

Warren J. Baker Endowment for Excellence in Project-Based Learning Robert D. Koob Endowment for Student Success

PROPOSAL NARRATIVE

(Maximum of 5 double-spaced pages including figures/tables, 1" margins, 12-point font)

I. Abstract

This project is an interdisciplinary effort between Psychology and Computer Science.

Experiencing racial/ethnic discrimination is a key stressor placing Asian- and Latino-heritage college students at risk for poor mental and physical health. Two major gaps in the literature are a lack of understanding regarding: 1) how discrimination is linked to poor health outcomes (i.e., we must move beyond studies showing a correlational link between discrimination and poor health), and 2) what are protective factors that can attenuate these links? To address these two major limitations, this research project is significant in two ways. First, in the proposed psychophysiology study, we will test a theory-based mediational model to explain how discrimination is related to poorer psychological and physical health among Asian- and Latino-heritage college students at Cal Poly. Second, in another ongoing study, we are testing whether a smartphone-based self-affirmation writing intervention is effective in buffering against the negative health effects of discrimination. These results will provide important information regarding how a ubiquitous mobile technology (the smartphone) may be a developmentally-appropriate method of delivering an intervention aimed at improving the health outcomes of Asian- and Latino-heritage Cal Poly college students. The equipment purchased for this project will be used for: 1) the proposed and future psychophysiological studies, and 2) laboratory activities in the following courses: Psy 340 Biopsychology, Psy 320 Health Psychology, and Psy 329 Research Methods in Psychology.

II. Introduction

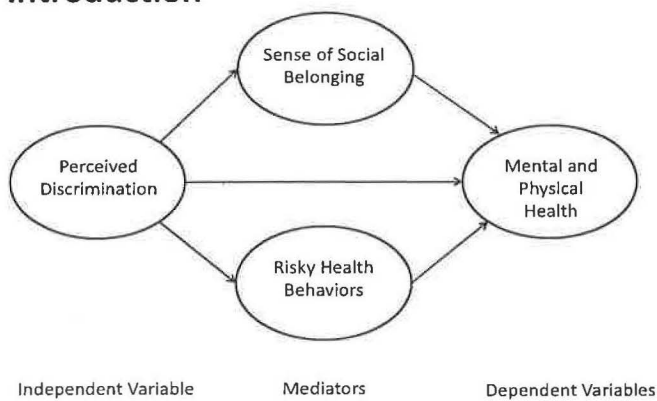


Figure 1. Proposed pathways by which perceived discrimination affects mental and physical health.

In the proposed study (Study 1), we will conduct a laboratory study to test whether a self-affirmation buffers the negative effects of perceived discrimination on physiological stress responses (e.g., heart rate, blood pressure, cardiac output). In Study 2 (currently underway), we will test whether a well-established writing intervention can be effectively delivered through use of a smartphone, thus demonstrating whether a user-friendly and easily accessible mobile technology can reach populations that are traditionally difficult to recruit for health-related research and interventions¹⁸.

III. Objective(s)

- (1) Develop a scalable self-affirmation App for the smartphone.
- (2) Validate the App by conducting an experimental, brief longitudinal study with Asian- and Latino-heritage Cal Poly students.
- (3) Conduct a psychophysiology experiment to assess whether the self-affirmation decreases physiological stress responses.
- (4) Disseminate the App at the local, state, and national levels. Present the results of the research project at the International Congress of Behavioral Medicine.

IV. Methodology

Personnel: Carol Wang (Psychology) will be the Project Manager and first author on presentations/publications. Luis Cuellar (Computer Science) will design the App and oversee the mobile survey technology. Anastasia Dencic (Psychology) and Lindsay Szabo (Psychology) will be

participant recruitment coordinators and co-authors on presentations. Dr. Rodgers (Psych/Child Dev) will be the primary faculty advisor. Dr. Alexander Dekhytar (Computer Science) will be the secondary faculty advisor. Other collaborators include: Dr. Maryam Kia-Keating (Education/UCSB) and Dr. Amr El Abbadi (Computer Science/UCSB).

This is a hands-on project that will foster collaboration among students and faculty and allow for interaction across disciplines. As a true learn-by-doing initiative, this project promotes enthusiasm for academic research and innovation. By partnering with Computer Science, this project will make a psychological intervention easily accessible to students. This study will look at the relationship between discrimination and wellbeing, and the nature of self-affirmation as a mediator. Previous literature suggests there is a decline in health behaviors as people transition from adolescence to young adulthood. Additionally, research shows that Asian- and Latino-heritage college students who experience discrimination are more likely to engage in negative health behaviors. This project aims to develop and disseminate a self-affirmation smartphone App to examine whether it improves health and wellbeing among this population of college students. Using mobile technology is a cost effective and user-friendly way to deliver health interventions to a wide variety of individuals. By crossing multiple disciplines and topics, we believe this project will provide valuable insight into discrimination, health and wellbeing, and the efficacy of mobile technology in psychological intervention.

Preparation for the project includes human subjects' approval, training of research assistants, recruitment of participants, and data collection. Following the data collection, collaborators will perform data analysis, write up the results, and present the project at a conference. The final tasks will include manuscript preparation and dissemination of the smartphone App.

Data Collection: 100 Latino-heritage and 100 Asian-heritage college students at Cal Poly will be asked to participate in three parts of our study. First, participants will be provided with information about the methods and they will be asked to fill out an online intake survey. The second part is the mobile phase, where participants will be notified through a text message on their smartphone to click

on a link to an online daily diary. They will be asked to fill out the daily diary on their smartphones every day for 14 days. The control group will participate in a self-affirmation intervention. The third part is a follow-up survey, which will be similar to the intake survey. Reviewers may view the questionnaires at the following website:

Link to intake questionnaire: https://berkeley.qualtrics.com/SE/?SID=SV_8D02o58tCvIprxP

Link to Smartphone app: https://berkeley.qualtrics.com/SE/?SID=SV_aVH3qB3j6ZF04SN

The psychophysiology study (N = 60) will be conducted with Cal Poly Asian-heritage and Latino-heritage students. A full description of the study is beyond the scope of this brief application. The full study protocol is complete and available upon request.

V. Timeline

Table 1. Timeline of Proposed Project

	Fall 2014	Winter 2015	Spring 2015	Summer 2015	Fall 2015	Winter 2015
Human subjects approval	X					
Training RAs	X	X				
Recruitment and Data Collection		X	X			
Data Analysis and write up				X		
Conference presentation					X	
Submit final report						X

Human subjects approval and training of research assistants has been completed. Data collection for the Smartphone intervention is underway. The psychophysiology study will be launched in Winter, 2015.

VI. Final Products and Dissemination

The final product will be a smartphone-based App that has been tested and validated. We expect to find that the smartphone-based self-writing intervention is effective in protecting Cal Poly students and others from ethnic discrimination. The results of the research will be presented at conferences and will be published. The App will be disseminated through Understandingprejudice.org, the Social Psychology Network, and other organizations.

VII. Budget Justification

The equipment will be used to measure emotional responses (in particular, anxiety) and physiological stress responses (e.g., galvanic skin response, heart rate). In addition, physical health assessments (e.g., basal metabolism, blood glucose and cholesterol levels) at intake and at follow up (8 weeks). The Ekman Face Suite is a DVD that provides training on FACS (facial action coding system), which is used to code emotional micro-expressions. Participants will be videotaped during the physio study and students will be trained to code for emotional responses. As described earlier, this equipment will also be made available to future students (in Psych 340 Biopsychology, Psy 320 Health Psychology, and Psy 329 Research Methods) who wish to become involved in psychophysiological research. Lastly, the lead student on the project (Lindsay Szabo) will travel to present the results of the studies at the International Congress of Behavioral Medicine. The main faculty advisor (Dr. Rodgers) will accompany the student on the trip.

Item	Description	#	Total
GST Esense	Mobile device that measures galvanic skin response (emotions) Mindfield eSense Skin Response (white) - GSR sensor for iPhone & Android	1	\$198.00
Ekman Face Suite	Facial Action Coding System training: Micro expressions are very brief facial expressions, lasting only a fraction of a second. They occur when a person either deliberately or unconsciously conceals a feeling. Seven emotions have universal signals: anger, fear, sadness, disgust, contempt, surprise and happiness.	1	\$210.00
Medgem	Basal metabolism device: The MedGem indirect calorimeter , a FDA 510K-cleared Class II medical device is a state-of-the-art, handheld device that accurately measures oxygen consumption (VO2) to determine resting metabolic rate (RMR)	1	\$2,659.05
Heart rate monitor	Heart rate monitor: AliveCor AC-007-UA-A Alivecor Heart Monitor for Ios and Android Devices by AliveCo	1	\$176.00
Travel	Travel to present results at the International Congress of Behavioral Medicine for lead student author (airfare)	1	\$1,175.00
	Grand Total		\$4,998.05

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PROPOSAL BUDGET

Student Applicant(s): Lindsay Szabo, Carol Wang, Luis Cuellar	
Faculty Advisor: Dr. J. Rodgers/ Dr. A. Dekhtyar (Computer Sci)	
Project Title:	Requested Baker Endowment Funding
Travel <i>subtotal</i>	\$
Travel: In-state	\$
Travel: Out-of-state	\$
Travel: International	\$1,755
Operating Expenses <i>subtotal</i>	\$
Non-computer Supplies & Materials	\$3,243
Computer Supplies & Materials	\$
Software/Software Licenses	\$
Printing/Duplication	\$
Postage/Shipping	\$
Registration	\$
Membership Dues & Subscriptions	\$
Multimedia Services	\$
Advertising	\$
Journal Publication Costs	\$
Contractual Services <i>subtotal</i>	\$
Contracted Services	\$
Equipment Rental/Lease Agreements	\$
Service/Maintenance Agreements	\$
TOTAL	\$4,998

October 20, 2014

Baker Foundation Grant Application

To whom it may concern:

I am writing to indicate my strongest support for the proposed Baker Foundation grant project: "Smartphone-based Intervention to Support Cal Poly Ethnic Minority Students and Psychophysiological Validation Project."

The students leading this project have been working diligently on it and have already accomplished a great deal. They have developed the App, designed the daily diary and intake/exit questionnaires (which are being administered through Qualtrics), and have been recruiting participants for the study. They are extremely motivated, and I fully expect that they will see this project to fruition.

The equipment that we would like to purchase would allow the students to conduct a psychophysiology validation (lab-based) experiment. The equipment will also benefit future Psych/CD and Biomed engineering students who are interested in conducting psychophysiological experiments, as well as students enrolled in our Biopsychology, Health Psychology, and Research Methods courses.

Lastly, with Baker Foundation support, one of the students (Lindsay Szabo) would be able to attend and present the results of this research at the International Congress of Behavioral Medicine. I expect to accompany Lindsay on this trip.

In sum, this is an outstanding project that will yield a scalable, low-cost psychological intervention that will be fully validated both in the lab and the field. In addition, the Baker funds will fund future similar research being conducted in our psychophysiology lab.

Sincerely,



Julie Spencer-Rodgers, Ph.D.
Director, Culture and Health Lab
Assistant Professor
Dept. of Psychology and Child Development