San Francisco Health Investigators

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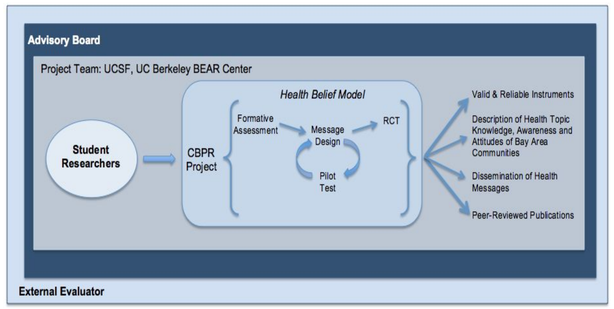
Abstract

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 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:

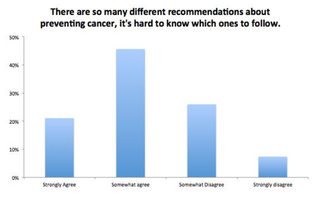
- Understand the levels of knowledge, attitudes and awareness about cancer, cancer prevention and screening among San Franciscans
- Identify focal points for targeted health messages

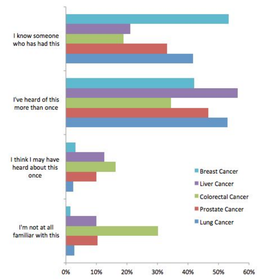
Methods:

- 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 prevention
- Variations in familiarity with common cancers





Our Health Message Campaign

SF CAN San Francisco Cancer Initiative

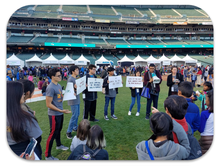
- Informed by SF CAN, a UCSF-led city-wide collaborative initiative to reduce rates for the 5 most common cancers in San Francisco
- Focus on low income communities of color that are disproportionately affected
- Emphasize importance of regular and timely cancer screening
- Highlight important risk factors for the 5 cancers

www.ScreeningCancer.org

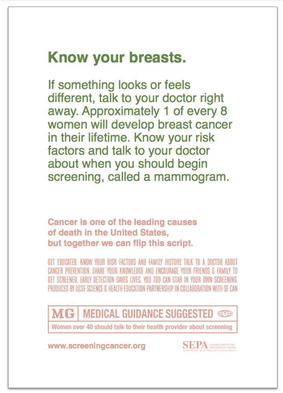
Follow us on Social Media! **@SEP_UCSF**

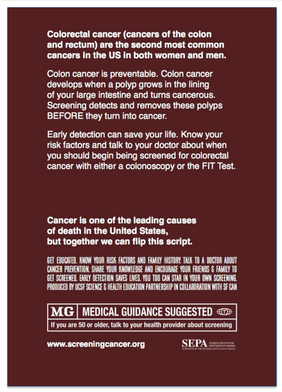
Campaign Launch and Distribution:

- 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





Researcher Identity

Student researchers are themselves part of a research study – seeking to understand the impact of this type of program on the development of students' identity as researchers.

Construct Map

Level Descriptions	Strand Descriptions
Level 4: Secure Identity or Integration of Identity Student identifies as a researcher and integrates this into their larger self	**Agency:** Student has a strong researcher voice; has a desire to make a meaningful contribution with research (to their community or neighborhood)
	Community: Student has a sense of belonging to the research community.
	Community: Student is interested in designing and investigating new research topics that will ameliorate a condition in the community.
	Fit & Aspiration: Student finds joy and excitement in research.
	Fit & Aspiration: Student recognizes research is a good fit; fitting personal interests, abilities, personality and passion
	Fit & Aspiration: Student aspires to a career in research.
	Fit & Aspiration: Student aspires to a career in research.
	Self: Student identifies self as a researcher.
Level 3: Comfortable with Identity Student begins to feel comfortable with their identity as a researcher	**Agency:** Student starts developing their researcher voice.
	Community: Student has a research network.
	Fit & Aspiration: Student sees some fit with doing research and personal interests, abilities, personality and passions.
	Self: Student begins to consider oneself a researcher.
Level 2: Role Exploration Student explores the different aspects of research	**Agency:** Student utilizes their viewpoint and value systems to lead the direction of structured discussions and activities.
	Community: Sense of belongingness to the research community begins to emerge.
	Community: Student is interested in identifying health-related issues in their community.
	Fit & Aspiration: Student shows interest in doing research and having a career in research.
	Self: Student considers oneself a student that assists with research, as affiliated with research, not as a researcher.
Level 1: Curious Identity Student is a newcomer to the concept of research	**Agency:** Student is active in researching roles with scaffolding.
	Community: Student is a newcomer in the research community with emerging initial ideas, feelings on being a member of the research community and on conducting research.
	Fit & Aspiration: Not sure research is a good fit for the person - whether fitting personal interests, abilities, personality and passions.

Acknowledgements

2018 SFHI Student Researchers

Graphic 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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UCSF Science and Health Education Partnership
BEAR CENTER

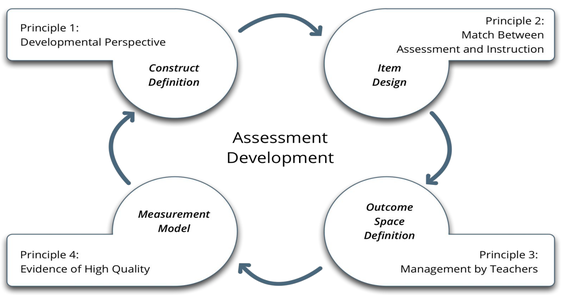
SEPA SCIENCE EDUCATION PARTNERSHIP AWARD
SUPPORTED BY THE NATIONAL INSTITUTES OF HEALTH

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 poster describes the process for developing the scale.

BEAR Assessment Framework, Wilson 2005

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 a newcomer to the concept of research
Absent	Student is unaware of what research entails and has not considered their role in research

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"*

Community — Sense of belonging to a research community. *"I am an important part of a group of researchers"*

Fit & Aspiration — 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"*

Self — 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:*

Outcome Space

Fit & Aspiration	Example items	Response categories					
		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Student aspires to a career in research	A career in research would be a great fit for me.	○	○	○	○	○	○
Student sees some fit with doing research and personal interests, abilities, personality, and passions.	A career in research might be a good fit for me.						

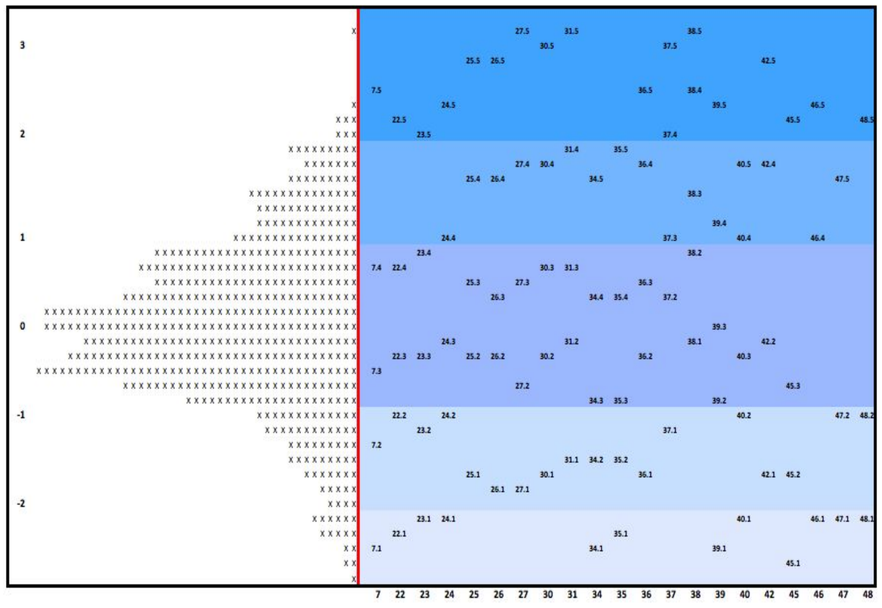
Measurement Model

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

$$P(x_i = c \mid \theta, \xi_i) = \frac{\exp \sum_{j=0}^{c} (\theta - \delta_{ij})}{\sum_{k=0}^{m} \exp \sum_{j=0}^{k} (\theta - \delta_{ij})},$$

X_i is the probability of response i to item j, θ is the person proficiency, $\boldsymbol{\delta}_{ij}$ is the item difficulty , m is the number of categories

Results - Person Item Map (Wright Map)



- The central red line divides person estimates and item locations. The map places both persons and items on the same (logit) scale
- The Xs on left represent person estimates
- Persons on the upper part of the map identify more as a researcher than students lower on the map
- The map's right side shows item locations and their steps
- Items are arranged in "x.y" format, where "x" is the item number and "y" is the item step
- Steps at the top of the map indicate higher agreement while steps at the bottom indicate lower agreement with RI statements

Group Comparisons

1.On average, the students who indicated love for science scored 0.407 logits higher on RIS than students who did not. This difference is significant ($p < 0.01$, $t = -5.24$, $df = 425$). Effect size = 0.312

2.On average, the students who indicated love for research scored 0.686 logits higher on the RIS than students who did not. This difference is significant ($p < 0.01$, $t = -3.03$, $df = 564$). Effect size = 0.509

3.On average, the students with GPA scores greater than 3.5 were 0.16 logits above on the RIS than students with GPA scores lower than 3.5. This difference is not significant.

4. Most students completed the survey and other forms in 13.4 minutes (SD: 7.51)

What the students have to say

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"

"A person who gives survey and conclude the data in the end"

In what ways are you a researcher?

"By doing this survey, I am helping to do research, so I'm a researcher. I've also done other surveys in the past"

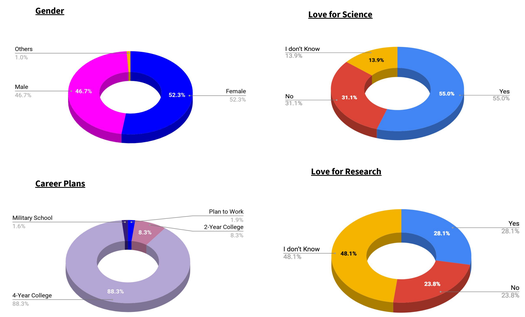
"I am good at concentrating, nothing much else."

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."

Survey Sample Characteristics

863 survey respondents ✦ Mean GPA: 3.53 (SD: 0.57)



Conclusions

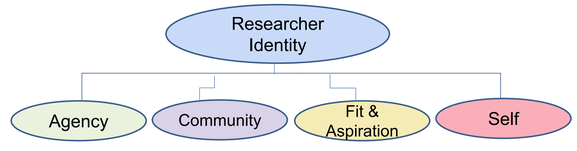
We developed a 50-item Likert scale survey to measure the aspects of high schoolers "Researcher Identity" (RI) i.e., to what extent they identify themselves as researchers. The construct of RI is composed of four strands including, Agency, Community, Fit & Aspiration, and Self. We conducted a unidimensional 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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