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Clavelle III, Frank

Designing for Connection: Reimagining Campus Architecture as an Active Agent in Student Mental Health

According to the American Psychological Association (APA), in “Nearly every metric, student mental health is worsening. During the 2020-2021 school year, more than 60% of college students met the criteria for at least one mental health problem.” The rising prevalence of mental health challenges among university students has prompted urgent conversations about how educational environments can better support their psychological well-being. While counseling and wellness programs are common interventions, the design of the physical campus is often overlooked. Prior scholarship has noted that architectural design can significantly impact and enhance students’ ability to manage stress, depression, and social isolation. This research is motivated by the belief that campus design can be a powerful and preventative tool for addressing students’ mental health concerns.

This study explores how the architectural design features in the university campus can positively influence students’ mental well-being and social connection at the University of Louisiana at Lafayette. Specifically, it asks: (1) Which built environment features, such as natural lighting, biophilic elements, or flexible spaces, most effectively reduce stress and anxiety? (2) To what extent do environmental elements influence perceptions of social connection? (3) How do students’ interactions with classrooms, study areas, and outdoor spaces affect cognitive and emotional functioning?

The research uses a mixed-method approach combining quantitative and qualitative data. Surveys are distributed to university students in all colleges of all classifications to assess their experiences in various campus environments, focusing on mental wellness, stress levels, and perceived environmental quality. In-depth interviews among selected faculty and staff explore their perception of students’ emotional responses to specific spaces.

The initial analysis of 144 survey responses indicates that around 95% of students believe the physical environment plays a significant role in supporting their mental health, particularly in relation to stress and social isolation. Despite this recognition, only 25% of respondents agreed that the current architectural design and layout of campus buildings adequately promote mental well-being. Additionally, half of respondents reported utilizing outdoor green spaces enhances their comfort, followed by communal areas, such as the library (29%).

The study will highlight the importance of reimagining university architecture not only as a backdrop for academic life but as an active agent in student health. By integrating emotional architecture and green design principles, campuses can become

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environments that support well-being, resilience, and a deeper connection to place and community. The findings aim to guide architects, campus planners, and university leaders in making evidence-based design decisions that promote mental health and sustainability simultaneously. All the data will be used to create and install a design piece that reflects and brings light to this national problem.

Cohn, Louis

Sorel's and Nietzsche's Lessons for Political Radicals

Georges Sorel is colloquially known for his influence on the development of the foremost radical political movements of the 20th century, Fascism and Bolshevism (Meisel, 1950). Mussolini, Duce of Fascist Italy, cited Sorel as his main teacher and influence, and Sorel saw Lenin as his most faithful disciple in the latter half of his life (Meisel, 1950). The chaos of the 20th century and the First World War unleashed a torrent of illiberal radical movements predicated on the earlier Western intellectual rejection of rationalism (Rouanet, 1964). Sorel's thoughts must be considered to understand the growth and development of these movements, specifically his infamous book *Reflections on Violence*. Friedrich Nietzsche, a distinct influence on Sorel's political thought, and his *Beyond Good and Evil* provide another medium to understand and interpret Sorel's lessons.

In this seminal work, Sorel presents a political philosophy with the goal of achieving a proletarian socialist revolution over the static bourgeoisie status quo. Sorel breaks with the Marxists of his day by emphasizing the superiority of action over paralyzing rationalistic theory in political life (Rouanet, 1964). This echoes Nietzsche's priority of action and vigor of the higher type of man over the rationalistic dissection of the "mediocre mind" (Nietzsche, 1886, 253). Sorel also emphasizes the importance of myth in human experience and to inspire revolutionary action. Myths should not be rationally analyzed but created and left unmolested in their totality to inspire the proletarian man (Rouanet, 1964). Like Sorel, Nietzsche emphasizes the need for a slavery of morals and limited perspectives, i.e. myths, as conditions for the growth of the human spirit (Nietzsche, 1886, 188).

Sorel recognizes violence as a vital component of revolutionary action. Militant spontaneous action galvanizes the proletariat into action against bourgeois parliamentary complacency and force based on abstract norms (Rouanet, 1964). This echoes the Nietzschean conception of life as fundamentally violent and necessarily violent to be alive truly (Nietzsche, 1886, 259). Through violence and devotion to myth, pre-Socratic heroism will emerge from the proletariat predicated on transcendental notions as opposed to bourgeois material decadence (Rouanet, 1964). Recognizing the need for violence and myth will give any political movement an upper hand because these elements have produced the best spiritual achievements of humanity (Nietzsche, 1886, 188).

In conclusion, Sorel must be examined to truly understand the development of the radical movements of the 20th century. Sorel interpreted in light of Nietzsche adds a further dimension to his political lessons. If liberalism wants to withstand any future

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radical threats, it must understand these political lessons to combat them. The polarization and populist discontent of the 21st century present opportunities for any discontented radical to seize the moment in the vein of Mussolini or Lenin.

Dore, Emily

Phonological Processes in Louisiana Children's English

Phonological research sheds light on children's speech patterns during development. Current English speech developmental norms used for clinical/research purposes in the US (Smit et al. 1990; 1993a, b) do not reflect contemporary use in the nation nor the Louisiana context. Similarly, previous works cross-linguistically do not account for variant language input effects on children's speech acquisition. This study starts an investigation of English speech developmental patterns in typically developing children in the Louisiana family context. The ultimate goal of the project, called *UL Lullaby*, is to establish English child speech norms and a demographic infographic map of family language use in Louisiana. The methodology comprises i) a survey to collect demographic and family language use data, ii) a reading task with an adapted lullaby text, and iii) a single-word-elicitation test. We comprehensively describe the development and modeling of these methodologies to ensure sensitivity to the Louisiana sociolinguistic/cultural terrain. The language assessment tool we are advancing comprises 120 child and culturally appropriate words, is representative of English phonotactics, phone frequency distributions, and predominant phonetic variation, and assesses variable levels of phonological complexity. We are collecting speech data in Louisiana from English-speaking children aged 2-5 years old, and from their parents/caregivers to gauge each child's language input and adult language use. The presentation situates the study within the framework of cross-linguistic phonological acquisition research in typical and atypical contexts (e.g., McLeod & Crowe, 2018) and outlines the theoretical tenets (e.g., Babatsouli 2019, 2024; Ingram & Babatsouli 2024) that guide this research. The contribution presents analyses of first data from 10 children/families, highlighting predominant phonological processes in the children's phonologies and seeking to identify production differences resulting from variable language input in the children's familial contexts. This contributes to investigating the role of family language use on children's phonological development, better informing speech norms.

Keywords: Louisiana English, child speech, phonological processes

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Edwards, Shelton

Accounting for the Wild: Integrating Exotic Animal Valuation into Zoo Pricing Models

Valuation of income producing assets has served as a strong component of financial reporting for decades. One exception to this rule is non-profit organizations, specifically zoos. As of current, zoos are not required to determine the value of their zoo animals and report them in their financial statements due to the fact that these animals are not sold in a legal marketplace. This study will research the valuation of zoo animals in multiple aspects and determine whether or not including a value would be useful for zoos in their pricing strategies. This research matters as it will contribute to both increasing awareness of how much zoo animals actually do for the economy as well as improving quality of financial statements that will allow them better transparency for donors and other public users. I will research the top zoos in the United States and analyze different aspects of their operations such as average annual attendance, main source of funding, exotic animals exhibited, and ticket price. A survey will also be conducted asking families of several income levels about their perspective on zoos, and which animals determine the demand for each zoo.

Foulkes, Lauren

Morphometric Variation of the Aortic Arch

Objective: This study aimed to examine how demographic characteristics and aortic arch (AA) type influence the angulation of the AA's three major branches: the brachiocephalic trunk (BCT), left common carotid artery (LCC), and left subclavian artery (LSC). Given that age and the angle at which the three arteries branch from the AA are associated with procedural challenges, better characterization of AA morphology may support improved surgical planning.

Materials and Methods: 35 formalin-phenol embalmed cadaveric specimens aged 61 to 105 years were dissected and classified into Type I, II, or III arches using Madhwal et al's (2008) method [1]. Take-off angle was measured using a goniometer, and statistical comparisons across arch types were performed using one-way ANOVA with Tukey's post-hoc tests. Relationships between demographic factors and arterial morphology were analyzed using Pearson correlations and linear regression models.

Results: The BCT showed the most obtuse branching angle ($M = 93.03^\circ$), while the LCC was most acute ($M = 62.69^\circ$). Type I AA was most prevalent in the sample (54.29%). Take-off angle of all three arteries decreased from Type I to Type III, with significant differences found across AA types. LCC and LSC take-off angle was significantly associated with age ($p < 0.001$).

Conclusion: Variations in arterial angulation by AA type, along with demographic influences on morphology, may have important implications for endovascular access and risk assessment. These findings support increased integration of AA morphology into preoperative assessments and highlight the need for further investigation in larger, more diverse populations.

Keywords: aortic arch, arterial morphology, take-off angle, cadaveric study, endovascular surgery.

Griffin Christian-Paris

Stress-induced Cytokine Activity and White Matter Integrity in Children and Adolescents with Chromosome 22q11.2 Deletion Syndrome (22q11.2DS): A Preliminary Study of a Population at Ultra-High Risk for Schizophrenia

Background: Chromosome 22q11.2 deletion syndrome (22q11.2DS) is a developmental disorder with serious medical, behavioral, and psychological problems including a 30-fold increased risk of schizophrenia in adulthood and risk of immune dysfunction. Elevated inflammation is associated with increased risk of schizophrenia in patients without 22q11.2DS. Thus, identification of key inflammatory markers and brain development could be a valuable endophenotypic biomarker of schizophrenia risk in children with 22q11.2DS well before they develop psychosis. The aim of this study was to examine pro-inflammatory cytokines associated with white matter damage over time. In DTI, higher radial (RD) and mean diffusivity (MD) with lower fractional anisotropy (FA) indicate compromised white-matter microstructure that is typically consistent with myelin disruption and poorer fiber organization. We hypothesized that those with 22q11.2DS would have elevated inflammatory markers in relation MRI diffusion tensor imaging (DTI) indicators of potential white matter damage. **Methods:** We collected blood samples from children with 22q11.2DS and age-matched typically developing (TD) controls following a 45-minute MRI, DTI, and fMRI scanning session which was a natural stressor. From blood we measured IL-17 α , IL-1 α , Eotaxin, IL-6, TNF α , and Fractalkine using a Magpix Immunoassay Multi-plex Kit. From the DTI data, we calculated fractional anisotropy (FA), mean diffusivity (MA), and radial diffusivity (RD) values of major white matter tracts using Freesurfer 7.0, FSL and ProtrackX. **Results:** TNF α levels were higher in the 22q11.2DS group versus the TD controls ($p = 0.049$) but there were no significant differences between groups on the levels of any of the other cytokines ($ps > 0.05$). In 22q11.2DS, higher TNF α related to greater global white-matter RD ($r = 0.35$, $p = 0.0016$) and MD ($r = 0.32$, $p = 0.0041$). In TD, higher Eotaxin related to higher RD ($r = 0.36$, $p < 0.001$), higher MD ($r = 0.24$, $p = 0.016$), and lower FA ($r = -0.28$, $p = 0.0038$). Combining 22q11.2DS and TD groups revealed that TNF α was positively associated with RD ($r = 0.20$, $p = 0.0061$) and MD ($r = 0.19$, $p = 0.0105$). Reported measures survived FDR correction. **Discussion:** TNF α was elevated in 22q11.2DS and tracked with greater RD and MD in overall white matter, suggestive of inflammation related changes in myelin integrity. In TD youth, Eotaxin related to higher RD and MD and lower FA, suggesting a relationship between stress mediated inflammation affecting white matter. Importantly, this is a preliminary study using a very modest sample size. Nevertheless, several findings remained significant after FDR correction, highlighting TNF α as a promising biomarker of white-matter integrity loss in 22q11.2DS. **Conclusion:** In this sample of children, and particularly in the 22q11.2DS group, elevated TNF α correlated with higher RD and MD with reduced FA. This

suggests that increased inflammatory signaling is linked to compromised white matter microstructure. The next step is a better-powered longitudinal study with tract-specific DTI and concurrent, objective stress measures.

Guillory, Riley

Fabrication Strategies for Conductive Hydrogel-Based Wearable Sensors

This project proposes a literature-driven design for a non-invasive wearable sensor that uses a dual-network conductive hydrogel as its active sensing material. The goal of this work is to outline a fabrication strategy informed by current research on conductive polymers and hydrogel-based sensors. The proposed sensor design incorporates a chitosan-based hydrogel matrix for structural stability and biocompatibility, combined with a conductive polymer such as poly(3,4-ethylenedioxythiophene) (PEDOT) or poly(vinyl alcohol) (PVA) to enable electrical responsiveness. Conductive MXene nanoparticles are incorporated to enhance mechanical strength, electroconductivity, and long-term stability. To fabricate the hydrogel component, digital light processing (DLP) 3D printing and electrospinning will be used to achieve precise geometry and fibrous reinforcement within the sensor. The literature review supporting this proposal highlights how these techniques have been applied in recent scaffold and hydrogel systems to control structure, porosity, and conductivity. The outcome is a conceptual roadmap detailing materials selection, fabrication steps, and testing plans for future experimental validation. Future work will focus on evaluating mechanical robustness, conductivity, and self-healing properties once prototypes are produced. This design proposal represents an early-stage framework for developing flexible, conductive hydrogel-based wearable sensors guided by current literature and fabrication experience.

Hill, Christopher

Don't Get Duped: The Importance of Data Validation

In biology and data science alike, maintaining data integrity is critical for reproducibility and meaningful results. Launched in 2019, the Louisiana Freshwater Sponge Project (LFSP) has surveyed approximately 400 sites to date, yielding a medium-sized dataset that contains data that are constantly evolving. Evolving data sets are prone to errors without data validation procedures. One such error is duplication of samples. This has been discovered, while logging samples post-survey. Small errors at the start of a process can skew project data downstream. Attention to detail in the initial workflow supports data integrity that is pertinent to research. This ensures accurate sample logging processes. This study, focused on identifying and correcting duplicate sample logs. The process included locating physical samples, and comparing entries in both student lab notebooks and the PI field collection notebook for double verification. The duplications were only located in the electronic record and not the physical specimens. The electronic records were updated to reflect accurate samples. In collaboration with the PI, conditional-formatting and data-validation rules capable of flagging duplicate identifiers were introduced. These safeguards have made the workflow more transparent and reliable. Team members are assigned specific roles for data entry and only one team member logs samples to further control data validity. Potential duplicates are flagged earlier, enabling quicker confirmation and correction, and improving consistency and traceability across the sample life cycle. By walking through the lifecycle of this sample duplication error case study, attendees can look forward to seeing how a culture of transparency can empower research students, reveal process improvement opportunities, and strengthen a project's data architecture.

James, Kennedy

Rent-to-Own Housing and the HOEPA Blind Spot: Modernizing Federal Consumer Finance Protections for Seller-Financed Home Purchases

The aspiration of homeownership, a cornerstone of the American Dream, is increasingly unattainable due to record high gaps between income and home prices, restrictive lending standards, and heightened interest rates. This modern affordability crisis compels many prospective buyers, particularly those unable to qualify for a traditional mortgage, to seek alternative financing, primarily through seller financed agreements such as rent to own and contract for deed arrangements.

THE REGULATORY GAP: AN AMERICAN NIGHTMARE

While these agreements are often presented as pathways to homeownership, their unique structure frequently drafted as leases or installment contracts allows them to evade the core protections of the federal **Truth in Lending Act (TILA)** and the **Home Ownership and Equity Protection Act (HOEPA)**. This regulatory **HOEPA blind spot** is significant because, in substance, these transactions function as high cost extensions of credit.

By operating outside of federal oversight, seller financed buyers are exposed to the very predatory practices TILA and HOEPA were designed to eliminate. These practices include:

- **Forfeiture of Equity:** Buyers lose down payments, investments, and accumulated equity following minor default.
- **High Risk Terms:** Buyers face unforeseen pitfalls like undisclosed title issues, property defects, high interest rates, and balloon payments.
- **Lack of Due Process:** Buyers can be removed through eviction rather than judicial foreclosure, even after years of payments have been made.

CALL FOR LEGISLATIVE AND REGULATORY REFORM

This research argues that by excluding seller financed and installment sale housing from the definitions of "credit" and "high cost mortgage," Congress and the Consumer Financial Protection Bureau (CFPB) have perpetuated this critical regulatory gap.

The solution requires coordinated action to align legal doctrine with economic reality, as courts have already affirmed a "substance over form" approach, treating these long term, non terminable obligations as credit sales.

We propose a two pronged reform strategy:

1. **Congressional Amendment: Modernize HOEPA** to explicitly extend its disclosure, cost cap, and enforcement protections to any seller financed or rent to own arrangement that creates a long term payment obligation tied to a residence.

2. **CFPB Regulatory Clarification:** Amend Regulation Z to **presumptively deem any transaction involving deferred payment for residential property as "credit"** when termination forfeits accrued equity.

Closing the HOEPA blind spot will not solve the affordability crisis, but it will ensure that alternative paths to ownership are transparent, fair, and safe, legitimizing seller financing by requiring it to adhere to the core consumer protections that define fair credit

James, Whitney

Exploring the Relationship Between Study Tools and Definitions of Learning of Learning for First-Year Science and Mathematics Majors

Retention in science and mathematics disciplines is a national challenge. Research highlights that science identity and self-efficacy, shaped by students perceived belonging in science communities, are critical factors in persistence and academic success. At a large research-intensive institution in the south, a first-year seminar was designed to build these elements by integrating students into the campus community, fostering academic and personal development, and demystifying scientific career pathways. The purpose of this research is to explore how the first-year seminar contributes to the development of science identity, enhances self-efficacy, and supports first-year student retention. To accomplish this goal, a survey was administered to students enrolled in first-year seminar during the Fall 2024 semester. The survey included questions probing students' academic and personal interests, expectations for college-level coursework, study tools do they currently use or predict using, study strategies and activities do they find most effective or plan to adopt, future career aspirations, and personal definition of learning. To investigate the students' academic and personal development within the study, we inductively coded student responses. After all responses were inductively coded, constant comparative analysis, and thematic analysis were used to examine the data and identify emerging themes within and across student narratives, providing a richer understanding of how first-year students perceive their academic journey and future in science and mathematics. Data revealed that students' definitions of learning impact the educational strategies of science and math majors. Survey responses showed that students who had more active definitions of learning, also had more active educational study strategies.

Kumar, Darshan

Experimental Smart Ground-Station Grid

Conventional ground stations or networks of ground stations working with LEOSAT(s) and/or CubeSat(s) do not offer sufficient flexibility or globally scalable transparent coordination of communications, instrumentation, and/or functional or physical actuation at satellites or ground stations to fully exploit these systems so as to operate practically, experimental missions anywhere on Earth, or to achieve highly desirable globally scalable experimentation missions in general. Fortunately, UL Lafayette researchers have invented the ESG-Grid to overcome these limitations. The ESG-Grid is an Internet-cloud coordinated network of one or more LEOSAT(s)/CubeSat(s) combined with a plurality of Terrestrial Participant Devices (TPDs) (i.e. simple portable or mobile smartphone-based ground stations, or same functionality installed in automobiles, boats, planes, drones, tanks, missiles and/or instrumented robots to name a few) where the collective resources and functionality of both satellites and TPDs may be coordinated to achieve novel capabilities, including choreographed and highly economical, automated, transparent, and globally scalable exploration, instrumentation, and experimentation missions, in orbit or anywhere on Earth.

Currently, ESG-Grid is being developed by a team of undergraduate students who are developing and implementing the ESG-Grid via building the LoRa packet schema, RF ground-stations, and the web app utilized to communicate and view information to and from the satellites in orbit. The undergraduate team consists of an embedded system, front-end, back-end, cyber security, operations, and management team. The team expects to have a minimal viable product (MVP) by December of 2025 and hopes to complete their “Phase I” plans by May of 2026. In the MVP, the team plans to be able to receive communication from a mock satellite, decode packets, upload the information to the backend servers, and display the information to logged-in users on the front-end application. The ESG-Grid will also be used as an educational outreach platform where teachers will be able to create lesson plans around satellite information and can receive live data from active mission via lite ground-stations located at their schools.

Menard, Emma

Swipe, Scroll, Study: Is Tech Helping or Hurting Grades?

No abstract provided.

Trevino, Chloe

A Study of Student Reviews on Public Professor Evaluation Systems

During the COVID-19 pandemic, educational institutions nationwide shifted toward online and hybrid learning. Due to social distancing and remote learning, traditional means of communication through Word of Mouth (WoM) or on-campus interactions became limited. Consequently, students turned to electronic WoM, such as social media and public professor evaluation (PPE) sites, for information about their professors. By

the end of 2023, the most popular PPE site, RateMyProfessors (RMP), had indexed more than 19 million reviews of around 1.7 million professors across almost 7,500 universities and colleges from all over the world [27].

Research in higher education has shown that students find professor evaluations on PPE sites to be a helpful, credible, and valuable source of information when making class enrollment decisions [18, 27, 7]. However, discriminatory language and prejudice are frequently detected in both the textual reviews and numerical ratings on such sites [3, 27, 25]. When left unaddressed, bias in professor evaluations can significantly impact classroom dynamics, leading to negative student attitudes toward professors, lowered expectations for educational outcomes, and even sub-optimal exam performance [12, 11]. Additionally, biased evaluations can undermine professors' self-efficacy and negatively influence their behavior in the classroom [5]. These effects tend to be especially pronounced for junior and tenure-track faculty, stemming from concerns that such unofficial evaluations may be used to inform hiring, promotion, and tenure decisions [20].

Intellectual Merits: The main thrust of this proposal is the recognition that credible, unbiased, and accessible teaching evaluations are crucial for a sustainable system of higher education. To that extent, this proposal outlines a cross-disciplinary research plan to examine sources of bias in public professor evaluation (PPE) sites and suggest strategies for mitigation. In particular, the proposal will leverage various theories of behavioral economics and social psychology as well as employ Large Language Models (LLMs) to develop an understanding of how cognitive biases—such as sexism, racism, and classism—can influence students' perception of their professors' instruction quality. These insights will inform the design and development of evidence-based software engineering strategies to actively counteract such patterns of bias on PPE sites.