuses on its function as a sign system. Although my paper addresses these perspectives, I focus mainly on Hamlet’s shift from a state of deconstruction to a reunion with logos, a transformation that others have left largely unaddressed. I argue that only after the sea voyage, which contains a reversal that reorients Hamlet’s metaphysical center and guides him toward reason, does the prince embrace logos and accept his reality as ordered; in the meantime, the breakdown in logos results in hesitation. Because language contributes to the play’s sense of uncertainty, Hamlet becomes distrustful of signification, hence the character’s frequent use of the word “word.” Caught between the ghost’s call for revenge and Claudius’s insistence on normality in the kingdom, the prince sees no underlying reason in language and thus dismisses it as a random stream of sounds. Indeed, Hamlet internalizes the absence of logos to the point that he doubts the underlying truth of his own language. It is Hamlet’s encounter with the pirates that leads to psychological integration, and his discovery of Claudius’s death order provides him with real evidence for his uncle’s guilt. Hamlet’s reacquisition of reason corresponds to his renewed faith in signifying. Thus the prince returns to a state of logos, as is obvious from his command to Horatio to tell his story after he dies.

THE SAME QUENTIN: RELATIONSHIPS BETWEEN *THE SOUND AND THE FURY* AND *ABSALOM, ABSALOM!*

Presented at the Sigma Tau Delta International Convention, St. Louis, Mo., March 2010

After introducing Quentin Compson to the Yoknapatawpha novels with *The Sound and the Fury*, William Faulkner revisited the character several years later with *Absalom, Absalom!* Critics cannot agree, however, if these two instances of Quentin Compson are intended to be the same character with the same experiences or two figures from alternate universes. An analysis of the connections between the two novels, however, reveals that both feature the same Quentin and that his experiences in each of the novels influences his motivations in the other.

DIDO'S TRAGEDY

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

The purpose of this paper is to illustrate how Virgil portrayed Roman loyalty and political views toward Cleopatra through a cautionary tale of Dido in *The Aeneid*. Virgil uses the character of Dido to mirror the roman goddesses and embody different female archetypes that were present in Greek and Roman mythology while exploring the nervous political situation of Rome, and through his illustration of the female stereotype he shows us that the woman in Roman society is incomplete and unrestrained emotionally without a husband or consort to subdue her passions. In Roman culture women were considered emotional and unrestrained, incomplete without a male counterpart, and could not hold political authority in Roman society. R. M. Henry suggests in "Medea and Dido" that Virgil plays with the mythology of female archetypes by focusing on the development of Apollonius's poem, *Argonautica* (*The Classical Review* 44 [1930]: 97-108). The wars between Rome and Carthage also changed the course of how topics, like love, in literature were approached. According to Leonard and McClure, Virgil's Dido demonstrates three female archetypes: the virgin goddess, the vulnerable goddess, and the death goddess (*Myth and Knowing* 112). Through Virgil's Dido, the ruling of women in Roman society implies the fall of the society and the culture, which directly connected Cleopatra as the representative of a "maddened" Dido who would lead to the fall of Rome.

Dylan Phillips, 2010

*Department of English
(ENGL 300-Bickford)
Faculty Mentor:
Leslie Bickford, Ph.D.*

Erika Patterson, 2010

*Department of English
(ENGL 508 – Koster)
Faculty Mentor:
Josephine Koster, Ph.D.*

WERE MUTE, BUT NOW WE SPEAK: FINDING VOICE THROUGH FEMINIST LITERARY CRITICISM

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

Renee Beach, 2010

*Department of English
(ENGL 330-Gerald)*

*Faculty Mentor:
Amy Gerald, Ph.D.*

In feminist literature, voice is a metaphor symbolizing the exercise of power gained through telling one's own story. Feminist writers Adrienne Rich, Carolyn Heilbrun, and Judith Fetterley describe the need for feminist writing and critical analysis in order to give women a voice, in both the artistic world and the "real" world. Rich, for instance, states feminist literary criticism affects women's lives by "seeing, hearing our wordless or negated experience affirmed and pursued further in language." Fetterley addresses the power women lose from having no accurate representations of themselves in literature and advocates being "resisting readers" to regain female consciousness. Heilbrun, drawing from Rich and Fetterley, subsequently indicates the need for women to write honestly and acknowledge emotions previously discouraged by male society. Modern feminists credit these pioneering women for awakening the literary community to feminist criticism. This paper examines the continued need for feminist literary criticism and its correspondence to voice and power. Feminist literary criticism validates women's perspectives, enabling women to find their own voices and gain back the power excluded from them. It has recovered lost texts, exposing the voices of writers long silenced, to examine deeply what writers reveal about society and themselves. As feminist scholars continue to look at texts with a fresh perspective, with "re-vision," and advance the writings of women, women will continue to overcome silence and exclusion. Although women have been muted and locked away through society's dictations, feminist literary criticism allows women to speak by adding their own perspectives to texts that authentically share their experience.

EXISTENTIALISM IN HEART OF DARKNESS

Presented at the Winthrop University Department of English Undergraduate/Graduate Research Conference, February 2010

Stephen Crawford, 2012

*Department of English
(ENGL 203-Hiner)*

*Faculty Mentor:
Amanda Hiner, Ph.D.*

At first glance Joseph Conrad's frame story novella *Heart of Darkness* appears to be a scathing critique of the economic imperialism practiced by many European governments in his time, as evidenced by extensive critical analysis on the subject by scholars such as Ted Boyle (1965) and Walter Wright (1949). However, an existentialist reading of the text reveals a triple grouping of foil characters that shed light on Joseph Conrad's hope for humanity, rather than his contempt. My paper argues that the foil characters in the narrator's tale can be separated into three categories based upon chronological location with each set highlighting

a different aspect of darkness in human nature. The narrator, Marlow, encounters the first set of foils in the time frame before he departs for the Congo. They serve to illuminate the ignorance of the teeming masses to their own dreadful potential when failing to pursue their own personal dreams as Marlow does. Marlow encounters the second category of foils during his time spent in the Congo, and they serve to illustrate the loss of humanity in those that fail to resist the darkness in their hearts. The final chronologically divided category of foils Marlow encounters contains only one character, Kurtz's unnamed fiancé. Kurtz's intended, as she is called, serves to illuminate the fact that, despite being submerged in the chaotic darkness of human evil and inequity, Marlow is able to return from the Congo without having lost his humanity. Collectively, the foils show that Marlow is able to retain his humanity throughout the story due to his existential pursuit of fulfillment, rather than chasing after ephemeral things such as wealth and advancement.

INTERNET HEALTH CARE TECHNOLOGY IMPLICATIONS: SOCIAL WORK WITH OLDER ADULTS

Presented at the Carolina National Association of Social Workers Spring Symposium, Myrtle Beach, S.C., February 2010

In 2004, 22% percent of people over the age of 65, and 58% of the people between the ages of 55 and 64 used the Internet. In 2010 we know Internet usage is growing in society. Many older people must now log onto the Internet to sign up for their Medicare benefits. In addition, research has shown that older adults are accessing information on health care, and this information informs their health care decisions. Health care can be accessed on the Internet through various WebPages, discussion groups, and e-mail. In 2006 consumers used over 100,000 WebPages with health information. This will increase in the future as the medical profession moves toward all medical records being electronically based, with individuals being able to access their own records. In addition, the availability of information has led to more informed consumers with many older adults preparing questions prior to visiting their health care providers. A problem was recognized in that not all older adults know how to traverse the system; to address this problem many senior and other activity centers that serve older adults are increasingly providing workshops on basic computer and advanced computer skills. Studies have shown these workshops not only increase ability, but also foster increased Internet usage. These workshops have also been instrumental in increasing quality of life through helping older adults learn how to find and access resources they need. However, as in all learning situations, the current usage has led to some frustrations among older adults. In this workshop participants will learn about the use of the Internet to access health care by older adults, their perceptions of how helpful the information they found was, and how social workers can become active in helping the older generation.

Amanda Davis, 2010

*Department of Social Work
(S.C.WK 330 – Manetta)
Faculty Mentor:
Ameda Manetta, Ph.D.*

“TRUTH IS AN ODD NUMBER”: FINDING ORDER THROUGH CHAOS IN *AT SWIM-TWO-BIRDS*

Presented at the American Conference for Irish Studies Southern Regional Meeting, Rock Hill, S.C., March 2010

Laura Merritt, 2010

*Department of English
(ENGL 525–Neary)*

*Faculty Mentor:
Marguerite Quintelli-Neary,
Ph.D.*

Of *At Swim-Two-Birds* Dylan Thomas said, “This is just the book to give your sister if she’s a loud, dirty, boozy girl!” That is an unusual comment to be said about a novel held in high literary esteem, and that is considered one of the first postmodern novels, but a believable one, nonetheless. In *At-Swim-Two Birds* Flann O’Brien creates a delightfully convoluted work that tells many stories and provides a humorous insight to the complex culture of the Irish. O’Brien pulls from the outside world and his own vast imagination to create vibrant worlds inside his novel that attempt to make some sense of the confusion of changing times. As many postmodern writers do, O’Brien seeks truth in a world of unanswered questions. He strives to find truth that may or may not exist by creating impossible situations and a world out of control that is completely in his control. I would like to assert that through the chaos of his novel’s varied stories and influences, from James Joyce to Irish mythology, O’Brien orders his world and finds stability that he could not grasp in actuality. I cannot say these influences work together seamlessly because O’Brien wants us to see where he has sown them together in his story, and to know that he is a master at his craft, blending seemingly unrelated aspects of Irish culture, history and society to answer the questions no one else can in one of the most memorable and opinionated works of Irish literature.

ULYSSES AND *AS I LAY DYING*: A STUDY OF INFLUENCE

Presented at the American Conference for Irish Studies Southern Regional Meeting, Rock Hill, S.C., March 2010

Geoffrey Bernard, 2011

*Department of English
(ENGL 510–Neary)*

*Faculty Mentor:
Marguerite Quintelli-Neary,
Ph.D.*

Though nearly every artist desires to be original in his work, every work of art is inevitably a reaction to those works which have come before it. In the twentieth century, James Joyce was one of the greatest forces of influence on literature and almost every succeeding author was forced to reconcile with him. In this paper I compare *As I Lay Dying* with *Ulysses* to argue that William Faulkner was heavily influenced by James Joyce. Through analyzing structure, interior monologue, subject matter, and stream-of-consciousness style I show that, while Faulkner does not simply mimic Joyce’s techniques, his work is greatly impacted by Joyce.

DRINKING AND SOCIOCULTURAL PARALYSIS IN THE WORKS OF JAMES JOYCE

Presented at the American Conference for Irish Studies Southern Regional Meeting, Rock Hill, S.C., March 2010

While the stereotypical depiction of the drunken Irishman is unfair and exaggerated, alcohol consumption is indeed an important and destructive facet of Irish culture. Alcohol acts as a means of celebration and as a form of escape from the socioeconomic realities of Irish life. James Joyce's *Dubliners* and *Ulysses* explore the toll that alcoholism has taken on Dublin society: nearly every story in *Dubliners* features an alcoholic character, and several stories depict the effects of alcoholism on the family. Joyce explores Dublin pub culture extensively in *Ulysses* and suggests that alcohol exacerbates the ultra-nationalism among the Irish. Leopold Bloom, the abstemious protagonist in *Ulysses*, is ridiculed by a group of drinkers in the "Cyclops" episode for his perceived Otherness; his refusal to drink with them does not help matters. This paper will demonstrate the pervasiveness of drinking among the Irish and the social causes and effects of alcoholism. While Joyce saw institutions such as nationalism and religion as the overarching threats to Ireland, he was also keenly aware of the devastating effects of alcoholism on Irish society. Alcohol is a contributing factor to the paralysis Joyce observes among Dublin residents: many of his characters are stuck in a vicious cycle of addiction from which there appears to be no escape. Furthermore, excessive drinking fuels the romantic Irish notion of nationalism Joyce finds so distasteful. Stephen Dedalus' estranged relationship with his alcoholic father and gravitation towards the non-drinking outsider Bloom is, in a way, Joyce's symbolic rejection of the alcohol-soaked delusions that caused Irish culture to stagnate.

James Funk, 2010

*Department of English
(ENGL 510–Neary)*

Faculty Mentor:

*Marguerite Quintelli-Neary,
Ph.D.*

A GENDER WAR IN WOOLF'S "THE MARK ON THE WALL"

Presented at the Winthrop University Department of English Undergraduate/ Graduate Research Conference, February 2010

This paper examines the parallels between war and women in Virginia Woolf's "The Mark on the Wall" and how Woolf's presentation of these parallels exemplifies the internal mind characteristic of Modernism. In this short story, the narrator's contemplations about women's struggles for individual thought are connected to the struggles of war and thereby showcase the problems with repressing female perspectives. By incorporating this idea with recent scholarship on Woolf, which discusses her concern with "the inner life" (Julia Briggs, *Virginia Woolf: An Inner Life*) and the presence of war "at the story's margins" (Jane Goldman,

Cayla Eagon, 2011

*Department of English
(ENGL 203–DeRochi)*

Faculty Mentor:

Jack DeRochi, Ph.D.

The Cambridge Introduction to Virginia Woolf), it is evident that the female narrator is battling an internal war. A feminist approach to this story reveals that the narrator's oppression by a male dominant society that imposes its own ideas on women-by pressuring women to abandon individual thought and accept male thought as truth-forces the narrator to choose between actively defending her thoughts, bringing the gender war out into the open, or succumbing to male ideas and thus keeping the war within herself. In conclusion, Modernism provides the ideal technique for Woolf to examine a woman's thoughts about the right to have her own thoughts in a patriarchal society while implying a woman's only chance for individual identity in that society is to take up arms in a gender war.

THE TEMPEST AND CONFUSION OVER NEW WORLD COLONIZATION

Presented at the Winthrop University Department of English Undergraduate/ Graduate Research Conference, February 2010

Karen Cox, 2010

*Department of English
(ENGL 305–Fike)
Faculty Mentor:
Matthew Fike, Ph.D.*

This essay challenges the commonly held interpretation that *The Tempest* is about New World colonization. Critics have falsely pinned New World elements on *The Tempest* when trying to understand the play according to the world view in Shakespeare's time. My thesis is that although the play does allude to the New World, it does not reflect the English colonization of North America because too many elements are contradictory and because such an interpretation is inconsistent with the world view of Shakespeare and his audience in 1611. A deeper understanding of the play's historical context suggests that the setting is more accurately equated with Ireland, Caliban with Irish natives, and Prospero with what Jerry Brotton calls "the elite traveler."

VENUS WANDERS: THE ELLIPTICAL MOVEMENT AND DUALITY IN MILTON'S POETICAL WORKS

Presented at the Winthrop University Department of English Undergraduate/ Graduate Research Conference, February 2010

Erika Patterson, 2010

*Department of English
(ENGL 513–Fike)
Faculty Mentor:
Matthew Fike, Ph.D.*

This paper examines the role of Venus as both the morning star and evening star in John Milton's poetical works. My argument states that due to the elliptical nature of Venus's orbit around the sun, she wanders between the light and the dark making her both the morning star and the evening star, which leads to her duality as a planet and a goddess in Milton's poetry. Venus's planetary aspect addresses an elliptical orbit around the sun which causes her to rise on the horizon in both the morning and the evening. Owen Gingerich's discussion in "The Trouble With Ptolemy" addresses Ptolemy's issues with calculating the

elongations in the orbit of Venus due to her relationship to Earth's orbit (Isis 93.1 [2002]: 70-74). Venus's elongation also places her in relation in a superior conjunction with the sun between the planet and Earth, which aligns with the period of winter and the time she is seen on the evening horizon. While Venus's orbit during the winter months as the evening star suggests that she is moving away from the Sun, she still possesses a close proximity to the Son who eclipsed her and whom her brightest light reflects his coming to mankind. Though Milton connects Venus to the light in "The Nativity Ode," in Comus she takes her alternate aspect of Hesperus, the evening star as she moves further from the Sun in her orbit, which causes her light to fade into the darker elements of pagan deities. Venus's dual nature is resolved in the coming of the Son as Jesus in Paradise Regained. He resolves her duality in his union of God and man, eliminating the need for pagan deities, therefore Venus.

SHAKESPEARE'S *A MIDSUMMER NIGHT'S DREAM* AND MASLOW'S HIERARCHY OF NEEDS: TITANIA'S ROLE IN MOVING BOTTOM CLOSER TO SELF-ACTUALIZATION

Presented at the Winthrop University Department of English Undergraduate/ Graduate Research Conference, February 2010

Many scholars (such as Hunt, Wyrick, and Allen) have analyzed characters in *A Midsummer Night's Dream* in light of individuation. This paper narrows the critical dialogue by using Maslow's hierarchy of needs to argue that Bottom the Weaver experiences progression up the pyramid toward self-actualization. At the beginning of the play Bottom has fulfilled his needs in tier one (physiological) and tier two (security) of the hierarchy, but his movement to tier three (love and acceptance) is hindered by his feelings of inadequacy and inability to gain respect from the other actors. Bottom strives for approval by displaying a false mask of confidence. This act continues until he is changed in the forest. The real and lasting transformation is not the physical one that results from Puck's magic but is instead an internal growth caused by Titania's excessive love. Though it is drug-induced and fleeting, her "doting" shows Bottom his worth, allowing him to be himself and gain true confidence. The difference in his character can first be seen in Act 4, Scene 1 where he is self-assured for the first time in the play. He maintains a level of confidence for the remainder of the play, especially when he takes on his role as Pyramus. His outward behavior, while still confident like before, has a different, more genuine quality about it because it stems from his understanding that he is worthy of love. Despite his improvement, Bottom does not reach the level of self-actualization in Maslow's hierarchy; however, Titania's love succeeds in propelling him on his way.

Alese Linder, 2010

*Department of English
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STABLE ISOTOPIC SIGNATURES OF ENDOMYCORRHIZAL FUNGAL SPORES AT ELEVATED TEMPERATURES: APPLICATIONS TO ARCHAEOLOGY

Presented at the Geological Society of America's Annual Conference, Portland, Ore., October 2009

Supported by Winthrop University's Dalton Endowment for Environmental Science and Research Council Grant

Henry White, 2011
John Yankech, 2009

*Department of Chemistry,
Physics, and Geology
Faculty Mentor:
Scott Werts, Ph.D.*

Arbuscular mycorrhizal fungi (AMF) are ubiquitous in the soil system as symbionts to a multitude of plant root systems. Through the course of geologic time, fungal spores have been present in terrestrial sediments as far back as the Early Devonian. Prior research on organic material in soils reveals that a near complete loss of carbon and organic matter occurs in soils when exposed to temperatures above 400°C. However, additional work on these soils has shown several species of AMF to be structurally resistant to temperatures up to 500°C, despite the loss of all other organic structures. From a geological and archaeological perspective, we are interested in investigating the progressive chemical changes of these spores at increasingly high temperatures to determine whether they may be useful as a "post fire thermometer". Initial investigations of changes in d13C and d15N signatures of Acaulospora, Gigaspora, Glomus, and Scutellospora spores at increasing temperatures shows an abrupt shift toward heavier values for both isotopes above 300°C and 250°C respectively. This correlates with large losses in %C and %N mass at these temperatures and likely represents the loss of specific organic compounds at progressively high temperatures.

GREAT MOTHER GODDESS IN THE GARDEN: EARTH AS THE SACRED FEMININE IN *PARADISE LOST*

Presented at the Big South Undergraduate Research Symposium, Radford, Va., April 2010

Ashley Galloway, 2011

*Department of English
(ENGL 513–Fike)
Faculty Mentor:
Matthew Fike, Ph.D.*

*This paper examines the roles of Earth and Eve in John Milton's *Paradise Lost* in terms of the mythological and pagan concept of the three phases of the sacred feminine—virgin, mother, and crone. By paying particular attention to Milton's descriptions of his two main female characters, I will argue that in prelapsarian Eden, Eve is cast as the maiden and Earth, the mother; following the Fall, Eve takes her promised title as the Great Mother, and Earth becomes the crone. The chief symbol of the great mother is the vessel or womb, which is central to her associations with fertility; the maiden is signified by the as yet unrealized promise of such fertility. In prelapsarian Eden, Earth is revered as the womb that gives birth to all life, while Eve clearly has yet to conceive; she is referred to as a mother only after she eats of the Forbidden Fruit. On several occasions*

before the Fall, though, Milton predicts Eve's transformation into the Great Mother and the Earth's shift into the crone phase by aligning Eve's potential fertility with that of Mother Earth. In an early description of Eve, Milton compares Eve's long, flowing hair to the rapidly growing vines of the Garden; furthermore, as John R. Knott discusses, neither the flora of the Earth nor the beauty of Eve are affected by seasonal change or age—both women experience a sort of eternal summer. Just as Adam and Eve fall from grace, so does the Earth. She is no longer the unfailingly fertile Great Mother. She becomes a place of rocky soil, harsh seasonal shifts, and predatory animals—a tangible portrayal of Adam and Eve's spiritual fall, as outlined by Barbara Lewalski. Eve is recognized as “Mother of all Mankind,” pushing the Earth out of her role as the protective and loving mother and into the role of the Grandmother, or Crone.

YOUNG ADULTS' SIMILARITY AND LIKELINESS TO DECEIVE THEIR PARENTS

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Previous research has shown that children with a more open relationship with their parents are less likely to lie to their parents (Rutger, Engels, Finkenauer, & Van Kooten, 2006). Similarly, parents with little interest in or knowledge about their offspring have children who are more likely to hide behaviors (Finkenauer, Frijns, Engels, & Kerkhof, 2006). The purpose of the current study was to examine whether dissimilarity to parents predicts young adults' willingness to lie to their parents. Participants were 57 adults, with a mean age of 19.37 ($SD = 1.57$). Participants answered questions from the 'Self Concealment Survey' (Larson & Charstain, 1990) and the "World View Questionnaire" (Jenkins, 2004), as well as questions created by the researchers to further assess worldview, deception, and demographics. Participants were asked to respond to the worldview questions with their own opinions. Then, we prompted them to answer the same questions the way their primary caregiver(s) would answer them. We calculated a concealment score with a possible range of 12 to 60 and a mean of 32.02 ($sd = 8.48$). We also calculated an "Overall Difference Score" (ODS) with a possible range of 0 to 140; a higher score indicated that the participant held worldviews that were different than his parents. The mean ODS was 30.21 ($sd = 13.57$), suggesting that in general, participants felt similar to their parents. Our results revealed that students with different beliefs than their parents have a higher level of concealment than students with similar beliefs as their parents. Compared to women, men reported being more spiritually different and more likely to conceal information from their parents. Race and year in school did not predict concealment levels. Young adults reported differing from their parents the most on current political issues, such as the drinking age, homosexuality, and interracial marriage.

Jason Laboe, 2010
Alli Gyenes, 2010

Department of Psychology
(PSYC 302-Sleigh)
Faculty Mentor:
Merry J. Sleigh, Ph.D.

WOMEN'S USE OF OVERT VERSUS COVERT AGGRESSION IN THE WORKPLACE

*Presented at the Southeastern Psychological Association,
Chattanooga, Tenn., March 2010*

Jessie Bickley, 2011
Scotia Sexton, 2010
Roya Hosseini, 2011

*Department of Psychology
(PSYC 302-Sleigh)
Faculty Mentor:
Merry Sleigh, Ph.D.*

We examined women's aggression in the workplace by focusing on obvious versus subtle aggressive acts and the gender of their victim. Overall, men were more physically aggressive than women, $t(56) = 4.23, p < .01$. There were no other gender differences in self-reported use of overt or covert aggression. In other words, men and women believed that they exhibited similar types of aggression in the workplace. However, we also asked our participants to identify acts of aggression they had experienced and to identify the gender of the perpetrator. Men reported that they had more frequently experienced the following acts from women than from men: work judged unfairly, opinions dismissed, work criticized, rumors spread, backbiting, being ignored, do-not-speak-to-me behavior, purposefully interrupted, and insinuation of mental problems. In contrast, men reported that they had more often experienced insults about their private life, public criticism of their appearance, and derogatory imitation from a man than from a woman. Women reported that they had more often experienced the following acts from women than from men: insults about private life, public criticism of their appearance, being unfairly blamed, having their opportunities to express their opinions reduced, having their opinions dismissed, having their sense of judgment publicly questioned, having their work criticized, having their duties reduced or decreased, being isolated, having rumors spread, backbiting, being ignored, being subject to negative glances and gestures, do-not-speak-to-me behavior, being imitated in a derogatory manner, being interrupted, and insinuations of mental illness. In contrast, women reported that they had more often experienced a showering of abuse, being threatened, and having someone refuse to listen from a man than from a woman. In general, our male and female participants reported behaving similarly in the workplace; however, both men and women reported experiencing more aggressive acts from women than from men. The acts committed by women tended to be more subtle, whereas aggressive acts committed by men tended to be more overt in nature. These findings raise the question of whether women are unfairly stereotyped as being passive aggressive in the workplace or are instead simply unaware of the aggression they display in the workplace.

RELATIONSHIPS AMONG PARENTAL MODELING, SOCIAL AWARENESS, POLITICAL MISTRUST, AND VOTING BEHAVIOR

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Received the Psi Chi Regional Research Award

Voter turnout among 18 to 24 year olds has been historically and consistently low (Levine & Hugo, 2002). Previous research found that personality, parental discussions, and news exposure are all predictors of voting behavior (McIntosh, Hart, & Youniss, 2007; Miller, Taylor, & Buck, 1991; Peterson, Smirles, & Wentworth, 1997; Scaturro & Smalley, 1980). This study examined the relationships among parental modeling, social awareness, political mistrust, and voting behavior. Sixty young adults answered modified questions regarding their political attitudes and behaviors, as well as questions measuring the political involvement of the participant and their mother, father, best friend, and significant other. We compared participants who voted in the last presidential election to those who did not. Participants who voted had lower Political Trust scores, $t(61) = -2.39$, $p < .05$, higher Political Awareness Scores, $t(61) = 2.06$, $p < .05$, higher Father Involvement, $t(59) = 2.96$, $p < .01$, higher Significant Other Involvement, $t(48) = 2.83$, $p < .01$, and higher Friend Involvement, $t(60) = 2.60$, $p < .05$; these groups did not differ on Mother Involvement. However, when we asked participants to rank in order the factors that most influenced their voting behavior, the most influential factor was mother, followed by father, teacher, closest friend, God, sibling, and significant other. Participants also reported that the greater their father's political involvement, the more important it was that their children vote, $r = .35$, $p < .01$ and the more proud they were to be an American, $r = .33$, $p < .01$. The more participants reported that father influenced their voting behavior, the higher their Father Involvement Scores, $r = .28$, $p < .05$, and the lower their GPA, $r = .26$, $p < .05$. The higher the GPA, the more participants felt that teachers influenced their voting, $r = -.33$, $p < .01$. We found no gender or race differences on political awareness, political trust, political interest, involvement of others, or influences on voting. In sum, our participants believed that their mother had heavily influenced their voting behavior; however, father's involvement in politics emerged as a more predictive factor for both behavior and attitudes.

Erin Sim, 2012
Laura Borell, 2010

*Department of Psychology
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Faculty Mentor:
Merry J. Sleigh, Ph.D.*

KNOWLEDGE AND SELF-AWARENESS AS PREDICTORS OF RISK-TAKING BEHAVIOR

*Presented at the Southeastern Psychological Association,
Chattanooga, Tenn., March 2010*

Amy Rivers, 2011
Becky Baxter, 2011
Adrienne Bogle, 2010

*Department of Psychology
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Faculty Mentor:
Merry J. Sleigh, Ph.D.*

We assessed whether perceived knowledge in a specific area of risk-taking influenced the likelihood of taking a risk in that area. We also examined a risk-taking domain, academic risk-taking, that had not been previously explored in this arena. The more participants reported knowing about each corresponding area, the more likely they were to engage in health/safety risk-taking behaviors, $r = .26$, $p < .05$, financial risk-taking behaviors, $r = .25$, $p < .05$, and recreational risk-taking behaviors, $r = .52$, $p < .01$. In contrast, the more participants knew about ethics, the less they engaged in ethical risk-taking behaviors, $r = -.26$, $p < .05$. Knowledge of social and academic risk-taking did not predict behaviors in these areas. However, the more participants knew about academic risk-taking, the less likely they were to engage in ethically risky behavior, $r = -.37$, $p < .01$. The more participants believed that the average person engages in risky behavior, the higher their own academic risk-taking, $r = .30$, $p < .05$, and the higher their own ethical risk-taking, $r = .37$, $p < .01$. The higher the self-esteem, the more participants engaged in social risks, $r = .27$, $p < .05$. In general, GPA and self-esteem did not predict risk-taking behaviors or perceived knowledge. We compared participants who were enrolled in an Economic Risk Analysis class to those who were not using an independent t-test. Students enrolled in the class had a lower academic risk-taking score, $t(64) = 2.29$, $p < .05$. There were no other differences in risk-taking behavior or overall risk-taking knowledge. Our hypothesis was partially supported. In certain domains, knowledge led to increased risk-taking behavior; however, ethical knowledge reduced ethical risk-taking and social knowledge did not predict risk-taking. Thus, the relationship between knowledge and risk-taking is not linear. Similarly, many factors seem to contribute to whether an individual takes risk in a specified area. For example, self-esteem predicted social risk-taking, whereas race predicted recreational risk-taking. These findings could be used by schools to modify education on risk-taking behaviors. Teaching people about risk-taking might be effective in some arenas and not in others.

MEDIA EXPOSURE, IDENTIFICATION WITH VIOLENT CHARACTERS, AND AGGRESSION LEVELS

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

The current study examined the relationships among exposure to media, identification with same-race violent characters, and aggression levels in young adults. The higher the aggression score, the more hours participants spent listening to violent music, $r(71) = .27, p < .05$, watching violent TV, $r(71) = .40, p < .01$, and watching TV, $r(71) = .33, p < .01$. The higher the aggression score, the more participants agreed that they identify with violent male TV characters, $r(71) = .44, p < .01$, and with violent female TV characters, $r(71) = .52, p < .01$. The higher the aggression score, the more participants agreed that they are similar to people of their own race on TV, $r(71) = .28, p < .05$. There were no differences between African-Americans and Caucasians in aggression score. African-Americans reported watching more hours per week of TV, $t(64) = 4.55, p < .01$; however, there was no difference in hours per week of violent TV watching. Caucasians were more likely to view an "exercise of power in an unethical fashion" as aggressive than were African-Americans, $t(64) = -2.11, p < .05$. Caucasians also were less likely to identify with an aggressive person of their same race on television, $t(64) = -1.71, p < .05$, and more likely to think that the people on TV of their same race are similar to themselves, $t(64) = -1.10, p < .01$. African-Americans reported a higher percentage of African-Americans on TV being violent, $t(64) = 5.58, p < .01$. These findings suggest that aggressive people spend more time interacting with violent media and identifying with violent television characters. Although African-Americans and Caucasians watch similar amounts of violent television and have similar levels of aggression, these two races have unique television viewing experiences. African-Americans perceived African-American characters on television as being violent, whereas Caucasians perceived same race television characters as being similar to themselves.

INDIVIDUAL DIFFERENCES AND MULTIMEDIA LEARNING

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

We hypothesized that multimedia instruction would be more effective for people with higher working memory capacity (WMC). We gave participants the automated operation span task (Unsworth et al., 2005). Then we gave them a lesson in chess tactics in a narration only (N) or narration + pictures (N + P) condition. Finally, we gave them a test of their knowledge of how to use chess tactics. We found no significant interaction

Jamal Phillips, 2010
Aysha Meadows, 2010
Paige Roper, 2010

Department of Psychology
(PSYC 302-Sleigh)
Faculty Mentor:
Merry J. Sleigh, Ph.D.

Corey Kinne
Jeremy Sowell
Ashley Garrick
Amber Hiott
Wales Watkins, 2012

*Department of Psychology
(PSYC 302-Hayes)
Faculty Mentor:
Matthew Hayes, Ph.D.*

between WMC x Instructional Condition, and we found no main effects of either. These results are at odds with others who have studied multimedia learning and with what we would expect of WMC.

SOCIAL NETWORKING SITES AND THE COLLEGE EXPERIENCE

*Presented at the Southeastern Psychological Association,
Chattanooga, Tenn., March 2010*

Daniel Selvey, 2012
William Harlan, 2012
Amber Hiott
Wales Watkins, 2012

*Department of Psychology
Faculty Mentor:
Matthew Hayes, Ph.D.*

We examined whether the time and use of social networking sites affected the academic performance of college students. A survey was distributed to college students asking how and how much they used Facebook and other social networking sites. Our hypothesis was partially supported by multiple relationships between gender and study habits and motivation. Our study retains value in its implications for future research, as well as its insight into men and women's study habits.

INTRACELLULAR SIGNALING OF LYSOPHOSPHOLIPID INDUCED GROWTH CONE COLLAPSE OF CHICKEN RETINAL NEURONS

*Presented at the Symposium for Young Neuroscientists and Professors of the SouthEast (SYNAPSE), Winston-Salem, N.C., March 2010 and at the Big South Undergraduate Research Symposium, Radford, Va., April 2010
Supported by an NIH Grant from the National Center for Research Resources for S.C.-INBRE and a Winthrop University Research Council Grant*

Canaan Whiteneck, 2010

*Department of Biology
(BIOL 471, 472 – Birgbauer)
Faculty Mentor:
Eric Birgbauer, Ph.D.*

Developing neurons use growth cones (fanlike structure at the end of developing axons) to sense attractive and repulsive chemical cues to grow towards and form a synapse at the target. We are investigating the effect of two lipids, lysophosphatidic acid (LPA) and Sphingosine-1-phosphate (S1P), on developing chicken retinal ganglion cells (RGCs). We have established that LPA and S1P are inhibitory and cause growth cone collapse. LPA and S1P activate specific G-Protein Coupled Receptors (GPCRs)... Therefore we wanted to determine the GPCR intracellular signaling pathways involved in LPA or S1P induced growth cone collapse of chicken RGCs. There are four G-Proteins associated with GPCRs: Gi, Gq, Gs, and G12/13. We used inhibitors to block representative downstream pathways and compared the growth cone collapse rates to controls. LPA induced growth cone collapse was significantly reduced when pathways associated with Gs (Adenyl Cyclase, PKA) and G12/13 (Rho, ROCK) were blocked. Reducing intracellular calcium ion concentration via chelation, associated with Gq, and using pertussis toxin to directly inhibit Gi had no effect on LPA induced growth cone collapse. In conclusion, our preliminary data show

that Gs and G12/13 are probably integral to LPA induced growth cone collapse, whereas Gi and G12/13 do not seem to be involved. SIP induced growth cone collapse was not observed for Gs and G12/13 ; however, Gq does not seem to be involved in SIP induced growth cone collapse. Furthermore, our preliminary data with pertussis toxin suggests that Gi may be required for SIP, but not LPA, induced growth cone collapse.

DESTINED FOR SUCCESS OR DOOMED FOR FAILURE? AN ANALYSIS OF THE PROCESS OF RECEIVING A POSITION IN THE STATE LEGISLATIVE AS AN AFRICAN AMERICAN FEMALE

Presented at the Annual Meeting of the National Conference of Black Political Scientists, Atlanta, Ga., March 2010

Politics has always carried the slogan that, "it is not what you know, it is who you know." However, what if you know the right people, but it is who you are that defines your outcome in a political campaign. Politics will forever remain one of the most discriminatory agendas for the world, only inch by inch making room for the minorities that are proving to have a strong voice. Continuing to explore the expansion of the political realm the numbers have proved that amongst minorities African American women are beginning to emerge. In the summer of 2008 I was a part of the Leah Moody for Senate campaign and experienced the challenges of an African American female running for a state legislative position. In this essay I plan to first introduce the candidate Leah Moody, her family history, and her platform. By sifting through her life and political background the factors are weighted and applied to a possible outcome in an election. Next will be the research of African Americans and females in politics; discovering some of the realities of politics. Moreover, I will reflect on the experiences and challenges that Leah Moody encountered while attempting to obtain a seat in the South Carolina Senate. I will evaluate the candidate in comparison to the research I have found. Lastly, this research will allow a proper analysis of possibly why the election had the results that it did. African American women not only must overcome the obstacles of race and gender, in the pursuit of or positioned in the state legislature, but have also played a major role in breaking the mold of state politics. Questions such as what could have been done differently will be answered; along with a theory as to why the election for Leah Moody ended the way it did. This campaign was a great experience for me in determining the challenges and factors that may lead to the success or failure of African American women in politics.

Amanda Covington, 2010

*Department of Political
Science (PLS.C. 423-Belk)
Faculty Mentor:
Adolphus Belk, Ph.D.*

STUDY STRATEGIES AND RESOURCE USE: CHANGE ACROSS THE SEMESTER

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010
Sponsored by a Winthrop University Research Council Grant

Wesley Allen, 2010

Department of Psychology
Faculty Mentor:
Matthew Hayes, Ph.D.

The present study investigated whether students change their study strategies and academic resource use in response to course demands. Students completed a study strategies questionnaire and recorded the academic resources they used in a week at the beginning and end of the semester. Whereas participants who reported deep study strategies at the beginning of the semester didn't change their academic resource use, participants who employed shallow study strategies spent less time reviewing their own and other's lecture notes, reading, and reviewing assigned readings, though they did consult their instructor more. The results indicate that students do change what they do to study, but not for the better.

SOCIAL AND ACADEMIC CORRELATES OF A COMMON BOOK EXPERIENCE

Presented at the Southeastern Psychological Association, Chattanooga, Tenn., March 2010

Andrew Carrier, 2012

Department of Psychology
Faculty Mentors:
Matthew Hayes, Ph.D.
Tim Daugherty, Ph.D.

Guidance exists for establishing and evaluating common book programs (e.g., Anderson, 2006; Boff, Schroeder, Letson, & Gambill, 2007; Straus & Daley, 2002); but few published, refereed studies examine whether these programs produce their sought outcomes and those articles omit relevant data. Greater connection to the community is associated with academic success (Astin, 1993; Pascarella & Terenzini, 2005). Effective study skills and self-regulation are critical for success in college (Cano, 2007; Taraban, Rynearson, & Kerr, 2000). A common book program that emphasizes deep learning could help students develop deep learning strategies, which are associated with academic achievement (Campbell et al., 2001; Dart et al., 1999). It was predicted that engaged readers of a common book would report a stronger connection to the community, more effective learning approaches, and would demonstrate stronger college achievement. The two reading groups (Engaged Readers, Non-Engaged Readers) did not differ significantly in terms of SATV ($t(86) = 1.02, p = .31$) or HSGPA ($t(95) = .64, p = .53$). Engaged Readers achieved significantly higher College GPA ($t(95) = 2.16, p < .02$) and reported stronger Community Connection ($t(95) = 2.33, p < .02$) than Non-Engaged Readers. The Engaged and Non-Engaged readers had significantly different Learning Approaches ($p's < .005$). The Engaged Readers employed more Deep Learning approaches ($p's < .005$) and more Achievement Approaches ($p's < .008$). Upper-level students who

read their common book as freshmen reported a stronger connection to the community and had higher college achievement. The Engaged Readers did not differ in terms of HSGPA or SAT Verbal score; reading a common book does not simply reduce to preexisting academic skill. Engaged Readers may have been helped by better learning approaches than Non-Engaged Readers -Achieving and Deep approaches to learning have been found to result in higher academic achievement (Biggs, 1987).

OTHER STUDENT / FACULTY COLLABORATIONS

THE ENDANGERED SPECIES ACT: ANALYZING AND WEIGHING THE COST TO PROPERTY OWNERS AND THE BENEFITS TO THE COMMUNITY

Erin English, 2009

*Department of Political
Science (PLS.C. 490)*

*Faculty Mentors:
Karen Kedrowski, Ph.D.
Timothy Boylan, Ph.D.*

This study examines the intent and consequences of the Endangered Species Act of 1973. The Act was put into force to protect species likely to become extinct and to serve as a warning mechanism for other species that faced the thread of diminishing numbers. The Act and its intent is compared and contrasted with the rights of property owners, who are often at odds with the limitations and restrictions of the Act. Both the costs and benefits to land owners and the community at large are weighed and evaluated.

HOMESCHOOLING AND STATE POLICY IN SOUTH CAROLINA

Zachary Blum, 2009

*Department of Political
Science (PLS.C. 490)*

*Faculty Mentors:
Karen Kedrowski, Ph.D.
Timothy Boylan, Ph.D.*

This paper focuses on educational policy in South Carolina and how South Carolina has handled the issue of home schooling. Over the past twenty years, the number of students being home schooled has grown from 300,000 (in 1990) to over 2,000,000 (in 2008). Yet, state policy has not kept up with this dramatic rate of growth. The laws and regulations tied to homeschooling are examined and evaluated to see if they place an undue burden on specific types of schooling. Finally, this paper examines the widely different policies and regulations that cover charter schools and homeschooling.

UNDER THE INFLUENCE: AN ANALYSIS OF SOUTH CAROLINA DUI LEGISLATION AND THE DIFFUSION OF ITS POLICIES THROUGH INTEREST GROUPS

South Carolina is ranked third in the nation for accidental deaths due to driving under the influence. The way in which various states make DUI policy is examined and is compared to how DUI policy has been developed in South Carolina. What emerges is the reality of interest group influence. Each time there is a change in DUI legislation, it provides an opportunity for interest groups to pursue their own interests. This paper examines the purpose and influence of MADD (Mothers Against Drunk Driving) in the shaping of state DUI laws.

Kate Morrison, 2009

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Timothy Boylan, Ph.D.*

DEVELOPMENT OF LC-MS METHODS FOR THE PURIFICATION OF SPHINGOSINE KINASE 1 INHIBITORS

Human sphingosine kinase 1 (SK1) is a sphingolipid-metabolizing enzyme responsible for regulating cellular levels of sphingosine 1-phosphate (S1P), which has been shown to promote cellular proliferation. Recent research has also shown elevated levels of SK1 expression in a variety of human malignant tumor types, including cancers of the breast, colon and lung. Current anticancer therapies, including radiation and many chemotherapeutics, can initiate apoptosis through the creation of ceramide and sphingosine from cellular sphingomyelin via a constitutively active enzymatic pathway designed to maintain equilibrium levels of the sphingolipids. The proapoptotic effects of ceramide and sphingosine on cancerous cells are abrogated by the rapid conversion of sphingosine to S1P by the overexpressed SK1, thereby reducing the cellular response to current therapies. These observations have made SK1 an attractive target for the development of novel anticancer therapeutics. At present, several candidate SK1 inhibitors have been developed by researchers in the Department of Chemistry, Physics, and Geology at Winthrop University. However, analysis of these inhibitors by either in vitro or in vivo methods cannot occur without purification of the target compounds. In response, our laboratory is focused on the development of a purification method utilizing high performance liquid chromatography (HPLC). A protocol has been successfully developed to purify the first inhibitor compound identified for SK1 using a methanol gradient and a C18 column. At present, our efforts are focused on scaling up the protocol to allow for preparative scale isolation of the inhibitor. Upon validation of the preparative scale protocol, the identities of the purified inhibitors will be confirmed by matrix assisted laser desorption ionization time of flight mass spectrometry.

Zachary Curry, 2012

*Department of Chemistry,
Physics, and Geology
Faculty Mentor:
Jason Hurlbert, Ph.D.*

AUTOMATING THE DRY PROGRAMMING AND CONTROL OF TUNGSTEN COIL ATOMIZERS

Supported by an NIH Grant from the National Center for Research Resources for S.C.-INBRE

Ronald Nelson

*Department of Chemistry,
Physics, and Geology
Faculty Mentor:
Cliff Calloway, Ph.D.*

Commercial atomizers for atomic spectroscopy, such as the inductively coupled plasma or graphite furnace, require large power supplies, high inert gas flow rates and cooling systems. Tungsten coils, however, are simple atomizers requiring only a small, programmable power source with controlling software and a low inert gas flow rate. The small size and power requirements make tungsten coil atomizers an attractive alternative with potential field applications. However, metal analytes can be lost from the tungsten coil through manual “over drying” prior to the atomization stage. In addition, residual solvent from “under drying” can reduce coil lifetime and increase molecular background spectral interferences. An auto-drying solvent removal process would have advantages including improved sensitivities, lower background response and better reproducibility. Tungsten coil users would only be concerned with ashing and atomization parameters for the sample and analytes of interest. Coil potential was shown to increase by more than 1 V at the end of the dry stage, and this change in voltage was used to automate the drying process. The home-built tungsten coil atomizer power supply and PC computer interface were modified to monitor the coil potential internally during the sample drying stage. The home-written software program was modified to record the coil potential and calculate the change in voltage as the dry cycle progressed. A voltage change threshold of 0.35 V was used to signal the software and power supply to end the solvent removal process and proceed to the next ash or atomize stage. The internal voltage measurement and software modifications were shown to effectively and reproducibly remove sample solvent under a variety of coil and sample conditions. As sample volume increased, the program correctly allowed more time for solvent removal. As a coil ages, the wire coil thins and results in an increased drying current and rate of drying. The software shortened the dry time for each sample using older coils.

CLONING AND EXPRESSION OF THE CATALYTIC DOMAIN OF HUMAN SPHINGOSINE KINASE 1

Supported by an NIH Grant from the National Center for Research Resources for S.C.-INBRE

Rachel Wilson, 2010

*Department of Chemistry,
Physics, and Geology*

Human sphingosine kinases (hSKs) are a novel group of enzymes that regulate the balance of sphingolipids such as ceramide, sphingosine, and sphingosine-1-phosphate (S1P). Sphingolipids are key regulators of biological responses such as apoptosis and angiogenesis. The product of the

sphingosine kinase 1 catalyzed reaction, S1P, has been shown to promote antiapoptotic behavior in vitro, and elevated levels of sphingosine kinase isoform 1 (hSK1) have been found in tumors of the breast, colon, lung and prostate. These observations have made hSK1 an attractive target for the development of new therapeutic agents for the treatment of cancer. Our laboratory uses x-ray crystallography to determine the three-dimensional structure of proteins which, in turn, can be used for the design of inhibitors specifically targeted to the enzymatic active site. As an initial step in the determination of the structure of hSK1, we have identified and cloned the catalytic domain of the enzyme for expression in a bacterial system. This catalytic core domain of human SK1 was cloned from a cDNA source and ligated into several prokaryotic expression vectors (pET21a, pET26b, pET28a) for protein production in broth culture. Protein expression was studied as a function of growth temperature (18°C and 37°C) and induction time (3 hours and 18 hours) with recombinant hSK1 production determined by SDS-PAGE and Western Blot (anti-hexahistidine tag) analyses. A small amount of hSK1 was expressed in one clone (pET21A vector in *Escherichia coli* Rosetta2) grown at 18°C with overnight induction, and further analysis of this clone will allow for increased protein expression. Further protein expression studies will be conducted using different bacterial strains, so as to identify the conditions suitable for the production of the protein quantities necessary for crystallographic analysis.

(CHEM 551,552 - Hurlbert)
Faculty Mentor:
Jason C. Hurlbert, Ph.D.

FROM TERRORIST TO NATIONAL HERO: THE CAREER OF MICHAEL COLLINS

Since the release of the film *Michael Collins* starring Liam Neelson in 1996, the reputation of Collins has gone through something of a renaissance. This research reviews how Collins' career is presented in film, the internet, scholarly works, and the more recent revisionist literature that has appeared since 9/11. The object of the research is to establish whether the popular image of Collins is seen as being different in Ireland and the United States, and whether our concept of terrorism has influenced perceptions of Collins as hero or outlaw/terrorist.

Karen Cox, 2010
Catherin McHale, 2010

Department of History
(HIST 473-Cornish)
Faculty Mentor:
Rory Cornish, Ph.D.

EFFECTS OF WATER QUALITY ON MOSQUITO COMMUNITIES IN CEMETERY VASES

Within urban areas, artificial water-filled containers can provide suitable habitats for the aquatic stages of mosquitoes. Such artificial habitats place human populations in urban areas at risk of contracting mosquito-borne diseases. In this study, I observed the presence of mosquitoes in water-filled cemetery vases in relation to vase type (brass, metal, stone, plastic) and water chemistry (dissolved oxygen, pH, conductivity, volume

Bretina Outten, 2010

Department of Biology
(BIOL 471-Jannot)
Faculty Mentor:
Jannot, Ph.D.

and temperature). The field site was Laurelwood Cemetery located in downtown Rock Hill, South Carolina. I conducted bi-weekly surveys (September 2009-April 2010) of vases, measuring water chemistry components, assessing the presence/absence of mosquitoes, and identifying mosquitoes to the species level (larvae and adults). Vase types differed in temperature, conductivity, and pH but did not directly influence the presence of mosquitoes. Larger water volume was positively correlated with mosquito presence, whereas dissolved oxygen was negatively correlated with mosquito presence. The relationship between mosquito presence and dissolved oxygen or water volume appears to depend on vase type; however, this effect was not significant due to small sample sizes. Our data suggest that vase shape might influence the presence of mosquitoes, sets the stage for long-term monitoring of mosquito communities in Rock Hill, and can be used to predict future risk of disease in the greater Charlotte area.

ARGININE 25 WITHIN AT-HOOK 1 OF HMGA.1 IS REQUIRED FOR BINDING TO KIT LIGAND

Supported by an NIH Grant from the National Center for Research Resources for S.C.-INBRE and an NSF Research Initiation Grant

Jiayue Deng, 2012
Christine Harvey, 2012

*Department of Chemistry,
Physics, and Geology
Faculty Mentor:
Takita Sumter, Ph.D.*

The High Mobility Group A (HMGA.) family is comprised of four proteins. HMGA.1a, HMGA.1b, and HMGA.1c are the alternatively spliced products of the same gene *hmga1*. The fourth, HMGA.2, results from the translation of a separate gene *hmga2*. These proteins are nonhistone proteins which alter chromatin structure by binding the minor groove of AT-rich DNA sequences, thereby regulating transcription and cellular growth. They also actively participate in pathologic processes such as viral integration, neoplastic transformation, and metastatic progression. The research interest of our laboratory is to understand how HMGA. proteins are involved in cancer development. Specifically, we are interested in the role of Arginine 25 (R25), located within the first AT hook of HMGA.1a, in post translational modifications. HMGA.1a acts to induce transformation of DNA by activating the KIT ligand. KIT ligand, also known as Stem Cell Factor or steel factor, is a stimulator of cellular differentiation that binds the c-Kit receptor (CD117). KIT ligand and c-Kit receptor are expressed in many types of cancerous cells and indicates tumor growth and angiogenesis. The binding of HMGA.1a to the promoter region of KIT ligand causes its overexpression, ultimately increasing the interaction between the Kit ligand and the c-Kit receptor. To determine the effects of post translational modifications on HMGA.1a-induction of KIT ligand, we conducted Enzyme Mobility Shift Assays of HMGA.1a and a PTM-impaired mutant R25A. This method was used to determine the dissociation constants of the Wild Type HMGA.1a and of the R25A HMGA.1a. Our initial observation shows a decreased binding affinity between the R25A HMGA.1a and the KIT ligand. These

findings suggest that R25 plays an important role in the HMGa.1a-KIT ligand interaction. Further studies are aimed at understanding the mechanism of which HMGa.1 positively regulates the human KIT Ligand promoter and stimulates anchorage independent growth in carcinoma cells. With this study, we hope to contribute to the growing collection of information about cancer development.

ANIMAL LOVERS IN THE MINORITY? THE CONNECTION BETWEEN INTERPERSONAL VIOLENCE AND ANIMAL RIGHTS

Though when compared to many other countries America seems like an animal-loving nation, analyses of responses from the General Social Survey seem to contradict the idea that Americans value animals especially more than other people. The purpose of this research is to explore the connection between interpersonal violence and opinions on the rights of animals. In order to better understand the impact sympathy toward animals may have on one's tendency to be violent toward animals and people, this research hopes to inform the community on causes of violence and the role animals play in human emotional responses. The 1993 General Social Survey was used to run correlations and regressions on the HIT, GUN, SPANKING, and ANRIGHTS variables. The number of people who answered all questions (N) is 312. The mean education level for respondents is 13 years, while the mean age is 46. The sample is 57% female and 88% white. The research finds that education level and age have the greatest overall impact upon views toward the rights of animals and that "Disagree" is the most commonly held opinion on the ANRIGHTS question.

STEM CELLS IN AEOLOSOMA HEADLEYI (ANNELIDA)

Supported by a Winthrop University Research Council Grant

Scattered studies of stem cells in annelids suggest that the epidermis possess a replicating stem-cell population. Whether these stem cells correspond to the so-called basal cells described in previous literature is presently unknown. This situation contrasts that in the rhabditophoran platyhelminthes; their epidermis is replaced immigration of cells from the parenchyma. Here, we provide preliminary data on epidermal S-phase and mitotic cells (EdU-labeling and anti-PhosH3-labeling, respectively) in a fissioning annelid known to possess basal cells in the epidermis. S-phase cells were found in the epidermis, both in the fission plane and general body wall. Interestingly, not all S-phase epidermal cells were basally located, and some had the nuclear morphology of differentiated ("supportive") cells. M-phase staining with anti-phosH3 labeling showed mitotic cells with a similar distribution. Using progressively shorted EdU

Leanna Greenwood, 2010

*Department of Sociology
and Anthropology (SOCL
516-Solomon)
Faculty Mentor:
Jennifer Solomon, Ph.D.*

Sara Merlie, 2011

*Department of Biology
(BIOL 300-Smith)
Faculty Mentor:
Julian Smith, Ph.D.*

labeling times, we estimated G2 to be less than 60 min, and ratios of double-labeled cells in the general body wall and fission plane were statistically different, suggesting variations in the cell cycle time, specifically in G2. Collectively, these data suggest that basal cells are not the exclusive stem cell population for the epidermis and establish this species as a useful model for studying stem cells in annelids.

CATHODE MATERIALS FOR LITHIUM ION BATTERIES

Hilary Thomas, 2010

*Department of Chemistry,
Physics, and Geology
(CHEM 551,552-Grattan)
Faculty Mentor:
Lennart Kullberg, Ph.D.*

The development of advanced batteries is of great importance due to the increasing demand for portable energy in modern technology. Lithium ion batteries are regarded as the most promising answer to the pressing request for long-lasting and high-energy power systems for consumer electronics and electric vehicles. Large research efforts are devoted worldwide to the effective development of these batteries with particular concern to the characterization of electrode and electrolyte materials capable of assuring a high energy content combined with reliability and safety. We have found in our laboratory that cobalt and aluminum doped lithium manganese oxide spinels show promising electrochemical properties as cathodes in lithium ion batteries. In this project, the spinels are synthesized by two different methods, a high temperature solid state technique and a sol-gel method. In order to evaluate how the synthesis method affects the electrochemical properties of the spinels, we have prepared a series of spinels of composition $\text{Li}_{1+x}\text{Co}_x\text{Al}_x\text{Mn}_{2-3x}\text{O}_4$ ($0.03 \leq x \leq 0.07$). Each synthesized cathode material was analyzed using x-ray diffraction (XRD). The diffraction data revealed that each sample is highly crystalline and that the spinel phase was produced. The electrochemical properties of the cathode materials were studied by constructing lithium ion cells using a Hohen test cell. The cells that were built have the same basic components as commercial lithium ion batteries. The discharge capacity of each prepared cathode material has been successfully determined. Studies are currently underway to assess the long-term stability of each synthesized cathode material.

DESIGN AND SYNTHESIS OF ZONE 3 SPHINGOSINE KINASE INHIBITORS FOR IMPROVED ORAL BIOAVAILABILITY

Supported by an NIH Grant from the National Center for Research Resources for S.C.-INBRE

Nicole Quigley, 2010

*Department of Chemistry,
Physics, and Geology*

Sphingolipids are a family of compounds that, in addition to being structural constituents of cell membranes, play key roles as signaling molecules. In particular, two of these sphingolipid metabolites, ceramide and sphingosine 1-phosphate (S1P), have recently received considerable

attention as integral mediators of cell death and survival. The regulator of the ceramide/S1P equilibrium is sphingosine kinase-1 which phosphorylates the sphingosine to form S1P. Sphingosine kinase-1 has been identified as an oncogene and is, therefore, of considerable interest in the treatment of cancer. To this end, a number of novel inhibitors of sphingosine kinase-1 have recently been identified and evaluated by Smith et al. These inhibitors show promising chemotherapeutic results in vitro but are simply a starting point in the eventual optimization of in vivo activity. Initial studies have recently been completed, in collaboration with Smith's lab, on a synthetic route to produce one of these inhibitor compounds as a template molecule along with numerous analogs. Specifically, the synthesis will focus on developing zone three modifications of the template molecule which will then be compared to the template molecule through collaborative bioassay testing. Our target compound, 3G, has been shown through in silico docking studies to dramatically improve sphingosine kinase inhibition in comparison to the template molecule. Modifications like 3G as well as other numerous derivatives will ultimately lead to an increase in the therapeutic effect and improved oral bioavailability of sphingosine kinase-1 inhibition.

Faculty Mentor:
T. Christian Grattan, Ph.D.

PRELIMINARY CARBON STABLE ISOTOPE ANALYSIS OF MONOCOTS AND POLLEN DIVERSITY IN HOLOCENE PEAT DEPOSITS IN CONGAREE NATIONAL PARK

Supported by Winthrop University's Dalton Endowment for Environmental Science and Research Council Grant

The Congaree National Park, located near Columbia, S.C., contains the oldest floodplain forest in North America. The floodplain muckswamp contains portions of the original channel of the nearby Congaree River as well as extensive peat deposits. A three-meter long peat core was extracted from the muck swamp containing a basal date of 21,000 kyr. Previous palynological investigations have identified several major shifts in dominant plant assemblages since that time. The abundance of diatoms near the base of the core suggests initial deposition in a paleomeander of the river system where the peat finally began to accumulate in a resulting oxbow lake environment. Based on previous pollen diversity studies on these peat deposits, the dominant terrestrial ecosystems transitioned from a spruce, hemlock and herbaceous plant assemblage, through a system dominated by sweet gum, holly, hickory, elm, pine, sedges, ferns and mosses. Finally, the ecosystem was dominated by deciduous forest containing the above hardwoods and herbaceous plants with an abrupt decline in pines. These shifts in vegetation suggest several warming intervals throughout the history of the region. While much of the material in the peat core is heavily decomposed, we have extracted preserved

John Yankech, 2009

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Scott Werts, Ph.D.

monocot leaf and sheath material at various intervals throughout the core. Here, we present our initial record of $\Delta^{13}\text{C}$ analysis from the monocot and bulk peat material in an attempt to gain further insight into climate variability in the Southeastern U.S. since the last ice age.

DESIGN AND SYNTHESIS OF ZONE 2 SPHINGOSINE KINASE INHIBITORS FOR IMPROVED ORAL BIOAVAILABILITY

Supported by an NIH Grant from the National Center for Research Resources for S.C.-INBRE

Madelyn McCaulley, 2010

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T. Christian Grattan, Ph.D.*

Sphingolipids are a family of compounds that, in addition to being structural constituents of cell membranes, play key roles as signaling molecules. In particular, two of these sphingolipid metabolites, ceramide and sphingosine 1-phosphate (S1P), have recently received considerable attention as integral mediators of cell death and survival. The regulator of the ceramide/S1P equilibrium is sphingosine kinase-1 which phosphorylates the sphingosine to form S1P. Sphingosine kinase-1 has been identified as an oncogene and is, therefore, of considerable interest in the treatment of cancer. To this end, a number of novel inhibitors of sphingosine kinase-1 have recently been identified and evaluated by Smith et al. These inhibitors show promising chemotherapeutic results in vitro but are simply a starting point in the eventual optimization of in vivo activity. Initial studies have recently been completed, in collaboration with Smith's lab, on a synthetic route to produce one of these inhibitor compounds as a template molecule along with numerous analogs. Specifically, the synthesis focuses on developing four zone two modifications of the template molecule which will then be compared to the template molecule through collaborative bioassay testing. Our synthetic studies have found optimized pathways to synthesize the novel derivatives in comparison to the synthetic design of the template structure. These numerous derivatives will ultimately lead to an increase the therapeutic effect and improved oral bioavailability of sphingosine kinase-1 inhibition.

MUTAGENESIS OF BACILLUS SUBTILIS XYLANASE C FOR STRUCTURE/FUNCTION ANALYSES

Supported by a Winthrop University Research Council Grant

**Cameron Waller, 2011
Amber Anderson, 2012**

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Unlike fossil fuels, ethanol is a renewable energy source produced through the fermentation of sugars by bacteria. Heteroxylan, a carbohydrate polymer found in the hemicellulose fraction of plants, is an underutilized source of fermentable pentose sugar from hardwoods and crop residues. The primary component of heteroxylan, β -1,4-D-xylan is periodically

substituted with a variety of chemical moieties, including: arabinofuranose, coumaric acid, ferulic acid and 4-O-methyl-D-glucuronic acid (MeGa). Conversion of this polymer to fermentable sugars may be significantly limited by these substitutions. Recently, the family 5 xylanase (xylanase C, XynC) encoded by the *ynfF* gene in *Bacillus subtilis* strain 168 was found to hydrolyze such substituted heteroxylans, forming a mixture of oligomeric xylose products bearing MeGa. substitutions on the xylose residue penultimate to the reducing terminus. The exact means by which the enzyme tolerates MeGa. substitutions on the substrate during binding is unknown, and characterization of the binding and catalytic modes of the enzyme may allow for the design of efficient hybrid enzymes for industrial applications. Insight into these processes can be gained by x-ray crystallographic analysis of the XynC/MeGa.Xn complex. We recently solved the structure of *B. subtilis* xylanase C in complex with xyloglucuronic acid and glucuronic acid and have identified several residues (tyrosines 231, 269 and 274, serine 235 and arginine 272) that may be involved in substrate recognition and/or binding. To better define the role of these residues in the xylanase reaction mechanism, we have begun mutagenic analyses of the protein. We mutated tyrosine 269 to an alanine using mutagenic PCR, then expressed and purified the mutant protein from recombinant *Escherichia coli* Rosetta 2 culture. The purified protein was analyzed by SDS-PAGE and detected on a western blot using an anti-hexahistidine antibody. MALDI-TOF mass spectrometry confirmed the presence of the designed mutation in the recombinant protein. Cocrystallization trials of the mutant protein with glucuronoxylotriose will be initiated in parallel with enzymological studies to determine the kinetic parameters of the mutant for comparison with the wild type enzyme.

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