

increased population size of both species and expansion of the boreal forest, a likely result of global climate change, have caused areas of geographic overlap to occur. The Trumpeter and Tundra Swans are known to be reproductively compatible, as a viable hybrid population exists in Virginia at the Airlie Center's Swan Research Program (SRP). Further, accounts from local wildlife managers indicate the presence of fertile hybrids in overlapping breeding areas in Alaska. This research seeks to confirm the presence of viable wild hybrids and to elucidate the genetic structure and relatedness of these interbreeding populations by comparison of phylogenetically relevant genetic loci of wild individuals to known hybrids from the SRP. We will also incorporate "historic" samples collected in 1920 (and prior) to confirm that this interbreeding is a recent phenomenon and likely due to habitat disturbance from climate change.

EFFECTS OF PREDATION, COMPETITION, AND ISOLATION ON THE RATE OF SHELL SELECTION IN THE HERMIT CRAB *PAGURUS LONGICARPUS*. Amber L. King & Deirdre Gonsalves-Jackson, Biology Department, Virginia Wesleyan College. Hermit crabs are most notably known for their use of gastropod shells to protect their soft bodies, which lack calcification on their abdominal exoskeleton. Because of the necessity for a gastropod shell, hermit crabs will often fight amongst each other for shells due to the scarcity of available shells because without a shell to provide adequate protection, they risk exposure. *Pagurus longicarpus* was used in this study to determine the effect of various factors on the rate of shell switching, specifically the effect of isolation, conspecifics, and predation. It was proposed that more hermit crabs would switch shells and the rate of shell switching would increase when isolated, rather than when in the presence of conspecifics or a predator. Three different treatments were set up and based on the results, the two hypotheses were supported because more hermit crabs switched shells and at a faster rate in the isolation treatment, rather than in the other two treatments, suggesting that predation may have posed as significant a threat in my study because the hermit crabs failed to switch shells.

Psychology

SEX ANXIETY AND SEX GUILT FROM 1980 TO 2010. Yang Deng & Louis H. Janda, Department of Psychology, Old Dominion University, Norfolk VA, 23529. The present study examined perception of social desirability regarding sex anxiety, perceived norms regarding sex guilt, and attitude changes in sex anxiety and sex guilt over the past 30 years. Undergraduate students completed the Sex Anxiety Inventory (SAI) honestly, attempting to present a favorable impression and attempting to present an unfavorable impression. They also completed the sex guilt subscale of Mosher Forced-Choice Guilt Inventory (MFCGI) by describing their own feelings and estimating their same-sex peer responses. Both sex anxiety scores and sex guilt scores were compared among different instructions. The self-descriptive scores on sex anxiety and sex guilt were compared with those in 1979/1980. The results indicated that the favorable-impression scores on sex anxiety were significantly higher than the unfavorable-impression scores and the self-descriptive scores; the

self-descriptive scores on sex guilt were significantly higher than the estimated, same-sex peer scores, consistent with the concept of *pluralistic ignorance*; and the self-descriptive scores on sex guilt in 2010 were significantly higher than those in 1979. The results suggest that people are holding a conservative standard for sex but a permissive perception of sex norm. Changes in sex guilt and sex anxiety between 1979/1980 and 2010 are discussed.

THE EFFECT OF A CONTEXTUAL AID DURING A VISUAL SEARCH TASK. Molly Liechty & Poornima Madhavan, Old Dominion University, Norfolk, VA 23529. Individuals utilize contextual cues (familiar objects within an environment) to simplify their world and anticipate where items will be. The goal of this study was to simulate the way in which airport security screeners utilize contextual cues while searching for threat objects. Twenty undergraduates from Old Dominion University performed a simulated luggage-screening task during which they were connected to an eye tracker. Participants screened 375 bags, 75% of the images contained a target and/or a distractor (an item in the visual scene semantically unrelated to the threat object, i.e., iPod). Results revealed that when the distractor was present, fixation durations increased while fixation counts, dwell times, and saccade counts decreased, demonstrating an aggressive search pattern and an expectation of target presence. We contend that participants formed an implicit association between the distractor and the target and used this association to improve the efficiency of their visual search. This implicit association of objects demonstrates the potential that exists to bias airport security screeners and could aid in training security screeners.

WHEN FEAR AND SADNESS ARE GOOD: THE EFFECTS OF ANGER, FEAR, AND SADNESS ON THREAT RECOGNITION DURING LUGGAGE SCREENING. Ray C. Heikens & Kimberly E. Culley, Dept. of Psychology, Old Dominion University, Norfolk VA, 23529-0001. Research involving the impact of negative emotions on decision-making shows that they can have an effect on one's perception of risk. Anger has a significant reduction in the amount of perceived risk and is able to increase hopefulness for the future. Fear has the opposite effect, increasing perceived risk and reducing optimism. Sadness has a limited history of examination, but can drive one's risk assessment more logically. Current standards of luggage security screening allow personnel to view bags being x-rayed for 4 seconds. The purpose of this study was to investigate the effect of anger, fear, and sadness as well as the effect of stimulus duration on luggage screening accuracy. Participants (n = 228) viewed images selected to induce one of the three test emotions, then attempted to locate threatening objects in x-rays of luggage after either 2, 4, or 6 seconds of viewing. Results showed that 4 seconds of viewing enable the highest percentage of hits when participants were angry or afraid. Sad participants had a higher hit rate when viewing the x-ray for 6 seconds and 6 seconds claimed the lowest percentage of false alarms overall. The implications of this research could aid in improving training and optimizing decision-making for security personnel.

PARENTAL ALCOHOL ABUSE, NEGLECT, PSYCHOLOGICAL ABUSE, AND PHYSICAL ABUSE: A BRIEF LOOK AT INTIMATE PARTNER VIOLENCE. Emily M. Muschek, Old Dominion Univ., Norfolk, VA. Adverse childhood

experiences (parental alcohol abuse, neglect, psychological abuse, and physical abuse) have long-term negative consequences. This study examines the relationship between these 4 types of adverse childhood experiences and emotional and physical abuse in college dating relationships. 426 college students completed 4 measures that assessed their adverse childhood experiences, exposure to parental alcohol abuse, emotional abuse, and physical aggression. Overall, ACOAs were more likely to be in a relationship in which they are being emotionally abused in all four dimensions. ACOA status also predicted restrictive engulfment behaviors as well as behaviors resulting in injury toward their partners. ACOAs were more likely to be in a relationship in which their partner was psychologically aggressive. Participants who were exposed to parental alcohol abuse were more likely to express behaviors that would injure their partner. Participants who experienced childhood psychological abuse were more likely to exhibit behaviors of hostile withdrawal and dominance/intimidation toward their partners. They were also more likely to engage in acts of assault leading to possible injury towards their partner. Participants who experienced physical abuse were more likely to exhibit behaviors of restrictive engulfment, denigration, and hostile withdrawal, and to be more aggressive and engage in acts of assault and be psychologically aggressive towards their partner. Neglect, psychological abuse, and physical abuse were not found to be predictors of participant perpetration in any of the 4 dimensions of emotional abuse in dating relationships.

CONCORDANCE OF ALCOHOL USE AMONG UNDERGRADUATE WOMEN IN DATING RELATIONSHIPS. Michelle K. Crewe & Michelle L. Kelley, Department of Psychology, Old Dominion University, Norfolk, VA 23529-0267. This study examined concordant drinking among 315 undergraduate women between the ages of 18 and 30 and their dating partners. The Substance Abuse Subtle Screening Inventory -3 was used to assess their own and their reports of partner's alcohol use. Four types of couples were expected: alcohol-abusing participants with alcohol-abusing partners (i.e., abuse-concordant couples, $n = 38$), alcohol-abusing participants with a non-alcohol-abusing partner ($n = 20$), non-abusing participants with an alcohol-abusing partner ($n = 46$), and non-alcohol-abusing women and men ($n = 211$). Abuse-concordant couples were compared to other couple types to examine potential differences in relationship satisfaction as measured by the Dyadic Adjustment Scale, quantity of alcohol use as measured by the Daily Drinking Questionnaire, and alcohol consequences as measured by the Rutgers Alcohol Problem Index. As hypothesized, participants who met criteria for alcohol abuse on the SASSI-3 were significantly more likely than expected by chance to report that their dating partner also abused alcohol. Participants in alcohol-concordant couples reported significantly higher alcohol use than participants in other couple types, indicated more alcohol consequences than other couples types except alcohol-abusing women with non-abusing men, and had higher relationship satisfaction than non-abusing women with alcohol-abusing men.

DON'T BE AFRAID TO EXAGGERATE: A STUDY OF EMOTIONAL INTELLIGENCE & PHYSIOLOGICAL MANAGEMENT. Daniel T. Bice, Alexander G. Morris, Victoria Toadvine, Joshua K. Vickstrom, & Hilary E.

Stebbins, Dept. of Psych., Univ. of Mary Washington, Fredericksburg VA 22401. This study investigated the effect of emotional intelligence (EI) and exaggeration of emotional responses on the ability to recover from an aroused state. We hypothesized that participants high in EI would recover faster regardless of condition and that exaggeration would produce a greater discrepancy between the minimum and maximum arousal levels. After completing the Wong-Law Emotional Intelligence Scale, 47 participants (18 men) were randomly assigned to an exaggerate or natural condition and exposed to a 3-minute video clip from *I Know What You Did Last Summer* (1997). Both, physiological arousal and management ability were measured via Galvanic Skin Response. A statistically significant interaction between condition and EI on baseline recovery rate was found such that those high in EI did recover faster than low EI, but only in the non-exaggerate condition. Arguably, exaggeration allows low EI individuals to be more aware of physiological changes and better manage them, but interferes with high EI individuals' natural awareness and management abilities. This finding illustrates that there are potential techniques, such as exaggeration, that can be taught or used to increase emotional intelligence.

BULLYING IN COLLEGE AND ITS EFFECT ON ACADEMIC ACHIEVEMENT. Calesha W. Hayes & Barbara Winstead, Old Dominion University, Norfolk, VA. Bullying and its effects on academic achievement were examined. It was hypothesized that engaging in bullying would negatively correlate with academic achievement in high school and college and that being bullied would negatively correlate with academic achievement in high school and college. Undergraduate Old Dominion University students ($N=190$) were the participants. Participants were presented with a definition of bullying and given an anonymous self-paced questionnaire about academic achievement and bullying others and being bullied in high school and college. The correlation between bullying others in both high school and college with academic achievement was not significant. The correlation between being bullied in high school and college with academic achievement was not significant. A curvilinear relationship was found between the college victim and bully scores and GPA. The medium GPA group was found to have significantly higher bullying and victim scores than the high GPA group, while the low GPA group did not differ significantly from either group. A revised questionnaire or definition of bullying that includes lower levels of bullying and victimization is discussed.

THE INFLUENCE OF SIMULATION STYLE ON PERFORMANCE. Chelsea D. Picot, Rachel R. Phillips, & Poornima Madhavan, Department of Psychology, Old Dominion University, Norfolk VA 23529. Despite the fact that luggage screening involves a dynamic presentation of images, most luggage screening research is conducted with static image presentation. Although some research has suggested that performance with static and dynamic images is equivalent, this has not been addressed in the context of luggage screening. To address this gap, we conducted an experiment to compare luggage screening performance between static and dynamic conditions. Fifty-six students participated for a partial fulfillment of course requirements and were told that they would be playing the role of airline luggage

screeners looking for knives in x-ray images of luggage. The experiment began with a 200 image training session during which participants viewed each image in the center of the screen for 3 seconds. Participants had to indicate if they believed a knife was present before the image timed out. After a short break, participants completed a transfer block of 200 images in one of three conditions: 3 seconds centered, 9 seconds centered, or scrolling. Results revealed that participants had a higher hit rate and a lower false alarm rate in the transfer block than in the training block indicating that their performance improved between training and transfer. In the transfer conditions, participants in the scrolling condition had a significantly lower hit rate than those in the 9 second centered condition. These results indicate that performance with a dynamic versus static image display may differ when it comes to a complex visual search task such as luggage screening and that simulation style may influence results in a meaningful way.

METHODOLOGICAL CONSIDERATIONS FOR USE OF A MULTIMODAL STROOP-LIKE TASK. J. Christopher Brill & Elizabeth L. Ferguson, Department of Psychology, Old Dominion University, Norfolk, VA 23529. Development and usage of a multi-modal Stroop-like task for assessing attentional processing requires specific methodological considerations. A task requiring the learning and use of a spatial translation code that supersedes stimulus-response compatibility may facilitate tapping into the same psychological processes involved in performing the classic Stroop task. Information is presented visually, aurally or tactually in a spatial array, and participants respond manually using a spatially congruent response box. Special considerations, however, are required to fairly compare performance for a tri-modal Stroop-like task. Among the considerations are creating highly discernable signals, equating perceptual loudness across sensory modalities, considering response mode, custom fitting the vibrotactile array to each participant, and use of hardware that facilitates accurate measurement of response time. Current research explores the use of this task as a means for assessing differences in processing for multimodal signals. Future research will explore the use of redundantly-coded and spatially incongruent signals.

SELF-REPORTED AGGRESSIVE DRIVING BEHAVIOR AMONG COLLEGE STUDENTS. J. Christopher Brill, Lindsey C. Chase, Christina M. Rieger, & Rebecca L. Tiefenback, Department of Psychology, Old Dominion University, Norfolk, VA 23529. The National Highway Transportation Safety Administration identified aggressive driving behavior as a serious hazard to driving safety. We sought to identify potential patterns of aggressive driving behavior among college students using a recently constructed questionnaire: The Aggressive Driving Behavior Questionnaire. The ADBQ is a 20-item self-report questionnaire in which participants rate on a six point Likert-type scale the extent to which they engage in a series of behaviors while driving. Participants completed a basic demographics form and driving history questionnaire, as well as the ADBQ. The results suggest the majority of participants endorse feeling angry at other drivers' behavior, but substantially fewer reported engaging in aggressive acts (e.g., flashing their bright

lights at other drivers, slowing down in front of drivers who are tailgating, and cutting off other drivers). Most participants reported engaging in more passive behaviors, such as shaking their heads at other drivers.

Statistics

FINDING AN OPTIMAL DESIGN USING PSEUDOFACORS. Mary A. Marion, Department of Statistics, Virginia Polytechnic Institute and State University. This paper was written as a result of an Industrial Systems Engineering project performed at Virginia Tech. This paper reflects an evolving procedure to design an industrial experiment utilizing optimality criteria, AIC statistic and the usual regression/ANOVA model statistics. Discrete factor settings were coded as continuous to utilize response surface methods to find the best settings to reach a specified target. While the industrial example is trivial the characteristics of the project lend themselves to illustrate the complexity of real life applications.

AN INCREMENTAL FORWARD STAGewise REGRESSION ALGORITHM FOR DICHOTOMOUS RESPONSE VARIABLES. Adam Sima, Department of Biostatistics, Virginia Commonwealth University. The Incremental Forward Stagewise Regression (IFSR) procedure was developed by Hastie, et al. (2001) as a flexible estimation procedure for fitting penalized linear models. To generalize this procedure, the IFSR estimation method was extended for use with a dichotomous response variable. In particular, a simulation study was used compare both the accuracy in prediction and model fit to similar algorithms that simultaneously fit a model and estimate parameters. The results show that this method is comparable to some commonly used algorithms.

INTRODUCTION TO DISCRETE CHOICE MODELS. Bhaskara S. Ravi and N. Rao Chaganty, Department of Mathematics and Statistics, Old Dominion University. We often encounter with decisions that involve choosing between alternatives or choices such as “which phone to buy” or “which minute plan” to choose or “which brand of shampoo to buy” etc. Interestingly, these decisions not only depend on individual characteristics but heavily on alternatives available. Discrete choice models analyze such choice behavior and these are very popular in economics. This talk aims at introducing very famous McFadden’s conditional logit model and the importance of IIA (Independence of irrelevant attributes) assumption. Also, a review of current trends and challenges in this popular research area are presented.

Structural Biology, Biochemistry and Biophysics

MECHANISM OF ACTION OF UDP-GALACTOPYRANOSE MUTASE FROM TRYPANOSOMA CRUZI. Michelle Oppenheimer, Ana L. Valenciano, Jun Qi, & Pablo Sobrado, Department of Biochemistry, Virginia Tech, Blacksburg, VA 24061. *Trypanosoma cruzi* (*T. cruzi*) is the causative agent of Chagas’ disease, which if untreated leads to chronic inflammation of the heart. UDP-galactopyranose