

scores (Males:  $M=1.02$ ,  $SD=0.66$ ; Females:  $M=1.53$ ,  $SD=0.51$ );  $t(55)=-3.002$ ,  $p=0.004$ . Only females showed a significant correlation between rsFC within the withdrawal/negative affect network and negative affect scores of the PID-5 ( $r=0.51$ ,  $p<0.05$ ). Fisher  $r$ -to- $z$  test showed significant gender differences ( $z=-1.91$ ;  $p=0.03$ , 1-tailed) in correlations coefficients representing the relationship between rsFC of the withdrawal/negative affect network and negative affect (PID-5 subscale). **DISCUSSION/SIGNIFICANCE OF FINDINGS:** Preliminary findings suggest that the relationship between neural networks mediating emotion regulation and negative affect is only found in females. These results provide valuable data to inform personalized chemical dependency treatment that targets emotion regulation specific to females.

99164

### Resting Functional Connectivity of Networks Associated with Preoccupation in Alcohol Use Disorder Predicts Time to Relapse

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**ABSTRACT IMPACT:** Our research has the potential to impact human health by identifying a neural network that can be used to predict time to relapse in individuals with alcohol use disorder. **OBJECTIVES/GOALS:** Preoccupation towards alcohol use (e.g. craving, rumination, and poor executive control) is a maladaptive behavior associated with relapse risk. We investigated whether alterations in resting state networks known to mediate preoccupation could predict time to relapse in alcohol use disorder (AUD). **METHODS/STUDY POPULATION:** 50 participants with alcohol use disorder (AUD) (Age:  $M=41.76$ ,  $SD=10.22$ , 19 females) were recruited from an addiction treatment program at ~2 weeks of abstinence. fMRI data were preprocessed with the Human Connectome Project pipeline. Strength of resting state functional connectivity (RSFC) within two networks known to mediate the 'Preoccupation go' (PG) and 'Preoccupation stop' (PS) stages of addiction were calculated. T-tests were conducted to compare RSFC between subsequent abstainers and relapsers (after 4 months). Linear regressions were conducted to determine whether RSFC (of PG and PS networks) can predict time to relapse. Craving measures were included in the model. **RESULTS/ANTICIPATED RESULTS:** 19 AUD relapsed during the 4-month follow-up period. There were no RSFC group effects (subsequent abstainers and relapsers) in the PG or PS networks. Number of days to relapse could be predicted by PG RSFC ( $F(1,17)=14.90$ ,  $p=0.001$ ,  $r^2=0.47$ ). Time to relapse increased by 13.19 days for each PG RSFC unit increase. Number of days to relapse could be predicted by PS RSFC ( $F(1,17)=9.39$ ,  $p=0.002$ ,  $r^2=0.36$ ). Time to relapse increased by 12.94 days for each PS RSFC unit increase. After adding a self-report craving measure (i.e. Penn Alcohol Craving Scale) in the prediction model, both PG and PS RSFC still significantly predicted time to relapse. Craving metric did not predict time to relapse. **DISCUSSION/SIGNIFICANCE OF FINDINGS:** RSFC in

preoccupation networks during short-term abstinence predicted time to relapse. These preliminary findings highlight promising targets for AUD neuromodulation interventions aimed to reduce relapse. Future larger scale studies that examine the effects of covariates and mediators are needed.

## Commercialization/Entrepreneurship

### Digital Health/Social Media

21968

### Adapting a global telehealth model to solve U.S. healthcare needs: age-related hearing loss as a test market

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**ABSTRACT IMPACT:** We are adapting a global telehealth platform and model of care to the U.S. context in order to solve the problem of undertreatment of age-related hearing loss and, in turn, facilitate healthy aging and social engagement among older adults. **OBJECTIVES/GOALS:** Intelhealth is a nonprofit startup that provides medical care to last-mile populations in India by equipping frontline health workers with an open-source digital assistant and telemedicine platform. Here, we explore how this technology and model of care might be adapted to address health inequities in the context of the U.S. healthcare system. **METHODS/STUDY POPULATION:** We first sought to identify a specific healthcare need that we could address as a case study on applying the Intelhealth model more broadly in the U.S. context. We began with a needs assessment, wherein we conducted primary ethnographic research, expert interviews, and literature review to identify problems in the general areas of health disparities, community health workers, and telemedicine accessibility. We then scored each need on clinical impact, feasibility, business potential, and strategic fit. After a top need was selected, a root cause analysis was performed. Brainstorming and solution concepting will be followed by prototyping, iterative design with primary stakeholder feedback, usability testing, and finally implementation and validation of the solution. **RESULTS/ANTICIPATED RESULTS:** Of 106 needs, the most highly scored was undertreatment of age-related hearing loss (ARHL). The third most common chronic condition in the U.S., ARHL presents a significant barrier to healthy aging and the single largest modifiable risk factor for dementia; yet only 15% of those with ARHL regularly use hearing aids. Thus, a large market segment - nearly 30 million Americans - is underserved by the current hearing care paradigm. Root cause analysis revealed that the primary reasons for hearing aid non-use include stigma around aging, denial of hearing loss, poor awareness of resources, and insufficient education around proper use and maintenance. These barriers, being primarily sociocultural in nature, may be optimally addressed by community health workers, making ARHL an ideal fit for the Intelhealth model. **DISCUSSION/SIGNIFICANCE OF FINDINGS:** We have identified ARHL as an

optimal test market for Intelhealth in the U.S. By developing a targeted intervention to improve hearing aid access and acceptability among older adults, we will create a generalizable model for delivering care through community health workers equipped with a decision support and telemedicine platform.

### *Dissemination and Implementation*

55256

#### **ReacStick: From Conception to Commercialization**

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**ABSTRACT IMPACT:** ReacStick concussion testing and monitoring can serve as a 'vital sign for the brain', allowing for an immediate, objective assessment on the field or at the bedside. This project examines the entrepreneurship process from invention to commercialization. **OBJECTIVES/GOALS:** ReacStick is the first objective, portable, measure of concussion likelihood and severity and uses simple and complex reaction time testing. We detail the entrepreneurship process from product invention through its current mid-stage (patented, 20+ publications, etc.) to future commercialization for diverse applications. **METHODS/STUDY POPULATION:** ReacStick was invented in 2010 and underwent extensive testing and validation of the underlying innovations. The regulatory landscape of the product was examined, and 510(k) was found to be the best pathway. Competitive analysis was done examining alternative products and comparing against the current gold standards. A customer discovery process was undertaken, and stakeholders were interviewed for feedback and iteration. Testing and validation were completed with athletes, older adults, and people taking medications. An overview of the necessary commercialization concepts is: market opportunity/monetization, intellectual property considerations, regulatory processes, commercialization plan. **RESULTS/ANTICIPATED RESULTS:** ReacStick accurately predicts concussion and time to recovery and was patented through UM Tech Transfer in 2010, with 10 years currently remaining on the patent. Through customer discovery processes, athletics was determined to be the most viable first market to enter. Next steps include seeking additional patent protection, capital investors, delivery of minimum viable product followed by iteration and improvement for military, emergency medicine and acute care use. The current remaining timeline involves 12-18 months to commercialization and includes regulatory approval, additional patent protection, collaboration with regulatory consultants, capital fundraising and product production. **DISCUSSION/SIGNIFICANCE OF FINDINGS:** The research team has gone through a lengthy process toward commercialization of ReacStick. Proof of concept and extensive validation of the underlying technology have been completed and the regulatory process has been mapped. Our experience can serve as a model of many of the steps and challenges that lie on the path from lab to sale to end users.

### *Education/Mentoring/Professional and Career Development*

31257

#### **A Case Study of Needs Assessment Practices Using I-Corp Customer Discovery Protocols Alongside REDCap Surveys for CTSA Activities.**

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**ABSTRACT IMPACT:** The results from this study will improve needs assessment practices. **OBJECTIVES/GOALS:** The discovery phase in project development is necessary to better understand the needs and requirements of the intended market. This paper compares the outcomes of two virtual data collection methodologies, NSF I-Corps Customer Discovery interviews and REDCap surveys, for a needs assessment. **METHODS/STUDY POPULATION:** Clinical and Translational Science Award (CTSA) Directors and Academic Administrators across the Consortium were asked about the types of skills needed to assess clinical research professional competencies and the need for a competency-based self-assessment tool (CBST). Parallel methods were used to extract qualitative and quantitative data. The first approach was to conduct interviews using I-Corps customer discovery guidelines, and data was collected using Innovation Within software. Targeted requests were sent via cold email outreach to 102 individuals within 63 CTSA hubs. The second approach involved the use of the NJ ACTS Training and Education Offering Inventory REDCap Survey which was distributed via LISTSERV to 63 CTSA hubs. Response rates and user insights from each method were compared. **RESULTS/ANTICIPATED RESULTS:** Twenty-one of 63 CTSA hubs responded to the survey (response rate: 33%) while 18 of 63 hubs participated in an interview (response rate: 28%). Twenty-two individuals out of 102 were interviewed (response rate: 21%). Fifty-nine percent of interviewees and 62% of survey respondents indicated a clear need for a CBST; types of responses varied. Forty user insights were obtained from ten interviews. Two insights were gained in the survey from the eight who were prompted to fill out the free-text response. Both survey participants and interviewees indicated that communication and team science soft skills were the most important competencies. Regarding hard skills, interviewees preferred written skills while survey participants favored 'scientific design and concept' skills. **DISCUSSION/SIGNIFICANCE OF FINDINGS:** Results suggest the use of a survey or an interview for a needs assessment is dependent on several factors: need for insights, burden of time, desire to obtain quantitative vs. qualitative data, and question format. The interview was more effective than the survey in addressing the key question and obtaining insights from the intended market.