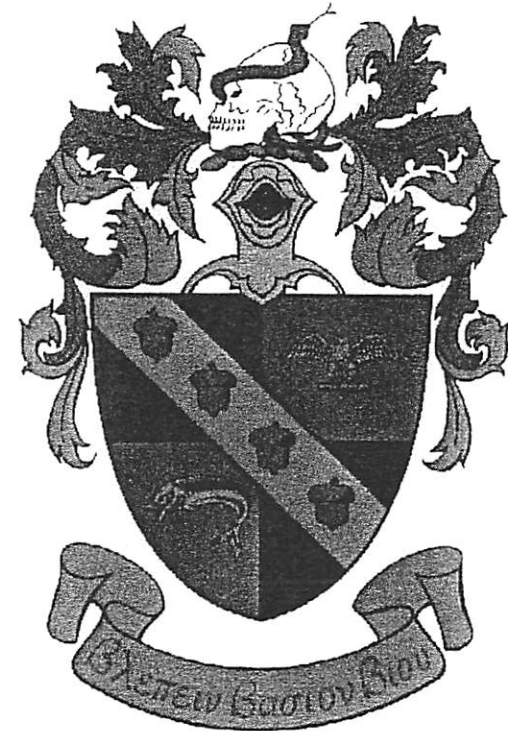


# **SOUTHWESTERN UNIVERSITY**

## **UNDERGRADUATE RESEARCH SYMPOSIUM**



## **PROGRAM AND ABSTRACTS OF PAPERS**

### **Volume I**

**April 12, 2000**

**Southwestern University  
Georgetown, Texas**

April 12, 2000

Dear Members of the Southwestern Community,

On behalf of the Delta Alpha Chapter of Tri-Beta, we welcome you to Southwestern Undergraduate Research Symposium 2000. It is an honor and a privilege to have you attend this event.

Beta Beta Beta was founded in 1922 at Oklahoma City University by Dr. Frank G. Brooks and a group of his students. The national organization was formed in 1925 by three faculty members: Dr. Brooks together with Dr. William M. Goldsmith from Southwestern

College in Winfield, Kansas, and Dr. John C. Johnson, Sr. from Western State College in Colorado. The Delta Alpha Chapter of Tri-Beta was installed at Southwestern University in 1999. There are currently more than 380 chapters of Tri-Beta in the United States.

The three Greek letters, Beta Beta Beta, on the key stand for: BALANOS which means acorn; it represents life in and on the ground. BOUDETASE, which means little bird; it represents life in the air. BOAX, which means fish; it represents life in the water. All three words may be summed up in the one word BIOS, meaning life. The coiled serpent in the center of the key is an ancient symbol of wisdom.

We think you will find this symposium enlightening. In true liberal arts fashion, the symposium features over a dozen disciplines and the accomplishments of more than forty students. We purposefully mixed disciplines within each session to display the diversity of interests represented by the Southwestern University student body.

We hope you enjoy the symposium.

Sincerely,

Delta Alpha Chapter  
Beta Beta Beta

[www.southwestern.edu/student-life/organizations/bbb/](http://www.southwestern.edu/student-life/organizations/bbb/)



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### Program Sponsors

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## 2000 PROGRAM AGENDA

<b>Session I</b> <b>Location:</b> Fondren Jones Science Hall Annex, Room 148 <b>Moderator:</b> Stacy Hebert	
Time	Title
6:00 PM	1. SYMPTOMS OF ADHD AND ACADEMIC, SOCIAL, AND PSYCHOLOGICAL FUNCTIONING AMONG COLLEGE STUDENTS. Tara Wilkins, Southwestern University, Georgetown, TX.
6:15 PM	2. MEDICAID MANAGED CARE AND THE HEALTH OF CHILDREN. Ashley Bacon and Erin Decatur, Southwestern University, Georgetown, TX.
6:30 PM	3. EGON SCHIELE AND THE PICTORIAL LANGUAGE OF THE SELF. Sonya Mooney, Southwestern University, Georgetown, TX.
6:45 PM	4. THE STIMULATION OF PHENYLALANINE HYDROXYLASE STIMULATOR (PHS) IN RAT HEPATOMA CELLS. Carla Marienfeld, Southwestern University, Georgetown, TX.
7:00 PM	5. ZOOT SUITS AND COMBAT BOOTS: THE ADVOCACY MODEL OF LEADERSHIP IN THE MEXICAN AMERICAN COMMUNITY. Dya Celeste Campos, Southwestern University, Georgetown, TX.
<b>Session II</b> <b>Location:</b> Fondren Jones Science Hall Annex, Room 151 <b>Moderator:</b> Celestine Kan	
6:00 PM	6. BIOMASS-DEPENDENT EFFECTS OF COMMON CARP ON WATER QUALITY: IMPLICATIONS FOR BIOMANIPULATION OF TEXAS RESERVOIRS. Matthew M. Chumchal, Ray W. Drenner, Shelley E. Mann, and Weston H. Nowlin, Texas Christian University, Ft. Worth, TX.
6:15 PM	7. COMPUTERS AND THE POSTMODERN CONDITION: COMPUTER AND DIGITAL ART. Chet Lofgren, Southwestern University, Georgetown, TX.
6:30 PM	8. FOOTBALLS VS. BARBIES: CHILDHOOD TOYS AND GAMES AS PREDICTORS OF SPORT PARTICIPATION BY WOMEN. Katie Popp, Southwestern University, Georgetown, TX.
6:45 PM	9. THE U.S. AIRLINE INDUSTRY: A CASE STUDY. Gailo Ashley and Beth Hattaway, Southwestern University, Georgetown, TX.
7:00 PM	10. SOUTHWEST AIRLINES 2000. Beth Hattaway and Gailo Ashley, Southwestern University, Georgetown, TX.

<b>7:15 – 7:45</b> <b>Break for Posters and Refreshments</b>	
<b>Session III</b> <b>Location:</b> Fondren Jones Science Hall Annex, Room 148 <b>Moderator:</b> Kristy Ward	
Time	Title
7:45 PM	11. IDENTIFICATION AND ANALYSIS OF FIELD RR LYRAE VARIABLE STARS. Timothy Woodruff, Southwestern University, Georgetown, TX.
8:00 PM	12. SENIOR HONORS EXHIBITION. Laura Harrison, Southwestern University, Georgetown, TX.
8:15 PM	13. INSTRUMENTAL CONDITIONING IN THE CUTTLEFISH ( <i>SEPIA OFFICINALIS</i> ). Sarah E. Dreumont, Southwestern University, Georgetown, TX.
8:30 PM	14. THE EFFECTS OF EXOGENOUS PEPTONE CONCENTRATION ON AND THE LOCATION OF PROTEASE ACTIVITY IN <i>MUCOR ROUXII</i> . Adam Szafran, Southwestern University, Georgetown, TX.
8:45 PM	15. CONSTRUCTING OBSTACLES VS. MAKING EXCUSES: EXAMINING PERCEIVERS OF REACTIONS TO BEHAVIOR. Cody Cox, Southwestern University, Georgetown, TX.
<b>Session IV</b> <b>Location:</b> Fondren Jones Science Hall Annex, Room 151 <b>Moderator:</b> Leah Oswald	
7:45 PM	16. "WRITTEN ON WHOSE BODY?" Mel-Gail Dabney, Southwestern University, Georgetown, TX.
8:00 PM	17. HYBRIDIZATION IN <i>PHLOX CUSPIDATA</i> AND <i>PHLOX DRUMMONDII</i> IN RESPONSE TO MIXED AUTOGAMOUS/HETEROSPECIFIC POLLINATIONS. M. Brooke Byerley, Southwestern University, Georgetown, TX.
8:15 PM	18. GENDER AND AGE RELATED DIFFERENCES IN THE COMPREHENSION OF SARCASM. Patricia Barrera, Southwestern University, Georgetown, TX.
8:30 PM	19. EMPOWERMENT AND CHALLENGE: COLONIAL WOMEN IN PERU AND THE INQUISITION. Taylor Garrett, Southwestern University, Georgetown, TX.
8:45 PM	20. LEARNED AVOIDANCE IN FLATHEAD MINNOWS. Sarah Geenbergh, Southwestern University, Georgetown, TX.

## PRESENTATION ABSTRACTS

1. SYMPTOMS OF ADHD AND ACADEMIC, SOCIAL, AND PSYCHOLOGICAL FUNCTIONING AMONG COLLEGE STUDENTS. Tara Wilkins, Psychology, Southwestern University, Georgetown, TX.

The academic, social, and psychological functioning of college students was investigated in relation to their symptoms of Attention Deficit Hyperactivity Disorder. 21 male and 44 female Southwestern University students, 7 of whom were diagnosed with ADHD, completed three questionnaires. Academic, social, and psychological functioning was assessed using the Inventory of Common Problems (ICP) (Hoffman & Weiss, 1986) a measure designed to quantify the difficulties experienced by college students, as well as by a researcher developed questionnaire. The number and severity of ADHD symptoms were assessed using the Connors' Adult ADHD Rating Scale (CAARS) (Connors, Erhardt, & Sparrow, 1999). As predicted, higher levels of ADHD symptoms were associated with more depression, anxiety, drug use, and academic and social problems. Importantly, this same pattern was also found when diagnosed students were excluded from the analysis. These findings support the hypothesis that the symptoms of ADHD are problematic across a range of symptom levels. They also are in keeping with the view that ADHD is under-diagnosed in the college student population, in part because current diagnostic thresholds of ADHD may be too high to identify all adults with the disorder.

2. MEDICAID MANAGED CARE AND THE HEALTH OF CHILDREN. Ashley Bacon and Erin Decatur, Department of Economics, Southwestern University, Georgetown, TX.

As medical costs have continued to rise, managed care has been introduced as a more cost-effective means of providing health care. However, there is concern that these savings have come from a reduction in the quality of care available to patients. Since 1993, the state of Texas has been moving Medicaid clients from a traditional fee-for-service environment to a managed care setting. Since some Medicaid clients are enrolled in managed care and others in traditional fee-for-service programs, an opportunity exists to test the effect managed care has on access to health care. Using data across 194 counties in Texas, this study estimates the effect of managed care on the access to health care of children enrolled in the Medicaid program. In particular, the dependent variables measure the fraction of children in the Medicaid program who have met the recommended number of visits as prescribed by the Early and Periodic Screening, Diagnostic, and Treatment Program (EPSDT). To control for other county-specific factors that may also affect access to care, several additional variables are used in the

model. Our results suggest that children enrolled in Medicaid managed care receive less care than children in the traditional fee-for-service program.

3. EGON SCHIELE AND THE PICTORIAL LANGUAGE OF THE SELF. Sonya Mooney, Department of Art History, Southwestern University, Georgetown, TX.

At the turn of the twentieth century, Vienna was a city plagued by stagnation. Not only was the decaying political system in need of a drastic reformation, but the decadent social atmosphere was in need of one as well. In these sour circumstances, the notion of an individual with its own specific essence, a self, was simultaneously gaining positive exposure and coming under attack. This criticism came from various philosophical and newly burgeoning psychoanalytic critiques and, consequently, a crisis of faith arose about the possibility that such a self even existed. It then fell upon the artistic individual's shoulders to represent the existence or dissolution of the self. Egon Schiele was one such artist dealing explicitly with issues of the self. What he accomplished in his numerous self-portraits was the scripting of a new language with which to describe the self. As a result of this new visual language a different concept of the self emerged. Through Schiele's work, a new definition of selfhood is established which can be seen as a direct consequence of socio-political history and philosophical thought in Vienna at the turn of the twentieth century.

4. Phe STIMULATION OF PHENYLALANINE HYDROXYLASE STIMULATOR (PHS) IN RAT HEPATOMA CELLS. Carla Marienfeld, Department of Chemistry, Southwestern University, Georgetown, TX.

Phenylalanine hydroxylase (PAH) catalyzes the conversion of Phe to Tyr. The enzyme Phenylalanine hydroxylase stimulator (PHS) is involved in the regeneration of a cofactor of PAH, tetrahydrobiopterin. These enzymes are involved in the diseases phenylketonuria and hyperphenylalaninemia, respectively. The substrate Phe has been shown to positively allosterically effect PAH. In attempts to show that Phe also stimulates PHS, results were inconclusive, as the assay needed to determine the specific activity of PHS at varying concentrations of Phe incubated with Hepatoma cells was not functioning. Much experimental work was done to make the assay work properly to no avail. An alternative method, western blotting, was used to show that increasing the Phe concentration used when incubating cells for a particular time period caused an increase in the amount of PAH and PHS in certain cell extracts.

5. ZOOT SUITS AND COMBAT BOOTS: THE ADVOCACY MODEL OF LEADERSHIP IN THE MEXICAN-AMERICAN COMMUNITY. Dya Celeste

Campos, Departments of Political Science and History, Southwestern University, Georgetown, TX.

Latinos in the United States have gone through various stages of cultural realization in order to obtain their current identity and character. The context of this paper will discuss sentiments of resistance in the community, and their contribution to the identity of the Mexican-American in the United States. Through a model of leadership which I will call the advocacy model, the Mexican-Americans have achieved a degree of equality and respect in a land which they are bastardized. This advocacy model of leadership has dominated minority politics for decades. Mexican-Americans in the United States during the 1960's developed a "grass roots" movement in reaction to political and social issues of the time. History has coined this era the Chicano Movement, and from this movement, the mentality of Chicanismo was developed. Furthermore, through analysis, I will discuss the success and failure of the movement, and discuss the role of the advocate approach to leadership, and question its efficiency today. The advocacy model of leadership allowed mass participation from the Mexican-American community, and created a style of rhetoric that appealed to the masses. Key figures in the movement were the primary advocates for social, political, and economic change. I will focus on a few character who assisted in evoking sentiments of resistance among Mexican-Americans including, Jose Angel Gutierrez, and Reis Lopez Tijerina, primarily because they are among the most important and the least read about.

6. BIOMASS-DEPENDENT EFFECTS OF COMMON CARP ON WATER QUALITY: IMPLICATIONS FOR BIOMANIPULATION OF TEXAS RESERVOIRS. Matthew M. Chumchal\*, Ray W. Drenner, Shelley E. Mann, and Weston H. Nowlin. \* Department of Biology, Southwestern University, Georgetown, TX and Texas Christian University, Ft. Worth, TX.

We conducted an experiment at the Eagle Mountain Fish Hatchery to examine the biomass-dependent effects of common carp (*Cyprinus carpio*) on water quality. The experiment involved May-June sampling of water quality variables in 11 ponds with carp biomass ranging from 0 to 465 kg/ha. Chlorophyll a, turbidity, total nitrogen, and total phosphorus increased as a linear function of carp biomass. The experiment may provide insight into the biomass-dependent effects of carp on reservoirs during spawning when natural conditions would be similar to our protocol. We calculated the enhancement effect of carp on our four water quality parameters and determined the average enhancement of common carp within Texas reservoirs to determine the suitability for biomanipulation as a means of water quality improvement.

7. COMPUTERS AND THE POSTMODERN CONDITION: COMPUTER AND DIGITAL ART. Chet Lofgren. Department of Art, Southwestern University, Georgetown, TX.

This paper explores the recent history of computer graphics and art, tracing the history of computer aided and driven design to its current form as a viable and definitive movement in the postmodern art world.

8. FOOTBALLS VS. BARBIES: CHILDHOOD TOYS AND GAMES AS PREDICTORS OF SPORT PARTICIPATION BY WOMEN. Katie Popp. Department of Psychology, Southwestern University, Georgetown, TX.

A substantial amount of research has explored the childhood socialization experiences that distinguish between women who later became involved in sports and women who did not. Such research has typically focused on the socialization agents (e.g., parents, peers, coaches) who influenced females' subsequent involvement in sports (e.g., Greendorfer, 1987). Other factors, such as childhood toys and games--which have been shown to play an important role in childhood socialization in non-sport domains (Lever, 1976)--have received relatively little attention. Thus, the present study examined the extent to which childhood games and toys predict future sport participation by women. As part of a more extensive study exploring the socialization of female athletes into sport, 92 college women (47 varsity athletes and 45 nonathletes) completed a questionnaire that measured their attitudes toward and experiences with sports and physical activity. Of particular interest to the present study were questions pertaining to childhood activities, such as the nature and type of games played, the gender composition of playmate groups, and the specific toys played with most often. The results revealed that, as predicted, childhood toys and games distinguished between women who later became athletes and those who did not. Specifically, female athletes were more likely to report playing stereotypically masculine games (e.g., dodgeball, football) and with masculine toys (e.g., toy guns, cars) than were female nonathletes, who were more likely to report playing stereotypically feminine games (e.g., hopscotch, "house") and with feminine toys (e.g., Barbie dolls, tea sets). In addition, girls who played masculine games and with masculine toys were more likely to consider themselves tomboys, who in turn were more likely to play with boys than with girls and also to engage in team (vs. individual or dyadic) activities.

9. THE U.S. AIRLINE INDUSTRY: A CASE STUDY. Gailo Ashley and Beth Hattaway, Business Department, Southwestern University, Georgetown, TX.

The airline industry has faced varied challenges during the decade of the 1990s. A slow economy, low load factors, and heavy competition resulted in negative profits during 1990-1994. The airlines that survived this period enjoyed healthy profits in 1995-1998 and gained hope for a positive future through expanding markets and a booming economy. Many factors still threaten the profitability of airlines. For example, the government has threatened regulation in the areas of safety, customer service/rights, and competition for airport gate space, which could lead to higher costs for airlines, and lower profit margins. Cost control with regards to labor, fuel, and aircraft fleet are critical to airline's success. During 1998, restless labor unions caused many problems for both Northwest Airlines and American Airlines; revenues during the quarter in which strikes occurred decreased by several million dollars. On the other hand, during the same period of the late 1990s low fuel prices helped to lower costs for all airlines. Technology has also played a part in lowering costs and increasing efficiency for the industry. CUTE terminal equipment was installed to better utilize airport terminals so that airline employees could access customer information more quickly, and "smart label" baggage tags helped to streamline the baggage checking and locating services. During the late 1990s strategic alliances were developed between many airlines. They allow domestic and international carriers to link their frequent flier programs and make international air travel more convenient for passengers. Potential for growth in the domestic market is mixed. Due to the booming economy of the late 1990s, air travel in business and leisure sectors has increased and thus increased load factors for airlines. Consequently, airlines are increasing domestic capacity 5.6% in 1999. This is far faster than 1998's 1.5% growth in passengers and 1997's 3.1% growth in passengers. Experts also predict a 17% decrease in net earnings during 1999. This increase in air traffic will further stretch the capacity of already overloaded airport facilities. As a result, facility charges could be raised, hurting both the airlines and the customers. These and other challenges will be faced by the airline industry during the first decade of the new millennium.

10. SOUTHWEST AIRLINES 2000. Beth Hattaway and Gailo Ashley, Business Department, Southwestern University, Georgetown, TX.

Southwest Airlines has been involved in the airline industry for over twenty years. The company created and perfected the point-to-point, short haul market niche. The airline was also able to perfect its turn-around time. Southwest Airlines has been the only company to successfully do this. The company was not only known for its turn-around time. SWA was also known for its friendly service. The friendliness that pervaded

through the company was present from its inception. The employees of SWA were empowered to make the company a better place for both passengers and other employees. The empowerment began with the CEO Herb Kelleher. One of the major issues that faced Southwest Airlines in 1999 was who would be the next CEO? Another issue the company faced was the possibility of expansion into the long-haul market.

11. IDENTIFICATION AND ANALYSIS OF FIELD RR LYRAE VARIABLE STARS. Timothy Woodruff, Departments of Physics and Math, Southwestern University, Georgetown, TX.

We present results from a program to identify previously unknown RR Lyrae variable stars in the halo field of our Galaxy. Our variable candidates are drawn from a sample of published halo stars that were identified as evolved, helium-core burning stars. From this sample, 31 stars were chosen which had photometric colors consistent with the RR Lyrae instability strip and thus expected to be variable. Using the 16-inch Meade LX200 telescope at Fountainwood Observatory at Southwestern University, we observed 5 of these stars a night in a V-band filter, for 4 to 5 hours each night, to determine which of the stars were actually variable. We then conducted follow-up observations of several of the confirmed variables in order to construct light curves and ultimately determine the period of variability and variable type. When the project is completed we intend to use these stars as kinematic tracers of the Galactic halo.

12. SENIOR HONORS EXHIBITION. Laura Harrison, Departments of Art and Sociology, Southwestern University, Georgetown, TX.

I have been working with forms in sculpture that explore expansion and containment of mass and volume. Originally, I made units that I increased or decreased in scale progressively stacking one unit on top of another creating a larger form representative of a natural formation. These forms appear weighty and massive like columns, but the surfaces remind me of stones smoothed by years of contact with running water. This highly polished mirror black sensual surface seems to me to present a powerful presence on what is basically a rigidly defined geometrical arrangement of the unit forms. I have become more interested in the surface quality of the skin over the volume or mass. I want to include the element of water in its most contemplative mode. In my mind this would be when the water is moving gently and slowly over the forms, its movement barely perceptible to the viewer. I want to explore the negative space by using the water to create small wells of black pools each shaped by the form of the unit. I have been influenced by Japanese Gardens where the power of abstraction under the influence of Zen Buddhism sets up an experience for the viewer in which symbolic associations are

implied rather than explicit, and where the senses are most revealed and experienced. Water has many symbolic meanings, which I intend to explore and incorporate. The sculptures of Isamu Noguchi, Constantin Brancusi, Ursula Von Rydingsvard, and Akio Makigawa have further influenced my ideas about the forms for this work. I want to continue to explore other arrangements of these forms in a variety of materials with strong sensual or tactile qualities. These would be intended for an outdoor garden space. Sculpture within the garden has often been used as a focal point and sometimes as a way of interrupting the path of the viewer, but, I particularly like the idea of the work creating dual experiences of quiet reflection and strong tactile sensations.

13. INSTRUMENTAL CONDITIONING IN THE CUTTLEFISH (*SEPIA OFFICINALIS*). Sarah E. Dreumont, Department of Animal Behavior, Southwestern University, Georgetown, TX.

Coleoid cephalopods, such as octopus, squid, and cuttlefish, have come under investigation in the recent past for their unique learning abilities that are typically reserved for vertebrates. The majority of this research has focused on the octopus in tasks such as habituation, discrimination learning, and operant conditioning. However, studies of this kind have recently been applied to cuttlefish. Purdy, Roberts, & Garcia (1999) demonstrated that cuttlefish (*Sepia officinalis*) were capable of making associations between a signal and a reinforcer, known as signal learning. The current study seeks to extend this research by investigating another category of learning known as instrumental conditioning or stimulus response learning. Instrumental conditioning essentially involves a response made by the subject, the outcome created by that response, and the relationship that forms between the response and the outcome. Instrumental conditioning and signal learning do differ. The subject must make a response in order to achieve the outcome of a reinforcer in instrumental conditioning, where as in signal learning the reinforcer is given regardless of the response made to the signal. In the current study, two groups of cuttlefish, three experimental and three controls, were asked to traverse a maze for a food reward. Each experimental cuttlefish was yoked to a control cuttlefish in such a way that the control animal's reinforcement was dependent upon the successful completion of the maze by the experimental animal. Each yoked pair was given three successive trials per day for seventy-five days. Preliminary analyses of the results indicate that cuttlefish are capable of stimulus-response learning. Experimental cuttlefish successfully complete the maze more times than the control cuttlefish, leading to the conclusion that instrumental conditioning has occurred.

14. THE EFFECTS OF EXOGENOUS PEPTONE CONCENTRATION ON THE LOCATION OF PROTEASE ACTIVITY IN *MUCOR ROUXII*. Adam Szafran, Department of Biology, Southwestern University, Georgetown, TX.

Previous research has shown that the levels of protease activity fluctuate in a cyclical pattern during the aerobic growth of *Mucor Rouxii*. In these series of experiments, data was collected and analyzed to determine the effect on protease activity in cultures containing exogenous peptone levels ranging from 10% to 0.1%. An azocasein degradation assay and an enzcheck TM proteases assay was used to determine the protease activity. Protease activity was also determined in subcellular fractions of the organism. Higher protease activity was detected in cultures grown at intermediate levels of exogenous peptone in the culture medium. This supports the hypothesis that limiting exogenous peptone induces the production of proteases. The protease activity was present in all subcellular fractions that were examined.

15. CONSTRUCTING OBSTACLES VS. MAKING EXCUSES: EXAMINING PERCEIVERS OF REACTIONS TO BEHAVIOR. Cody Cox, Department of Psychology, Southwestern University, Georgetown, TX.

Although research suggests that there are two distinct types of self-handicapping (behavioral self-handicapping, which involves constructing an obstacle that makes a person's best effort unobtainable, and self-reported self-handicapping, which involves generating a verbal excuse for poor performance), little empirical research has addressed perceivers' reactions to these different strategies. The present study explored reactions to self-handicapping as a function of the type of strategy employed (behavioral or self-reported) and the resulting consequence (positive or negative) for the actor. As part of a 2 x 2 within-subjects design, 23 undergraduates (11 women and 12 men) read four hypothetical vignettes which described students who had self-handicapped in academic situations. Consistent with the predictions, participants reacted more favorably to self-reported self-handicapping than to behavioral self handicapping.

16. "WRITTEN ON WHOSE BODY?" Mel-Gail Dabney, Departments of Sociology & Women's Studies, Southwestern University, Georgetown, TX.

Jeanette Winterson's *Written On The Body* is a novel that provides for readers the opportunity to reexamine assumptions, expectations, and stereotypes about gender. This is possible because the narrator's name and biological sex are not known. Furthermore, this narrator has had romantic relationships with both men and women and displays both stereotypically masculine and feminine traits. I analyzed book reviews regarding how the

issue of gender was treated. A few hostile critics felt there was no point in "hiding" the narrator's gender and that it was a disservice to the story. Many relied on textual "clues" to determine gender, and most of them wavered. Some felt that it didn't matter. Finally, quite a few treated the ambiguity in a positive way for its ability to address the social construction of gender. I also collected student's responses to the question of how did they gender the narrator and why. Most relied on textual "clues", but either fluctuated or were not completely confident. Only a few were confident enough to not waver at all. Some didn't think that it mattered. Almost all recognized in some way how assumptions and stereotypes played a part in how they read the narrator's gender. I analyzed the reasons they all gave for their assignment of gender. Almost all of the reasons were "clues" that could be interpreted in more than one way and were based on gendered assumptions, expectations, and stereotypes. Furthermore, almost all of the clues pointed to the question of femininity/masculinity as opposed to female/male. When readers acknowledge that their assignment of the narrator's gender is merely based on societal assumptions, expectations, and stereotypes, they are taking the first step towards reexamining those societal messages, which tend to conflate female with femininity and male with masculinity.

#### 17. HYBRIDIZATION IN *PHLOX CUSPIDATA* AND *PHLOX DRUMMONDII*. IN RESPONSE TO MIXED AUTOGAMOUS/HETEROSPECIFIC POLLINATIONS.

M. Brooke Byerley, Department of Biology, Southwestern University, Georgetown, TX.

The outcome of autogamous, heterospecific, and mixed autogamous/heterospecific pollinations on fruit set, seed set, seed weight, and percent germination were studied in sympatric populations of *Phlox cuspidata* and *Phlox drummondii*. There was a significant species effect on these variables with *P. cuspidata* exhibiting higher fruit set and seed set but lower seed weight. A significant effect of pollen source (autogamous or heterospecific) was detected for fruit set and seed set but not seed weight. On average heterospecific pollinations yielded higher fruit set and more seeds per fruit than autogamous pollinations even though *P. cuspidata* exhibits a high level of autogamy. Progeny tests to determine the outcome of mixed autogamous/heterospecific pollen loads revealed an approximate 1:1 ratio of heterospecific to autogamous offspring in *Phlox cuspidata*, indicating that the species is relatively indiscriminate of pollen source when subjected to a mixed pollen load. Alternatively, *Phlox drummondii* displayed a 13 to 1 preference for heterospecific pollen over autogamous pollen despite the obvious disadvantages of hybrid sterility.

#### 18. GENDER AND AGE RELATED DIFFERENCES IN THE COMPREHENSION OF SARCASM. Patricia Barrera, Department of Psychology, Southwestern University, Georgetown, TX.

The purpose of this study was to examine whether males and females respond differently to sarcasm, and if any such differences are mediated by the gender of the sarcastic speaker. During group testing, 52-5th graders, 56-8th graders, 22 college students, and 22 non-student adults read and completed questions about 4 scenarios involving sarcasm. The gender of the protagonist in the scenarios was counterbalanced so that for each scenario the protagonist's name was female half the time and male half the time. Each scenario was followed by a short series of questions about how the recipient of the sarcastic statement might feel, how "nice" the speaker was, etc. The results revealed a developmental increase in the comprehension of sarcasm (calculated on a scale of 0 to 1), such that fifth graders ( $M = .43$ ) were less likely to understand sarcasm than the eighth graders ( $M = .80$ ) or the adults ( $M = .85$ ), and the eighth graders were less likely to understand sarcasm than the college students ( $M = .93$ ).  $F(3,144) = 28.36, p < .001$ . Further analysis of the results revealed significant effects of age and gender for feeling "mad" and "upset" if they were the recipients of the sarcastic statement. In rating characteristics of the sarcastic speaker, there were no significant effects for "liking" or rating if the speaker would "be a good boss." Significant differences, however, were found in the participants' perception of how "nice" and "funny" they rated the sarcastic speaker. In conclusion, these results are discussed in reference to developmental and gender issues.

#### 19. EMPOWERMENT AND CHALLENGE: COLONIAL WOMEN IN PERU AND THE INQUISITION. Taylor Garrett, Department of History, Southwestern University, Georgetown, TX.

This past summer I had the unique opportunity to research the role of women in the Peruvian Inquisition. This research was carried out at the Archivo Historico Nacional in Madrid, Spain, and was funded by the Mundy Fellowship Program at Southwestern. Dr. Daniel Castro went with me, and basically my role was to assist him in his research, although I did gather enough material to make a paper or project possible. I want to translate that project into an honor's thesis, revolving around the primary resources I gathered in Madrid. I compiled the records of over 150 women who, at different periods in the history of Peru, were persecuted by the Inquisition. There was a definite power structure in place in colonial Peru, a male dominated power structure that revolved around economic gain and the Catholic Church. How women challenged that power structure, the success of their challenges and the failures is what I have documented in my work. Their challenges may not always be apparent to themselves or to those within



the power structure, but the threat these women posed is evident in their persecution by the Inquisition. What conclusions can be drawn from my work? Simply put, the challenges that women made empowered them in many different ways. Their success was often, though, untenable. Their stories speak to a voiceless past that has not been documented well enough. My paper seeks to document those lost voices in the history of colonial Peru.

20. LEARNED AVOIDANCE IN FLATHEAD MINNOWS. Sarah Geenberg,  
Departments of Math and Psychology, Southwestern University, Georgetown, TX.

In a classical conditioning experiment, flathead minnows were exposed to trials that consisted of a CS (light) and 30 seconds later a negative US (a bass) from which they could hide. A replication consisted of four habituation trials of light only, 12 learning trials of paired presentations of the light and bass, and three test trails, where the light was moved to another location. The test trials showed the strength of the response. Each school of 75 fish learned to make a response to the rocks when the light was presented so the bass was not able to make any captures. However, the school did not make a response minimizing the distance from their location to the rocks or maximizing the distance between themselves and the bass as expected if they were only avoiding the bass. It seemed as if they were also avoiding the light, which is similar to a negated sign-tracking response. The path into the rocks the school should take after the presentation of the CS under these conditions was predicted using a mathematical model.

## POSTER ABSTRACTS

21. PUTTING THE BUDDHA TO THE TEST: EXPLORING THE EMPIRICAL EVIDENCE FOR REINCARNATION AND MEDITATION. Cody Cox,  
Department of Religion, Southwestern University, Georgetown, TX.

Research into Tibetan ideas is becoming more common in psychological literature as interdisciplinary studies and cross-cultural psychology become more prominent. Many therapists have incorporated meditation into their practice as a technique of relaxation and insight. Other researchers have examined the validity of certain Tibetan Buddhist beliefs and the characteristics of individuals who share these beliefs. This paper serves as a literature review of empirical evidence surrounding meditation and reincarnation and suggests avenues for future research.

22. EMINEM VS. CHARLIE PRIDE: RACE, STEREOTYPES, AND PERCEPTIONS OF PERFORMERS OF RAP AND COUNTRY MUSIC. Allison J. Dickson, James C. Morris, and Keri L. Cass, Department of Psychology, Southwestern University, Georgetown, TX.

The present study explored the effects of stereotype deviation in the music industry on people's perceptions of performers. One hundred college students (48 men, 52 women) were recruited for a study investigating "perceptions of music" and examined a profile of a fictitious musician containing a picture, a brief biography, and a lyric sample. As part of a two-way between-subjects design manipulating race of performer and music genre, participants read about either a Black or White musician who performed either rap or country music. After reading the profile, participants gave their perceptions of the performer, including how much they liked him, how talented they perceived him to be, and their judgments of his "legitimacy." The results showed the predicted stereotype-deviation effects for rap musicians but not for country performers. That is, although there were no differences between ratings of Black and White country musicians, Black rap artists were liked more and perceived as more talented and more legitimate than were White rap artists. Consistent with previous research (e.g., Jackson, Sullivan, & Hodge, 1993), people who violate societal expectations are judged more harshly than are people who conform to societal stereotypes, particularly in cases which involve strong preexisting racial stereotypes (e.g., Fried, 1999).

23. SILENT OR VIOLENT: PERCEPTIONS OF WOMEN WHO IGNORE VS. CONFRONT SEXIST REMARKS. Elizabeth Dodd, Department of Psychology, Southwestern University, Georgetown, TX.

The present study explored women's perceptions of other women who either ignored or confronted a sexist remark made by a man. Sixty college women were recruited for study ostensibly investigating "group dynamics and interactions" and were asked to read a (fictitious) transcript of a conversation among three friends (two men and one woman) who were about to embark on a camping trip. As part of a two-way between-subjects design, participants read a scenario in which either an offensive (e.g., "Since you're the woman, why don't you take care of the cooking") or a mild (e.g., "Why don't you take care of the cooking?") sexist remark was directed at the female group member, which she either ignored (despite being upset; e.g., "Okay, but I'm not a very good cook") or confronted (e.g., "That's sexist. I don't even like to cook, and it's not right to say it's my duty to cook because I'm the woman."). The results showed that participants liked and respected the woman more if she confronted the sexist remark, particularly if it was offensive (rather than mild). Previous research (e.g., Swim & Hyers, 1998) suggests that although women often want to confront sexist remarks (and indeed wrongly predict that they will confront sexist remarks in real-world situations), in practice they often remain silent because they are concerned about how others will perceive them. The current results imply that women's impression management fears are unfounded (at least as far as other women are concerned) and imply that women should feel free to confront sexist remarks that bother them.

24. THE BOLD AND THE BEAUTIFUL: FEMALE DESIRABILITY AS A FUNCTION OF EXTROVERSION AND PHYSICAL ATTRACTIVENESS. Katie Kirkendall, Deann Dixon, and Ann Raney, Department of Psychology, Southwestern University, Georgetown, TX.

The present study explored the effects of extroversion and physical attractiveness on the desirability of a potential dating partner. Thirty-two male college students were recruited for a study ostensibly investigating "perceptions of dating service members" and were asked to read profiles of dating service clients and to make judgments about each client. The experiment was a two-way mixed-subjects design in which physical attractiveness of the client (attractive or unattractive) was manipulated between-subjects, and level of extroversion (shy or outgoing) was manipulated within-subjects. Each participant read and made judgments about four profiles -- two distracter profiles and two profiles directly relevant to the hypotheses -- and then judged each client according to how friendly she seemed, how much fun she might be on a date, how desirable she was, and how much

they would be interested in dating her. The results showed that although men perceived outgoing women to be more friendly and potentially more fun on a date than shy women, level of extroversion did not influence their ratings of the woman's overall desirability. That is, participants rated physically attractive women as more desirable and were more interested in dating them compared to unattractive women, regardless of level of extroversion. These results are consistent with research suggesting that physical attractiveness, rather than personality, is the most potent factor in determining desirability (Dion, Berscheid, & Walster, 1972).

25. FAMOUS OR INFAMOUS? THE INFLUENCE OF CELEBRITY STATUS AND RACE ON PERCEPTIONS OF RESPONSIBILITY FOR RAPE. Jennifer Knight, Department of Psychology, Southwestern University, Georgetown, TX.

Although an extensive literature has explored the effects of race, socioeconomic status, and attractiveness on perceptions of rape defendants, few studies have considered the influence of celebrity status (and its potential interaction with race) on people's perceptions of events related to rape. As part of a 2 x 2 between-subjects design, 71 undergraduates (32 men and 39 women) read a fictitious newspaper account of an alleged rape that varied the defendant's race (Black or White) and celebrity status (famous or nonfamous), and were then asked to make judgments in response to the event. As predicted, being a celebrity had distinct advantages for White defendants, whereas for Black defendants, being a celebrity was a liability. This apparent backlash against Black celebrities is consistent with aversive racism theory (Dovidio & Gaertner, 1991; Gaertner & Dovidio, 1986), which proposes that although most people today are not openly racist, a subtle form of prejudice appears when people feel safe to express it and when they can justify their feelings.

26. INVESTIGATION OF THE SOLUTE MICROENVIRONMENT IN MODIFIED POLYMER SYSTEMS. Wendy Hayter, Department of Chemistry, Southwestern University, Georgetown, TX.

Because many fluorescent molecules are sensitive to their local environment, they are an ideal tool for quantifying molecular-level interactions occurring in complex systems. In particular, a fluorescent probe may be used to investigate the behavior of a solute within neat and modified polymers. We have used the fluorescent probe 6-propionyl-2-(dimethylamino) naphthalene (PRODAN) to determine the effects of the addition of both good and theta solvents on a model linear polymer, poly (dimethylsiloxane) (PDMS). This presentation will focus on how the microenvironment and microviscosity surrounding PRODAN dispersed in PDMS is affected by polymer molecular weight,

temperature, and mole fraction of added toluene (good solvent) and ethyl acetate (theta solvent).

27. THE EFFECT OF HEAT AND COLD MODALITIES ON HAMSTRING FLEXIBILITY. R. C. Y. Hanselman, and J. C. Smith, Department of Kinesiology, Southwestern University, Georgetown, TX.

Previous research has shown that heat and cold modalities act as counter irritants and reduce muscle pain and guarding. As a result, it has been suggested that these modalities should improve range of motion (ROM) when applied in conjunction with static stretching (SS). It was the purpose of this study to determine the effect of heat and cold modalities on hamstring ROM when applied in association with SS. 10 female collegiate basketball players (mean (sd), age 19.3 (1.3) yr, ht 174.1 (6.3) cm, mass 67.4 (9.0) kg) served as subjects for this study. Right and left hamstring ROM were measured under three conditions presented in a randomized order, i) SS alone, ii) heat with SS (HSS), and iii) cold with SS (CSS). In addition, baseline (BSE) ROM was determined during the initial visit. Repeated measures ANOVAs revealed a significant treatment effect on right ( $F=136.9, p < 0.001$ ) and left ( $F=112.08, p < 0.001$ ) ROM. Tukey post hoc revealed that the mean ROM of each condition were significantly different for both legs, in the following descending order: HSS, SS, CSS, BSE ( $p < 0.05$ ). These results suggest that heat and cold modalities affect ROM when applied in conjunction with SS. Further, it appears that there is a synergistic effect of heat and SS which acts to improve ROM over CSS and SS alone. In contrast, cold seems to attenuate some of the positive benefit of SS, and results in reduced ROM compared to HSS and SS alone.

28. THE EFFECTS OF GENDER AND OCCUPATION ON PERCEPTIONS OF ATTRACTIVENESS. Ashley Rittmayer, Department of Psychology, Southwestern University, Georgetown, TX.

This study explored the effects of gender and sex-stereotype of occupation on perceptions of physical attractiveness. Forty college students (20 women and 20 men) were recruited for a study ostensibly investigating "perceptions of dating service clients." As part of a 2 (client gender: female or male) X 2 (job type: feminine or masculine) mixed-subjects design, participants read four profiles, two distracter profiles (included to disguise the hypotheses) and two profiles directly relevant to the hypotheses: either (a) a man in a feminine occupation (e.g., elementary school teacher) and a man in a masculine occupation (e.g., high school PE coach) or (b) a woman in a masculine occupation (e.g., firefighter) and a woman in a feminine occupation (e.g., nurse). Interestingly, men perceived clients who behaved consistent with sex stereotypes as more physically

attractive (and more positively overall) than clients whose behavior contradicted sex stereotypes. By contrast, women perceived clients who contradicted sex-role stereotypes as more physically attractive (and more positively in general) than clients whose behavior was consistent with sex-role stereotypes.

29. CUTANEOUS VASCULAR RESPONSE TO ISOMETRIC HANDGRIP EXERCISE DURING LOCAL WARMING. P. G. Taylor, D. P. Stephens, A. Saad, and J. M. Johnson, Department of Kinesiology, Southwestern University, Georgetown, TX, and Department of Physiology, UT Health Science Center, San Antonio, TX.

It has been reported that a cutaneous vasodilation occurs in response to locally warming skin to 39°C during isometric exercise. The purpose of this study was to determine the roles of distensibility of the resistance vessels and sympathetic vasoconstrictor function in the cutaneous vasodilator response. Cutaneous vascular responses to isometric handgrip and local warming at bretylium treated (BT) and control (CON) sites were measured on the forearms of nine volunteers (7 men and 2 women). Skin blood flow was measured by laser Doppler velocimetry and expressed as laser-Doppler flow (LDF), and arterial blood pressure was measured noninvasively (Finapres). Cutaneous vascular conductance (CVC) was calculated as LDF/mean arterial blood pressure. Isometric exercise was performed for 3-min periods at 30% of MVC. The skin was normothermic (34°C) for the first exercise bout, and locally warmed to 39°C and 42°C for the second and third bouts, respectively. At the CON, CVC was significantly higher at 34°C ( $P < 0.001$ ) and 39°C ( $P < 0.001$ ), but not at 42°C ( $P > 0.05$ ). At BT, CVC was not significantly higher at 34°C or 42°C ( $P > 0.05$ ), but was significantly increased at 39°C ( $P < 0.001$ ). These results suggest that neurogenic factors may play a role at low local temperatures and that passive factors may be important at 39°C. Future studies should be designed to investigate the role that neurological factors play in this response.

30. RAPID IDENTIFICATION OF THE OAK WILT CAUSING PATHOGEN, CERATOCYSTIS FAGACEARUM. Kristen Holly Wright, Department of Biology, Southwestern University, Georgetown, TX.

The goal of my research is to develop a rapid diagnostic test to detect the oak wilt pathogen, *Ceratocystis fagacearum*. Specifically, I propose to assess the degree of concordance between the traditional plate culture technique and an experimental PCR protocol. I hope to eliminate the plate culture technique of identification provided the PCR technique is determined to be more accurate than the traditional method.

31. OAK WILT DIAGNOSIS AND EPIDEMIOLOGY. Matt McCaw, Department of Biology, Southwestern University, Georgetown, TX.

Oak Wilt (*Ceratocystis fagacearum*) is a species of fungus that infects and kills both Live Oak and Red Oak trees and is especially problematic in urban areas. A quick-detection method for Oak Wilt that will diagnose the presence or absence of *Ceratocystis fagacearum* within one to two days is currently being developed. This will greatly improve the percentage of symptomatic trees being saved and will prevent the infection of a great many others. An epidemiological study using the quick-detection test will also be conducted to map the spread of both *Ceratocystis fagacearum* and Oak Wilt symptoms. Comparisons will be made between the spread of the pathogen and appearance of its symptoms throughout a population of oak trees.

## BIOLOGY SUMMER RESEARCH PROGRAM

### Proposed Research

32. EFFECT OF KAINIC ACID INDUCED TOXICITY ON THE CRAYFISH NERVOUS SYSTEM. Swetangi Bhaleeya and Rebecca Sheller. Department of Biology, Southwestern University, Georgetown, TX.
33. TRANSCRIPTIONAL REGULATION OF M(GAMMA) IN *DROSOPHILA*. Frances Chu and Deborah Eastman. Department of Biology, Southwestern University, Georgetown, TX.
34. PROPOSAL FOR FURTHER RESEARCH INTO THE POSSIBLE FITNESS ADVANTAGE OF LARGE FEMALE *XANTHOPIMPLA STEMMATOR*. Matthew M. Chumchal and Stephanie Fabritius. Department of Biology, Southwestern University, Georgetown, TX.
35. ANALYSES OF ASPARTAME BREAKDOWN AND POSSIBLE ASPARTAME-INDUCED HEAT SHOCK RESPONSE IN CRAYFISH. Niki Leontaritis and Rebecca Sheller. Department of Biology, Southwestern University, Georgetown, TX.
36. ANALYSIS OF UPSTREAM INTERACTIONS OF THE M-BETA E(SPL) GENE USING A YEAST-1-HYBRID SYSTEM. Rebecca Pierce and Deborah Eastman. Department of Biology, Southwestern University, Georgetown, TX.
37. EFFECTS OF INOCULUM SIZE ON THE DIMORPHIC CONVERSION OF YEAST LIKE CELLS TO HYPHAE IN *MUCOR ROUXII*. John Saari and Vicente Villa. Department of Biology, Southwestern University, Georgetown, TX.
38. OVERLAP IN NEST SITE SELECTION AMONG DOVE SPECIES ON THE SOUTHWESTERN CAMPUS. Kara Stabler and Stephanie Fabritius. Department of Biology, Southwestern University, Georgetown, TX.
39. THE EFFECT OF INOCULUM SIZE ON THE MORPHOLOGICAL DEVELOPMENT OF *MUCOR ROUXII* UNDER AEROBIC CONDITIONS...QUORUM SENSING? John Stewart and Vicente Villa. Department of Biology, Southwestern University, Georgetown, TX.

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