MU College of Human Environmental Sciences

M-I-Z+HES=Impact!

Jung Ha-Brookshire
Associate Dean for Research and Graduate Studies
April 2018
6 Mighty Units

- Architectural Studies
- Human Development and Family Science
- Nutrition and Exercise Physiology - TBD
- Personal Financial Planning
- School of Social Work
- Textile and Apparel Management

- Grant Proposals - $20-21 M (FY16-17)
- Grant Awards - $5.5 M (FY17)-12 M (FY16)
- Grant Expenditure - $8 M (FY17)
- 40-45 TT faculty + 27 NTT
Architectural Studies

**Mission:** is to advance scholarship in making connections between people and place and between interior design and architecture. Our work prepares graduates to become lifelong problem-solving designers of the built environment.

**People:** 5 TT faculty + 3 NTT faculty
Design Computing – Advanced Visualization and Simulation
Dr. Bimal Balakrishnan, Director of Immersive Visualization Lab

- To advance theoretical understanding of immersive experience, spatial understanding, visual cognition and data analytics as a function of technology affordances.
- To explore innovative 3D visualization techniques to address a variety of applied problems that span disciplinary boundaries.

Simulating Human-Environment Interactions

- Multiple projects exploring VR/AR simulations for training and performance evaluation of healthcare professionals
- Driving simulations to study geometric design alternatives, crash reconstructions, work zone safety training etc.
- Behavioral agents and simulations that capture human-environment interactions during disaster

Human Performance analysis

- Motion capture for ergonomic evaluation
- Integration of VR and motion capture to test complex environments before it is built

Spatial Perception & Design Cognition

Simulating Human-Environment Interactions

• Multiple projects exploring VR/AR simulations for training and performance evaluation of healthcare professionals
• Driving simulations to study geometric design alternatives, crash reconstructions, work zone safety training etc.
• Behavioral agents and simulations that capture human-environment interactions during disaster

Human Performance analysis

• Motion capture for ergonomic evaluation
• Integration of VR and motion capture to test complex environments before it is built

Spatial Perception & Design Cognition

- Technology Affordance
- Audience Response
- Measurement

- Perception
- Engagement
- Memory
- Recall
- Attention
- Presence

Figure 1 - Park Layout Expert [Red] vs. Novice [Blue]
Collaborative project design and delivery process, computational methods in community and architecture design.

**Building Information Modeling (BIM)**
- Manage geometrical and non-geometrical information associated with project design and delivery
- A research platform of model-based reasoning and software prototyping.

**Parametric Design**
- Teach parametric design in the design studio setting.
- Enable iterations of design options.
- Contribute to optimization research by combining with simulations

**Performance analysis and visualization**
- Visualize qualitative and quantitate performances of our built environment for decision-making.
- Ongoing research for an integration of BIM and Building Energy Simulation (BES).

**Education platforms with digital media**
- Disseminate research outcomes for education.
- Enhance students’ learning for both on and off campus courses.
- Provide affordable course materials by using technologies.
Green Building Literacy and Healthy Homes Partnership

Dr. Laura Cole – Assistant Professor of Architectural Studies
Prof. Michael Goldschmidt

Green Building Literacy

- The Healthy Homes Partnership directly assists families and stakeholders with information and assistance on mold, asthma triggers, lead poisoning, safe drinking water, carbon monoxide poisoning, and many other aspects of home environmental health, including energy efficiency and safety.

- Funded by US HUD and USDA-NIFA $225,000 per year; Includes Extension and Outreach Educators in all 50 states (13-14 states funded in subgrants per year)

- Includes two smart phone apps, consumer guide, stakeholder guide, toolkit, youth curriculum, website, social media, webinars, and newsletters.

healthyhomespartnership.net

- Trains approximately 17,000 stakeholders per year (health professionals, educators, child care providers)

- Assists approximately 22,000 consumers/families per year through direct contacts, and approximately 238,000 through social media
Human Development and Family Science

Research Areas

• **Relationships and Development Across the Lifespan**
  - Lifespan approach to the study of close interpersonal relationships, family processes, and human development within a variety of contexts and systems

• **Diversity and Multiculturalism**
  - Studies on diverse family structures and cultural populations including ethnic and racial minority youth and families and culture groups from around the world

• 15 TT Faculty + 4 NTT Faculty
Relationships & Development Across the Lifespan

Example Projects:

Jacquelyn Benson’s Love after 60 Lab conducts research on re-partnering and family caregiving relationships in later life.

- The *Daily Health & Non-marital Partnerships* study is an MU Research Council-funded online survey study that examines the impact of daily health and stress on relational quality among unmarried older couples who are cohabiting or living-apart-together (LAT).

Sarah Killoren’s research focuses on the roles of parents and siblings on adolescent development.

- The *Sisters’ Study* examined mechanisms of sibling influence on adolescents’ romantic relationship and sexuality development in 64 sister pairs using survey, interview, and observational data (Funded by National Institute of Child Health and Human Development).
Diversity and Multiculturalism

Example Projects:

**Gustavo Carlo’s** research focuses on parenting, personality, and culture-related mechanisms associated with health and moral development outcomes in diverse populations.

- Newly NIH-funded project investigates maternal risk factors in early childhood and their predictive effects on quality of mother-child conversations in fifth grade across ethnic/racial low-income families.

**Antoinette M. Landor’s** research centers on how discrimination based on skin tone (i.e., lightness/darkness of skin color) and race (e.g., being African American) impacts individual, relational, and family health/functioning.

- The *Health and Relationships During College* study examined 145 African American and Latino college students’ experiences of racism and colorism on campus and how these experiences influenced their relationships, health, and academic achievement using online survey instruments, observer ratings, and saliva sampling (Funding: MU Research Council).
Research Mission: We conduct research pertaining to financial issues of individuals, families and households. Our research is highly applied and provides practical implications to researchers, financial planning professionals and policy makers on helping individuals, families and households make better financial decisions, improve their financial well-being, and reach their financial goals.

People: 5 TT faculty + 5 NTT faculty
Research Areas

• Assessing consumers’ **behavioral challenges** related to financial decision-making (e.g., buying high and selling low): Fran Lawrence, Rui Yao

• Measuring consumers’ **financial risk tolerance** as well as using appropriate instruments to reduce the probability and severity of financial losses: Lu Fan, Abed Rabbani, Rui Yao

• Investigating consumers’ **investment behaviors**, such as investment decision power allocation between spouses, wealth accumulation as a result of investment decision power allocation, investment portfolio allocation, and portfolio efficiency: Rui Yao

• Examining consumers’ **preparation for retirement**, decision to retire, spending plans during retirement, and issues related to later-life financial wellbeing such as physical and mental health issues: Deanna Sharpe, Rui Yao

• Assessing the needs of **financial literacy education** and education program evaluation: Lu Fan, Fran Lawrence, Deanna Sharpe
Potential Collaboration

- Economics
- Finance
- Psychology
- Family Studies and Human Development
- Gerontology
- Sociology
- Social Work
School of Social Work

• **Research Mission**: Our faculty are engaged in the development, dissemination, and application of knowledge for clinical practice, service delivery, and policy development. Our research has contemporary relevance to advance the mission of the School and the social work profession, and to local, national, and international issues.

**People**: 12 TT faculty + 3 NTT faculty
Advocating Vulnerable Populations

• **Aaron Thompson** – Collaborating with schools and community service agencies to determine the best ways to help school-aged children with social, emotional, and behavioral health concerns. (Education, A&S)

• **Kelli Canada** – Health and mental health interventions for vulnerable populations who enter the criminal justice system to prevent incarceration and recidivism. (UMSL, Engineering, Medicine, Nursing)

• **Hsun-Ta Hsu** – Risk and protective factors (e.g., personal characteristics, social network properties, and community environment) for homeless individuals with an overall focus on health and health disparities. (HDFS)

• **Kathy Preble** – Risk factors associated with human trafficking and survivor perspectives on prevention, intervention, and aftercare service provision so as to enhance trauma-informed efforts to address the effects of human trafficking on survivors. (Nursing, Health Professions)
• **Mansoo Yu** – Health disparities and the interconnections of mental health, physical health, and health risk behavior — smoking related. (HDFS, A&S, Nursing, Health Prof and Medicine)

• **Ginny Ramseyer Winter** – Body image in relation to women’s physical, mental, and sexual health, with a particular interest in improving women’s body image to ultimately lead to improvements in women’s health outcomes. (Engineering, Health Professions, HDFS, TAM)

• **Erin Robinson** - Health prevention among older adults, using health communication and technology in order to ensure longevity of older adults. (Medicine, Engineering, Nursing, Health Professions)

• **Leigh Tenkku Lepper** – Prevention of alcohol use and abuse; implementation and evaluation of training of providers on how to talk with patients/clients on alcohol use whether dependent or just drinking at risky levels; prevention of alcohol-exposed pregnancies; use of online web-based technology for this training. (UMKC Nursing and Medicine)
Textile and Apparel Management

- **Mission**: Educating Innovative Leaders in the Global Fashion Supply Chain
- **Research areas**: Globalization, Leadership, Sustainability, Technology
- **People**: 5 TT faculty
Kristen D. Morris, Ph.D.

Research areas:
1) Functional clothing design/activewear
2) Niche or underserved markets
3) 3D apparel design process
4) User-centered design

Current projects:
1) Capturing body measurements of male and female firefighters to improve fit of turnout gear.
2) Improving fit and function of apparel for trans men
3) Increasing positive body image through 3D body scanning.
4) Improving activewear for women 55+
Li Zhao, Ph.D.

Research areas:

1) Fashion Informatics
   • Big Data Analytics in Fashion
   • Social Network Analysis
2) Direct Digital Manufacturing in the Textile and Apparel Supply Chain

Current projects:

1) Data-mining-based social network analysis in fashion
2) Fashion sustainability brands social media activities --- Image recognition and visual search on Instagram
3) Redefining global supply chain for designers, makers, and users in the future of making