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**Teaching Statistics: A Comparison on Topics and Approaches Across Disciplines** by Michael Q. Abili and Layla Guyot

Mathematics Education, Texas State University

**Problem or research question:**

In practically every discipline that a student pursues, they will have to deal with the application of statistics. For the students to handle the statistical applications they will run across in their discipline; most students are required to have a statistics course as a prerequisite from a mathematics department that will allow them to take subsequent courses from their discipline. Therefore, to build a deep understanding on a topic, curriculum materials should be developed to guarantee a coherence between the different approaches of this topic (Fortus & Krajcik, 2012). We are interested in what extent statistical topics taught in courses specific for a discipline align with the same topics introduced in the context of an introduction to statistics course offered by a mathematics department. More specifically, we are interested in how these topics are taught. Therefore, our research questions are: How do the topics covered in the prerequisite statistics course align with the subsequent courses' topics? How are common topics taught in a prerequisite statistics course compared to subsequent courses?

**Methodology or approach:**

We began by identifying the two introductions to statistics courses offered in the mathematics department at a university located in the southwestern region of Texas. These two introductions to statistics courses were identified as a prerequisite for students from other departments outside from the mathematics department. Next, we reviewed the syllabi of the subsequent courses to ascertain a list of topics that were taught, and we also used the syllabi to identify the textbook(s) used, if any was required for the course, to analyze the approach used to teach the topics.

**Preliminary results and their impact on the field:**

Our preliminary results indicate that subsequent courses tended to focus heavily on computations whereas introductory statistics course seem to focus on the use of technology and visualizations. By researching how topics align for an introductory statistics course with subsequent courses, we are bridging the gaps between disciplines and attending to teach topics coherently.

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Fortus, D., & Krajcik, J. (2012). Curriculum coherence and learning progressions. In B. J. Fraser, K. Tobin, & C. J. McRobbie (Eds.) *Second international handbook of science education* (pp. 783-798). Springer, Dordrecht.

## Role of IBR5 - GTP Binding Proteins Interaction as a Regulator of Plant Cell Morphology

by Idrees Ahmad, Elia Lopez, Praveen Kathare, Sunethra Dharmasiri, and Nihal Dharmasiri  
Biology, Texas State University

Auxin is a major growth regulatory hormone, which is vital for plant growth and development. Within the nucleus, auxin regulates the degradation of a group of transcriptional repressor proteins known as Aux/IAA, to control auxin responsive gene expression. It has been shown that *Indole Butyric acid Response5 (IBR5)*, which encodes a dual specificity phosphatase, is also involved in the auxin signaling pathway. However, the exact role IBR5 plays in auxin signaling is not well understood. Yeast two hybrid screen, *in-vitro* binding assays and co-immunoprecipitation studies indicate that IBR5 physically interacts with several different small GTP binding proteins. Previous studies have implicated these GTP binding proteins as components of the auxin signaling network responsible for regulating plant tissue morphology. Our studies indicate that the *ibr5-1* knock-out mutant have defective leaf epidermis, root hair, and petal blade phenotypes, all of which are tissues that rely on auxin signaling to regulate cell morphology. These observed morphological aberrations are further affected when combined with *rop2-1* and *rop6-2* small GTP binding protein knock out mutations, indicating a possible genetic interaction between IBR5 and ROP2, ROP6 small GTP binding proteins. Taken together, biochemical, physiological and genetic interaction data suggest that small GTP binding proteins and IBR5 function in the same signaling pathway to regulate plant auxin responses.

**Neorealism and U.S. Foreign Policy: Rethinking Perceptions of Power** by Justin Allemang  
International Studies, Texas State University

**Problem or research question:**

All told, “[s]ince the end of World War II, there have been 248 armed conflicts in 153 locations around the world. The United States launched 201 overseas military operations between the end of World War II and 2001.”<sup>1</sup> In other words, from 1946 to 2001, the United States has been directly responsible for 81% of armed conflicts, and the numbers have only gone up with the 2001 invasion of Afghanistan and the 2003 invasion of Iraq. Additionally, best case estimates indicate that 85-90% of casualties of war are civilians, “with about 10 civilians dying for every combatant killed in battle.”<sup>2</sup>

**Methodology or approach:**

Methodology will be fairly simple, an examination of how the U.S. has institutionalized neorealism-structuralism and the outcomes of taking such a position – supported by case studies – an overview of potential solutions, including Ken Booth and Nicholas Wheeler’s ‘survival education,’ and finally an argument for using the coercive power of the state and the underutilized public education system to create a new national identity focused on absolute good over relative power gains.

**Results or preliminary results and their impact on the field:**

While there is a considerable body of literature that addresses the issue of conflict resolution in international relations – few seem to have attempted to find and address the root causes of conflict between states from the social construction perspective proposed by Alexander Wendt.<sup>3</sup> Working within critical theory, K.M. Fierke offers a framework, focused on the realignment of the perceptions of security, dialogue, and care; brought into practical application this approach has the potential to change the way the U.S. views its role in conflict in such a way as to possibly reduce U.S. interventionism, and by extent, conflict throughout the world.[Field]<sup>4</sup> While Fierke provides the theoretical framework that lays out a potential solution to the problem of conflict, her work raises the question of, how can her theory be brought into praxis to accomplish the ends it describes?

With that, the argument presented here is that U.S. interventionism is dependent on a society trapped in a neorealist-structuralist paradigm that assumes that not only is conflict inevitable, is also the best answer to most problems in the international system. As such, using the ideas presented in Constructivism and the Frankfurt school of critical theory, that feedback loop should be able to be broken – specifically by utilizing the public education system to redefine conceptions of relative power, and by extension, change the identity of the society and elite perceptions to modify what the U.S. considers the suitable parameters for the use of force in the international arena.

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## **Open-Source Data and Tools for Trail Analysis: Big Bend National Park** by Dane Atkins Geography, Texas State University

### **Problem or research question:**

Hiking is an increasingly popular outdoor leisure activity. Despite the personal benefits of hiking, it is also a dangerous activity that strains Search and Rescue operations. Distressed hikers are often blamed for their lack of preparation, yet, available descriptions of hiking trails are often inconsistent and rarely comprehensive. Increasing the accuracy and availability of hiking trail data is proposed to reduce instances of lost and distressed hikers.

### **Methodology or approach:**

To improve upon existing hiking trail information, open source geographic data was processed with a novel procedure using an open source geographic information system. This process was applied to three trails in Big Bend National Park, generating new hiking trail data that was then compared with existing sources of trail data.

### **Results or preliminary results and their impact on the field:**

The developed procedure provided reasonable estimates of key trail attributes, including trail length and elevation gain. Furthermore, the attributes are shown to be more comprehensive than any singular external source of trail data.

The results of this comparative analysis suggest that open source tools and data (which are within the technological capabilities of most land managers) could be used to provide hikers with more comprehensive, accurate, and up-to-date trail descriptions. More work remains, however, to improve estimates of trail elevation gain.

## **An Electrical Vehicle Charging Station Monitoring Embedded Design** by Noushin Azami and Damian Valles

Engineering, Texas State University

With the growing use of Electrical Vehicles (EV), the need for an efficient way of charging EVs is necessary. Although more companies and stores are equipping their parking areas with charging stations there is a necessary charging infrastructure needed as more EV become available. An embedded solution is proposed to monitor the charging station that will help technicians to maintain the charging units. The monitor solution displays parameters from the charging station such as: number of batteries in stock, reports any malfunction in the station's equipment, and alarms in the display for technicians when an extreme weather condition occurs. The embedded solution is a proof-of-concept that can help monitor stations, provide a cost-effective solution, and easier way to maintain the charging infrastructure.

## **Case Study: “Oyu Tolgoi” The Largest Mining Project in Mongolia’s History from a Value Orientation Perspective** by Uyanga Bazaa, and Bolanle Olaniran

Mass Communication and Communication Studies, Texas Tech University

### **Problem or research question:**

Many international and cross-cultural studies have categorized cultures based on their commonly held social norms. Triandis (1995) split humans into two main camps: “collectivists” and “individualists.” Kluckhohn (1961) argued people orient their ideologies based on their perceptions of time, nature, and surroundings. While testing the water before entering the market would be a necessary step for customer-based multinationals, this is not a common practice among resource companies. The scenario is often as follows: a mineral deposit is discovered, a deal is made between the host government and an investor, and the mining project begins. However, this practice often causes major problems for all parties involved. Community protest can put billions of dollars invested in jeopardy, the host government may be caught between the public and the mining company, and in a worst-case scenario civil unrest erupts.

Although, there are a good array of strategic communication and public relations theories that talk about opinion leaders and relationship management, a more in-depth analysis must be done to explain the problems caused in mining industries. Behaviors and motives of the host government, international mining investors, and the locals must make a sense.

With this in mind, this paper seeks to explore how strategic communication efforts can facilitate a dialogue between not just two but three main parties, taking into account varying value systems. By deeply rooting itself in a country’s value orientation system and collectivist/individualist culture, how can mining conglomerates better conduct dialogue with communities in the host countries/cultures they operate in? Why do mining corporations have to do more due diligent than traditional consumer-oriented multinationals?

### **Methodology or approach:**

The approach in this study is two-fold. First, a case study of Oyu Tolgoi (OT) LLC, a \$6 billion investment and the first mega mining project in the history of Mongolia will be presented. According to Kirk (2013), one of the strengths of a case study lies in its inductive reasoning. Secondly, based on OT case, a development of a framework using value orientation will be made as an explanatory mechanism.

### **Results or preliminary results and their impact on the field:**

After striking a deal with the host government, multinationals should serve a “grace period” without pouring their money into the country. During this time however, what they must do is to invest time and effort to inform the public about the project and to improve their understanding of the host culture. It may sound basic, but this process will facilitate discussions among the public to reach a consensus that will safeguard them and the government from the risk of lawsuit.

Implications from this research include the development of valuable practical application. Based on the OT case, suggestions will be the value orientation and collectivist/individualist theories provide explanation to the phenomenon of “resource nationalism” and enrich “social license to operate” theory. Integrating natural resource concepts with value system theories, and relationship management models of public relations can strengthen the literature and improve understanding.

**Key words:** Resource nationalism, social license to operate, value orientation, collectivist and individualist culture, Mongolia, Oyu Tolgoi, mining communication, Rio Tinto

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**Investigations of the Mycoflora Inhabiting the Bark of *Juniperus ashei* (Cupressaceae) in Central Texas** by Jessica Bernardin, Trina Guerra, David Rodriguez, and David Lemke  
Biology, Texas State University

**Problem or research question:**

*Juniperus ashei* (Cupressaceae) is a common evergreen tree in central Texas with a range extending from Arkansas to northern Mexico. A notable feature of these trees are conspicuous white patches that occur on the bark of the trunk and branches that have been identified as a parasitic fungus, *Robergea albicedrae*. This fungus, along with others that inhabit the bark of Ashe juniper, remains understudied and ambiguous in terms of the overall mycoflora occurring on juniper bark. This study is the first attempt to document the complete mycoflora of *J. ashei* bark in central Texas.

**Methodology or approach:**

Samples of bark were excised from the trunk, branches, and twigs of *J. ashei* in San Marcos, Texas. Samples were washed under a turbulent flow of distilled water for 24 hours before being plated on varying concentrations of malt extract agar and bark extract agar. Cultures were incubated at 37° C and fungal colonies were re-plated until pure cultures were obtained. DNA from each pure culture was extracted and sequenced using cycle sequencing.

**Results or preliminary results and their impact on the field:**

Preliminary results demonstrate that the mycoflora on *J. ashei* bark is more diverse than anticipated. Culturing techniques used in this study were successful in eliminating contamination and simulating nutrients needed for fungal growth on bark. During attempts to culture *Robergea albicedrae*, a wide variety of other fungi were encountered and sequenced, providing a new perspective on the diversity of fungal species contributing to the mycoflora on *J. ashei* bark. We are presently building a sequence library of the common mycofloral constituents present on the bark of *J. ashei* bark that will be useful for future studies.

## **Two-Year Institution and Community College Web Accessibility: Updating the Literature After the 2018 Section 508 Amendment** by Ibrahim Bicak and Zachary W. Taylor

Adult, Professional, and Community Education, University of Texas Austin

### **Problem or research question:**

On January 18th, 2018, the Americans With Disabilities Act (ADA) required all federal aid-receiving institutions of higher education (Title IV) to publish web accessible websites for people with disabilities. To be compliant with federal law, Title IV institutions must now adhere to Web Content Accessibility Guidelines (WCAG) 2.0 standards at the Level-A and Level-AA threshold. This study examines the web accessibility of a random sample of 325 two-year Title IV institutions in the United States and finds all institutions had at least one Level-A error on their homepage, potentially violating new ADA guidelines. This study also finds private, for-profit institutions published the least web accessible websites, while public institutions published the most web accessible websites. Implications for future research and practice are addressed.

This study seeks to update and expand upon previous work by answering two critical research questions pertinent to community college students with disabilities: After the January 18, 2018 deadline, are two-year, Title IV-receiving institutional websites compliant with new Section 508 guidelines and WCAG 2.0 standards? If not, which WCAG 2.0 standards are most abundant?

Answering these questions will not only inform the scholarly community but also inform institutions as to whether their websites are compliant with federal law and accessible for a marginalized population in higher education: community college students with disabilities.

### **Methodology or approach:**

To address this study's primary research questions of whether two-year institution websites are web accessible, we gathered institutional-level data from the Integrated Postsecondary Education Data System (IPEDS). After the research team established this population, we randomly selected a sample size of 325 institutions by using the random number generation function in Microsoft Excel.

To collect website accessibility data, the research team gathered institutional hyperlinks or URLs to each institution's homepage. Once the research team located these URLs, the team employed Tenon™ accessibility software, a robust freeware program capable of running 99 total tests of web accessibility at the Level-A, Level-AA, and Level-AAA standards (Tenon LLC, 2018).

### **Results or preliminary result and their impact on the field:**

Data in this study suggest, of a sample of 325 two-year institutions, no one website was entirely Level-A and Level-AA compliant, thus entirely satisfying new Section 508 guidelines. Building upon the previous work of Flowers, Bray, and Algozzine (2011) and Erickson et al. (2013), a number of themes emerge pertinent to web accessibility, advances in technology, and students with disabilities' equal access to higher education.

First, this study found keyboard-related errors were problematic, echoing prior research (Thompson, Burgstahler, & Moore, 2010). Subsequently, students with disabilities who rely on assistive technologies including keyboard usage may be unfairly disadvantaged when accessing postsecondary websites. In addition--although this study does not examine institutional websites over time--this study's data suggests web accessibility continues to be an elusive goal. Finally, understanding that institutions of higher education are frequently targets of lawsuits and others forms of litigation for failing to comply with ADA laws (Carlson, 2018), all members of institutions should explore web accessibility.

**Health Information Technology and Big Data's contribution to Medical Outcomes** by  
Kiante Blakley, Thomas Brown, Sravani Soma, Ikea Smith, and Dr. Scott Kruse  
Healthcare Administration, Texas State University

**Problem or research question:**

Electronic health records (EHRs) contain a considerable amount of information and when multiplied by the masses of people, it creates exabytes of data. This plethora of data assists providers in decision making, diagnostics, treatments, prescribing, and more. This assistance can potentially provide higher quality care, improving medical outcomes.

The objective of this systematic review is to analyze the contribution of big data to medical outcomes.

**Methodology or approach:**

The authors conducted a systematic literature search through the Medical Literature Analysis and Retrieval System Online (MEDLINE) by PubMed and the Cumulative Index of Nursing and Allied Health Literature (CINAHL) databases. Articles were eligible for inclusion in our review if they were published in the last five years and showed evidence of improved patient outcomes due to the intervention of big data. Methods from the Assessment of Multiple Systematic Reviews (AMSTAR) protocol were used to conduct the systematic review and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was used to report our findings.

**Results or preliminary results and their impact on the field:**

The evidence indicate patients receiving medical care with the assistance of EHRs, HIT and /or other sources for big data demonstrate improved health outcomes compared to those patients receiving care without the assistance of EHRs, HIT, and/or other sources of big data. EHRs were found to have improved the patient participation in their care and provided assistance in the informed decision-making process, resulting in improved health outcomes.

As the United States' healthcare system moves deeper into the meaningful use of EHRs, providers should experience an increase in data availability and mobility, and greater interoperability between EHR systems. Leveraging these data should increase medical outcomes and the overall quality of medical care. Medical devices provide data streams about a patient's condition. Alert systems notify providers of changes in patients' medical conditions. Decision support systems connect to databases that consult clinical trials and other research that could alter the standard of care. Computerized Provider Order Entry systems calculate algorithms to help determine if a dosage is appropriate for a medication. Asset management systems can show which pharmacies carry and have on hand a medication, saving an outpatient precious time traveling to pick up medication. Bar coding within hospitals alert nurse staff of the right patient, right medication, right time to administer, and it automatically connects asset management to billing, making the organization more efficient. Big data has great potential, but very little research has been done to demonstrate the effect that big data has on patient outcomes. This research has great impact on the healthcare industry and on medicine in general.

**Key words:** Electronic Health Record (EHR), Big Data, Medical Outcomes, Health Information Technology (HIT), Health Information Exchange (HIE)

## **Community Writing Centers and Antiracist Rhetoric** by Lauren Chaney

Adult, Professional, and Community Education, Texas State University

### **Problem or research question:**

Linda Flower (2008) argues, “community literacy is rhetorical practice for inquiry and social change” (p. 16). In addition, community literacy has been a part of higher education, but the implementation of community literacy has not been an easy task. More specifically, there is a gap between the awareness of the importance of community literacy and how to effectively incorporate this type of literacy. Meanwhile, community writing centers have emerged as a place where there is no gap between community literacy and the incorporation of it into practice for adult learners. Community writing centers are a beacon of hope for higher education in regards to inclusion and acceptance of all writers and their language. In this research study, I explored the current state of antiracist rhetoric within community writing centers by interviewing Dr. Michael Dimmick, a professor at the University of Houston-Downtown, who previously worked as a tutor in a community writing center. I concluded my study by exploring ways that community writing centers can adapt in order to better shape antiracist pedagogies.

The research questions for this project include: how can higher education cater to adult learners from various backgrounds? how can antiracist rhetoric be implemented in pedagogies? how can we collaborate in order to create a dialogue that effectively creates an atmosphere of inclusion?

### **Methodology or approach:**

In order to obtain information about the implementation of antiracist rhetoric at community writing centers, I interviewed Dr. Michael Dimmick, an assistant professor at the University of Houston-Downtown. Dimmick was provided with a consent form that had been accepted by the Committee for Protection of Human Subjects (CPHS) before the survey was conducted.

### **Results or preliminary results and their impact on the field:**

Dimmick’s responses were very similar to what other scholarly voices of those within the area of writing center studies. In addition, Dimmick highlighted how powerful language can be. Dimmick suggested to resist working from the assumption that you are the master of that discipline (personal communication, April, 17, 2018). In order to be successful at implementing antiracist rhetoric, one has to listen to where that person is, what they want, and what they need from you. Moreover, Dimmick believes that collaborative sharing, giving more formal pedagogical models to work with and extensive training can help community writing centers improve with issues such as racism or exclusion (personal communication, April, 17, 2018).

It is clear that there has been more of a focus on antiracism in education in the more recent years, but what is missing is the explicit conversation about race and racism. Race can be difficult to talk about, especially in today’s political climate. Frankie Condon (2012) explains of how the idea of speaking about race “provokes anxiety and fear in many of us” (p. 66). However, in order to have a rhetoric of respect,

the talk about race and racism must be explicit in order for there to be a change in the field of adult education.

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## **The Role of Learning Disposition in Korean Adult Learners' Foreign Language Anxiety: A Review of the Literature** by HeeJae Chung

Adult, Professional, and Community Education, Texas State University

### **Problem or research question:**

Since the 1980s, numerous studies indicated anxiety as a major impediment in learners' language learning process and performance (Krashen, 1985; Horwitz, Horwitz & Cope, 1986). A myriad of factors associated to foreign language anxiety (FLA) such as age (Krashen, 1985), self-esteem (MacIntyre, 1999), and culture (Woodrow, 2006) have been revealed alongside. However, there has been little study on correlation between adult learners' learning disposition formed in secondary education and FLA. Paralleling existing studies revealing "negative psychological dispositions about learning" (Lavrijsen & Nicaise, 2017, p. 117) affecting later learning participation (Mennheim, 1952), this study will compare learners' learning disposition studies and FLA characteristics, specifically in Korean educational context, for Korea has been ranked as one of the highest academic achievers in the Organization for Economic Co-operation and Development's (OECD) Programme for International Student Assessment (PISA) report but also been gradually falling down the ranks for English speaking proficiency among the OECD countries.

The research questions guiding this study include: what are the characteristics of learning disposition formed in secondary education system, and how does this learning disposition influence his or her FLA?

### **Methodology or approach:**

With interdisciplinary approach, this study was conducted with a systematic review of existing literature in the fields of Applied Linguistics and Adult Education. First, the following databases were used to conduct a search for published academic journals, books, theses, and dissertations, covering Korean secondary education system, learning disposition, lifelong learning, adult learning, and FLA, over the period 1952-2018: the university library database, Wiley, Scopus, and ProQuest. Second, an extensive search was conducted referring to the reference section of each article found for the objective of finding additional articles. Finally, an analysis of the relevant literature was conducted.

### **Results or preliminary results and their impact on the field:**

With Confucian cultural heritage, "education is regarded as the sole path to higher social status" (Choi, 2017, p. 182), in that Korean secondary education system highly emphasizes on receiving a high score in Korean Standardized Aptitude Test (KSAT) for admission in prestigious universities. According to Choi (2017), Korean learners are, thus, inclined to cultivate "'quiz style' knowledge for exams" (D. H. Kim, 2010, p. 124) and pursuit quantified learning. Subsequently, such exam-inclined learning disposition can evoke 'emotion-laden images' (Dirkx, 2006) and provoke the following negative reactions: fear of failure (Horwitz, Horwitz & Cope, 1986; Tosun, 2018), fear of negative peer comparison with errors (MacIntyre, 2007; Tosun, 2018), and disengagement to learning (Horwitz, Horwitz & Cope, 1986).

Investigating the correlation of individual's learning disposition formed in secondary education and FLA can not only suggest the potential impact of learning disposition history on different subjects but also, most important, the necessity for further study on Foreign Language Anxiety (FLA) including learner's entire education experience as a contributing factor. This can, furthermore, contribute to the improvement of the current EFL andragogy and ultimately the cultivation of more English-proficient, empowered, and globally self-efficient citizens.

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## **Examining Variances in Mermaid Transformation Tales; Fouqué's *Undine*, Andersen's "The Little Mermaid," and Miyazaki's *Ponyo* by Brandy Clark**

Literature, Texas State University

### **Problem or research question:**

Adaptation theory, in relation to fairy tales, is an ongoing conversation of critical study that I will enter into by looking at three versions of the mermaid tale. Margot Blankier states that "the authors of adaptations and retellings make deliberate editorial choices about what sources to preserve, and which to ignore, or challenge" (113). I will talk about Fouqué's story in 1811, Andersen's writing in 1861, and Miyazaki's film in 2008 and how they took the mermaid tale and adapted it in different ways to make it unique and relevant in their time by looking at what they choose to preserve, ignore, or challenge in their specific version.

### **Methodology or approach:**

Terminology, in reference to category headers, is what is lacking in adaptation theory when applied to fairy-tales. As Blankier points out, Jack Zipes has blanketed the adaptations into two categories, "Duplicates" and "Revisions," in which one focuses on behavior/social standards and the latter focuses on producing new content thereby transforming the original tale. Thomas Leitch went further creating six categories for adaptations, but his study is limited to film adaptations. Linda Hutcheon thinks about adaptation theory along the lines of the original dictionary definition; "to adapt" is to adjust, to alter, to make suitable" (7). Which is what I see and want to explore deeper in Fouqué's, Andersen's, and Miyazaki's works to examine how the creators of adaptations artfully mold the tales.

### **Preliminary results and their impact on the field:**

I want to take a socio-historical lens to the works and I expect to see the mermaid tales adapted to reflect the current political or social views in which they were made. This historical difference, for the authors, will probably be one of the main reasons for the tales variances from each other. Along the way, I will keep in mind the lack of categories for this study to determine where these three tales would fall under the current terminology.

## **Prevalence of Urinary Incontinence and Perceived Impact on Athletic Performance in Female Collegiate Athletes** by Sarah E. Contrada, Emily Flannery, Benni Salinas, and Dr. Debra R. McDonnell

Physical Therapy, Texas State University

### **Problem or research question:**

The prevalence of UI among female athletes of college age has been found to vary between 0- 80% depending on type of sport played. High impact sports that cause larger increases in intra-abdominal pressure, such as gymnastics and trampoline, have been associated with a higher prevalence of UI. UI can have a negative impact on quality of life, cause feelings of shame and embarrassment, and lead to prevention measures such as reduced fluid intake and frequent urination. We would like to assess the prevalence of urinary incontinence (UI) among female collegiate level athletes through survey. In addition, we would also like to evaluate the impact of incontinence on individual function and perceived athletic performance.

### **Methodology or approach:**

Participants receive an emailed link to a single survey that will include an electronic informed consent form, one-time completion of demographic questions, Revised Urinary Incontinence Scale (RUIS), and the Female Athlete Urinary Incontinence Survey (FAUIS). The survey will be completed anonymously via an online survey engine, Qualtrics. The RUIS is a 5-item tool developed to assess urinary incontinence. The questions relate to amount, frequency, and timing of urinary incontinence. The FAUIS is a modified version of the Bristol Female Lower Urinary Tract Symptoms Questionnaire that was developed for specific use with young female athletes.

### **Results or preliminary results and their impact on the field:**

Preliminary results of eight participants, analyzed with descriptive statistics showed that 87.5% are currently taking hormonal birth control and all participants were unaware that physical therapy can be used to treat urinary leakage. 28.6% of those survey participated in 20 hours or more a week for their athletic activity and 42.9% had previously experienced at least minimal unanticipated urinary leakage during sports activity. The participants with leakage did not think it negatively impacted their athletic performance, but 42.9% of those responding did feel some amount of embarrassment because of their leakage. Survey participants were unaware of the availability of physical therapy resources to help the issue of urinary incontinence and that any amount of urine leakage with daily activities or sports could be prevented. Of the responders experiencing some amount of urine leakage with a variety of daily activity or sports, these individuals had told no one about their leakage or sought treatment, but they did express a willingness to try exercises to strengthen the muscles of their pelvic floor to prevent or treat the issue.

This preliminary data highlights the need for greater education of urinary incontinence and how to address it. We will further assess the specific effect of UI on perceived athletic performance to understand the impact that this condition has on female athletes. Preliminary findings provide data to

support the need for screening for UI in female athletes with referral for pelvic floor physical therapy and to evaluate the clinical utility of two screening tools, the RUIS and the FAUIS.

## **“How can Technical Communication Programs Prepare Students to Work in International Environments?” by Meghalee Das**

Technical Communication, Texas State University

### **Problem or research question:**

The technical communication industry in non-native English speaking nations like India is witnessing an upsurge in employment and global partnership, owing to a thriving IT sector. This has led to rising interest in technical communication education, facilitated by easy online access and creation of local chapters of international organizations like the Society of Technical Communication (STC). As the demand for effective technical communication increases outside of North America, universities in the U.S. must take measures to navigate the challenges of a culturally diverse classroom, as well as develop pedagogical methods to prepare students for an international workplace. Current studies have addressed issues of cultural identity, challenges in the classroom, and created a theoretical framework for measuring and meeting students’ needs. But, there is still a gap in research of workplace practices and instructional methods in countries like India in the field of technical communication. This paper will provide an overview of existing research on international technical communication with particular interests in educational and professional practices in India.

### **Methodology or approach:**

I analyzed 25 peer-reviewed technical communication articles, of which I selected 15 to create an annotated bibliography that categorizes the articles into three sections – existing theoretical framework, pedagogical practices, and world perspectives on international technical communication. Then, I will present a literature review that summarizes my findings. Ultimately, I intend to couple my review of technical communication research with textual analysis of university websites to assess what courses technical communication programs offer to foster international technical communication. My next step will be to assess the viability and usefulness of a study abroad or summer internship program, where students of technical communication get a chance to work and interact with international clients.

### **Results or preliminary results and their impact on the field:**

India is one of the fastest growing economies and biggest markets for technical communication. According to the Bengaluru chapter of STC, the Indian city employs nearly 5,000 technical communicators, with multinational companies like SAP, Oracle, Intel and Cisco being the top recruiters. To give some context, the U.S. Bureau of Labor Statistics says that the entire state of Texas employs 4,360 technical writers. These numbers support the exigency for more research on technical communication in India, given how fast the field is growing there.

This literature review will provide a foundation for my future doctoral research, which may include participant/observer research in Indian technical writing environments. The findings of this research may help universities in the U.S. bridge gaps in international technical communication research, specifically with reference to India.

## **Where to begin? Efforts to Create an Effective and Sustainable Volunteer Program by**

**Brittany Davis and Amy Biedermann**

Adult, Professional, and Community Education, Texas State University

### **Problem or research question:**

Volunteers have an integral role in city programs, especially for programs that do not make a profit. However, many city organizations encounter challenges recruiting and sustaining volunteers, forcing city employees to work overtime to account for the lack of volunteers thus draining city funds. In Buda, a fast-growing suburb of Austin, Texas, the city departments who run several events throughout the year are struggling to recruit and maintain volunteers to advise and assist them at events. As such, this study examines what the problems are that prohibit the city from recruitment and what community members know about volunteering and what motivates them to volunteer.

### **Methodology or approach:**

This study was conducted from a pragmatic perspective and utilized asset-based community development (Haines, 2009) as a theoretical frame to identify the current assets within the community. We sought to strengthen the community's assets using the five types of capital – physical, human, social, financial, and political - to guide how we examined assets. To determine the assets within each capital, we analyzed data from three semi-structured interviews with city employees, one unstructured interview with local business owners, content analysis of websites and city data, and one survey with open-ended questions sent to residents of Buda.

### **Preliminary results and Impact on the Field:**

Our preliminary findings highlight a series of problems related to finding and maintaining volunteers. The first major issue we recognized was the disconnect between the three city departments. They each host events but do not work together to create a single volunteer program. In fact, one department does not wish to share his volunteer list in fear of overworking that specific volunteer group. The city departments need to work together to create a unified volunteer program for all city-related events.

As soon as a unified program is developed, the city needs to use their existing assets to recruit volunteers. The city council has an advisory board filled with local business owners and residents. These individuals could be reaching out to their personal network to recruit volunteers. The city library hosts at least one event per month and is active on social media. This is another great opportunity to advertise volunteer needs. Finally, building relationships with the local HOA's could produce volunteers as well. These are three of many missed advertising opportunities to recruit volunteers.

Fortunately, the city is able to find volunteers occasionally, but they are not able to keep the volunteers for future events. Part of this is due to the lack of appreciation and communication with the volunteers. The survey responses and interview with the two business owners indicated that volunteers desire simple appreciation from the host. For instance, a free lunch, free t-shirt, or just a simple thank you would make the volunteers feel appreciated and more willing to volunteer again in the future.

This research is useful in creating future volunteer programs as well as restricting existing programs. Furthermore, it brings to light the complexity behind establishing a volunteer program and considering the various stakeholders.

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## **To Touch Hearts More Deeply:” The Expansion of the use of Wind Instruments in Mozart’s “Little G Minor,” “Haffner” and “Jupiter,” Symphonies by Seth Davis**

Music, Texas State University

The quantity of orchestral compositions that highlight wind instruments experienced a growth spurt in the eighteenth century. Wolfgang Amadeus Mozart and Franz Joseph Haydn were in the thick of the charge, which was started by Johann Stamitz and Johann Christian Bach. Nathan Broder suggests Mozart was the “more progressive” wind composer than Haydn.<sup>1</sup> While all of Mozart’s instrumental output is rich with wind writing, his “Little G Minor,” K. 183, “Haffner,” K. 385 and “Jupiter,” K. 551 represent a progression of growth in this domain. The lens of orchestration, historical context and evidence of “concertante” wind writing prove Mozart as a game-changer towards evolving the way winds are approached in composition. “Concertante” is a term that has evolved from its inception in the seventeenth century through the present day.<sup>2</sup> Its initial meaning was to “describe a group of mixed musical forces,” which Ronald Kidd admits is a vague in specificity.<sup>3</sup> In the eighteenth century, the term was often associated with the *Symphonie Concertante*, a piece for one or more solo instruments written in the “new symphonic style.”<sup>4</sup> In this paper, I will use the term “concertante” without quotes to describe a compositional event that highlights a single player or group of players, specifically winds. Woodwind and brass instruments (henceforth generalized as winds) each take their own path toward their more “modern” forms in the eighteenth century. Behind each of Mozart’s concertante moments in the winds lies a rich history about the instruments and how they intersect with Mozart’s history. When these concertante moments are then synthesized with the history of the music of the classical period, it becomes evident that Mozart’s utilization of wind instruments was a strong catalyst in their increased use in orchestral compositions during and after his time.

## **Autoperception and External Perception Through the Belbin Test and Johari Window: A Case Study** by Humberto de Faria Santos, Marcelo Jasmim Meiriño, and Sergio Luiz Braga Faça

Adult, Professional, and Community Education, Texas State University, and Management Systems, Univerisidade Federal Fluminense

### **Problem or research question:**

In search of enhancing performance, one of the methods applied by organizations to assess the level of self-knowledge of its managers is the Belbin Test (Belbin, 2011)(Connelly & Ones, 2010). In the organizational sphere, this self-knowledge has to do mainly with the knowledge of the competencies and limitations related to the work. The self-knowledge was also researched by two other scholars, Luft, and Ingham (1955), who developed the concept of the Johari Window. According to this concept, every person has an area related to his or her behavior that is not perceived by the person, but it is perceived by other people: blind quadrant.

The primary objective of this research is to propose integration between the result of Belbin Test and Johari Window and investigate if, considering the premise that the individual is the average of the perception of others about them (Vazire & Carlson, 2010), the concept of the Johari Window proves true in the population investigated, and if it is worthy consider external perception in the process of enhancing self-awareness.

### **Methodology or approach:**

The Belbin Test consists of an interview with the person been evaluated (subject) and the application of a questionnaire to his or her peers, at least five people with whom the subject person is on frequent professional contact. Both the interview and the questionnaires investigate nine characteristics, to evaluate to what level they are verifiable in the subject person's behavior. By putting together all the questionnaires and the interview results for each subject person, a *global result* is generated. The methodology consists in investigating if the perception of the subject of his or herself coincides with the global result more or less than the perception of the peers, also compared with the global result. The Test was applied in 36 high ranked managers of a multinational operating in Latin America, 19 in Chile, and 17 in Brazil.

### **Results or preliminary results and their impact on the field:**

In 100% of the cases, the number of coincidence of the results of the peer's evaluation was higher than the result of the self-evaluation, or the evaluation of the peers of each subject was more accurate than the self-evaluation. In the final average, the peers "hit" was 78%, while the average of self-evaluations was 17%.

The survey results confirmed that the Belbin test shows that external observers demonstrate knowledge of observed that he or she is not aware. The external (peer) evaluation can be used as a relevant tool in the process of enhancing self-awareness, which impacts on the professional performance.

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## **Young Children's Willingness to Deceive Shows In-Group Bias Only in Specific Social Contexts** by Callie De La Cerda and Dr. Katherine Rice Warnell

Psychological Research, Texas State University

### **Problem or research question:**

The ability to deceive others is an early-emerging and socially-complex skill which has been consistently linked to other social outcomes, including theory of mind. Children display higher theory of mind when reasoning about in-group versus out-group members (McLoughlin & Over, 2017), but we do not know whether children adjust their deceptive behaviors based on group membership. We used a minimal group paradigm to examine children's willingness to deceive in-group versus out-group members across varied contexts (e.g., lying for personal gain; lying to spite).

### **Methodology or approach:**

Forty-one children (24 males) aged 4-7 (mean=6.1y, SD=1.2y) played a puppet in three versions of a sticker-hiding game (adapted from Yi et al., 2014): (1) Self-Benefit, where the child could lie to receive a sticker, (2) Other-Benefit, where the child could lie to give another puppet a sticker, and (3) No-Benefit, where if the child lied, no one received a sticker. In all three games, if the child told the truth, the puppet they were playing with kept the sticker. Children played each game twice, once with an in-group puppet (assigned to the same color team) and once with an out-group puppet (assigned to a different color team). For the Other-Benefit game, when the child was playing with an in-group puppet, a lie would result in the out-group puppet getting a sticker, and vice versa. Each child completed five trials of each game (Self-Benefit, Other-Benefit, and No-Benefit) with each puppet (in-group, out-group), for 30 total trials. We also assessed theory of mind using a battery of false belief and appearance-reality emotion tasks (Rice et al., 2014).

We examined rates of lying in a 3 (game type) x 2 (group membership) repeated measures ANOVA. There were significant main effects of game type and group membership ( $p < .001$ ), as well as a significant interaction ( $F(2,58)=8.1, p < .001$ ). Children lied the most in the Self-Benefit condition, lying equally to in-group and out-group members. In-group bias emerged, however, when the potential for self-gain disappeared. In the Other-Benefit condition and in the No-Benefit condition, children engaged in more lie-telling to outgroup members ( $p < .05$ ). Although in-group lying did not decrease between the Other-Benefit and No-Benefit conditions ( $p = .669$ ), out-group lying did ( $p = .053$ ), suggesting lying is influenced both by the desire to help one's own teammate and by the desire to spite out-group members. Although total number of lies was related to age ( $r = .31, p < .1$ ), it was not related to theory of mind.

### **Results or preliminary results and their impact:**

These results suggest that lying behavior is sensitive to group membership only in certain social situations. Specifically, young children are able to flexibly apply a complex social skill (i.e., deception) based on group membership and task demands. Further, children's desire to benefit themselves appears to trump in-group bias. Future research should examine alternate situations, such as lying to avoid punishment, to determine

whether the context of the lie has a stronger effect on children, or if group membership seems to override the desire to benefit oneself.

## **Attitudes Toward Science of Latino Parents and Types of Informal Science Activities Performed With Their Children** by Izzy De Leon and Julie F. Westerlund

Biology, Texas State University

Diversity within teams and organizations guards against groupthink and overconfidence, and improves their ability to problem solve and make predictions. Even though efforts have been made to increase diversity within the Science, Technology, Engineering, and Mathematics (STEM) fields, marginalized groups are still largely underrepresented in the STEM workforce. This study focused on the Latino population gap in representation within the STEM fields. Most programs aimed at increasing Latino representation in science focus on directly encouraging students to pursue STEM careers. This study explored Latino parent's attitudes toward science and what types of informal science activities parents engage in with their children. Parents are not as involved in their children's science education primarily due to a negative view of science and a lack of knowledge of resources about science learning. I organized 15 family science events in San Marcos, Texas, in which parents completed a pre- and post-event attitude toward science survey and an additional parental involvement survey to find out what types of activities parents have done with their children. The activities and experiments performed during the family science events utilized common household items or items that could be cheaply purchased. Twenty-two Latino parents participated in the study and only 15 completed both the pre- and post-attitude toward science survey. The attitude toward science survey had 14 items and was scored using a Likert-type scale with a minimum and maximum score of 14 and 70 respectively. Latino parent's pre- and post-event attitude toward science means were 60.1 and 62.2 respectively for attending at least one family science event. On the parental involvement survey, Latino parents identified 27 activities that they have performed with their children, with 67% of those being discovery-based activities performed inside and 59% were free activities. Of the total responses on the parental involvement survey (114) 73% were for free activities. This study can help inform school districts, principals, teachers, and informal science education organizations on strategies for changing Latino parent's attitudes toward science and increasing their involvement in their children's science education.

## Mapping Disease Transmission Risk of Nipah Virus in South and Southeast Asia by Mark

A. Deka and Niaz Morshed

Geographic Information Science, Texas State University

### Problem or research question:

Since 1998, Nipah virus (NiV) (genus: *Henipavirus*, family: Paramyxoviridae), an often-fatal and highly virulent zoonotic pathogen, has caused sporadic outbreak events. Fruit bats from the genus *Pteropus* are the wildlife reservoirs and have a broad distribution throughout South and Southeast Asia, and East Africa. Understanding the disease biogeography of NiV is critical to comprehending the potential geographic distribution of this dangerous zoonosis.

### Methodology or approach:

This study implemented the R packages ENMeval and BIOMOD2 as a means of modeling regional disease transmission risk and additionally measured niche similarity between the reservoir *Pteropus* and the ecological characteristics of outbreak localities with the Schoener's D index and *I*-statistic.

### Results or preliminary results and their impact on the field:

Results indicate a relatively high degree of niche overlap between models in geographic and environmental space (D statistic, 0.64; and *I*-statistic, 0.89), and a potential geographic distribution encompassing 19% (2,963,178 km<sup>2</sup>) of South and Southeast Asia.

This study should contribute to current and future efforts to understand the critical ecological contributors and geography of NiV. Furthermore, this study can be used as a geospatial guide to identify areas of high disease transmission risk and to inform national public health surveillance programs.

**Island Time: Cultural perceptions of Marine Renewable Energy** by Brian DeSanti II,  
Warren Conway Ph.D, and Patrick Rice, Ph.D

Communication Studies and Wildlife Ecology, Texas Tech University; Aquatic Resources, Florida Keys Community College

Studies done in North America have shown large amounts of support for wind energy for the last 30 years. The largest barrier to wind energy establishment is community acceptance. A large portion of research has been devoted to minimizing the resistance of opponents and less about the motivations driving those who oppose development in their communities. This study will address the motivation for why people favor or oppose marine renewable energy technology in the Florida Keys instead of trying to minimize potential resistance. Motivation will be measured through a battery of items employing a 5-point Likert-style scale. To analyze the relationships between the various variables under consideration, we will employ a multiple regression analysis. Another gap in the literature is the comparison of perceptions of wind energy versus other types of renewable energy. This study will examine what options residents select regarding preferred renewable energy technologies when more than one choice is available (wind, solar, hydrokinetic). To discover any differences between favored technology on measures of support an ANOVA will be performed. We believe that wind energy will be the most favored and hydrokinetic will be the least favored due to gaps in knowledge of the technologies in the population. To discover the issues perceived by government professionals and industry investors a delphi panel will be used. For the stakeholders, initially focus groups will be held throughout the region, six in total. Participants will be selected from stratified random sampling throughout three regions in the Keys (Largo, Marathon, and Key West areas). Their primary role is to gather information that may be unique to the region. From the information gathered from the delphi panel and the focus groups a region wide mail survey will be conducted. The purpose of this research is to gain the current understanding and attitudes of Florida Key's residents for marine renewable energy to help guide future decisions by decision-makers, manufactures, and potential investors. In addition, the data collected will be used to build media campaigns that will educate the residents on the biggest issues facing marine renewable development in the region.

## Vegetation Survey of the Yegua Knobbs Preserve, Bastrop and Lee Counties, Texas by

Diana Digges and Dr. David Lemke

Biology, Texas State University

The Yegua Knobbs Preserve is a private, 122-hectare tract owned and managed by the Pines and Prairies Land Trust that sits on the Bastrop-Lee County line in the Oak Woods and Prairies ecoregion of east-central Texas. A floristic survey of the vascular plants present on site was initiated in March 2017 with over 200 species being collected to date. All species that were found with reproductive structures were identified and pressed as voucher specimens for deposit in the Texas State University Herbarium (SWT); when feasible, duplicate specimens were collected to be exchanged with other herbaria. Taxonomic nomenclature follows the Biota of North American Program (BONAP) database. Collections include species representing 163 genera and 64 families. Families with the highest species richness are Asteraceae, Poaceae, Fabaceae, Cyperaceae, and Euphorbiaceae. Botanically, the site is interesting in that it seems to represent the western distribution limit for a number of east Texas species.

To characterize the plant communities present on site, woody vegetation was sampled using the line intercept method. Sites for the transects were chosen based on visually similar vegetative assemblages and the quantitative data collected were used to calculate the raw cover and relative cover for each woody species. Preliminary analysis of the woody data shows the dominant species to be *Ilex vomitoria*, *Quercus stellata*, *Juniperus virginiana* and *Pinus taeda*. Herbaceous transects will be sampled in the fall of 2018 using the quadrat method. Analysis of these qualitative and quantitative data will allow for a comprehensive description of the existing plant communities at the preserve.

## **Generational Differences Among Police Officers** by Aaron Duron

Criminal Justice, Texas State University

### **Problem or research question:**

Many studies have examined differences in personality, values, and work ethics, between people from different generations. However, one of the biggest deficits in the generational differences knowledge is that little, if any, research has been done regarding generational differences in criminal justice. The purpose of this project was empirically to determine whether generational differences actually exist in policing organizations.

### **Methodology or approach:**

Physical surveys examining generational differences were given to active duty police officers who are members of both Generation X and Generation Y. The officers were selected from the San Marcos, Kyle, Buda, and New Braunfels police departments. Using the survey originally developed by Gursoy, Geng-Qing Chi, and Karadag (2013), the study examined seven factors such as work centrality and leadership to determine whether generational differences exist among police officers.

### **Results or preliminary results and their impact on the field:**

The results suggest that, while generational differences do exist among police officers, the strength of these differences appears to be weak, especially compared to findings in previous research. Technology challenge was the only factor that appeared to have a modest relationship with generation.

Based on the findings from this study, changes to training for officers and management practices can better address these generational differences to make the workplace a more positive environment.

## **Campus Crime Alerts and their Effects on Perceived Risk of Victimization and Fear of Crime** by Adaeze M. Edwards, Dr. Christine Sellers, Dr. Shayne Jones and Dr. Jaymi Elsass

Criminal Justice, Texas State University

### **Research Problem:**

For several decades, campus crime, fear of crime, victimization and the perception of victimization have all been principal concerns for campus administrators and have piqued the interest of the research community. A deep understanding of the nature of campus crime and victimization, as well as addressing the issues of fear of crime and perceptions of risk, have been made available by different studies. With the passage of the Clery Act of 1998, institutions of higher learning were mandated to make the campus community aware of both the different campus prevention programs offered and timely information/alerts on crimes on campus, as a means of risk reduction on the individual level. However, no research investigates the effects of these crime prevention efforts, specifically, the campus crime alerts, on perceived risk of victimization and fear of crime, and in turn, these effects on efforts to take protective action. This study will begin to fill this void by examining responses to web-based surveys administered to convenience samples of students enrolled at a large southwestern university.

### **Methodology or approach:**

This study utilized a quantitative approach, which is the predominant methodology in the fear of crime area (Ferguson & Mindel, 2007). Data is being collected from a large southwestern public institution in the United States in 2018 with the approval of the Institutional Review Board. A convenience sampling approach was used to select the students for participation in the study. However, necessary efforts were made to obtain a sample that represented the demographic composition of the student population at the university. Respondents were randomly selected to receive a web-based survey using Qualtrics, and were recruited using the university email assigned to every student (AKA Bobcat Mail).

### **Results or preliminary results and impact on the field:**

Univariate, bivariate, and multivariate analytic methods will be used to analyze respondents' responses to knowledge of crime alerts, multimodal/diversity of alerts, frequency of alerts, fear of crime, perceived risk of victimization, protective actions, prior victimization and vicarious victimization. These analyses will show the effects of campus crime alerts on student's perception of victimization and fear of crime. The results will also show that these effects will vary by age, sex, race, education level, place of residence, prior victimization and vicarious victimization.

Findings from this study will add to the literature of campus crime by determining what effects campus crime alerts have on the perception of victimization and fear of crime of the campus community as well as the measures individuals take to protect their own safety. This study will also impact the way school administrators send out crime alerts.

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## **Examining the Effects of Fear of Crime on International Students' Quality of life** by Adaeze

M. Edwards, Regina O. Alabere, and Owusu Ansah Boakye

Criminal Justice, Communication Studies, and University College, Texas State University

### **Problem or research question:**

The 4.5 million international students who study in countries other than theirs worldwide bring in numerous benefits that help in the progression of the economy, national security and culture of the host countries. In spite of the increasing crime rates on United State college campuses, few studies—either quantitative or subjective—have analyzed the rate of fear of crime among international college students, which may be detrimental to both their mental and physical health, thereby weakening or undermining their educational successes. The current study aims to fill in this research void by examining the effects of fear of crime on international student's quality of life. The analyses will draw on a sample of the 540 international students attending a large southwestern university in the United States.

### **Methodology or approach:**

A quantitative approach will be utilized in this study. Upon approval from the IRB, all international students (18 and above), irrespective of county of origin, attending a large southwestern university in the United States will be sent a web-based survey using Qualtrics, an online survey software package that ensures anonymity.

### **Results or preliminary results and their impact on the field:**

To analyze respondents' responses to fear of crime, perceived risk of victimization, prior victimization, vicarious victimization, protective actions taken and quality of life measures, univariate, bivariate, and multivariate analytic methods will be used. To test the various hypotheses in this study, several types of analyses will be performed. Foremost, summary statistics will be computed to describe the distribution of the outcome, predictor and control variables. Subsequently, correlations between all the predictor and outcome variables used in the study will be analyzed. This analysis will provide preliminary insights into the direction and strength of association between these variables. Third, given the clustered nature of the data, multivariate linear regression will be performed to examine the effects of fear of crime, perceived risk, and protective actions on international student's quality of life. The results of these analyses may show that fear of crime has an effect on international student's quality of life. The results may also show that international students who have experienced physical or vicarious victimization may report higher levels of fear of crime and higher effects of this fear on their quality of life. These results may also vary by age, sex, place of residence, feelings of attachment and English proficiency. The current study sheds light on the underrepresented population of international students in the fear of crime literature. Fear of crime may heavily influence international students' decision to come to the United States, and impact their mental health and physical behaviors while in the United States. While the current study represents an important first step toward understanding crime-related anxieties among this largely overlooked population, it will also help school administrators in better catering for their international student population.

## **Meta-Analysis of Behavioral Activation for PTSD: Comparison of Effect Sizes by Treatment Type and Treatment Modality** by Rachel Farley and Joe Etherton

Psychological Research, Texas State University

### **Problem or research question:**

The efficacy of behavioral activation (BA) for depression has been well-established. A small number of studies have extended BA to the treatment of PTSD. The current project involves a meta-analysis of available studies examining the efficacy of BA for PTSD.

### **Methodology or approach:**

PSYCINFO, Scopus, and Medline were searched using keyword terms "Behavioral activation", "Behavioural Activation", "Posttraumatic Stress Disorder", "PTSD". After removing duplicate results, 59 articles were screened. Inclusion criteria included (1) PTSD diagnosis or elevated scores on a measure of PTSD; (2) use of BA as an intervention for PTSD; (3) available pre-intervention and post-intervention measures of PTSD severity. Screening resulted in 17 studies comprising 19 BA treatment conditions ( $n = 1,185$ ). Of these only 5 included wait-list control groups. BA treatment conditions included standard BA ( $k = 7$ ), BA plus Therapeutic Exposure (BA-TE) ( $k = 6$ ), BA for Depression (BATD) ( $k = 1$ ), and "BA Plus" ( $k = 5$ ), which included a variety of additional treatment components (e.g., Cognitive therapy, relaxation training, etc.). Two studies compared in-person with BA delivered remotely (video or telephone).

### **Results or preliminary results and their impact on the field:**

Change scores in PTSD measures from pre- to post-treatment indicated a moderate effect (Hedge's  $g = 0.717$ ), with substantial heterogeneity ( $I^2 = 84.59$ ). Funnel plot inspection and Egger's regression intercept were consistent with publication bias. Moderator analysis indicated variability in effect sizes among different types of BA (BA Plus  $g = 1.10$ ; BA  $g = 0.809$ ; BATD  $g = 0.618$ ; BA-TE  $g = 0.582$ ). Heterogeneity was largest for BA Plus conditions, possibly due to the greater variability in additional treatment components. Treatment modality did not influence outcome (in-person  $g = 0.796$ ; remote  $g = 0.854$ ), although only two remote conditions were included. Results indicate that BA demonstrates significant potential for the treatment of PTSD, and that treatment effectiveness may be moderated by inclusion of non-BA treatment components, as effect size was largest in the BA Plus conditions.

## **Examining the Roles and Spaces of Food Banks in the Greater Foodscape** by Walter W.

Furness and Eric R. Sarmiento

Geography, Texas State University

### **Problem or research question:**

Food assistance programs serve important functions in larger food networks, taking on responsibilities ranging from distribution to storage to functioning as nodes of articulation between alternative food networks and more conventional food networks. Food banks and food pantries (here referred to interchangeably) are one manifestation of such programs. These organizations are tasked with regenerating value in foods that have been devalued in mainstream capitalistic retail markets (Lohnes & Wilson, 2017). Because they receive food from individuals, charitable organizations, local food initiatives like community gardens, and large retailers, food banks exist in a state of hybridity—they are neither mere extensions of capitalistic markets nor are they simple oases for local food systems in need of distributional infrastructure (Tarasuk & Eakin, 2005). Food pantries are one approach to addressing issues of food access in both urban and rural settings. In many cases these pantries are enmeshed with both conventional food systems (through store donations of surplus or expiring food) and alternative food networks (both materially through donations from community gardens or individuals and conceptually through linkages to discourses about food justice and food sovereignty), though they are not always afforded as much attention as community gardens or other local food initiatives. Given their hybrid, multifaceted status, food banks are situated as parts of diverse community economies that fall outside typical retail paradigms and which are contested in their goals, approaches, and operations (Lindenbaum, 2016).

### **Methodology or approach:**

This paper explores food banks as spaces deserving further scrutiny in the greater regional foodscape. The aim of the paper is to determine if/how these spaces can be a durable part of more just and equitable food systems. Our research draws on ethnographic fieldwork conducted in Rockford, IL and Oklahoma City, OK with data from interviews and focus groups.

### **Results or preliminary results and their impact on the field:**

Our preliminary results suggest the utility of enrolling a broader array of producers in supplying food banks, as well as cooperating on distribution and storage, two key facets of food systems that are often overlooked or unobtainable to local food movements. Involving producers in organizational decision-making to ensure democratic participation is a promising avenue toward assembling functional networks within these hybrid spaces.

The results also indicate that viewing food banks and food pantries as hybrid food spaces helps us to ask different questions about goals like economic viability and social justice rather than providing some silver bullet 'solution' for the challenges facing them. Here we begin to explore food banks as important interfaces between alternative food networks and conventional food networks, with a series of attendant

questions that become visible once we view food banks as hybrid spaces: Whose interests are served by these entities? Do they function primarily as adjuncts to conventional food networks and their profit-oriented logics? Are there (also) possibilities that they might open ways forward for food justice or food sovereignty or for scaling up alternative food networks?

## **A First Look at Small Groups** by Anthony Gallardo

Communication Studies, Texas State University

### **Problem or research question:**

Bona fide groups are a highly respected version of teamwork but an underrepresented portion of small group literature (Putnam & Stohl, 1996). Because bona fide groups link together on their own, it is difficult to replicate the conditions for a bona fide group to form in a laboratory setting. A university in south central Texas instituted a program that places participants in a position to form bona fide groups dedicated on problem solving. This paper will utilize Leader-Member Exchange theory (LMX) to see how quickly group members accept a leader in a new group. The paper will then analyze the interactions that occur within the group in accordance with LMX theory.

LMX puts the main focus on the leader of the group while acknowledging the multifaceted nature of group communication requires the members have some power and influence in the leader's choices. The facets of leader, followers, and relationship interact to explain the phenomena leading (Graen & Uhl-Bien, 1995). Leaders are studied according to their credibility, charisma, dynamism, trustworthiness, leadership style, traits, or other behaviors. Graen and Uhl-Bien (1995) highlighted how the member and relationship variables had been understudied up until that point. Although conceptualized as supervisor listening, Lloyd, Boer, and Voelpel (2017) operationalized the follower side of LMX by asking employees how they felt when they felt listened to by their supervisor. Stemming from the conflict-power-status-perspective, this observation then utilized leader member exchange theory (Graen & Cashman, 1975) in its focus. By using LMX, the main goal of this study was to examine how power is granted to the leader by members within the group. The following research questions stemmed from the theoretical background.

RQ1: What communicative actions earn, maintain, or lose power?

RQ2: How does a leader negotiate power between the group?

### **Methodology or approach:**

Participants volunteered to participate in an annual research competition at a university in south central Texas. Researchers were trained in coding through classes and given an open opportunity to focus on any observations they might see. Participants were told the students were simply involved in watching the research process at the start of the event. They were then informed the class also studied how groups interacted at the conclusion of the event. The group was observed for approximately six hours on the first day of the event and approximately seven hours on the second day. They were watched for active listening skills, conflict management strategies, social support offered, nonverbal cues, and leadership styles used. Notes were recorded throughout the group meeting and stored for reference.

### **Results or preliminary results and their impact on the field:**

Results are yet to be analyzed for consistency with the literature. The early takeaway is surprise at the lack of conflict. The first day did not have any disagreement over how the group should proceed. The leader started with power due to the amount of knowledge brought into the group, but quickly ceded the floor to the group.

This research shows a first look at how groups form in a natural setting. Group effectiveness is an applicable takeaway from this research. This research offers researchers the opportunity to offer tips and tricks to groups. Theoretically, this research further defends the use of small groups as an effective decision-making strategy. This research puts together almost a type of manual on how to appraise groups that organizations can use to maximize their efficiency.

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## **Factors Influencing Speed of Collegiate Wheelchair Basketball Players** by Jessica Garcia Therapeutic Recreation, Texas State University

### **Problem or research question:**

Sprinting is an important factor in wheelchair basketball as it determines the player's potential to take initiative in the next action. Previous studies have focused on wheelchair configuration and propulsion biomechanics for optimal performance in wheelchair sports.

The purpose of this study was to determine influential factor(s) affecting the speed of collegiate wheelchair basketball players by analyzing video-recorded 20-meter sprints.

### **Methodology or approach:**

Eleven women (W; age  $22.3 \pm 4.80$  yrs) and thirteen men (M; age  $24.3 \pm 5.89$  yrs) of the UTA Wheelchair Basketball teams volunteered to participate in this study. DXA scans assessed body fat composition (%bf). Bilateral handgrip strength (kg) and 1-repetition maximum bench press tested muscle strength (lb). The faster of two timed video recordings of the first 15-feet of the sprint were analyzed to obtain values of trunk and elbow flexion ( $^{\circ}$ ) and contact and recovery time (sec). Participants were grouped based on player classification (1.0-2.5 and 3.0-4.5).

### **Results or preliminary results and their impact on the field:**

Men and women in the lower class group (1.0-2.5) had strong positive correlations between initial trunk and elbow flexion (M:  $r = 0.73$ ; W:  $r = 0.84$ ) and 15ft time and initial elbow flexion (M:  $r = 0.75$ ; W:  $r = 0.71$ ). Low classified (1.0-2.5) men had strong negative correlations in the handgrips and both 15ft and 20m times (R hand 15ft time:  $r = -0.89$ ; R hand 20m time:  $r = -0.75$ ; L hand 15ft time:  $r = -0.81$ ; L hand 20m time:  $r = -0.93$ ). High classified (3.0-4.5) male players were affected by body fat percentage for both 15ft and 20m times (15ft:  $r = -0.74$ ; 20m =  $-0.78$ ). Body fat percentage strongly affected 15ft times for women in the lower classification (1.0-2.5) group ( $r = 0.88$ ).

The results identified initial elbow flexion and handgrip to be important for lower classified (1.0-2.5) men. Low classified (1.0-2.5) women had faster 15ft times with larger degrees of elbow flexion. Body fat percentage strongly affected higher classified (3.0-4.5) male players. Further research is needed to determine additional correlations for factors of speed.

## **Autism Spectrum Disorder: Differences in Diagnosis and Treatment between Peru and the United States** by Yvette Garza, Dr. Celeste Domsch, and Jason Tipps

Communication Disorders, Texas State University

### **Problem or research question:**

According to the National Institute of Neurological Disorders and Strokes (NINDS; 2018), Autism Spectrum Disorder (ASD) is a group of neurodevelopmental disorders that affect an individual's social communication and cause repetitive and restricted behaviors. The Centers for Disease Control and Prevention (CDC; 2018) states 1 out of 59 children in the United States and 1% of the world's entire population have ASD. As the US population increases in diversity, it's important for speech-language pathologists (SLPs) to understand the cultural views, diagnosis, and treatment of ASD in other countries. This would enable culturally appropriate service provision in international settings, and for recently-arrived students with ASD in the US. Over two weeks in June 2018, the course "Speech-Language-Hearing Services in Peru: History, Disorders and Delivery" aimed to help students become culturally competent SLPs. The program provided students with visits to rehabilitative programs in Peru, lectures from local practitioners and educators on current speech services provided, and homestays with Peruvian families. Based on literature review of ASD and information gathered in Peru, this poster will compare U.S. and Peruvian cultural responses, diagnoses, interventions and services, and speech and language treatments for ASD.

### **Methodology or approach:**

A literature review was conducted to gain information on culture, diagnosis, and intervention treatments in the United States and Peru. Lectures provided by practitioners and educators in Peru were also used.

### **Results or preliminary results and their impact on the field:**

The first finding was differences in cultural views on disability. In many cases, Americans reported believing disability is caused by biological variables (e.g., genetics), while some in Latin America interpreted it as moral punishment (Roseberry-McKibbin, 2014). The diagnostic process for ASD for a child in the U.S. and Peru also differed. The U.S. generally employs a two-step process of developmental screenings done by a doctor that leads to a comprehensive diagnostic examination by a multidisciplinary group. In Peru, information provided by health facilities stated a neurologist with a background in child development or a psychologist certified to perform the Autism Diagnostic Observation Schedule the authorized professional to diagnose ASD. Information didn't indicate whether these professionals conduct their assessments in a multidisciplinary group or individually. Similarities were discovered with both the U.S. and Peru providing state-funded early intervention for children at-risk and with disabilities between Birth-3, offering private and non-profit services, and incorporating augmentative and alternative communication (AAC) devices, specifically the Picture Exchange Communication System (PECS), for individuals diagnosed with ASD.

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Based on the information gathered, differences and similarities were observed between the U.S. and Peru in cultural views of disabilities, diagnostic practices, intervention processes, intervention programs, and treatment. This information has an impact on our field as we seek to provide culturally competent services in the US and in other countries. Future work should examine possible inter-professional collaboration between professionals and graduate students in Peru and the US.

## **Mercury Levels in 21 Species of Fish from Canyon Lake, Texas** by Taylor Gold Quiros, Clint Robertson, and Dr. Jessica Dutton

Aquatic Resources, Texas State University; Inland Fisheries, Texas Parks and Wildlife; Aquatic Resources, Texas State University

### **Problem or research question:**

Mercury (Hg) has been shown to have toxic effects on both human and fish health. It can bioaccumulate in tissue and biomagnify with trophic position, leading to high concentrations in top predator fish, which are commonly consumed by humans. Concerns for human health have led both federal and state agencies to establish Hg fish consumption advisories. The only Hg advisory currently in effect in Central Texas regulates the consumption of two species (longnose gar and striped bass) in Canyon Lake, Comal County. This survey is over ten years old and based on a limited sample size.

### **Methodology or approach:**

This study collected 21 species of fish from varying trophic levels in Canyon Lake, Texas and analyzed muscle tissue using a Direct Mercury Analyzer to determine total mercury concentration.

### **Results or preliminary results and their impact on the field:**

A positive relationship between body length and mercury concentration was found in 12 of species tested, while no relationship was observed in the other investigated species. Striped bass, white bass, and long nose gar had the highest average mercury concentration (3.17, 3.0, and 2.18  $\mu\text{g/g}$  dry weight, respectively) while redear sunfish, gizzard shad, and tilapia had the lowest (0.33, 0.13, 0.1  $\mu\text{g/g}$  dry weight, respectively). Two species (flathead catfish, long nose gar) had at least one sample that exceeded the Texas action level of 0.7  $\mu\text{g/g}$  wet weight, while 100% of striped bass and 33% of white bass exceeded the action level.

Mercury uptake in fish from Canyon Lake is a serious concern and warrants further investigation. This large-scale study allows for within species examination of Hg concentration to investigate bioaccumulation and between species investigation of biomagnification among trophic levels. The findings of this study will be important for regulatory agencies and recreational fishers, it also will broaden the knowledge of Hg in freshwater systems in Texas.

## **Workplace Wellness – Evaluating Regional State Employee Health Promotion Program by**

**Andrew Gonzalez**

Health Education, Texas State University

### **Problem or research question:**

The Centers for Disease Control and Prevention estimates only 20% of U.S. adults meet daily recommended physical activity levels. Stress levels, poor nutrition, and sedentary lifestyles increase the strain on employee health. Workplace wellness programs can reduce medical spending, increase work productivity, and improve overall employee health. The purpose of this study is to evaluate the effectiveness of workplace wellness efforts for the Department of State Health Services– Public Health Region 8 staff.

### **Methodology or approach:**

Wellness staff used behavior change theory, biennial needs assessment, and pre- and post-surveys to design and evaluate wellness initiatives to increase physical activity, nutrition, and mindfulness. Pre- and post-surveys measured current behaviors, readiness for change, social support, self-efficacy, and perceived benefits and barriers. Initiatives included lunch and learns, one-page newsletters, a family fun-run, one on one coaching, and a 6-week challenge, where participants earned colored paper sneakers for engaging in specific exercise, nutrition, and coaching behaviors. The sneakers were posted along the walls as cues to action and to increase motivation and self-efficacy.

### **Results or preliminary results and their impact on the field:**

Participation rates in wellness initiatives changed over the intervention period. Although only 30.5% of employees actively participated in the challenge, post-survey respondents noted improved physical activity and nutritional behavior as a result of the wellness initiatives during this period. Additionally, perceived barriers decreased – more specifically for lack of social support and knowledge – while perceived benefits increased.

Findings suggest frequent behavioral reinforcement and targeting perceived barriers will aid participation rates in workplace wellness programs. Pre- & post-surveys are efficient tools for measuring perceived barriers to participation. Program planning prior to implementation of wellness initiatives is essential. Finally, improving social support in the workplace, providing education, and promoting initiatives can assist in motivating employees to participate in programs and change health behavior.

## Parasocial Relationships: Examining Viewers' Connections with Characters in Television Series by Paloma Gray

Mass Communication, Texas State University

### Problem or research question:

Today, audience members have numerous ways to view episodes of their favorite television series. Sixty-one percent of viewers' time is spent watching television on a television set; while 38 percent is spent on Internet-connected television sets, computers, smartphones, and tablets (Lukovitz, 2016). Binge-watching is on the rise with an extensive variety of streaming services available to viewers. A survey from Netflix found 73% of viewers define binge-watching as watching two to six episodes of the same series in one sitting (Friedman, 2017). Approximately three-fourths of Americans and 90 percent of millennials binge-watch (Deloitte, 2016).

Binge-watching is impacting audiences' connections with series' characters. These connections are considered parasocial relationships (PSRs). PSRs are described as one-sided relationships in which an individual develops an attachment towards a character being portrayed through the media they are consuming. In other words, they are perceived intimate relationships (Bui, 2017).

This study examines the strength of viewers' PSRs with characters in both scripted and reality television series. The scripted series include *Scandal*, *This Is Us*, and *The Walking Dead*, and the reality series include *Jersey Shore*, *Keeping Up with the Kardashians*, and *The Real Housewives of Orange County*. This study evaluates PSRs between viewers and characters when series are viewed on a weekly basis and when they are binge-watched. It assesses whether the gender of the viewers and series' characters have an impact on PSRs. This study poses the following:

**H1:** Viewers demonstrate stronger PSRs with characters in television series they watch on a weekly basis compared to when they binge-watch.

**H2:** Viewers demonstrate stronger PSRs with characters in reality television series compared to those in scripted television series.

**RQ1:** Are viewers more likely to select a character of the same gender as the one with whom they feel the strongest connection?

### Methodology or approach:

Participants will take part in a survey and respond to questions regarding a scripted series or a reality series and one of its characters. They will select one of the three scripted series or one of three reality series, and they will type in the name of the character with whom they feel the strongest connection. Participants will indicate how they first watched the series and how many hours they tend to watch in one sitting. They will also be asked questions regarding their familiarity with the series. PSR will be measured through parasocial interaction (PSI) process, audience-persona interaction (API), identification, transportation, and audience response.

### Results or preliminary results and their impact on the field:

This study predicts viewers will demonstrate stronger PSRs with characters in series they watch on a weekly basis compared to when they binge-watch. In addition, it predicts viewers will demonstrate stronger PSRs with characters in reality series compared to those in scripted series.

There is limited research examining PSRs with characters in series that are available to binge-watch because this is a newer phenomenon. It is important to investigate whether PSRs are impacted by the way in which audience members are viewing series, whether that be watching on a weekly basis or binge-watching.

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## **Factors That Influence Persistence Among Students of Color in K-16 STEM Education by Michael P. Gutierrez Mannix, Shetay Ashford, Kristy L. Daniel, Dana M. Garcia, and Mairi P. Vannella**

Criminal Justice, Occupational, Workforce, and Leadership Studies, Biology, Communication Studies, Texas State University

Historically, students of color have been considerably underrepresented at all levels of education in comparison to their white counterparts, which adversely affects the overall growth of the science and engineering (S&E) workforce. After six years of consecutive college enrollment, African American students' college graduation rates are notably lower than white, Hispanic and Asian populations, and Native American students represent the lowest demographic of graduating students. At higher levels of STEM education, students of color face further underrepresentation in STEM-related graduate programs (e.g., Ph.D. STEM programs) and women of color occupy a small fraction of tenured faculty positions. As a result, the ethnic and racial diversity of the S&E workforce is progressively disproportionate and underrepresented by ethnic minorities in comparison to whites.

To identify the factors that influence the underrepresentation of students of color in K-12 and undergraduate STEM education (i.e., K-16), we conducted an integrative literature review study to review, critique and synthesize these factors in current STEM education literature. To guide our study, we conceptualized the following research question: what are the factors that influence students of color to enroll and remain enrolled in K-16 STEM education? Specifically, we employed a five-step process that included: 1) theme selection (e.g., ethnics minority; under-represented minorities; African American; Latino; STEM enrichment programs; STEM skills; STEM education; STEM retention, resources, and barriers; and K-12 STEM programs), 2) identifying resources (e.g., Education Source, ERIC, IEEE, Journal of Women and Minorities in Science and Engineering), 3) inclusion criteria (e.g., minorities, STEM skills, STEM experiences, STEM trajectories, U.S., English, 2013 to 2018), 4) database search results, and 5) article selection upon completion of previous steps.

Our initial database search resulted in a total of 1,480 peer-reviewed journal articles. By eliminating duplicates (784) and unrelated topics (322), our first level of analysis yielded 353 articles. Next, we grouped the articles by categories to identify the most relevant literature as follows: 1) barriers and successes in STEM education, 2) informal and formal STEM programs (e.g., summer camps, tutorials, mentoring programs, engaging programs), 3) teaching methods, models, curriculum, and workforce schools, and 4) marketing and recruitment tools to attract and retain students in STEM education. To best align with the inclusion criteria, we selected category 1, which yielded 56 journal articles for our study. Our results revealed the following barriers and successes to the persistence of students of color in K-16 STEM education: discrimination, micro-aggressions, gender/racial biases and stereotypes, familial support, self-motivation, and educational barriers. Our findings are significant because they inform educators and policymakers about factors that may improve or impede the increased representation of students of color in STEM education and ultimately in the science and engineering workforce.

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**Does Parent Knowledge Change Over the Course of Intensive Speech and Language Treatment?** by Briana Gutierrez, Melissa Carrillo, Dr. Maria Resendiz and Dr. Maria Diana Gonzalez

Communication Disorders, Texas State University

**Problem or research question:**

In Multicultural Inclusive Speech Therapy Intensive Camp (MISTIC), an intensive speech and language therapy program, children received therapy for 3 hours for 12 days. Prior to the camp, parents were required to fill out a survey on the child's background and the knowledge of interventions, strategies and techniques used to enhance the child's communication.

The purpose of this research is to gain the client's perspective and satisfaction of the outcome of intensive speech and language therapy.

**Methodology or approach:**

This research will be conducted by reviewing data of a previous intervention program. MISTIC provided the parents with an intake packet that included a survey. The survey was conducted before and after the treatment of their children. Parents were asked to rate their knowledge on treatment techniques and how to apply treatment techniques. on a scale 1-5. After treatment the parents were asked to fill out the same survey to compare any noticeable difference in parent education.

**Results or preliminary results and their impact on the field:**

Preliminary results demonstrate that there are gains in certain areas such as familiarization on how to use techniques and no gains in areas such as understanding characteristics of a communication disorder. Further analysis will be conducted in the areas that demonstrate gains versus no gains to improve parent education during intervention programs.

## **Doublet Emitters Derived from Stable Carbenes for Potential OLED Applications by**

**Gabrielle Harmon and Dr. Todd Hudnall**

Chemistry, Texas State University

Organic light emitting diodes (OLEDs) typically exhibit low quantum efficiencies (~ 19%) due to quantum mechanical limitations and spin statistics. In traditional OLEDs, the emitting excitons are either singlet (25%) or triplet (75%) spin states. Because decay from triplet states is spin forbidden, the internal quantum efficiency of fluorescent devices is limited to a theoretical maximum of 25%. To circumvent this problem, modern OLEDs rely on triplet, phosphorescent emitters, that require the incorporation of often expensive heavy atoms to facilitate intersystem crossing between the singlet and triplet excited states, thus increasing triplet emission. In contrast to the widely explored triplet emitters, this presentation will describe our recent efforts to prepare cationic and neutral doublet emitters derived from carbenes and triarylmethyl- or triarylboron-centered radicals, respectively. In principle, doublet emitters have theoretical quantum efficiencies of up to 100%, making them ideal candidates for next-generation light-emitting devices.

**Cognitive Inflexibility Associated with Orthorexia Nervosa is Domain Specific** by Niki

Hayatbini, Dr. Crystal D. Oberle, Shelby L. Lipschuetz and Dalton L. Klare

Psychological Research, Texas State University

**Problem or research question:**

This study investigated whether symptoms of orthorexia nervosa, characterized by obsessive thoughts and compulsive behaviors regarding healthy eating, are associated with cognitive inflexibility.

**Methodology or approach:**

Participants (25 in the orthorexia symptoms group, 25 in the control group) completed the Eating Habits Questionnaire and computerized versions of the Wisconsin Card Sorting Test and the Trail Making Test.

**Results or preliminary results and their impact on the field:**

Of the 11 variable measurements from these cognitive tests, only one significantly differed between the groups, with the orthorexia symptoms group making more errors than the control group on the first part of the Trail Making Test that does not actually require any set shifting.

These results suggest that although orthorexia is associated with inflexible thoughts and behaviors specific to healthy eating, the condition is not associated with cognitive inflexibility as an executive function deficit.

**Pre-Accuracy Study of a Self-Report Proficiency Assessment for Spanish-English Bilingual Speakers** by Laura Herrera, Dr. Maria Resendiz and Dr. Amy Louise Schwarz  
Communication Disorders, Texas State University

**Problem or research question:**

Bilingual individuals are considered to have a complex neurological network (Bialystok & Craik, 2010) with variations in language proficiency. Researchers and clinicians alike need an efficient and cost-effective means to accurately measure the level of proficiency for bilingual individuals for analysis of results, and in treatment planning (Centeno, 2010; Delgado, Guerrero, Goggin & Ellis, 1999; Kiran & Lebel, 2007; Luk & Bialystok, 2013). A standardized norm-referenced assessment, the Woodcock-Muñoz Language Survey-III (WMLS-III; Woodcock, Alvarado & Ruef, 2017), can be used to assess proficiency levels of Spanish-English bilinguals. However, this assessment takes hours to administer (based on the level of proficiency of the individual) and costs over \$1000. Due to the inefficiency and large costs of standardized assessments, researchers and clinicians have opted to use self-report measurements, such as the Language Use Questionnaire (LUQ; Kiran, Peña, Bedore & Sheng, 2010), to assess proficiency levels. Accuracy of the LUQ (Kiran et al., 2010) has yet to be determined.

**Methodology or approach:**

The purpose of the study is to determine if the LUQ (Kiran et al., 2010) is an efficient and cost-effective alternative to the WMLS-III (Woodcock et al., 2017) for identifying proficient and non-proficient Spanish-English bilinguals in listening, speaking, reading and writing, and overall ability. A previous study examined the relationship of participant self-ratings on a five-point Likert scale correlated with scores on the Woodcock-Muñoz Language Survey (Woodcock & Muñoz, 1993) in Spanish, but not in English (Delgado et al., 1999). The hypothesis of this study is that the LUQ (Kiran et al., 2010) will achieve positive and negative likelihood ratios within acceptable range for overall proficiency and the language domains assessed in Spanish, but not in English. A total of 39 Spanish-English bilingual participants (35 females, 4 males) completed the LUQ and the WMLS-III (Kiran et al., 2010; Woodcock et al., 2007); the number of participants meets the minimum of subjects for a screening instrument validation requirement ( $n=34$ ) (Bujang & Adan, 2016). Classification analysis of the proficiency results from the self-report 5-point Likert scale and the standardized-norm referenced assessment, as described by Dollaghan (2007), was completed to calculate positive and negative likelihood ratios to determine accuracy.

**Results or preliminary results and their impact on the field:**

Results from the classification accuracy found that participants had exact accuracy in identifying overall proficiency in English and had a positive likelihood ratio of 8.41 and negative likelihood ratio of 0.25 in identifying overall proficiency in Spanish. The results demonstrate that the LUQ (Kiran et al., 2010) suggests that individuals are accurate in reporting their overall language proficiency for both Spanish and English on a 5-point Likert scale, which indicates that the LUQ (Kiran et al., 2010) is a diagnostically accurate instrument. These findings go beyond the previous research of Delgado et al. (1999), which only examined the correlational relationship, whereas this study looked at the diagnostic accuracy of the

questionnaire. These results will impact how clinicians and researchers determine proficiency, but will also impact how bilingual clinicians will be identified by the American Speech and Hearing Association.

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## **Understanding LatinX Doctoral Student Experiences at Hispanic Serving Institutions by Orlando Hinojosa**

Adult, Professional, and Community Education, Texas State University

### **Problem or research question:**

There is a national concern for the successful completion of the doctoral degree in graduate programs that needs attention because approximately half of doctoral students earn the degree and the other half of doctoral students do not attain the degree. Furthermore, the completion rate for a doctoral degree is much lower for African Americans/Blacks and Hispanics whom are largely represented as first-generation. First-generation African Americans/Blacks and Hispanics have been reported as less likely to pursue a doctoral degree, and their experiences in the doctoral program have been less documented. Although Hispanics have narrowed the education achievement gaps in K-12, gaps still persist as we lag in both enrollment (W-86%, B-83%, H-79%) and matriculation (W-45%, B-32%, H-21%) in higher education. These gaps exacerbate when examining graduate education, in which Hispanics represent just 7% of students enrolled in graduate education, compared to Whites (60%), African Americans (13%), international students (11%), Asians (7%), and Native Americans (0.5%) (Synder & Dillow, 2015). Less than 1 percent of all Latina/os earn a doctoral degree while representing 5% of all doctoral students nationally. These educational opportunity gaps explain, in part, why just under 20 percent of the nation's professoriate consists of persons of color—blacks/African Americans (5.6 percent), Hispanic/Latinos (3.5 percent), Asian Americans (9.1 percent), and American Indians (1.4 percent).

In the last decade there has been a 127% growth in predominately and historically white institutions becoming "Hispanic Serving" with each passing year as student demographics shift on campuses. There are currently 497 HSIs (LatinX student population of >25%) and 297 emerging HSIs (LatinX student population 15-24%) in the United States yet these institutions still do not have the cultural artifacts, institutional missions, or historical rationales of explicitly serving Hispanics (Garcia, 2017). As institutions not founded to "serve" Latina/o students, Hispanic Serving Institutions (HSIs) must actively change their curricula and programs to meet the needs of their diverse population, including Latina/o, low income, and first generation students. It is important HSIs examine the Latina/o graduate journey and understand their perspective and experiences in order to better recruit, retain, and graduate Latina/os in graduate and doctoral programs.

### **Methodology or approach:**

Using an ethnographic case study approach, including Q-sort methodology, interviews and a Qualtrics survey, this study examined the educational experiences of LatinX doctoral students at one HSI. Specifically, findings highlight how the College of Education serves LatinX students and the ways in which such programs are embedded within the structures of the institution.

All were screened to ensure each met the purposeful criteria established of: 1) identify as Latina/o 2) enrolled in doctoral program and 3) attend an HSI

**Results or preliminary results and their impact on the field:**

The data showed three emerging findings: 1) Latina/os are not a monolithic group & collective identity is complicated 2) Latina/o faculty are critical to the success & development of LatinX doctoral students, and 3) HSIs' campus climate and culture impacts LatinX students' sense of belonging, culture, and outcomes/academic success.

This study has implications for HSIs and other institutions enrolling and serving diverse populations. As more universities become HSIs, it becomes critical that institutionally they foster an inclusive university campus environment where all students are empowered culturally and academically.

## **Swipe Left or Click? Cosmetic Consumers' Attitudes Towards Instagram Stories** by Julia

Hix and Dr. Sindy Chapa

Integrated Marketing Communications, Florida State University

### **Problem or research question:**

The objective of this study was to predict if cosmetic consumers who watch Instagram Stories are more likely to purchase products in-store, online, or online via Instagram Stories when they have favorable attitudes towards social media compared to when they have unfavorable attitudes. Using the Theory of Planned Behavior (TPB), it was predicted that consumers who watch Instagram Stories would be more likely to have purchased products featured on Stories when they have favorable attitudes towards social media.

### **Methodology or approach:**

This quantitative study includes valuable insights about consumer behavior and attitudes towards social media that could be helpful to industry practitioners. Data for this study was gathered using an online survey conducted by Research Now using the Qualtrics program in July, 2017. Data were transferred to SPSS for data analysis. A validation question was included to ensure that participants were paying attention to the questions. Consumers' attitudes towards the effectiveness of social media as a communication tool was validated using Cronbach's alphas with a 96% validity.

The participant sample included males and females, 18+ years old, in the United States, and those who responded "yes" that they use Instagram and watch Instagram Stories. Out of the 873 participants who said they watched Instagram Stories, 534 participants said they followed cosmetic brands or celebrities, bloggers, or social media leaders that frequently feature cosmetic brands on Instagram. Of the participants approximately 78% were women, and 83% were between the ages of 18 and 54.

### **Results or preliminary results and their impact on the field:**

The data found that 89.3% follow both cosmetic brands and brand influencers on Instagram. This study suggests that 40.4% were moderately likely, very likely, or completely likely to click on Instagram Stories and there was an 84% correlation between participants who were likely to completely likely to click and those who found Instagram a useful communication tool. About 33.3% of participants purchased after watching an Instagram Story featuring the product, with an approximately 70% correlation with those who had a favorable attitude toward Instagram as a communication tool.

While the data suggests that there is a correlation between consumers' attitudes towards social media and purchase behavior, there is more research is needed to create more valid Cronbach alphas to measure attitude towards Instagram Stories specifically. Measuring purchase intent is recommended, as opposed to purchasing behavior, to improve validity since purchase behavior cannot be confirmed. Additionally, survey questions need to address industry-specific purchase intentions. Furthermore, measuring purchase intent is recommended to improve validity since purchase behavior cannot be

verified. Future studies should also investigate how the other tenets of TPB impact purchase intention, including subjective norms and perceived behavioral control.

The results of this study can be practically applied by placing advertising messages on social media platforms for which the target audience has the most favorable attitudes.

## **A Qualitative Study of Young Mothers in College** by Kierrah Holliday

Sociology, Texas State University

### **Problem or research question:**

For any mother, trying to be what our society sees as a "perfect mom" is difficult. Young mothers, in particular, can often take on negative and stereotypical connotations before people take the time out to know their stories. Regardless of the path, these women chose to take, being a young and educated mother is a lot of work. The purpose of this study is to explore the experiences and difficulties of young mothers who choose to continue with their pregnancy and pursue a college education while doing so. An analysis of young mother in college reveals the many obstacles and challenges these women faced; accepting that the life of the typical college student that they once lived is forever changed. Functionalist theories see's the importance of continuing education and gaining that basic knowledge and skill set to pass on to their kids and the next generation. They prefer to see education as a more useful contribution to an ordered society than anything else. This theory solely explains why each one of these mothers worked so hard to be the best mothers they could be to their children

### **Methodology or approach:**

A qualitative coding strategy was used to analyze the data from the transcribed interviews. Collected from the interview transcripts were different codes and themes. The code is a record of different patterns found in the data, and a theme developed once three or more of the same codes are identified within the data collected. Open coding is used, and a series of notes connected the different patterns and reflecting on the experiences of the respondents. The themes were analyzed to develop a cohesive reflection on the impact of current young mothers

### **Results or preliminary results and their impact on the field:**

As a result, the women of this study realized that becoming a mother was not in mind for them. Raising a newborn while taking class was far more complicated than expected. This time in their lives not only affected them but the people around them. They were often judged and criticized for the decisions they made. Having a strong support system was also key to helping them get through it all.

This study aimed to gain an alternative perspective young mother in college and the actual insight instead of the usual statistics from quantitative research. There have been many of studies show the social problems women face while being a parent. It is not too many sociological perspectives that praise women for doing all that they can do. Although there can be very harsh and damaging view of young mothers, these four women exceed past any stereotype. "What is not typically found in the research is any voice; few studies are offering the experience of a [young] mother from her perspective." (Bowman 2013: 53).

## **“Adapting to change: How West Texas farmers utilize and communicate about technology” by Kristina Janét**

Media and Communication, Texas Tech University

### **Problem or research question:**

While farmer’s make up less than 2% of the U.S. population, (United States Department of Labor) the agriculture industry “consumes approximately 70% of the fresh water withdrawn per year” (UNESCO 2001a). And, although there have been studies conducted regarding the alley farming technology in Nigeria (Adesina, 2002), and the modern technology of Philippine rice farmers (Herdt, 1981), there has been little to no research that explores American farmers and their current use of technology, especially as it relates to the communication practices a farmer would employ to learn about farming technology.

The current study is guided by the following research questions: 1) Are farmers using technology currently available? 2) Are they embracing new technology as it becomes available? 3) What media and communication do farmers use to learn about new technology, especially as it relates to water conservation? Because water is such a valuable resource to the average citizen and the farming industry and because in some farming regions water is becoming more and more scarce, it is imperative to understand if the farmer of today is currently employing technology and practices that lead to reduced reliance on water and then also how they learn about technological advancements. Once we understand how farmers employ and perceive technology as well as how they communicate about technology, we can devise messages which encourages them to embrace technology, thereby enhancing water conservation.

### **Methodology or approach:**

Participant data was collected from two focus groups consisting of farmers who currently farm in the West Texas area. The participants were recruited from a snowball sample. Participants answered questions regarding their technology use as well as farming practices, and how they gain new information about farming practices and technology. The participants of the focus group will be sent a post survey.

### **Results or preliminary results and their impact on the field:**

- Following a preliminary thematic analysis, the current study makes the following hypotheses:
- Participants are concerned of the financial and social impact of implementing new technologies but have a willingness to adopt.
- Participants acquire knowledge of new technology from multiple sources including other farmers.
- Participants view new technology as a mandatory part of farming and view it as necessary to be efficient.
- Participants are concerned with the rising costs of technology.
- Participants are untrusting of USDA recommendations regarding farming.

- Participants are concerned about the negative perceptions of farmer's by urban dwellers.

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**The Implications and Limitations of Phreatic Overgrowths of Speleothems as Sea Level Indicators: Quintana Roo, Mexico** by Aubri Jenson, Benjamin Schwartz Yongli Gao and Lijun Tian

Aquatic Resources, Texas State University and Department of Geological Sciences, University of Texas San Antonio

**Problem or research question:**

The northeastern coastline of the Yucatan peninsula contains extensive, shallow cave systems, many of which are submerged. These caves are thought to form via mixing dissolution, a process that occurs where fresh and saline water interface near sea level. The Yucatan Peninsula is assumed to have remained tectonically stable at least since the late Pleistocene based on similar coral elevations across the Caribbean (Szabo, 1978). Following these assumptions, cave elevations should correspond to elevations of former—and much lower— sea levels, yet recent exploration has documented over 200 km of cave passage at 5-15m above modern sea level. This study tests the hypothesis that these caves formed rapidly during brief high-stands using U-Th dating of cave formations to constrain the timing and elevation of passage development.

**Methodology or approach:**

Phreatic Overgrowths of Speleothems (POS) are calcite crusts deposited on cave formations, typically found at similar elevations in disparate areas of a cave. They are thought to form where CO<sub>2</sub> outgasses at the water table and calcite precipitates in a band representing seasonal and tidal water table fluctuations. U-Th dating provides precise ages of POS and, in low-gradient systems, their elevation is expected to be nearly equivalent to sea level during the time of their deposition. Where sea level records are accurate, the difference between the former and modern elevation of a sample provides a measure of uplift or subsidence. We have obtained U-Th ages of 15 POS and 15 stalactites from three caves in Quintana Roo, Mexico. Samples were collected in cave passages 1-7 km inland at elevations 1-7 m above modern sea level. U-Th dating was done using Multi-collector inductively coupled plasma mass spectrometry (MC-ICP-MS). This method measures <sup>238</sup>U (4.5 by half-life) against decay products <sup>234</sup>U (246 ky half-life), <sup>230</sup>Th (7 ka half-life) in calcite samples.

**Results or preliminary results and the impact on the field:**

POS dates ranged from 49 +/- 2.0 ka to 287 +/- 3.6 ka. According to North Atlantic composite curves (Spratt and Leisieki, 2016), nearly all correspond to times of lower sea level than today, suggesting that uplift has occurred. Outliers could reflect rapid sea level changes not detected in ice or ocean sediment cores. The dates of interior stalactites range from 110 +/- 0.7 ka to 646 +/- 125 ka, which demonstrates that cave passages were fully developed and contained formations much earlier than any Pleistocene high-stand. Our data suggest that these caves formed at multiple sea levels with uplift of the Yucatan Platform at 250 mm/ka – 390 mm/ka.

These results challenge the assumption of tectonic stability of the Yucatan Peninsula and raise questions about the hydrogeologic history of the caves. Uplift could reflect tectonic movement, isostatic rebound resulting from erosion, and/or changes in buoyant support. Modern water table gradients are low, between 0.5 m/km (Jenson, unpublished) and 0.05 m/km (Beddows, 2007); past gradients may have been steeper, and changing positions of the coastline could introduce variability in the observed elevations of POS.

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## First Impressions Based on Clothing by Alyssa Kopecki and Cody Cox

Psychological Research, Texas State University, and St. Mary's University

### Problem or research question:

What effect does clothing have on peers' perception of social, work, and relationship competence, if any? In past research on first impressions, Jacobson (1945) found that the majority of statements made by participants pertaining to first impressions of others focused on appearance. Physical appearance also has been shown to influence peer's perception of one's work competence. Studies have shown that different styles of clothing lead to assumptions about one's occupation (Rucker, Taber, & Harrison, 1981).

### Methodology or approach:

Fifty-one participants ( $Mean\ age = 36.68, SD = 13.34$ ) completed an online survey about a photographed male's perceived social, work, and romantic competence. The photographed male was shown wearing either business appropriate clothing or casual clothing. It was predicted that the casually clothed man would be rated as more socially competent, while the man in business attire would be rated as more competent in the workplace and in relationships.

### Results or preliminary results and their impact on the field:

The results show a significant relationship between casual clothing and social competence. An independent samples  $t$ -test was performed, and it was found that the man in casual clothing ( $M = 4.37, SD = 1.09$ ) was rated as significantly more socially competent than when he wore business clothing ( $M = 3.45, SD = 1.08$ ),  $t(49) = 3.04, p = .004, d = .85$ . The other two predictions were not supported. It was found that the man in casual clothing ( $M = 3.91, SD = 0.96$ ) was not rated significantly different in regards to work competence than when he wore business attire ( $M = 4.58, SD = 1.46$ ),  $t(49) = 1.92, p = .06, d = .54$ . As for the prediction that the casual clothing ( $M = 3.95, SD = 0.76$ ) would result in lesser impressions of romantic competence, the results were not significant when compared to business clothing ( $M = 3.63, SD = 0.76$ ),  $t(49) = 1.50, p = .139, d = .42$ .

The findings of this study have many practical applications. Having research to back up the assumption that clothing influences other's perception of oneself can encourage others to choose their clothing more carefully, based on what impression they want to make. Due to the general nature of the clothing used in this study, future researchers may also be inspired to explore just which aspects of casual or business clothing instills the impression of social or business competence. In these ways, this study has useful future implications.

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## **Utilizing Domestic and Sylvatic Hosts as Medical Informatics Sentinels to Track Chagas Disease in the Southern United States: A Systematic Review** by Laavanya Krishnan, David Anthony Guerra, Raena Gelillo-Smith and Amber Vargas

Healthcare Administration, Texas State University

**Problem or research question:** Chagas disease (CD) is a growing public health concern. Its causative agent, *Trypanosoma cruzi* (*T. cruzi*), extends past Latin America and into non-endemic countries such as the United States (U.S.). The U.S. provides little effort in tracking CD progression, despite its consistent appearances in the southern region. Researchers suggest that both domestic and sylvatic host species have given *T. cruzi* the ability to persist in the environment where humans coincide. Still, this information is underutilized and there is little research performed on bridging healthcare surveillance of CD with medical informatics systems. This research aims to bridge the knowledge gap presented over CD and seeks to provide information over the following research question: how can CD be actively tracked within the southern U.S.? This systematic review will hypothesize an alternative, indirect methodology to track CD in the U.S. via medical informatics in the form of health information management (HIM) or health information exchange (HIE) systems to investigate CD prevalence within domestic and sylvatic hosts.

### **Methodology or approach:**

Boolean codes searches were conducted in PubMed and CINAHL. Search parameter limiters included the following: articles from the year January 2007 to September 2018, full text in English, and exclusion primates or bats. Searches generated 94 articles for PubMed and 30 for CINAHL. Sample size was minimized by having two (2) assigned authors review the abstracts to gauge any significance for the aims of this study. Disagreements between articles were resolved by having an unassigned third author review the abstract content and deliver conclusive feedback. The final consensus resulted in 60 articles for analysis and interpretation.

### **Results or preliminary results and their impact on the field:**

Potential findings displayed high *T. cruzi* prevalence in domestic and sylvatic host species, however, there were few articles presented over CD surveillance efforts via accessible medical informatics systems such as HIM and HIE. This demonstrates the need for increased surveillance efforts and further understanding of the role of both domestic and/or sylvatic host species in sustaining *T. cruzi*. Given the lack of research bridging CD and medical informatics, proposal methods are given in which HIM and HIE can be used to track prevalent hotspots within southern U.S. states and potentially the nation.

This systematic review can persuade the need for more surveillance efforts on CD by non-endemic countries. Information connecting CD burdens via sylvatic and domestic hosts could open new methods for tracking CD prevalence that are more cost-effective than first time donor testing. Findings can also stimulate current selective testing efforts and allow the nation to realize the potential need for detection of CD in the U.S. Furthermore, presented information can guide physicians in the diagnosis of CD cases via HIM and HIE systems within medical informatics. Potential CD patients could be located quickly by finding prevalent CD areas or hotspots through these efforts to landscape disease burden.

## **Use of Technology in the Detection of Alzheimer's Disease: A Systematic Review by**

Britney Larson, Taylor Castillo, Roger Samson and Reagan Wilkinson

Healthcare Administration, Texas State University

### **Problem or research question:**

For several decades now, the nation has seen a steady increase in the number of patients diagnosed with Alzheimer's disease (AD). This growth in diagnosis has caused AD to become the most common cause of dementia and the sixth-leading cause of death in the United States.

### **Methodology or approach:**

To conduct the review, PubMed and CINAHL databases were searched to obtain articles. Filters were used to narrow down our search and 122 article were identified from CINAHL and 53 from PubMed. Two members of the group were assigned to read each of the abstracts to determine if they are germane to the research. After choosing the appropriate articles and evaluating their content, PRISMA standards are utilized to construct the paper.

### **Results or preliminary results and their impact on the field:**

The systematic review is expected to identify specific technological advances that may allow for quicker AD detection and thus more accurate diagnosis. Because healthcare accounts for 18% of the GDP, any potential cost saving methods would greatly help reduce the burden faced by economies nationwide. An estimated 5.6 trillion in savings can be observed if individuals are accurately diagnosed in a timely manner because progression of the disease can be slowed. In addition to saving money, families may not have to shoulder as large of a mental and emotional load.

The significance of AD becomes apparent when one recognizes the overall toll it takes on the country. It is estimated that around 5.3 million Americans have been diagnosed with AD and approximately 5.1 million of those individuals are greater than 65 years old. If these statistics aren't alarming enough, the number is expected to increase approximately 225% by 2050 and affect over 16 million patients in the United States. The problem with these statistics is that the largest patient population affected is the baby boomers, who are mostly covered by Medicare and Medicaid insurance. Currently, these public insurers pay about 2.5 times more for the primary-care of patients with AD than those without and approximately \$225 billion on long-term care and hospice services. In addition to these expenses, an estimated 15 million family members worldwide contribute about 17.9 billion hours of care to individuals with AD. These hours have a monetary worth of about \$217 billion. For these reasons, many healthcare professionals have promoted research relating to earlier detection of the disease because a faster diagnosis could potentially reduce the overall burden faced by society. Employing a systematic review, this paper specifically examines the benefits of utilizing technology to identify and detect Alzheimer's disease at earlier stages in the diagnosis process. If the nation continues down the road they are going, Alzheimer's disease will become uncontrollable to the point where it causes a social and economic catastrophe.

## **Standardization of Mechanical Hippotherapy Riding Activity for Rehabilitation Settings by**

Torey Lasater, Rikki Patrick, Jocelyn J. Smith and Dr. Denise Gobert

Physical Therapy, Texas State University

### **Results or preliminary results and their impact on the field:**

The purpose of this study is to standardize riding activities for patients who undergo physical therapy with a mechanical horse stimulator (MHS). Hippotherapy using a live horse has been used since the 1960's as a form of physical therapy to emphasize repetitive motion and trunk stability. Treatment programs including hippotherapy utilize the cyclic, multidimensional motion of a horse as well as multi-sensory stimulation to encourage adequate patient responses to achieve functional outcomes and goals. Recent use of a mechanical horse simulator has been proposed to provide similar benefits like hippotherapy for improving flexibility, strength, symmetry, postural control, balance, and motor planning as well as other abilities in populations with neuro-motor impairments. Limited research has proposed that the MHS simulates that of a live therapy horse, but literature lacks evidence regarding standardized activities for patients with varying heights to allow comparisons with traditional hippotherapy. Therefore, the purpose of our project is to standardize the MHS riding position for pediatric patients and develop a treatment rating system for rehabilitation specialists.

### **Methodology or approach: Exploratory research design.**

Twenty-five healthy pediatric volunteers will be sampled by convenience. Participants will be recruited from the Texas State campus and the surrounding community during the course of one year. Inclusion criteria: 4 to 12 years old with no fractures or spine pathologies and ability to tolerate a sitting position on a bolster or MHS. Motor function will be assessed using the Bruininks-Oseretsky Test 2<sup>nd</sup> Ed, Short Form (BOT2-SF). Participants will ride the MHS in six standardized activities while trunk and leg muscles are recorded. Electromyography recordings will be processed using Delsys Trigno™ software. All participants will participate in two sessions to ensure a reliable documentation of muscle activity. SPSS (version 25, IBM, Inc.) will be used for all statistical analysis and comparisons.

### **Results or preliminary results and their impact on the field:**

Preliminary work includes setting up a standardized sitting position for optimal trunk and balance using the trunk-thigh-knee angle as criteria. Optimal knee position has been found to be 125.0 +/- 7.0 degrees to allow a proper trunk-thigh angle of 90 degrees. In addition, a progression scale of knee flexion angle was developed in proportion to thigh length. In addition, a six-position rating scale was developed to include sitting posture challenges vs. speed of the horse in combination to length of riding time. Preliminary results and findings will be displayed for discussion. The mechanical horse system has the potential to make hippotherapy more accessible to a larger patient population including various ages and heights in the rehabilitation setting. Therefore results will be further developed and expanded to adult patient populations. Besides the benefits provided by MHS, this device would allow physical therapists to objectively track progression and response, promote functional improvements, and control the exercise intensity, frequency, and duration of hippotherapy.

## **Transformative Learning and the Refugee and Immigrant Populations: A Review of the Literature** by Misty R. Lassiter

Adult, Professional, and Community Education, Texas State University

Early conceptions of transformative learning describe a process in which a learner experiences a largely cognitive change. According to Mezirow (2012), the transformative process involves a learner “becoming critically aware of one’s own tacit assumptions and expectations and those of others and assessing their relevance for making an interpretation” (p. 74). Transformation begins with a disorienting dilemma, which is a personal life event or series of events that cause a significant shift or change in perspective or frame of mind. Later conceptions of the theory include an emphasis on affective or extrarational change, rather than focusing on the cognitive.

When considering transformational experiences, the act of emigrating, especially when the move is forced due to fear of persecution or danger, constitutes a disorienting dilemma. This transformative event is heightened when the adopted culture is vastly different from the home culture. Because of the current refugee crisis and the political climate in which we find ourselves today, it is important to investigate the ways in which emigration, forced or otherwise, can spur transformation. The immigrant and refugee population is growing, and just as important as helping these vulnerable groups integrate into a community is learning how to approach these learners while honoring their experiences.

This research began with two guiding questions:

- What methods are used to investigate transformative learning experiences of refugees and immigrants?
- What kind of transformative learning experiences are found/discussed when researching learning of refugees and immigrants?

When locating articles for review, search terms included: transformative learning, immigrants, immigrant education, refugees, refugee education, adult education, and adult learning. Databases used included ERIC and Education Source, and individual journals were searched, including *Adult Learning*, and *International Journal of Lifelong Education*. Resulting articles had a wide array of focuses, though themes did emerge from the literature. Themes included in this literature review include: intercultural sensitivity and competency, the use of arts and photography to facilitate transformation, potential negative outcomes of transformative learning, and a focus on transformative learning in those who work with refugees and immigrants.

## **The Framing of Occupy Wallstreet by *The New York Times* and *New York Post* by Ryan Leach**

Mass Communication, Texas State University

### **Problem or research question:**

The purpose of this study is to compare how a liberal paper, *The New York Times*, and a conservative paper, the *New York Post*, framed Occupy Wall Street (OWS) during its nearly two-month occupation of Zuccotti Park in 2011. *The New York Times* and the *New York Post* were selected because they were both based in New York City where OWS occurred. OWS centered around economic issues originating from the 2007-2008 economic recession. This study will utilize the frames previous scholars have found to be prevalent among newspaper coverage of social movement organizations. It will determine whether these frames were present in both *The New York Times* and the *New York Posts'* coverage of OWS. The study will also compare the results and determine if there were statistically significant differences in the frames utilized by the papers.

### **Methodology or approach:**

The methodology selected for this thesis is a content analysis. September 17, 2011, was selected as the start date for the content analysis because it was the first day Occupy Wall Street took over Zuccotti Park. November 15, 2011, was selected as the end date for the content analysis as it was the day Zuccotti Park was cleared of occupiers by the New York City Police Department. Two independent coders were used to analyze the sample.

### **Results or preliminary results and their impact on the field:**

The results from the content analysis showed that there were no statistically significant differences between *The New York Times* and *New York Post* in their coverage of OWS. Both newspapers had implemented the same negative frames previous media scholars had uncovered.

## **Lost Children of the Larco Collection: The Iconography of Childhood and Infancy in Moche**

**Art** by Zach Lindsey

Anthropology, Texas State University

Jamming them between skeletal dancers or incising them as though an afterthought, Moche sculptors typically did not pay much attention to children. The archaeologists who have studied the pottery have often followed suit. However, childhood archaeology is an important subfield of archaeology that helps provide a comprehensive view of ancient cultures, and images of children are no rarer in the Larco Museum's collection than the better-studied erotic pottery. A search of the Larco collection reveals more than 200 images of children and infants, mostly Moche, often in specific iconographic situations. This poster uses Erwin Panofsky's three levels of art analysis and Jeffrey Quilter's narrative approach to Moche art to examine common poses, elements, and themes in portrayals of infancy and childhood. Survivors and sacrifice victims, sometimes cargo or decoration and other times actors in the narratives on display, children in Moche art played many roles. Like the adults around them (for only one object in the collection displays children isolated from adults), this means they sometimes exist between human and other animal, between life and death.

**The Effect of Telemedicine Adoption in the Management of Alcohol Abuse, Addiction and Rehabilitation- A systematic review** by Lorraine Lobo, Sabrina Oyibo, Ashton Stoppelmoor, Jeress Watson, and Dr. Scott Kruse

Healthcare Administration, Texas State University

**Problem or research question:**

More than 18 million Americans are currently suffering from an alcohol use disorder (AUD). With alcohol related injuries being one of the leading causes of preventable deaths there is a dire need to find ways to assist those suffering from alcohol dependency. There still exists a gap in knowledge as to the potential of telemedicine in improving patients suffering from an AUD. The purpose of this systematic review is to evaluate the effectiveness and/or barriers that result from the utilization of telemedicine in the management of alcohol abuse, addiction and rehabilitation.

**Methodology or approach:** This review was conducted utilizing the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The articles used in this analysis were gathered using keywords inclusive of both “telemedicine” and “alcohol abuse” which were then searched in both the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Medline (PubMed) databases. More than 30 articles were chosen for use in this review after four reviewers carefully and thoroughly screened the original 85 articles (17 from CINAHL and 68 from PubMed) for their relation to the objective statement.

**Results or preliminary results and their impact on the field:**

The results at the current stage of this research process seem to be indicative of telemedicine’s improvement of outcomes for those patients suffering from some sort of alcohol dependency.

There are many potential applications for telemedicine in improving patient outcomes. Telemedicine has the ability to expand the scope of healthcare by allowing patients the ability to connect to healthcare providers without an in-person visit. One of the key necessities for successful alcoholism recovery is behavioral therapy and counseling for the patient. Telemedicine has the ability to allow patients greater access to their provider in times of need. The idea is that the increased communication between the patient and provider will aid the patient in overcoming the barriers associated with alcohol recovery and in turn reduce the number of alcohol related deaths.

**Community Geography in Action: An Examples Partnership Between Texas State University and People United for Sustainable Housing** by Christina Lopez, John Ponstingel, Daria Andrievskikh, Geography, and Milad Korde  
Geographic Information Science, Texas State University

The recently formed subfield of community geography is applied as partnership between Texas State University's department of geography and a nonprofit from Buffalo, New York: People United for Sustainable Housing (PUSH). PUSH identified four major objectives to be completed by a team of 4 graduate students: 1) analyze existing landuse conditions to create an open space plan; 2) explore the potential for solar energy implementation; 3) analyze housing trends to help secure affordable housing; and 4) create Opportunity Maps. This paper discusses the process and challenges of community geography as well as the outcomes of this partnership.

**Blasphemy Laws: A Violation of Human Rights in Pakistan** by Fanny Mazna

Political Science, Texas State University

This research examines the victimization of minorities living under the blasphemy laws in Pakistan. The research focuses on the blasphemy cases, dating from 2000 until 2017. One hundred cases of blasphemy laws are analyzed. The cases were accessed from various sources, such as online newspapers, peer reviewed journals and articles. Coding sheet was developed to analyze the data. The data collected from those cases is used to demonstrate if the minority groups in Pakistan are affected, by the blasphemy laws to a greater or lesser extent. Since blasphemy laws penalize people who defile worship places and disrespect religions, especially Islam, this research also addresses whether the blasphemy laws are being applied to the protection of minority religions' sentiments. The results of this study indicated that 78% of the people, belonging to minority groups were accused of blasphemy whereas only 22% of the Muslim population were accused of committing blasphemy.

## **Differentiating Human from Nonhuman Bone Using Drifting Osteons** by Sophia

Mavroudas, Katherine McCullough French, and Victoria Dominguez

Applied Anthropology, Texas State University; Anthropology Affiliate, New York University; Anthropology, Lehman College - CUNY

### **Problem or research question:**

Differentiating human from nonhuman mammal bone is a problem for anthropologists in both the forensic and bioarchaeology realm. Traditionally, microscopic methods employed for differentiation rely on the presence or absence of various structural morphotypes such as osteon banding or plexiform bone. Osteons are the structural units of cortical bone that form longitudinally and parallel with the long axis of bones. Osteons are initiated through vascularization of the bone and are initially known as primary osteons. As they develop, building lamellae around the vessels, they become secondary osteons. Drifting osteons are a specific morphotype of osteon in which a forming secondary osteon “drifts” transversely through cortical bone while forming longitudinally. This study attempts to quantify the presence of drifting osteons to explore anecdotal observations that these structures are more common in primates as compared to other mammals. The effect of age on the prevalence of drifting osteons is also tested to explore whether high growth periods are reflected in drifting osteon counts.

### **Methodology or approach:**

Prepared histological bone cross-section slides of humans (n=120), nonhuman primates (n=28), and non-primate mammals (n=193) are examined to evaluate the prevalence of drifting osteons. The prevalence of drifting osteons is calculated as a ratio by dividing the number of identified drifting osteons by the log-scaled total cross-sectional area. The mean ratios are also calculated for each group. T-tests are performed to evaluate significance. To explore any significant differences by age, drifting osteon prevalence is compared between two age group subsamples.

### **Results or preliminary results and their impact on the field:**

T-test results show that there is a significantly higher prevalence of drifting osteons in humans as compared to non-primate mammals. Additionally, primates as a whole have a statistically higher number of drifting osteons than non-primate mammals. Although previous work indicated that age is a factor in drifting osteon prevalence, this study showed no significant difference between the prevalence of drifting osteons in adults (n=136) and subadults (n=49) across all groups.

This study contributes to our understanding of the drifting osteon morphotype and highlights an additional tool that anthropologists can use to differentiate human from nonhuman bone at the microscopic level.

## **“The Geomorphic Impact of Barn Swallow Nests in the Desert Environment of White Sands National Monument, New Mexico.” by Aidan K. McLendon**

Geography, Texas State University

### **Problem or research question:**

Avian zoogeomorphology is a subject often overlooked in the scheme of Geography. However, bird nest construction could prove to be worthy of more attention. Bird nests are interesting because they are diverse in form and function, with great insight to the interactions of birds and their landscape.

Some species of birds have specialized in constructing nests built with mud as the dominant building material. The Barn Swallow (*Hirundo rustica*) is a well-studied mud-nesting species, with most studies conducted in temperate regions as mud is plentiful for nest construction.

A population of Barn Swallows has been established in the desert environment of White Sands National Monument, New Mexico, and this particular oddity is the focus of my research. My research hypothesis is that a population of mud-nesting birds in the desert have a geomorphic impact on their landscape. The goals of my research are as follows: (1) quantify the amount of sediment moved for nest construction by Barn Swallows in the desert environment of White Sands National Monument, NM, (2) compare their impact to other avian zoogeomorphic studies, and (3) to discuss how anthropogenic forces may have influenced this particular bird population.

### **Methodology or approach:**

The nest dimensions of the population of Barn Swallows in White Sands National Monument, New Mexico, will be taken. The height ( $H$ ), largest radius ( $a$ ), and smallest radius ( $b$ ) of nests will be taken to the nearest tenth of a centimeter. The following formula will be used to calculate the volume of the nests:  $\{4\pi^3 \cdot H \cdot a^2 \cdot b^2\}$ . The volume of nest material will be used as an indicator of the amount of sediment moved for this population of birds, i.e. their geomorphic impact on their landscape. A comparison of my findings to a study on certain mud-nesting bird species in Central Texas will bring context to the amount of sediment moved by the desert population.

### **Results or preliminary results and their impact on the field:**

The impact of sediment transport by mud-nesting bird species is a topic of little information. Most studies have been on the ecology of the bird, but have overlooked the role that they could play as moderators of their environment. I intend to quantify the geomorphic impact of Barn Swallow nests in a desert environment, thereby elucidating the relationship of this peculiar population to their unique environment. Bird nests are an important insight into the life-history of birds. They provide a clear view of how a bird can alter their microclimate (e.g. insulation), or utilize their immediate environment (e.g. building materials). Understanding the dynamics of the relationship of birds and their environment is a topic of growing importance, given the unavoidable impacts of climate change. Migratory birds are under multiple, complex pressures at both their breeding and wintering grounds, and climate change is bringing

unprecedented changes to both. Once we can understand how birds interact with their landscape, we can be more equipped to protect their habitat requirements and lessen the imminent threat to avian biodiversity caused by anthropogenic influences.

**Using Cultivation Theory to Understand American College Students' Perceptions of Arabs in the Media** by Samer Melhem, Mass Communication, and Narissra Punyanunt-Carter  
Communication Studies, Texas Tech University

Research has shown that Arab portrayals on television have an effect on viewers' beliefs about Arabs in general. Based on questionnaire responses from 429 undergraduate students, this study sought to examine perceptions of Arabs on television. Results revealed that college students have predominantly antagonistic views about Arabs in general and on television. These findings suggest that television can affect the way college students view reality regarding Arabs and how these perceptions can perpetuate negative stereotypes.

**Keywords:** Arabs, Cultivation Theory, College Students Perceptions, Media, Television

## **A Contemporary Approach to Leadership: Impact of Social Framework on Leadership**

**Style** by Samer Melhem and Derrick Holland

Mass Communication, Texas Tech University

This study extended the findings of the previous research on leadership with special attention to the cultural feature IND-COL. The current study applied social identity theory of leadership as the theoretical framework to investigate the role that individualism-collectivism plays in perceived leadership style in an Arab organizational context. The researchers expected to find a positive relationship between followers' perceptions of collectivism and their perceptions of leadership. They also, expected to find a negative relationship between followers' perceptions of individualism and their perceptions of leadership. The current study utilized an online survey, through a sample of Jordanian school teachers. The findings of the current study indicated a positive relationship between collectivism and aspects of leadership (leader's ability, performance, and leadership style).

**Keywords:** leadership, social identity theory of leadership, collectivism, individualism, SEM.

**Comparing of Travel Frequency Patterns of Public Bike Systems and Bike Sharing Systems Using Smart Card Data and Online Questionnaires** by Lingu Meng, Zhiyuan Terry Liu, and Zhijie Sasha Dong

Engineering, Texas State University; School of Transportation, Southeast University; Ingram School of Engineering, Texas State University.

As forms of green transportation, both public bike systems and bike sharing systems have been widely used all over the world. Previous relevant studies only focused on public bike systems and were limited to the time use patterns of trips. This paper compared these two different modes simultaneously in terms of the relationship between travel frequency patterns and users' characteristics, based on smart card data and online questionnaires in Nanjing, China. The qualitative analysis and a multinomial logit model were applied to examine the relationship between travel frequency patterns and users' characteristics respectively. The findings show that the majority of trips in public bike systems were low-frequency travel while in bike sharing systems were medium-frequency. Moreover, travel frequency patterns differ significantly regarding user's age, traveling time, trip's distance and weather conditions. These findings indicate public bike systems and bike sharing systems should exert their respective advantages and learn from each other, such as making different bike sizes and accessories or combining two modes of the rental systems for catering to different groups and making it more convenient for users to borrow bikes. Operation improvements for both governments and enterprises have been proposed to contribute a better sharing transportation service.

## **Managing Pain of Residents in Long-Term Care Facilities while Avoiding Opioid Dependency** by Rohan Syal, Cody Basch, Edward Chabarría, Laura MacNeil, and Dr. Scott Kruse

Healthcare Administration, Texas State University

### **Problem or research question:**

Pain and pain management is a focus of the care of residents who live in long-term care facilities. Pain is among the primary complaints for many who are institutionalized, and it can lead to a poor quality of life, decreased functioning, and lesser physical and psychological outcomes. Many residents experience daily issues with pain and are often poorly managed. Finding ways to effectively manage and control pain, to successfully determine pain levels, and to manage types of pain to specific types of medications are important areas of focus for any facility to be successful in providing the highest quality of care to this population.

### **Methodology or approach:**

Authors conducted a systematic review of peer-reviewed articles across three indexed databases. PubMed, CINAHL, and Academic Search Ultimate were queried utilizing a three-string Boolean search. Specific inclusion and exclusion criteria were utilized to select specific articles which were germane to the research being conducted. After scrutiny of the articles returned, authors agreed that thirty-one (n=31) articles were germane to the topic at hand. These thirty-one articles were then reviewed, and facilitators and barriers were pulled from each of the articles. Each facilitator and barrier were then assigned overarching themes and analyzed statistically for incidence.

### **Results or preliminary results and their impact on the field:**

Four facilitator themes were chosen and were identified fifty-two times in the review of the germane articles. Themes were effectiveness, quality improvement, pain management tools, and education. Four barrier themes were chosen and were identified forty-six times in the review of the germane articles. Themes were lack of knowledge, lack of training, lack of follow-up, and misperceptions. Overall, there is a dearth of effective education and knowledge regarding pain and pain management in the field among those who are giving care to these residents. The assessment of pain and the effectiveness of pain management are both areas in which much work is needed to improve the care of the elderly. Appropriate pain medication interventions need to be assessed for, instead of simply prescribed for instead. Opioids are some of the most often prescribed medications, however, because they are being prescribed does not mean that they are effective. Interventions need to be designed to better use other pain management protocols and medications which are more effective, as opposed to simply prescribing opioids which come with a bevy of side effects and dependency issues.

Overwhelmingly the research points to the need for better understanding what pain management is, and how to assess pain to appropriately be able to manage it effectively. Additionally, standardized assessments and education are needed to better manage pain for long-term care residents. This

population presents in a difficult fashion as they have multi-system disorders and often have more than one source of pain. They often present with having both acute and chronic pain simultaneously, polypharmacy, and other compounding factors, so special attention needs to be paid to this population so their needs can best be met.

## **Positive Physical and Mental Outcomes for Residents in Nursing Homes Using Music: A Systematic Review**

by Michael Mileski, Edward Pando, Kristan Hernandez, Marian Herrera, and Gabriela Simon

Long Term Care Administration, Texas State University

### **Problem or research question:**

With the increased number of Baby Boomers aging into the American health care system, it has become imperative to find better ways to provide quality care. The use of music in promoting positive physical and mental outcomes in nursing facility residents has long been an empirical intervention in use. This systematic review detailed many positive facilitators and negative barriers to the use of music as a therapeutic intervention.

### **Methodology or approach:**

Authors used PubMed, CINAHL, and Academic Search Ultimate to conduct a systematic review of peer-reviewed articles across three databases. After scrutiny of the articles returned, authors agreed that thirty (n=30) articles were germane to the topic at hand. These thirty articles were then reviewed, and facilitators and barriers were pulled from each of the articles. Each facilitator and barrier were then assigned overarching themes and analyzed statistically for incidence.

### **Results or preliminary results and their impact on the field:**

Thirteen facilitator themes were identified sixty-six times in the review of the literature. The most common facilitator was increased socialization or communication (18.18%). Overall, improvements were increased physical health, stabilized mood, decreased mental disorder incidence, decreased behavior incidence, improved cognition, and reduced agitation. Eleven barrier themes were identified over thirty-five times in the review of the literature. The most common barrier was the inability to isolate the effects of the music on the populations being studied. Overall, many of the barriers were relatively isolated to individuals, as opposed to the population being studied. Problems were found with sleep quality, anxiety, increased mental health issues, decreased socialization, and decreasing effects over time.

Much empirical data exists regarding the benefits of the use of music as a treatment/adjunct therapy to increasing both physical and mental outcomes in nursing facilities. This study was able to distill much of the available research and utilize it to further understand the uses of music and how it can be leveraged in certain populations to provide a better overall living experience for those who are institutionalized. There is still much more to be learned in the field, however, the comparison of information from multiple articles into one article with easy to use and understand interventions has much value to those who work with these fragile populations each day.

## **Bobcat Clean Air Project** by David Mills, Shadi Maleki and Niaz Morshed

Geography and Geographic Information Science, Texas State University

### **Problem or research question:**

The National Research Council (NRC) recommends that air quality monitors be located upwind and downwind of the areas of highest population. Environmental experts agree that road transport accounts for a significant portion of air pollution within cities and towns. The Texas Commission for Environmental Quality (TCEQ) has only a single air quality monitor in San Marcos, Texas. This monitor is located on the south side of IH-35. Most people who have driven on the IH-35 corridor between Austin and San Antonio would tell you that it is a high-traffic area. By 2040, estimates predict that IH-35 will run through a San Antonio-Austin Metroplex which rivals Dallas-Fort Worth area's current size. Normal winds, as recorded at the National Center for Environmental Information: National Oceanic and Atmospheric Administration (NOAA), show that winds prevail from the south 90% of the time. For Dallas, the FY2010-11 budget request regarding air monitoring, compliance, and enforcement was \$1,581,991. Current methods for monitoring air quality are expensive and the primary methods used for reduction are enforcement of compliance at fixed-site industrial locations.

### **Methodology and approach:**

Our research approaches air quality monitoring from the perspective of health impact on individuals, incorporating dynamic methodologies that account for unique spatio-temporal phenomena such as population movement patterns and individual exposure. Traditional air quality monitoring methods combined with compliance and enforcement measures implicate static sources as primary causes of pollution. Large static sources of pollution are easy to monitor and easy to implicate as the main culprits of degraded air quality when using traditional and expensive methods to monitor. Our research leverages the latest air quality monitoring technologies, wireless networking, and social media to maximize efficiency, promote awareness, encourage citizen science, and increase data accuracy/precision, while reducing monitoring costs.

### **Results or preliminary results and their impact on the field:**

The academic community at Texas State University has been largely supportive and proactive in working with us to implement this innovative methodology at the Texas State University campus. Initial responses are encouraging and reflect that a well-recorded methodology could be used to implement campaigns at other universities as an impetus toward improving the science of air quality and influencing policy-makers. The air quality monitors proposed and implemented for this project reduce costs significantly while maintaining or improving relative accuracy of PM 2.5 measurements for communities.

Our research goal is to influence researchers and policy makers to restructure current methodologies for data collection, to utilize new technology, and to leverage social media and citizen science in order to collect more accurate data. Improved representation and understanding of the distribution of air pollutants in relation to the actual locations of people will increase our understanding of the health implications caused by dynamic sources of pollution. Adopting newer technologies and leveraging

community involvement will lead to finer scale data that more accurately represents air quality impact on community health and thereby leads to improved decision-making.

**Location-based modeling and economic analysis of AWG systems** by Faraz Moghimi, Dr. Hamed Ghoddusi, and Dr. Bahram Asiabanpour

Engineering, Texas State University; Finance, and Stevens Institute of Technology; Engineering, Texas State University

**Problem or research question:**

According to UN World Water Development Report 2018, more than 2 billion people lack safe access to safe drinking water and more than double that number lack safe access to safe sanitation. The global demand for water has been increasing at a rate of about 1% per year. Moreover, in a survey carried out by Circle of Blue, it is illustrated that water prices in 30 major cities in US has increased more than 50 % since 2010. Thus, exploring new methods of generating clean water is both economically appealing and of great importance to our future existence and quality of life.

Atmospheric Water Generators (AWG), may very well be the solution to the water problems we face. However, AWG efficiency vary in a wide range depending on several factors. So, to find feasible applications of AWG, numerous stochastic parameters should be taken into account. In this study, the focus is on developing an economic multi objective decision model to locate possible feasible locations and environments to install AWG systems.

**Methodology or approach:**

Our methodology consists of the following major steps

1. Factor identification
2. Location based multi objective model development
3. Simulation and optimization
4. Sensitivity analysis (stochastic variables and future prediction)

**Results or preliminary results and their impact on the field:**

The factors influencing the performance and economic desirability of AWG systems have been identified. For instance, humidity level and regional labor cost.

Moreover, as a 10-day data collection experiment, the performance and energy consumption level of an AGW machine (aquaboy proII) in different temperatures and humidity have been recorded. It is illustrated that the actual performances are averaging 20% below the prediction of the machine's manufacturer. Also, linear relations have been determined between the influencing factors.

To add on, in a primary feasibility analysis, the 12 Oz. cold water for \$1 and the 1 gallon distilled water for \$1.20 are assumed as the two alternate prices of the produced water. It is concluded that the AWG machine will reach the breakeven point in 72 days in the first scenario and 1229 days in the second scenario.

### **Impact of this research on the field**

This study may very well reach a practical and sufficient conclusion on if the AWG systems would be a major part of the solutions to our water problems. If so, it will also propose the path to establish these systems. Since all the analysis on this study will be based on real data with a focus on the economic aspect of the AWG systems, this study can be considered as an investment feasibility analysis for the investors interested in entering this new industry. It can also be considered as a marketing strategy for AWGs (a primary road map to where the corporations would acquire the most benefit). Moreover, the novel nature of this paper and the relative low numbers of publications in the field of AWG systems add to the importance of this study.

## **Small wind turbine site selection at Texas State University. A GIS based approach with financial analysis** by Milad Mohammadalizadehkorde

Geographic Information Science, Texas State University

### **Problem or research question:**

There is a significant literature confirming the positive correlation of energy production and CO<sub>2</sub> emission. In addition to descriptive and explanatory accounts of anthropogenic changes occurring in the environment, researchers are trying to assess whether humans, and, perhaps more importantly, human settlements, are “sustainable” or not. Because of the likely happening shift away from fossil fuels toward renewable energy sources, it is necessary to plan for the installation of new infrastructure to meet the demand for clean energy.

### **Methodology or approach:**

This paper will investigate energy efficiency through the study of potential energy saving and self-production of electricity by installation of small wind turbines at Texas State University. This study will assess the quantity of energy saved in the case of implementation of wind turbines on campus. This paper will be conducted in two phases: (1) A Multi Criteria Decision Analysis (MCDA) in a GIS environment to choose the best location to install small wind turbines, (2) The potential financial output of installed wind turbines.

### **Results or preliminary results and their impact on the field:**

What makes Texas State University such an interesting case to study is the fact that the state legislation (Senate Bill 898, passed in 2011) mandates that all political subdivisions, state institutions of higher education, and other state agencies reduce their electricity consumption by five percent per year for ten years. Assessing energy efficiency through the installation of small wind turbines at Texas State University can plausibly reveal information about the extent of sustainability commitment. This sort of coupled (i.e., nonbinding declaration plus legislative directive) set of sustainability commitments might be a relatively effective mix for practicing more “sustainable” energy consumption at a large institution of higher education in the United States.

## **Assisting Adults in Career Transition Utilizing Baxter-Magolda's *Authoring Your Life* Concepts** by Mason Murphy

Adult, Professional, and Community Education, Texas State University

### **Problem or research question:**

Adults in career transition struggle to find career resources that match their unique needs. When adults find themselves unemployed or in a transition, there is an immediate need to generate income. This income can be generated through attaining part-time or temporary employment. These adults do not have an opportunity to be creative and truly explore their passions. What if that space had been provided to these adults?

### **Methodology or approach:**

In Baxter-Magolda's *Authoring Your Life*, she outlines a structure, which allows adults to begin to think with an innovative and creative voice. In maximizing this approach, a four-week course can be created. Offered one day a week for four weeks in the evenings. By covering the essential components within the approach, adults will have an opportunity to make meaningful career transitions.

### **Results or preliminary results and their impact on the field:**

In using a qualitative course evaluation, the content within the course can be measured. Participants can be asked a series of questions about career preparation and attitudes prior to taking the course. Questions can be asked addressing the course effectiveness and the shifting of attitudes.

This research will present a different approach to working with adults in career transition. When adults are provided the space to be creative, they will transition into positions that align with both their strengths and skills. This alignment will provide hope, happiness, and career satisfaction.

## **Adolescent Academic Resilience: Examining Teacher-Child Interactions as a Potential Buffer** by Cambrian Nauman and Dr. Priscilla Goble

Texas State University, Family and Child Studies

A substantial amount of literature indicates that early childhood is a sensitive period for later academic success (Rimm-Kaufman & Pianta, 2000). For example, developmental and parenting literature has demonstrated that consistent high quality, supportive interactions with adults are beneficial for children (Henry et al., 2010, Landry et al., 2001). Positive and supportive interactions in early childhood with social partners (e.g., parents and teachers) have been linked to children's cognitive development, the strongest predictor of academic success (Varnhagen, Morrison, & Everall, 1994). Conversely, negative interactions, particularly with parents in early childhood, is a risk factor within the child's environment that increases the probability of future problems in development and for a negative or undesirable outcome (Buehler and Gerard, 2013). In particular, the quality of the mother-child relationship has shown to affect children's school engagement (Perdue, Manzeske, & Estell, 2009) and social competence (Zhange, 2011), which in turn, are both related to academic success (Ladd, Herald, & Kochel, 2006; Lecce, Caputi, & Hughes, 2011). For children who face relational adversity in early childhood, it is important to identify factors that can serve as a buffer for negative academic outcomes.

Teacher-child interactions are an influential factor in the development of academic resilience. Supportive teacher-child interactions have shown to buffer well-documented drops in motivation, engagement, and academic performance throughout childhood due to early childhood adversity such as unequal access to high quality instruction, family conflict, and chronic poverty (Carbonaro & Gamoran, 2002; Crosnoe, Johnson & Elder, 2004; Eccles, Wigfield, & Schiefele 1998; Niehaus, Rudasill, & Rakes, 2012; Roeser, 2005; Way, Reddy, & Rhodes, 2007; Vagi, 2008). Although research has shown that positive teacher-child interactions promote academic resilience, there is a lack of integrated research connecting teacher-child interactions throughout childhood and their influence on adolescents' academic success, specifically for children who faced relational adversity (i.e., negative mother-child relationship) in early childhood. Teacher-child interactions may serve as a potential protective resource that help children at-risk for academic failure due to a negative early mother-child relationship.

Thus, to augment our knowledge on adolescent academic resilience, the proposed study will use data from the NICHD Study of Early Child Care and Youth Development (SECCYD) to longitudinally examine the degree to which quality teacher-child interactions throughout childhood (i.e., first grade, third grade, fifth grade; Classroom Observation System NICHD ECCRN, 2002) moderate the relation between negative mother-child relationships (Child-Parent Relationship Scale; Pianta, 1992) in early childhood and children's academic success (GPA) in adolescence. The proposed study will explore the following research questions (Figure 1): (1) are negative mother-child relationships in early childhood negatively related to adolescent academic success? And, (2) Is the relation between negative mother-child relationships and adolescent academic success moderated by the quality of teacher-child interactions throughout childhood? The findings will further our understanding of whether quality teacher-child interactions play a buffering role against the adverse effects of negative mother-child relationship on adolescents' academic success

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**Design and Implementation of Thermoacoustic refrigerator stack** by Elga Ochoa Madrid and Zaid Almusaied

Physics, and Materials, Science, Engineering, and Commercialization, Texas State University

Due to environmental concerns over most popular and common refrigerants used by conventional vapor compressed refrigerators, alternative methods for refrigerations have been explored. Thermoacoustic refrigeration (TAR) has been one such alternative method. TAR is the process by which heat is pumped from one side of a resonator to the other by means of a high-amplitude sound wave. TAR utilizes high amplitude sound wave to generate temperature difference across number of closely spaced chambers (stack) inside resonator tube. This research proposes to explore different geometries and materials for the TAR stack to achieve optimal yield output. Various manufacturing technique will be implemented for this purpose, including additive manufacturing.

## **A Multi-stage Stochastic Programming Approach for Prepositioning of Relief Supplies by**

Oluwasegun Olanrewaju, Shao-Long Hu, and Zhijie Dong

Engineering, Texas State University

### **Problem or research question:**

Natural disasters, such as earthquakes, hurricanes or flood, have been a challenge all over the world due to their unpredictable nature, little or no notice about where it's going to occur, and when it does, with what magnitude of impact. Prepositioning of relief supplies is an important aspect of disaster management operations which helps preparedness for natural disasters by aiming to decrease the response time by the advance procurement of needed supplies. This paper presents a multi-stage stochastic programming model for prepositioning of relief supplies considering the dynamic inventory decision, flow conservation constraints of relief supplies, and the life-time of the commodity type.

### **Methodology or approach:**

The focus of this research is the United States. We consider 49 states with reference to the most populous city for each state. Distances between each city were also collected to derive transportation costs of relief supplies. Frequencies of natural disasters, such as flood, hurricane and earthquake, in each state were obtained for estimating uncertain emergency demand in each location. Acquisition cost, penalty cost associated with commodity shortage, holding cost of used commodity were all assumed such that it is relatively realistic. Moreover, motivated by the practice that for the commodities which are within 6 months of their expiration dates, Federal Emergency Management Agency (FEMA) might dispose or donate them to a federal, state, or local partner, or to charities if there is no immediate need. Thus, the remaining life-time period of the commodity type is considered, and removal cost of commodity close to expiration is required. The facility location and capacity are provided by FEMA. The proposed stochastic model focuses on minimizing the total expected costs over all scenarios resulting from the commodity acquisition and stocking decisions, the shipments of the supplies, unmet demand penalties, holding unused supplies, and removal supplies. The model is set to be solved using CPLEX Concert Technology (IBM ILOG CPLEX) in Microsoft Visual Studio as an integrated development environment (IDE).

### **Results or preliminary results and their impact on the field:**

Based on a real-world example where a surge in demand was incurred by earthquakes, hurricanes and floods in the US, a case study is presented to investigate the applicability of the proposed model, and the main conclusion are summarized as below. First, the multi-stage pre-positioning of relief supplies decisions is particularly valuable for saving costs and decreasing shortage risk of relief supplies. Second, decreasing unit holding cost of relief supplies is very productive for promoting FEMA procurement of relief supplies and decreasing shortage of relief supplies.

This study contributes to the literature on prepositioning of relief supplies by considering uncertain demand and life time of perishable products, thereby giving FEMA insights in dynamic control of inventory over each scenario and dealing with perishable relief supplies.

**Parent Perceptions of Tele-Practice as a Mode to Intervention for Speech and Language Therapy** by Christi Ann Prado, Marle Vargas, Maria Resendiz, and Maria Gonzales  
Communication Disorders, Texas State University

**Problem or research question:**

The purpose of this research is to determine whether parent training telepractice therapy sessions provide equal or similar parent satisfaction/perceptions as compared to clinician directed telepractice approaches towards interventions for children with communication disorders. As telepractice becomes more prevalent within the field parent perceptions are important for evidence based practice.

**Methodology or approach:**

The current study will analyze previously collected de-identified data of parent's responses during teletherapy sessions. The researchers will note how many times the parent states a frustration and whether or not she implemented the suggestion given by the speech pathologist. Results will be compared to the available research that evaluates parent satisfaction with telepractice that is clinician directed.

**Results or preliminary results and their impact on the field:**

Preliminary results reveal that parent's perceptions of parent training via teletherapy are less favorable when compared to their perceptions of clinician directed telepractice therapy. Specifics of what makes the parents less satisfied with be discussed.

## **Inclusion for All: Non-Millennials' Use of YouTube for Continuing Education** by Jessica M. Quintero and Cindy Pena

Adult, Professional, and Community Education, Texas State University

### **Problem or research question:**

The research regarding the use of YouTube in the medical professional setting is small but growing and the research focus has been on the Millennial Generation [born between 1982-2000]. Research has failed to consider the perceptions of generations preceding Millennials, such as Generation X, the Baby Boomer generation, and the Silent generation which make up a combined 60 percent of the workforce. Incorporating technology, namely YouTube into an adult continuing education setting should be important for adult educators of today. It is our intent to present a research proposal designed to look further into the generations being neglected by research on this topic. The questions driving the research are, what is the benefit of incorporating YouTube into adult education and how can YouTube be used to satisfy continuing medical education needs. It will be in line with phenomenological research that will try to explain the perceptions of non-millennials when using YouTube as an educational learning tool.

### **Methodology or approach:**

The methodology informing the research will be a mixed methods phenomenological study. Its participants will be interviewed in a semi-structured one-on-one interview and focus group. Participants will be recruited through purposeful selection because the target population are medical professionals who maintain a medical license and are required to have continuing education credit hours to maintain their licensure. The interview questions will ask participants to provide thorough descriptions of their realities with using YouTube as a platform for engaging in continuing medical education opportunities. The focus groups will be designed to discuss their perceptions with using YouTube in general as well as share personal stories and experiences that have led to their understanding and opinion of YouTube. The phenomenological methodology will allow the findings to materialize rather than to solidify any preconceived notion by the researcher.

### **Results or preliminary results and their impact on the field:**

The research study has not been conducted as of yet, but it has a future dissertation and pilot study planification. We are welcoming a platform open to discuss ideas, opinions and thoughts of the future of this research. Currently, the literature review findings discuss YouTube in adult education, and concerns and strategies for using YouTube but none specific to non-millennials. Some of the main themes also found were, YouTube and the Net Generation, and YouTube.

The goal of this phenomenological study is to determine the perceptions of generations preceding Millennials in using YouTube for continuing medical education. The research results will better inform the adult education practitioner in developing continuing medical education that is beneficial and inclusive of all adult learners regardless of age.

## **Causes of death and physiological characteristics among TASER-proximate decedents by**

Daniel Reinhard and Howard Williams

Criminal Justice, Texas State University

### **Problem or research question:**

Growing interest exists about what association exists between having conducted electrical weapons (CEW) used against criminal suspects during arrest, and their subsequent deaths. Additionally, little is known about persons who have died after having a CEW used against them. Despite more than two decades of research pertaining to CEW use by law enforcement and criminal justice actors (Kunz et al., 2012), several questions still remain. Previous large sample studies ( $n > 1,000$ ) have identified low mortality risk associated with CEW use (Bozeman et al., 2009), however, fewer studies have analyzed the presence of narcotics among decedents (Williams, 2013), and the medical cause of death among TASER-proximate deaths (Nugent et al., 2011).

This study will answer the following questions:

1. What are the most common physiological characteristics among TASER-proximate decedents?
2. What proportion of decedents have CEWs indicated as being either the primary cause of death or diagnosed contributing factor to death?

### **Methodology or approach:**

This study relies upon a United States national convenience sample of 1117 verified decedents in TASER-proximate deaths between 1983 and 2017. After removing all cases in which there is no known cause of death, and autopsies are not available, there are 850 cases of individuals used for the final analysis. Autopsy reports and police reports are used to assess the listed causes of death for each individual, as well as identify a variety of physiological traits shared among decedents.

Some of the variables of interest include age, race, mental illness, obesity, heart conditions, substance use, substance type, number of CEW applications on the same individual, CEW effectiveness, and whether other police restraint was documented in the arrest.

### **Results or preliminary results and their impact on the field:**

The preliminary results are that most decedents are male (98%,  $n=834$ ), African American (41%,  $n=346$ ), and on average 37 years old. The primary cause of death and the contributing phenomenon often contained multiple factors; individuals were unlikely to have died from one sole factor. With respect to conducted electrical weapon (CEW) use, approximately 14% of deaths had a primary cause or contributing factor being CEW use. In other words, among these decedents who all had CEWs used against them prior to their deaths, CEWs were attributed to their deaths in fewer than 1 in 5 cases. By comparison, 1 in 2 of all decedents had some form of drug listed as a primary cause of death or

contributing factor, while 1 in 3 had either cardiovascular disease or other grave heart conditions, and 1 in 5 had excited delirium syndrome as a cause of death.

Hysteria exists regarding CEW use, both among the general public and among some researchers (Jauchem, 2015). This study's intention is to help understand those persons who have died from CEW use and to what extent medical professionals attribute their deaths to CEW applications. The findings, thus far, are suggestive that the lethality of CEWs is not intrinsically greater than police alternatives, such as neck restraints, firearms, batons, or police dogs.

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**Is there an association between verbal utterance length and language proficiency for Spanish-English bilinguals?** by Maria Resendiz, Frances Ulep, Xavier Paredes, Amy Schwarz, and Maria Gonzales

Communication Disorders, Texas State University

The purpose of the proposed study is to identify the association of the length of verbal utterances and language proficiency during a children's storybook translation task. During translation of children's storybooks, not all the content is conveyed appropriately (Nord, 2003). Words, names, and quality of sentences are all subject to interpretation of the translator. Yip and Matthews (2009) debated whether the length of utterances revealed any information about language proficiency. The current study aims to identify the association between the length of verbal utterances and language proficiency of Spanish-English bilinguals. Twenty Spanish-English bilingual college age students with varying levels of language proficiency in English and Spanish from a previously collected dataset were reviewed. All participants translated a children's storybook from English to Spanish and completed a standardized language proficiency assessment in English and Spanish. Preliminary results suggest that the higher proficiency of an individual in Spanish, the longer the utterances produced during the translation task. Proficiency of English and its relation to the translation process could not be evaluated because there was little variation in English proficiency levels. The changes that occur during the translation process can aid speech language pathologists in being aware of the quality of the translations. Speech-language pathologists can also translate with more awareness of what changes have the potential to occur during the translation process.

## **Exploring Educational Needs of Emerging Food Entrepreneurs: Identifying Challenges, Solutions and Resource Gaps within the Austin, Texas Manufacturing Ecosystem by Peg Richmond**

Adult, Professional, and Community Education, Texas State University

### **Problem or research question:**

As an advisor to small business owners, the author observed that many of her emerging food entrepreneurs consistently asked the same questions and at approximately the same general time within their lifecycle growth. From this observation, she wanted to better understand whether the client questions' applied more universally, whether a resource gap within the local ecosystem actually existed and whether entrepreneurial programming (education, networking, collaboration) could be reasonably developed to deliver a significant impact.

### **Methodology or approach:**

Toward this end, the author conducted a two-part field investigation. First, she organized stakeholders—from non-profit organizations, state and local governments, municipal economic development offices, federal agencies and investor networks—into a collaborative working group. During two interactive sessions, she facilitated this group as it documented its collective view of the available local resources and requests for assistance in the food manufacturing industry.

The author also conducted one-on-one, in-depth interviews with 24 CEOs, founders or managing directors of small food and beverage manufacturing businesses, as well as, those considering entering the space. The focus of these interviews related to challenges, successful solutions, failed solutions and additional resources needed to address labor, operations/manufacturing, distribution/reaching market, regulatory, leadership and other.

The two sets of data were then compared and analyzed using qualitative data analysis methods.

### **Results or preliminary results and their impact on the field:**

The author identified six themes of most concern to the entrepreneurs within the study. She also identified local ecosystem resource gaps and potential recommendations about services, facilities and programs most urgently needed to support the budding industry sector.

The author also created her first commercial course—currently delivered via the Texas State University Small Business Development Center—intended to help growing food, beverage and consumer product good (CPG) businesses prepare for the realities of entering the retail supply chain. The coursework is also intended to bolster operators' skills in assessing and choosing between strategies, business models and operations plans.

As follow on to this initial inquiry, the author is now pursuing doctoral coursework in order to better formalize and progress her research and her work with adult learners. At this point, the research has yielded a number of topics ripe for more focused research and development. Furthermore, beyond the application to the food manufacturing and CPG industries, continued research is likely to have broader ramifications for entrepreneurial education and development.

**Perfectionism: Is there a cognitive cost?** by Anthony Robinson and Dr. Amitai Abramovitch

Psychological Research, Texas State University

Rooted in a historically unidimensional conceptualization, perfectionism has been later theorized as a multidimensional trait, incorporating a number of factors. However, more recent research has shifted to a bi-dimensional model, conceptualizing two dimensions: adaptive and maladaptive. Moreover, Gaudreau and Thompson (2010) identified perfectionistic profiles termed adaptive perfectionist, maladaptive perfectionist, and mixed perfectionist. Research indicated that the two core dimensions (i.e., adaptive, maladaptive) of perfectionism are associated with different psychopathological correlates and plausibly cognitive functioning. Previous studies have found that perfectionism is associated with an underperformance in cognitive functioning in clinical populations. Nevertheless, to our knowledge, no study to date examined the neuropsychological profile of perfectionism. The aim of the present study is to utilize a comprehensive gold standard neuropsychological battery to assess the association between perfectionism and cognitive functions in college students while addressing potential clinical moderators, such as severity of psychopathological symptoms and clinical status. One-hundred participants were recruited as part of a large neuropsychological study conducted at a university in the southwestern United States. Participants were screened using the MINI semi structured interview, and completed a neuropsychological battery, the Positive and Negative Perfectionism Scale, and the Depression, Anxiety, Stress Scale-21. Participants were split into groups of high and low perfectionism based on the median split value for negative perfectionism. Results revealed that the high negative perfectionism (HNP) group had significantly higher levels of depression ( $p=.019$ , Cohen's  $d=.50$ ) and stress ( $p=.024$ ,  $d=.47$ ), with a non-significant trend for anxiety ( $p=.072$ , Cohen's  $d=.38$ ). Controlling for these variables, the groups were compared on 10 neuropsychological domains. No overall group effect was found. Univariate analyses revealed that the HNP group significantly underperformed on a measure of working memory (Digit Span forward), and phonemic (letter) fluency, but these results did not survive correction for multiple comparisons. Similar gradient differences on clinical outcome measures were found between the groups when comparisons were conducted between groups characterized by high adaptive, high maladaptive, and mixed perfectionism. However, no difference across neuropsychological outcomes were found between the groups. For all neuropsychological tests across groups, scaled scores produced using tests' norms indicated performance within the normal range. These findings suggest that higher levels of negative/maladaptive perfectionism are associated with significant psychopathological burden, however no evidence for an impact on cognitive functions was found. This was supported by the second analyses where three groups with different degrees of psychopathological symptoms, and putatively different types of perfectionism exhibited intact performance. In light of these results, there is a need to critically examine the bi-dimensional model in terms of the motivations underlying adaptive and maladaptive perfectionism, given that the former is associated with low psychopathological burden, and has been termed achievement striving, which is not necessarily perfectionism. Given the paucity of research on perfectionism and cognitive performance, more research is needed to replicate and expand upon these results. Furthermore, given the known association between psychopathology and underperformance on cognitive tests, perfectionism may be a uniquely appropriate construct for studies examining the nature of the association between psychopathology and cognitive functioning.

## **Stochastic Models for Planning Distributed Wind Generation based on Data Analytics by**

**Temitope Runsewe, Clara Novoa, Tongdan Jin, and Jordan Givens**

Engineering, Texas State University

### **Problem or research question:**

World human population continues to increase rapidly. It brings the imminent need to look for inexhaustible energy sources to decrease carbon emissions. Many industries are sourcing cleaner forms of energy to reduce their energy costs and environmental impacts, but they need to plan their energy distribution systems in an efficient and economical way. This paper investigates on the formulation and solution of probabilistic, stochastic and simulation optimization models to minimize the life-cycle cost of distributed generation (DG) systems considering the loss-of-load probability and thermal constraints. The models focus on finding the optimal sizing and siting of wind turbines in the DG system to minimize capital, operational and environmental costs. The DG system can be a distribution network serving small cities, companies, department stores or farms, among others.

### **Methodology or approach:**

Three solution methodologies are compared. In the first one, the problem is modeled as a probabilistic non-linear program, formulated in the Algebraic Mathematical Programming Language (AMPL), solved under the Knitro solver and validated using the Frontline Analytic Solver Platform (ASP) software. In the second one, a stochastic non-linear program that simultaneously considers eleven different scenarios to characterize the power output of the wind turbines is formulated, solved and validated. In the last method studied, the stochastic program is solved using the simulation optimization technique running under ASP. The comparison of the costs and solutions provided by the different models is done through numerical experimentation.

### **Results or preliminary results and their impact on the field:**

The proposed models are tested in a 9-node medium voltage distribution network with total demand of 50.10MW. Probabilities for the scenarios and wind speeds used in the model are estimated by doing data analytics on large samples collected for the cities of Wellington, New Zealand, Rio Gallegos, Argentina and Tokyo, Japan. Due to high wind speed profile in Wellington and medium-high wind in Rio Gallegos, the stochastic model results show that seven wind turbines need to be placed in both cities. In Wellington, six 1-MW, one 2-MW wind turbines and one substation are needed. In Rio Gallegos, three 1-MW, four 2-MW wind turbines and one substation are used. The required wind capacity in Rio Gallegos is higher because of the lower wind speed. Comparing the results from all methods, the stochastic model outperforms the probabilistic one since the stochastic model includes uncertainties in wind speeds that the probabilistic model does not. The DG system owners get a cost saving by using the stochastic model instead of the probabilistic one. The resulting small cost difference between the stochastic and the simulation optimization models validates the accuracy of the stochastic model.

Our study contributes to the literature on modeling and optimizing DG systems considering stochastic factors such as the variability on the power supply of wind turbines. The three case studies presented illustrate the consistent benefits of using stochastic programming and simulation optimization models for renewable energy integration.

## **Use of Botanical Pesticides to Control Sweet Potato Weevil** by Harpreet Sandhu and Dr. Ken Mix

Integrated Agricultural Sciences, Texas State University

Sweet potato is ranked the seventh major crop in world crop production; with 103 million tonnes in 2013 (FAOSTAT 2015). Sweet potato is also in the top five staple crops of 40 developing countries after rice, wheat, maize, and cassava. In Africa, *Cylas formicarius* (sweet potato weevil) is considered the biggest hindrance in acquiring high yields with losses up to 100% in parts of the continent. Female weevils damage sweet potatoes by creating holes in the sweet potato and above ground vines for laying eggs. Larva creates tunnels in the root, reducing mass and making the root unpalatable for humans and livestock. Thus, damage destroys the market value of the product and leads to major economic loss. The weevil is very difficult to control and control is almost entirely achieved by multiple applications of synthetic insecticides. Control is further complicated by its nocturnal behavior and the presence of alternative host plants in and around agricultural fields. Currently, few effective controls are available for low input or organic production. Controls for low input or organic fields are important as there is a vast amount of production using these techniques in developing countries and the U.S. Therefore, this study will explore the effect of botanical extracts of *Lantana camara*, *Cupressus lusitanica* (Mexican white cedar), *Azadirachta indica* (Neem), *Melia azaderachta* (Chinaberry), *Chromoleana odorata*, and *Manihot esculanta* (yuca or manioc).

## **Two highly invasive trematodes introduced into Texas spring-fed surface waters: distribution of the parasites and conservation implications for endangered endemic fishes** by Allison Scott and David Huffman

Wildlife Ecology, Texas State University

### **Problem or research question:**

Texas is home to many endemic and imperiled fish species, including the federally endangered fountain darter and Devils River minnow, and the state endangered Rio Grande darter. Two highly invasive parasites, *Haplorchis pumilio* and *Centrocestus formosanus*, were introduced into many delicate spring-fed ecosystems of Texas in the 20th century. *C. formosanus* is a gill parasite, and has been documented since 1996 as a serious threat to fountain darters and other endemic fishes (Mitchell et al. 2005). However, recent research at our lab indicates that *H. pumilio* represents an even greater threat to many native fishes. This parasite encysts in the fins of fish and dramatically reduces the ability of fish to catch food and escape predators. At this time, there is only a single, preliminary study documenting the potential dangers of *Haplorchis* in Texas fishes (Huston et al. 2014).

### **Methodology or approach:**

Our lab has documented the current range of both parasites in spring-fed systems throughout the state, including the San Marcos, Blanco, Guadalupe, Comal, and Devils Rivers. We documented the distribution of the parasites by sampling wild fishes progressively downstream from the headsprings until neither parasite was detected. Currently, we are determining the rates at which fish acquire the parasites by setting out wire cages containing experimental fish at stations where the parasites occur, and withdrawing 2-3 individuals from each cage after 2, 5, and 7 days. The rates of parasite acquisition by wild fish at each station were estimated by calculating the mean number of cysts acquired per unit time. Caged-fish studies were performed using blacktail shiners in the San Marcos and Comal Rivers and, in partnership with USFWS, captive-reared fountain darters in the Comal River. Caged studies are also planned in the Devils River, using uninfected local blacktail shiners as surrogate species for the federally endangered Devils River minnow.

In a concurrent study, we are also developing a rapid method (cercariometry) for real-time estimates of the degree of impact these parasites are having on fishes in affected streams. It involves counting the density of infective stages (cercariae) in the water, and correlating the density with the results from our caged-fish studies.

### **Results or preliminary results and their impact on the field:**

Preliminary results of this research have confirmed high levels of infection in fishes of the Comal River, including in fountain darters, and higher than previously recorded levels of infection in fishes of the Devils River.

Given the listed status of the fountain darter, Devils River minnow, and Rio Grande darter, areas where these fishes occur are of particular conservation concern, and illustrate the necessity of current data concerning the prevalence and intensity of these parasites in the delicate spring-fed ecosystems of Texas.

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## **A Comparison of Whole Blood Viscosity and Hematocrit Levels between Yoga Practitioners and Sedentary Adults** by James Shadiow, Takashi Tarumi, Mandeep Dhindsa, and Stacy D. Hunter

Department of Health and Human Performance, Texas State University  
Human Informatics Research Institute, National Institute of Advanced Industrial Science and Technology, Tsukuba, Ibaraki, Japan

### **Problem or research question:**

Alterations in rheological measures such as elevations in whole blood viscosity (WBV) and hematocrit (Hct), have been linked with increased risk of cardiovascular disease (CVD). Endurance training has been demonstrated to lower WBV and Hct; however, evidence supporting the efficacy of yoga in modulating WBC and Hct is sparse.

The purpose of this trial was to determine the effect of a regular yoga practice on WBV and Hct.

### **Methodology or approach;**

A cross-sectional study was conducted examining WBV at multiple shear rates and Hct levels among yoga practitioners with a minimum of 3 months of consistent practice and sedentary, healthy adults. Fasting blood samples were collected from an antecubital vein from a total of 42 participants: 23 sedentary adults and 19 regular yoga practitioners. Brachial arterial blood pressure (BP) was measured and the averages of 3 measures were reported.

### **Results or preliminary results and their impact on the field:**

Yoga practitioners had significantly lower WBV at 45 s<sup>-1</sup> ( $p < 0.01$ ), 90 s<sup>-1</sup> ( $p < 0.01$ ), 220 s<sup>-1</sup> ( $p < 0.05$ ), and 450 s<sup>-1</sup> ( $p < 0.01$ ) than sedentary participants. No significant group differences in Hct ( $p = 0.38$ ) were found. A tendency toward lower systolic BP ( $p = 0.06$ ) was observed in the yoga practitioner group; however, no significant group differences in BP were exhibited.

Although a consistent yoga practice was associated with lower WBV, a health indicator related to CVD risk, yoga was not associated with changes in Hct, a major determinant of WBV.

## **Kids in Cages or Kids at Camp? Analyzing the media spectacle of family separation at the southern border** by Marianne Smith

Sociology, Texas State University

### **Problem or research question:**

Media sociologists argue that mass media largely constructs the public's understanding of events and issues; and further, that mass media also informs the public how to feel about events and issues (Mills, 1956; Habermas, 1989). In *Latino Threat Narrative* and *Covering Immigration*, Leo Chavez demonstrates how the media's portrayal of immigration and immigrants themselves can be categorized into a handful of themes, all with the effect of drawing lines between *us* and *them*. Chavez specifically argues that "how we, as a nation of diverse people, derive our understanding of who to include in our imagined community of fellow citizens is a product of...what we glean from the media" (Chavez, 2008; 5). An important arena in which this is exercised is the mass media during a media spectacle.

### **Methodology or approach:**

This research analyzes the content of news media in both print and cable news network form from collectively accepted liberal and conservative sources of this summer's media spectacle of family separation at the southern border. Articles and news segments conveying the spectacle are analyzed for common themes in order to demonstrate the ways in which society engaged in distinguishing between us and them, and therefore what sympathy, rights, outrage, advocacy, or policy should be extended to those who might not be a part of *us* in the context of wrestling with family separation.

### **Results or preliminary results and their impact on the field:**

Preliminary findings show conservative and liberal print media and liberal cable news reports repeat virtually the same themes, while conservative cable news networks and alt right print media share the same repeated themes.

As information and identity is dispensed and negotiated in mass media, analyzing common themes which emerge from contemporary media spectacles reveal society's current ideas about who we are as Americans, and who is to be excluded as well as the terms of and justification for exclusion.

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## **Weight Stigma During Medical Visits is Negatively Associated with Provider-Patient Relationship Factors** by Morgan Snyder and Kelly Haskard-Zolnierrek

Psychological Research, Texas State University

### **Problem or approach:**

Weight is a personal characteristic that is highly stigmatized. In fact, rates of weight discrimination are comparable to rates of racial discrimination (Puhl, Andreyeva, & Brownell, 2008). Health care professionals may hold negative attitudes about individuals who are overweight or obese and this can lead to the stigmatization of these individuals in health care settings. Therefore, it is important to understand how experiences of weight stigma during medical visits are associated with aspects of provider-patient relationship quality. This online survey study examined the relationship between weight stigma and provider-patient relationship factors in individuals with hypothyroidism. Weight change can result from hypothyroidism, so it is important to examine weight stigma in this population.

### **Methodology or approach:**

Participants ( $n = 456$ ) in this study included individuals who reported that they had been diagnosed with hypothyroidism. Participants were recruited via social media, specifically Facebook support groups for hypothyroidism. Weight stigma was measured using the Stigma Situations in Health Care Scale (Ferrante et al., 2016). Trust in the physician was measured using one item that asked the participant to rate their level of trust in their physician from 0-10. Empathy was measured using the Jefferson Scale of Patient Perceptions of Physician Empathy (Kane et al., 2007). Provider-patient relationship quality was measured using the Patient-Doctor Depth-of-Relationship Scale (Ridd et al., 2011).

### **Results or preliminary results and their impact on the field:**

A total of 96% of the participants were female, and 90% of the participants were White. The mean age of participants was 45 years. Based on BMI calculations, about 22% of the sample were normal weight, 30% were overweight, and 48% were obese. Correlations revealed significant negative associations between experiencing weight stigma during a medical visit and trust in provider ( $r = -.21, p < .001$ ), perceived provider empathy ( $r = -.25, p < .001$ ), and provider-patient depth-of-relationship ( $r = -.23, p < .001$ ).

In this study, experiencing weight stigma during a medical visit was associated with lower trust in the provider, perceiving less empathy from the provider, and lower depth-of-relationship between the provider and the patient. When a patient feels stigmatized due to their weight during their visit, certain aspects of their relationship with their provider can be affected. Trust in provider, provider empathy, and the depth-of-relationship have been shown to be associated with adherence and patient satisfaction. Strained relationships due to experiencing stigma during a medical visit can have negative implications for the patient such as lower adherence or lower patient satisfaction. These results suggest that education and awareness regarding weight stigma would be beneficial for health care providers.

## **A Comparative Study of Middle School Mathematics Teachers' Pedagogical Content Knowledge and Belief Towards Teaching Between the U.S. and China** by Zhaochen Song Mathematics Education, Texas State University

### **Problem or research question:**

In 2010, U.S. former President Barack Obama launched one of the world's most ambitious education reform agendas "Race to the Top", which encourages U.S. states to adopt internationally benchmarked standards and assessments as a framework within which it can prepare students for success. On the other hand, international comparison studies indicate that Chinese students outperform many of their peers in mathematics tests and competitions. It is reasonable to hypothesize that this learning gap is connected to their teachers, as teaching is a major determinant in students' learning gains. Being a student in both the U.S. and China as well as my cultural background motivated me to research the area of teacher's pedagogical content knowledge and their cultural beliefs more in-depth, as the pedagogical content knowledge (PCK) is closely related to the actual teaching and directly affects teachers' instructional quality. In this study, I plan to answer the following research questions:

1. What is the pedagogical content knowledge of middle school mathematics teachers from Shandong Province, China and south Texas, USA?
2. What are the beliefs towards teaching in relation to their PCK and teaching?
3. How do Chinese teachers compare to the U.S. teachers with respect to PCK and cultural beliefs?

### **Methodology or approach:**

A case study method will be applied for this study. In this study, three middle school mathematics teachers in each country will be chosen. In general, the data will be collected in two stages. The data will first be collected from the Chinese teachers, and three phases will be conducted at this stage. During these phases, teachers will be taking a survey, observed in their classroom, and interviewed about their views and beliefs. All the interviews will be audio recorded for data analysis. The three U.S. teachers will be chosen, in the next stage of the study, from a larger NSF funded research project. Their Mathematical Knowledge for teaching (MKT) and Mathematical Quality of Instruction (MQI) scores will be used for future research. Scores of the teachers from two countries will be plotted on a plane to make comparison. Three pairs of teachers will be selected, and their classroom observations will be further analyzed in depth to answer the research questions.

### **Results or preliminary results and their impact on the field:**

The large-scale investigation of how teachers impact students' achievement is still sparse in the field, as it is extremely difficult to extensively investigate teachers. Therefore, small, yet in-depth studies become especially important and practical in examining the effects of teachers on students' mathematics learning. This study is designed to contribute to the existing body of knowledge about middle school

mathematics teachers' pedagogical content knowledge between the two countries, and hence has its significance in revealing the differences, if there are any, and possibly pointing out a direction for the improvement of professional development training for teachers in the U.S. The purpose of this study will be to discover the differences in pedagogical content knowledge for middle school mathematics teachers as well as their cultural beliefs towards teaching in the U.S. and China.

## **Study of Effectiveness of “Fact Sheet” Information at National Alliance on Mental Illness** by Jesse C. Starkey

Mass Communication, Texas Tech University

### **Problem or research question:**

Access to clear and concise information about mental illness is crucial for individuals seeking help and their support network (Furlonger & Budisa, 2016). The website of the National Alliance on Mental Illness (NAMI), the nation’s largest grassroots mental health organization, offers a robust “Learn More” section, with a “Fact Sheet” library, offering “clear, concise information on mental health topics” (Fact Sheets, n.d.). However, an initial review of the documents in the “Fact Sheet Library,” found the documents to be textually dense, with small type and very few design elements to highlight the main points.

To address this issue, the author used a series of validated measures to determine the readability and suitability of the current Fact Sheets, develop new Fact Sheets, and determine the relationship between both the original and new Fact Sheets and users’ Mental Health Literacy (MHL).

### **Methodology or approach:**

This study employed several measures to answer the research questions:

1. How effective are the current NAMI “fact sheets” at providing “clear, concise information on mental health topics?”
2. What can be done to improve the “fact sheets” to allow them to be more accessible and easier to read for the intended audience?

The investigation was conducted in three phases: (1) evaluate the readability of the current Depression and Bipolar Disorder fact sheets using the Flesch-Kincaid Reading Ease Formula (FKREF) and the Suitability Assessment of Materials (SAM) scale, (2) redesign the documents based on Phase 1 results to be easy-to-read, content-appropriate sources of information, and (3) field test both the original and revised documents via a Qualtrics experiment using a convenience sample ( $n = 100$ ) of English-speaking adults to determine whether a better designed document will result in higher MHL (using the Mental health Literacy Scale; O’Connor & Casey, 2015) and condition-specific literacy (using the Friends in Need Questionnaire; Burns & Rapee, 2006).

### **Results or preliminary results and their impact on the field:**

Phase I and Phase II results indicated that the FKREF scores are well above the called-for levels of fifth or sixth grade reading, and the SAM scores are in the 0-39% range, making them unsuitable material.

Phase III Results

At the time of this submission, Phase III data has not been gathered. It is expected that by the time of presentation, data will have been collected, and an initial analysis will have been conducted.

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## **Atmospheric Water Generation Optimization Using Computational Fluid Dynamics**

**Analysis of a Thermoelectric Cooler Test Platform** by Mark Summers and Bahram

Asiabanpour

Engineering, Texas State University

### **Problem or research question:**

Atmospheric Water Generation (AWG) is the process of extracting water from the surrounding air. The combination of dry bulb temperature, relative humidity, and atmospheric pressure defines the amount of water available in the atmosphere, and methods can be employed to optimize the AWG rates achieved.

Nature does this in many ways. Plants have evolved the shape, size, and orientation of their leaves to capture atmospheric water, and some insects have evolved the surface texture of their backs to allow efficient water collection. Humans have also achieved various success with AWG. Over one hundred years ago, air wells were designed and used to collect hundreds of liters of water a day. More modern techniques include using vapor-compression refrigeration (VCR) and thermoelectric coolers.

For any set of atmospheric conditions (dry bulb temperature, relative humidity, and atmospheric pressure), there is an associated optimum voltage/current combination to minimize the energy required per unit of water harvested. This value of kW-hr expended per liter of water produced is the parameter that is to be optimized.

### **Methodology or approach:**

Since there are endless atmospheric conditions to evaluate and optimize, doing actual AWG testing for each condition would be problematic. Therefore, the approach is to design and fabricate a thermoelectric cooler powered AWG Test Platform and minimize the energy per unit volume of water generated at just a few widely spaced sets of atmospheric conditions. Then, these results will be correlated to computational fluid dynamics (CFD) simulation data. Once this correlation is achieved, the remaining intermediate atmospheric conditions can be run using the CFD models to quantify the operating characteristics of the AWG system over a wide set of possible atmospheric conditions. The end result will be an optimized current/voltage for the Peltier devices and cooling fans that will optimize the kW-hr per liter of water achieved for each atmospheric condition.

Since there are a variety of heat transfer mechanisms being considered (conduction, convection, radiation, and evapotranspiration), it is difficult to find a single CFD analysis software tool that is best suited for all types of analysis. Therefore, Solidworks Flow Simulation will be used to evaluate conduction, convection, and radiation heat transfer rates. For evaluation of the multiphase heat transfer and the effects of surface roughness of the condensation plates, ANSYS, COMSOL, and/or STAR-CCM+ CFD tools will be used.

**Results or preliminary results and their impact on the field:**

Preliminary test results using purchased TEC cooler assemblies with 60mm x 40mm condensation plates tested at indoor conditions (70-75°F – 40-60% R.H.) were successfully correlated to a Solidworks Flow Simulation CFD analysis.

Impact: The goal of the effort is to optimize AWG rates (kW-hr per liter of water) in a newly designed and fabricated thermoelectric cooler powered AWG Test Platform. For areas of the planet without access to reliable sources of water and/or electrical power, this system could be used to provide maintenance free water using sustainable energy provided by solar panels.

## **Integration of Variable Microgrid Energy to Attain Carbon Neutral Manufacturing: A Machine Learning Approach** by Fei Sun, Tongdan Jin, and Clara M Novoa

Materials Science, Engineering and Commercialization, Texas State University

### **Problem or research question:**

Microgrid generation is the potential solution to attaining zero-carbon manufacturing operations. This study aims to formulate a stochastic model that minimizes the investment and operation costs when variable renewable generators and hybrid energy storage systems are integrated into large manufacturing facilities. Various design constraints are considered, including zero carbon footprint, reliability of power supply, and battery state of charge. The research aims to achieve two objectives: First, a quantitative approach is proposed to minimize the Levelized Cost of Energy (LCOE) for powering a manufacturing facility. Second, the long-term prediction models of renewable energy generation is developed based on the Artificial Neuron Network (ANN) algorithm. Mathematical models of wind and solar generation, and battery and supercapacitor are elaborated.

### **Methodology and approach:**

The objective function is a mixed integer linear programming (MILP) model and particle swarm optimization algorithm is proposed to search for optimal solution. The model is tested and implemented in different cities with a variety of climate conditions. The results can provide a reference for the capacity optimization of wind, solar and energy storage systems. The variation of microgrid costs for time-of-use (TOU) rate and battery's depth of discharge levels are analyzed as well.

Two mathematical models are designed based on the fixed price and dynamic utility price (i.e. TOU), which influences the energy storage capacity. ANN model is applied to forecast the coming year's wind speed and weather condition. Python programming language is used to manipulate big data and extract effective statistic information from the historical weather data information and construct the ANN model. To tackle this complex stochastic optimization problem, wind and solar generations are simulated hour-by-hour during the course of a year. The optimal capacity of wind turbine, solar photovoltaics and hybrid energy storage system is captured to minimize the annualized system cost. The forecasting models help to assess generation of renewable technologies. Algebraic Mathematical Programming Language is applied to solve this MILP problem.

### **Results or preliminary results and their impact on the field:**

We performed a comprehensive feasibility analysis on penetrating 100% wind and solar power in large industrial facilities. This model would set an exemplary when using onsite renewable energy as the primary power supply. It is cost effective when wind speed is greater than 5 m/s or the energy storage device has more than 70% depth of discharge levels.

It provides a solution to designing and operating microgrid power system with onsite renewable power, which is competitiveness, feasibility and minimal impact on the main grid. The experiment results show that the manufacturing industry can attain net-zero carbon emission operations economically and reliably

through the integration of onsite renewable energy resources. This model can be expanded from one location to multiple locations and from manufacturing into commercial business, data center, and warehouses, distribution centers, which are energy-intensive industry.

## **An Association Between Health Information Technology and Safer Prescribing in Long-Term Care: A Systematic Review** by Rohan Syal, Cody Basch, Edward Chabarria, Lauren MacNeil, and Dr. Scott Kruse

Healthcare Administration, Texas State University

### **Problem or research question:**

Electronic health records (EHRs) have been implemented across several segments of healthcare organizations. Their purpose is to assist with increasing the quality of health care, preventing medication errors, reducing costs, increasing administrative efficiencies, and expanding access to health care. One health care segment that has seen slow adoption of EHRs is long-term care facilities. Should these facilities employ such systems, they will see many benefits including reductions in adverse drug events that are caused by medication errors and inappropriately prescribed medications.

**Objective:** The objective of this systematic review is to determine an association between the use of health information technology and the improvement of prescription administration in long-term care facilities.

### **Methodology or approach:**

A systematic review was conducted using the Medline database provided by Pubmed and the Cumulative Index of Nursing and Allied Health (CINAHL) database. With the use of certain key terms, we identified 66 articles that met the criteria for our review. Each article was then reviewed by two researchers to determine if the study was germane to the research objective. If both reviewers agreed with using the article, it became a source for our review. The review was conducted and structured based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

### **Results or preliminary results and their impact on the field:**

Upon analyzing the articles chosen for review, it came to our attention that long-term care facilities have been slow to adopt EHR systems in the United States when compared to other health care systems. Due to this lack of adoption, researching the benefits and the reduction of adverse drug events stemming from EHR application in long-term care settings proved to be difficult.

Health information technology and the adoption of EHR systems have proven quite beneficial for many health care organizations. Long-term care facilities are among the organizations that would benefit greatly from implementing such systems. Research has shown that they are slow to adopt, however, long-term care facilities that have had successful EHR implementations, have shown to have reductions in adverse drug events caused by medication errors and inappropriately prescribed medications.

**Keywords:** Health Information Technology (HIT), Long Term Care (LTC), Electronic Health Records (EHR), Medication Errors

**Cultural Dissonance in Culturally Diverse People** by Maria Tahir and Dezerae Reyes  
Sociology, Texas State University

America has found itself in the face of a cultural dilemma: immigrants without a community to share their culture and beliefs feel alienated and isolated. However, their children, and others from a culturally diverse background face a different type of alienation. While parents fight for their offspring to maintain a semblance of their own culture and ethnicity, these children are also immersed in American culture. This leaves children with a sense of cultural dissonance that they are unable to shake. Whether it is a mixed race child caught in the crossfire's of their parents' clashing cultures or an immigrant in America torn between fitting in or maintaining their roots, this feeling permeates their lives. It leaves them caught between two cultures, never fully conforming to one, always feeling an outsider regardless of the situation. These children, then, are constantly in a liminal space, trying to fit to one culture versus the other, while never feeling a real sense of belonging to either. They can often carry this alienation with them throughout their lives. Using collaborative autoethnography informed by Anzaldúa's *Borderland* as a theoretical framework, we will examine our experiences of cultural dissonance and the impact it had on shaping many of our mindsets and behaviors relating to identity. We will analyse these experiences as reflections of an inherently flawed ethnocentric culture. Our paper concludes by discussing implications of the research findings for future research.

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## **A Few Good Men: A Comparison of Nonprofit Volunteer Recruitment Messages to Men** by

Laura Torres

Sociology, Texas State University

### **Problem or research question:**

Volunteering has numerous economic and community benefits but a majority of volunteers are women. According to the Bureau of Labor Statistics in 2015, women volunteers made up 27.8 percent of the total while men made up 21.8 percent of volunteers. For nonprofit agencies that serve communities equally divided in sex, it has become key for nonprofits to understand how to recruit men to ensure success within these communities. It's also important for nonprofits to have diverse volunteers in regards to funding or longevity. Social media is an important tool that has become essential to many nonprofit organizations because it lets them target a large pool of potential volunteers to recruit. Because there is limited research on this topic, this paper hopes to discern what message is being sent on Facebook in an effort to recruit men as volunteers.

### **Methodology or approach:**

Using unobtrusive methods, this paper will analyze the Facebook pages of 100 Texas nonprofit organizations social media posts during the month of April, national volunteer month. This paper will evaluate photos, videos, and text to understand the message being conveyed across numerous nonprofit Facebook pages.

**Results or preliminary results and their impact on the field:** In this study, it's my goal to code the media messages to better understand how nonprofit organizations are recruiting men as volunteers. I also would like to include Facebook posts around holidays or events that men in particular may be interested in like the Superbowl or Father's Day.

In order to adequately serve nonprofit agencies that serve communities equally divided in sex, it's important for nonprofit organizations to understand how to recruit men. By evaluating social media posts, this research can better comprehend what messages are being conveyed to men in recruitment messages.

**Defining the Barriers to the Use of mHealth in Improving the Preventative Health Outcomes in Developing Countries: Systematic Review** by Melissa Susana Valdes Luna, Stephanie Ortiz, Narce D. Segovia, and Inderdeep Kaur Bamrah  
Healthcare Administration, Texas State University

**Problem or research question:**

During the last decade there has been an upsurge in the use of mobile technologies to improve the delivery of health services that aim to change the health outcomes of populations around the world. This study centers specifically in the use of mobile technologies (mHealth) such as cell phone text messaging, short message services (SMS), calls, and apps to change the health behaviors and therefore the health outcomes of populations in Low and Middle-Income Countries (LMICs). Research supports that these types of mHealth applications show improvements in health outcomes such as maternal and infant mortality, treatment adherence, immunization rates, communicable diseases prevention, etc. However, it is also evident that in LMICs, there are significant barriers that are difficult to overcome to successfully implement, sustain, and expand mHealth initiatives that have the potential to improve the health of vulnerable populations. A systematic literature review has been conducted to explain the factors that impede the successful implementation of preventive care mHealth interventions that aim to improve health outcomes of a population in diverse developing countries around the world.

**Objective:** This study aims to define the barriers to the use of mHealth in improving the preventive health outcome in developing countries.

**Methodology or approach:**

The authors followed the PRISMA checklist and conducted a systematic literature review using data from Google Scholar, PubMed, and CINAHL. The search criteria derived from the primary objective of the study. The final matrix of the articles from PubMed and CINAHL prepared from an exhaustive terms search that includes mHealth, text messaging, and developing countries with all their respective MESH terms. The search includes specific limiters such as publication date, language, full text, general availability. At least two authors thoroughly reviewed each article abstract, and a final set of articles (n= 58) were obtained following several consensus meetings to confirm the applicability and external validity of the articles.

**Results or preliminary results and their impact on the field:**

Researchers analyzed eight studies out of the fifty-eight available. According to the analysis, the use of mHealth, specifically text messaging to remind patients about clinic visits and to improve adherence to treatment, has shown positive results in patients' health outcomes. Text messaging also reduces the turnaround time of lab results to patients in rural settings where the response time is critical to starting patients' treatment and reducing the risk of transmission of communicable diseases. Findings of the analysis showed that the main barriers to successful use of mHealth are: lack of cell phone signal, the perception of usefulness from patients, funding, infrastructure organization, socio-political conflicts, study design, and the gender gap. The full results of the study are expected by November 2018.

The review on mHealth revealed that text messages are proficient in changing population behavior, immunization coverage, psychological symptoms in primary care, but it is not yet fully established in developing countries, and barriers vary widely.

**Keywords:** Health information exchange (HIE), mobile health (mHealth), Text Messaging, Telemedicine, Barriers, Low- and middle-income Countries (LMICs), preventive care, telehealth.

## **BRFSS 2015-2017: Exploring the Burden of Caring for Others** by Teresa Vannoy

Sociology, Texas State University

### **Problem or research question:**

Recognizing the growing public health need for informal care, the U.S. Centers for Disease Control & Prevention (CDC) commissioned an expert panel to develop a “caregiver module” for the Behavioral Risk Factor Surveillance System (BRFSS), the CDC’s annual health survey. The new module was piloted in 2005, and in the decade since, the BRFSS survey has been an important resource for understanding the impact of the burden of caring for others on the health and well-being of those providing informal care in the United States.

However, the core survey has not included “caregiving” questions since the significant 2011 redesign of the BRFSS random selection process to include cell phone numbers. In 2015, an updated caregiver module was released and by 2017 forty-five states implemented caregiving questions in one or more annual survey. As states typically only survey a subset of participants, the state-level data sets are generally small, limiting analysis. Pooling available data and combining that data with demographic and health data from the core survey provides an important new opportunity to test if the burden of care is influenced more strongly by the underlying reason for care or by the amount and duration of care provided, or whether both are instrumental in influencing or predicting burden. As little comparative research exists, the purpose of this research is to test for the first time these influences and key sociodemographic factors suggested by research to date.

### **Methodology or approach:**

This secondary quantitative research project involved pooling BRFSS data files to compare care-related and demographic factors that impact the overall health of care partners. Univariate, bivariate, and regression analysis provided insight into two comparator groups: all current care partners and a subset of heavily burdened care partners, defined as those care partners providing 40 or more hours of care per week for five or more years.

### **Results or preliminary results and their impact on the field:**

Preliminary results suggest that for care partners, overall poor health is positively associated with the relationship of the person for whom they provide care, race and ethnicity, gender, and the average number of hours of care provided per week. Negative associations with poor health were stronger for social or employment status and education than for household income, and main reason for care. For heavily burdened care partners, Hispanic ethnicity is more likely to be associated with care partner poor health. Social or employment status and education also had stronger negative associations than main reason for care or household income in this group. These results suggest that a priority for care partner burden research should be to understand the impact of social and employment status and how those roles contribute to and mitigate caregiver burden. Additionally, this research provides support for the value of pooling data and the need to continue to do to develop deeper understanding of the key drivers of care partner burden.

## **Singapore Summit Newspaper Coverage** by Andrew Villarreal

International Studies, Texas State University

President Donald J. Trump met face-to-face with the North Korean Supreme Leader Kim Jong-un on 12 June 2018 in Singapore to discuss the issue of denuclearization of the Korean Peninsula. The Singapore Summit, as it is referred to now, was a five-hour meeting that produced a one-page agreement signed by the two leaders with four main points. Although this meeting was not the first time that the United States has engaged in negotiations with another state, this was the first time that a sitting United States President has met with any North Korean Supreme Leader.

The current nuclear issue is rooted in North Korea announcing they were pulling out of the 1970 Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in 1994. In response to this crisis, the United States and North Korea signed the Agreed Framework whereby North Korea would stop its nuclear weapons program in exchange for aid. When this framework broke down in 2002, North Korea pulled out from the NPT and began operation of their nuclear facilities in January 2003. By August 2003, the next phase of response to the nuclear crisis, the Six Party Talks, began. The Six Party Talks were a series of annual multi-lateral talks between the United States, Japan, South Korea, North Korea, China, and Russia aimed at denuclearization. These series of talks broke down in 2009 after an internationally condemned rocket launch by North Korea.

During her time as Secretary of State, Hillary Clinton called Japan one of the United States' closest allies in Asia. Among the members of the old Six Party Talks however, Japan is the only country to not have had a meeting with North Korea. Because of the historic nature of the Singapore Summit, and the noticeable absence of Japanese representation, it is important to look at the way that newspaper coverage in the United States and Japan have framed the Summit.

The questions that are hoped to be answered include, but are not limited to:

1. Is there a difference in the way American and Japanese newspaper coverage framed the Singapore Summit?
2. Is there a difference in the tone of American and Japanese newspaper coverage of the Singapore Summit?

In order to answer these questions this study will use agenda setting and framing theory combined with a cross-content analysis of the American and Japanese newspaper coverage of the Singapore Summit, and will include a subjective analysis of editorials.

This study is currently on-going, but the impact of this research on the field will be an adding of knowledge about the interrelations between the United States, North Korea, and Japan.

## **Calculus Visualizations and Mental Imageries of Blind and Sighted Students** by Nell Wackwitz

Mathematics Education, Texas State University

*“Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world.”*

- Albert Einstein, *in an interview with G. S. Viereck*, The Saturday Evening Post, 1929

In the science, technology, engineering, and mathematics (STEM) fields, the gateway course has always been Calculus I. Beginning with the calculus reform movement in 1986, Calculus I tended to be presented using increased and more complex visualizations. This visual requirement placed a roadblock in the path of most non-visual students, and especially of congenitally blind students, who had never seen and had therefore to use other techniques to learn the highly visual aspects of calculus.

In this holistic, exploratory case study, I investigated the visualizations, mental imageries, and dynamic qualities of Calculus I. I used four participants, three sighted and one blind. The blind participant was completely and congenitally blind. I chose these four students because they had the same Calculus I professor in the same course, because they all scored an A in their Calculus I course, because the participants were all 19 or 20 years old, because the participants were all female, and because the participants were all STEM majors. Since this study, by design, would only speak to this one set of circumstances, I felt that the more similarities shared by the participants, the better.

These participants took part in a series of face-to-face task-based calculus interviews with the me. I used a researcher developed Wackwitz-White Visualization – Mental Imagery (V–MI) Continuum framework, against which each student’s responses to each visualization in each task were measured. The findings were unexpected, as students who tested as highly visual evidenced the same general mental imagery ability per task as the more analytic participants. The breakdown in findings between participants informed this researcher on the kinds of visualizations, which worked well with these participants, and might work well with other students.

## **Out of the Closet and into the Gayborhood: The Cycle of Gaytrification** by Joshua Warren Sociology, Texas State University

### **Problem or research question:**

Arguments surrounding the existence of gay neighborhoods—commonly referred to as “gayborhoods”—often lead to predictions that they will either disappear in the seemingly ever-growing liberal climate of many cities, or will continue to thrive as communal and safe spaces for the LGBTQIA+ population. By creating and occupying gayborhoods, are queer individuals thus gentrifying (“gaytrifying”) these areas?

In his intensive study of gayborhoods and their shifting dynamics, Ghaziani (2014) revealed a variety of factors that affect queer individuals’ decisions to occupy a gayborhood in a post-gay era. Homophily is used to explain the persistence of gayborhoods and their inhabitants, as people with similar interests and characteristics are more likely to form clusters with one another. The notion that queer individuals are the gentrifiers of cities is challenged by the growing trend of straight people eventually moving into gayborhoods and changing the dynamic (Ghaziani 2014). As a result, queer individuals may actually face displacement rather than the stigma of being gaytrifiers (Christafore and Leguizamon 2017), but are often still viewed as consumers in a pink economy (Bell and Binnie 2004).

### **Methodology or approach:**

I will conduct a content analysis of a sample of online news articles that specifically have titles and content related to gayborhoods, gentrification, and pink capitalism/economy. Upon analysis, I will synthesize and correlate my findings to the existing literature and present a possible motivation for gaytrification and pink capitalism, and discover how they affect either the persistence or disappearance of gayborhoods.

### **Results or preliminary results and their impact on the field:**

I expect to draw conclusions that can be explained by homophily and shifting, diverse dynamics in a post-gay era. Online news articles will provide better insight into how the media views gayborhoods and influences queer individuals as gaytrifiers and pink consumers.

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## **First Principle Polaron Modeling in Hybrid Perovskites Using the GGA+U Method** by Eric Welch, and Alex Zakhidov

Materials Science, Engineering, and Commercialization, and Physics, Texas State University

Organohalide lead hybrid perovskites (HPs) have become the benchmark, state-of-the-art materials in third generation, perovskite solar cell devices, achieving a power conversion efficiency of over 22%. Yet, the underlying photo-physical properties of HPs are still under debate. Here we use density functional theory within the generalized gradient approximation with a Hubbard correction (GGA+U) to study structural properties, band structures, charge carrier dynamics and electron-phonon coupling in HPs with different compositions. Our preliminary DFT+U simulations reveal the formation of light-induced self-trapped hole polarons in HPs with different halides, which may have profound implications on charge transport, recombination, and experimentally observed device instability under illumination. Moreover, we argue that polaron induced loss of inversion symmetry and enhanced Rashba splitting might be responsible for our recent experimentally observed room-temperature ultrafast photocurrent and free-space terahertz emission generation from unbiased CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub> benchmark HPs. Polarization dependence of the observed photoresponse is consistent with the Bulk Photovoltaic Effect caused by a combination of injection and shift currents. Ballistic by nature, these photocurrents may enable next generation perovskite solar cells with efficiency that can theoretically exceed the Shockley–Queisser limit. We also developed a computational method that allows estimating the polaron size, while minimizing self-interaction errors, as well as the overall computational requirement of each calculation.

## **The effectiveness of shock advertising used by commercial organization: promoting products or social issues?** by Shuo Yan and Dr. Sindy Chapa

Media and Communication Studies, Florida State University

### **Problem or research question:**

In 1980s, consumers around the world were astonished by Benetton's shock advertising strategies to draw viewer's attention to the brand, a series of shocking advertising campaigns were launched in 80s and 90s. Surprisingly, most of Benetton's advertisement and campaign do not include its products or anything related to its products. The brand successfully increases its awareness with these unconventional advertisements initially. However, these shocking ads elicit controversy and opposition against the brand.

Nowadays, many For-profit or nonprofit organizations still utilize shock advertising to capture people's attention to break through the clutter (Dahl, Frankenberger & Manchanda, 2003). The empirical support from research is mixed. Some studies confirmed the effectiveness of shock advertising on increasing attention (Parry, Jones, Stern & Robinson, 2013), brand awareness (Waller, 2004), and benefiting memory and behavioral change (Dahl, Frankenberger & Manchanda, 2003). While other scholars found shock advertising was not as effective as expected because of the increasing immunity of the audiences (Parry, et al., 2013), negative image being created about the brand in consumers which could potentially lead to the boycott toward the brand or the loss of sales. (Andersson, Hedelin, Nilsson & Welandar, 2004; Klara, 2012). In addition, previous studies revealed socio-demographic factors such as religion, moral principles, age and gender as moderators to the perception of shock advertising (Vézina & Paul, 1997; Virvilaite & Matuleviciene, 2013). Cultural dimensions such as individualism-collectivism and high-low language context also moderate the impact of shock advertising (Virvilaite & Matuleviciene, 2013). Other scholars showed interests in consumer's emotional response toward shock advertising (Parry, et al., 2013; Virvilaite & Matuleviciene, 2013). Despite shock advertising receives considerable research interests on its effectiveness of breaking through the clutter, few studies known to date have been done to investigate the effectiveness of the use of shock advertising by commercial organizations for different purposes – product promotion or increasing awareness of social issues among consumers. Therefore, this paper is proposed to fill the gap in the existing shock advertising literature.

### **Methodology or approach:**

This study employs a 2 (appeal: shocking/nonshocking) × 2 (purpose: product promotion/social issues) multiple message experimental design. Advertising content and purpose are manipulated between subjects. Participants randomly view three printed advertisements in each condition for a total of 12 advertisements. Thus, message is a replication factor and run between subjects.

### **Results or preliminary results and their impact on the field:**

This paper attempts to fill the gap in shock advertising literature by investigating the effectiveness of shock advertising in consumer's attitudinal response. Specifically, it compares the use of shock

advertising by commercial organizations for different purposes – product promotion or increasing awareness of social issues among consumers. In addition, it provides evidence on the comparison between the effectiveness of shock advertising and traditional advertising.

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**The impact of perturbation on multicollinearity detection measures** by Ryan Zamora and

Dr. Shuying Sun

Mathematics, Texas State University

In a linear regression setting, multicollinearity occurs when two or more regressor variables are related or correlated and they provide the model with redundant information. This shared explanation of the response variable's variation will often lead to inflated standard errors and the instability of regression coefficients. Even though there are diagnostic measures for the detection of multicollinearity, these methods often lack the guidance and clarification needed to formulate a conclusion. In order to solve this problem, we study how the perturbation of regressors will affect the different multicollinearity diagnostic measures. In particular, we are developing a statistical software package to analyze and summarize the multicollinearity patterns when adding different levels of noise to perturb regressors of interest. We calculate the rates of change of the different diagnostic measures. Our software package produces summary tables and output files that will provide a comprehensible opportunity to observe the relatedness of variables. Our package also allows us to test the robustness and stability of each individual diagnostic measure.

## **Mandatory Foreign Language Education among American Students: A Review of the Literature** by Immanuel Zhen Miin Tan

Public Administration, Texas State University

### **Problem or research question:**

The incapability of many Americans to speak in a foreign language creates a foreign language “emergency” which could gradually hinder the country’s economy growth and weakens the United States foreign policy in the near future (Zietlow, 2017).

This review of literature provides several best practices that have been used in the past such as mandatory foreign language education in school, increase country’s annual budget to invest in foreign language education and bilateral agreements on foreign language education among countries to address the lack of United States foreign language skills policy problem. The research question guiding to this study is: What are the best practices that have been used in the past from different countries to address the lack of foreign language skills policy problem? This study was conducted by reviewing literatures retrieved from academic journals, online articles and online newspapers published in the past 10 years. Three best practices that have been used in the past from different countries to address this policy problem were identified. They are: mandatory foreign language education in school, increase country’s annual budget to invest in foreign language education and bilateral agreements on foreign language education among countries.

### **Mandatory Foreign Language Education in School.**

All schools in China has begun to teach English from kindergarten onwards. Besides that, all state employees younger than 40 years old are mandated to comprehend at least 1,000 English phrases (Ward & Francis, 2010). China is now ranked 36th among the world's 80 non-English speaking countries in term of English proficiency, holding its highest ever position (Xinying, 2016).

### **Increase Country’s Annual Budget to Invest in Foreign Language Education.**

In Japan, the Education Ministry has recommended to increase the number of foreign English teachers at schools to 10,000 from the present 4,360 and sending these native English speakers to all schools in Japan. Although this will increase the budget for education ministry, the government strive to strengthen the nations’ English language proficiencies. (Japan Today, 2013).

### **Bilateral Agreements on Foreign Language Education among Countries. *United Kingdom and China.***

Hanban, the Chinese office for teaching Mandarin as a foreign language, has signed an agreement to double the number of Chinese educators for the United Kingdom. The British Council has also approved to educate 50,000 English teachers in China over the next three years. (Stacey & Warrell, 2013). Consequently, there is a significant increase of 5%, converted to an approximate of 90,000, China students who studied in the United Kingdom between year 2013 - 2014 and a 50% growth measured over the past five years. In addition, there is a significant increase of students, by 50% over the past five years,

who enrolled in the British Transnational Education (TNE) courses presented in China between 2013 - 2014 (ICEF Monitor, 2015). Students from both the United Kingdom and China were able to communicate better in English and Mandarin when they study abroad.

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