San Francisco Health Investigators
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**Abstract**
San Francisco Health Investigators (SFHI) engages 20 high school students annually in a year-long research project to investigate their community’s knowledge and awareness about a health topic. Students use their research to inform the design of targeted health messages, then study the effectiveness of these messages.

The 2018 theme for SFHI was cancer screening and prevention.

**Program Approach**

**Formative Survey**
Using Data to Inform Message Design
Goals:
- Understand the levels of knowledge, attitudes and awareness about cancer, cancer prevention and screening among San Franciscans
- Identify focal points for targeted health messages

Methods:
- Intercept Survey
- iPad administration
- Public locations around SF
  - Farmer’s markets
  - Parks
  - DMV
  - Shops & restaurants

Results:
- Collected over 400 surveys
- Diverse pool of respondents
- >60% of respondents unsure about cancer screening
- Variations in familiarity with common cancers

**Program Approach**

**Campaign Launch and Distribution:**
- Campaign launch at AT&T Park Discovery Day of the Bay Area Science Festival (November 3, 2018)
  - "Movie Screening" booth activated to share messaging
  - Live quiz game show about cancer screening & prevention
  - Hundreds of print postcards and stickers distributed
  - Additional surveys collected for cancer awareness & screening

**Campaign Collateral**

**Acknowledgements**

2018 SFHI Student Researchers

Graphics Design: An Otherwise Co.

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Download Student Health Messages: https://ucsf.box.com/v/SFHI
An Application of Item Response Theory to Develop a Measure of Researcher Identity
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Abstract
Often students choose careers that complement who they perceive themselves to be (identity) and what they are capable of (ability). While “ability” can be measured through cognitive assessments, measuring student identity is a formidable task. In this backdrop of identity and individuality, we developed a survey to measure the aspects of “Researcher Identity” (RI) of secondary school students, i.e., to what extent do they identify themselves as researchers. The survey provides respondents with a 6-point scale to allow them to express their level of agreement for each item. We analyzed data from the 50-item Researcher Identity Scale (RIS) using item response theory. Data were gathered from 863 high school students in the fall of 2018. This paper describes the process for developing the scale.

BEAR Assessment Framework, Wilson 2008
The Building Blocks and Principles of the BEAR Assessment System

Construct Map
A “researcher” is defined as someone who conducts an organized, systematic investigation on a topic or a question related to a scientific field.

Title of Level Description
Secure Identity or Integration of Identity Student identifies as researcher and integrates this into their larger self
Comfortable with Identity Student begins to feel comfortable with their identity as a researcher
Role Exploration Student explores the different aspects of research
Curious Identity Student is unaware of what research entails and has not considered their role in research
Absent

Item Design based on 4 strands
Activities - Literature Review, Focus Groups, Pilot and Exit Interviews
Agency The degree to which a student feels empowered to impact change through research. “I can do research that helps people”
Sense of belonging to a research community. “I am an important part of a group of researchers”
Interest in research as a career path and belief in research as a great fit to their personal interests (future self). “My future career will probably be in research”
Current idea of self-identity as a researcher, focus here is on how the student feels about their self at the present moment. “I consider myself a researcher”

Love for Research
“I am a researcher”
“Who is a researcher?”
“A person who carries out smart or scientific research”
“A person who spends a lot of time trying to solve a problem with data, history, and other stuff”
“A person that is on the internet all the time”
“A dude that looks info up on a topic”

What the students have to say
In what ways are you a researcher?
“By doing this survey, I am helping to do research, so I am a researcher. I’ve also done other surveys in the past”
“I am good at concentrating, nothing much else.”
“All of my experience could be considered as research, such as what I do in order to improve my writing, etc.”
“I am not a researcher, I use Google.”

Agency Community Fit & Aspiration Self

Outcome Space
Response categories Fit & Aspiration Example form
Agree Disagree Agree Disagree Agree Disagree

Measurement Model
We used the Partial Credit Item Response Model (Wright & Masters, 1982) to analyze the data and generate the Item Person (Wright) Map.

\[ P(r = c | \theta, d_i) = \frac{1}{1 + e^{-\theta - d_i}} \]

\[ e^{\theta - \theta - d_i} \]

\[ e^{-\theta - d_i} \]

Where \( r \) is the probability of response 1 to item, \( \theta \) is the person proficiency, \( d_i \) is the item difficulty, and \( m \) is the number of categories.

Results - Person Item Map (Wright Map)

Survey Sample Characteristics
863 survey respondents
Mean GPA: 3.53 (SD: 0.57)

Conclusions
We developed a 50-item Likert scale survey to measure the aspects of high schoolers “Researcher Identity” (RI) i.e., to what extent they identify themselves as researchers. The construct of RI is composed of four strands including, Agency, Community, Fit & Aspiration, and Self. We conducted a unidimensional Rasch analysis of the Researcher Identity Scale (RIS) and show a snapshot of 26 items on the Item Person Map. The items displayed are targeted to the highest level on the construct map. Data were gathered from 863 high school students in the fall of 2018 for this study. Our investigation into the fairness, validity, and reliability of the use and interpretation of the instrument is almost complete.

Future Work
1. We are in the process of converting the Likert scale to a Guttman scale which is a cumulative scale, in that if a respondent agrees with a specific option within a question then they will agree with all previous options to the questions. Here is an example of a possible Item adjusted to conform to the Guttman requirements.

Which statement best describes your interest in pursuing a career in research?
A. A career in research would not be a good fit for me
B. I am not sure if I am interested in research as a career
C. I might have an interest in research as a career
D. A career in research could be a good fit for me
E. A career in research would be a great fit for me

2. Multidimensional Analysis-investigating the relationships among the dimensions

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Thank You!

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