NSF Graduate Research Fellowship Program

Angelina V. Leary, MS
A little about me…

• 6th Year Clinical Psychology PhD Candidate at UCF

• Also completed undergrad degree at UCF (Psychology/Statistics)
  • Undergrad honors thesis: A Deviance Regulation Theory Intervention to Reduce Alcohol Problems Among First-Year College Students

• REALE-Time Lab
  • Master’s thesis: “I Drink (Responsibly), Therefore I Am”: Development of the Personal Assessment of Responsible Drinker Identity (PARDI)
  • Working on my dissertation now
  • Applying to residencies
  • I have a Shiba Inu mix named Bella 😊
About the NSF GRFP

• **Graduate Research Fellowship Program** through the **National Science Foundation**
  • 5-year program
    • 3 years of ‘tenure’ i.e. funding
    • Take classes full-time, do research
    • 2 years of ‘reserve’ i.e. no funding
      • Can take part in GRFP-exclusive opportunities
The program goals are:

1) to select, recognize, and financially support early-career individuals with the demonstrated potential to be high achieving scientists and engineers, and

2) to broaden participation in science and engineering of underrepresented groups, including women, minorities, persons with disabilities, and veterans. NSF actively encourages women, members of underrepresented minority groups, persons with disabilities, veterans, and undergraduate seniors to apply. GRFP is a critical program in NSF's overall strategy to develop the globally-engaged workforce necessary to ensure the Nation's leadership in advancing science and engineering research and innovation.

The ranks of NSF Fellows include numerous individuals who have made transformative breakthrough discoveries in science and engineering, become leaders in their chosen careers, and been honored as Nobel laureates.
Why should I apply?

16% acceptance rate….prestigious!

$34,000 yearly stipend plus ‘Cost of Education’ funding
Stipend given in 2 lump-sum payments
You have to pay taxes on this… FYI

COE covers tuition, leftover money can be used for other academic expenses

UCF gives $12,000 / year for COE
I used my COE funds for tuition, fees, participant compensation, research, and an iPad

Gives you flexibility in grad school
Don’t have to worry about getting a TA-or RA-ship (!!!!)

Can be used at the institution, program, research, and advisor of your choice
How to apply?

Application due in October (date based on field)

Can apply as undergrad senior or as a first-or second-year grad student

Application requirements:

3-page ‘Personal, Relevant Background and Future Goals’ statement

2-page ‘Graduate Research Plan’ statement

3 letters of recommendation

Unofficial transcript

Proposed field of study and graduate institution
• Must pursue PhD or research-based Master’s
Can I apply?

• Intend to enroll or be enrolled full-time in a research-based master's or doctoral degree program in an eligible Field of Study in STEM or STEM education

• Undergrad Seniors/ Bachelor-holders: unlimited

• First or second year graduate student: one time
  • I applied my first year of graduate school
NOTE: Newer Guidelines

- "Although NSF will continue to fund outstanding Graduate Research Fellowships in all areas of science and engineering supported by NSF, in FY2021, GRFP will emphasize three high priority research areas in alignment with NSF goals. These areas are Artificial Intelligence, Quantum Information Science, and Computationally Intensive Research. Applications are encouraged in all disciplines supported by NSF that incorporate these high priority research areas."
- Not psychology 😔
Should I apply?

• YES!
What is important in the application?

**Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and

**Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.
Lemonade Stand

My Background: When I was a little girl, my mom would host yard sales for her neighbors to attend. At the yard sale, I would sell homemade lemonade, and I was very proud of my lemonade stand. I would combine different amounts of sugar and lemon juice, sometimes causing the lemonade to become too sweet and sometimes just... gross. However, even when my batch did not come out well, I would sell the lemonade because I wanted to save up to buy a new barbie doll. I had to find the best ways to sell my drinks. To figure out the best method, I had two “experimental conditions.” I would spend a few hours just standing at the stand, talking to people at the garage sale, and count how many people would come to my stand. Next, I would spend the following days walking around and interacting with people at the garage sale. This greatly increased the number of people willing to buy my lemonade. My lemonade sales especially increased if I talked to groups of friends or families. My younger self concluded that social interaction greatly increased lemonade sales, which, in turn, increased my ability to buy a barbie doll. My younger self also did not know that this was my first psychology research experience.

My love of science and experiments has evolved since initially observing the behaviors of people at lemonade stands (for the best). While I initially thought that the “taste” would lead to more sales, I realized that social interaction was actually the key. I learned that in science, maybe like in life, you cannot just throw a curve ball, but, as the saying goes, when life gives you lemons, you make lemonade. I was diagnosed with multiple sclerosis (MS) when I was a senior in high school, one of life’s curveballs. A trend I noticed in the MS community is poor coping mechanisms. Some recently diagnosed individuals would engage in health-compromising behaviors, instead of healthy coping mechanisms, which ultimately worsened their condition. This trend sparked my interest in studying psychology, specifically to investigate methods of how to increase healthy coping skills and decrease health-compromising behaviors.

People with disabilities are gravely underrepresented in higher education, especially in graduate programs, and as scientists in general. According to the National Center of Education Statistics, about only 3% of adults with disabilities will graduate a college degree, while about 11% of people without a disability will achieve a graduate degree. I want to change the statistics of people with chronic illnesses with graduate degrees. I want to disrupt the social stigma of people with disabilities. I want to show that people with disabilities can have a profession in a challenging and rewarding field. I want to show that we are just as capable of becoming faculty researchers at R1 institutions. I was awarded various scholarships, such as the National Multiple Sclerosis Society Scholarship, the Elaine Chang University Scholarship, and Florida’s Bright Futures Scholarship to help pursue college and offset medical costs. I entered the University of Central Florida (UCF) for my undergraduate degree in psychology and statistics, pursuing a broad goal to learn how to help others in similar situations. Being a scientist with a disability provides a unique perspective on a variety of problems.

As an undergraduate at UCF, I had the opportunity to work as a Resident Assistant for the university’s department of residence life. I worked in a community that houses over 1,000 first-time residents (ITC) students. In this position, I have seen many ITC students make health-compromising choices involving alcohol. Having to call first responders and law enforcement numerous occasions. I have witnessed the prevalent and detrimental impact alcohol can have on a college student’s success. I was part of a higher education qualitative research team Curriculum Development and Assessment Taskforce (CDAT), to analyze the implementation of a residential curriculum into the residential halls on campus. This was an educational plan to teach residents to be global citizens, which included tackling the issue of college drinking. While being a part of CDAT was a memorable experience, I wanted to discover better ways to help serve my residents, especially to reduce health-compromising behaviors associated with alcohol use. Because of my continued interest in health-compromising behaviors, I joined Dr. Robert Dvorak’s REAL-TIME (Risk Estimating, Addiction Longitudinally Examined Through in situ Momentary Experiences) Lab in Fall 2016. Once I joined REAL-TIME, I quickly became very involved with research initiatives.

Research Experiences & Intellectual Mentors: My ambition to have a career as a scientist in academia comes from my previous experiences as a research assistant, teacher, and mentor. As stated, I am passionate about studying ITC students’ drinking habits, and I want to reduce problematic drinking due to my previous experiences with this population as a Resident Assistant. Dr. Dvorak and I have a 10-year-long randomized-controlled trial in the ITC population using Dynamic Regulation Theory (DRT) based intervention, which was originally developed by Dr. Dvorak (which would become my honor thesis for more information on DRT, please see my research dissertation). One goal was to increase responsible drinking behaviors among college freshmen. We recruited 157 college students who engage drink regularly. We implemented a theory-driven experimental manipulation to increase responsible drinking. I then collected weekly diaries assessing alcohol use and problem for the next 5 weeks (they also completed follow-ups at 3, 6, and 12 months). To analyze this data, I had to learn multilevel modeling in order to understand between and within subject variation and I had to learn to clean and code data in Stata. The results showed that across time, freshmen would often fit in with their peers, than stand out, a novel finding that is specific to this population. I disseminated my thesis at the International Convention of Psychological Science in Paris, France. In the freshman alcohol use dataset, we noticed that norms changed across time and that the strength of the manipulation (because it is based on perceived norms) also changed. Consequently, I was able to show that manipulation messages should be adjusted across time, to capitalize on the ability to increase the strength of the manipulation. Ultimately, messaging effects may vary across time (or drinking occasions) as a function of current automated belief (and possibly identities); recently presented these findings at the 2019 Research Society on Alcoholism (RSA) Annual Meeting in Minneapolis, Minnesota. I also awarded one of two Undergraduate Diversity Awards from the Research Society on Alcoholism for this research.

Currently, I took on a leadership role in the REAL-TIME Lab and became the laboratory manager for my last year of undergrad. I assisted with multiple projects in the lab, which I was liaison between graduate students and research assistants, and was responsible for running research participants through research protocols. Furthermore, during my time in undergrad, I co-authored four manuscripts from research in the lab, which have been accepted at high impact, top clinical psychology journals, including Journal of Consulting & Clinical Psychology, Journal of Abnormal Psychology, and two in Experimental and Clinical Psychopharmacology.

Various other experiences that have solidified my goal of a career in research and academia, I have taken the Advised Research Methods (ARM) with Dr. Minhupa Mendes during Fall 2017. Our research project investigated the relationship between risky use, drug use, and the media. My ARM group and I were given the opportunity to present our findings at the American Psychological Association’s Convention in San Francisco. In addition, I have been a teaching assistant for Dr. Alisha Janovacky for over 4 years in two different courses: one in undergraduate
Statistical Methods in Psychology course and a graduate Teaching Symposium course. In this role, I developed an interest in teaching and assisting students for their own successes. Overall, these experiences further contribute to my desire to have a career in research and academia. Because of a strong working relationship with Dr. Dorcak, I am continuing my studies at UCF under his mentorship. I began my Clinical Psychology PhD program in August 2019.

During my short time thus far in graduate school, I have already begun working on my master’s thesis, which is based off of findings from my undergraduate thesis and the findings presented at the RSA Annual Meeting. My master’s thesis looks at sustained changes in behavior, using DRT, as a function of changes in personal identity.

Broader Impact: During my first year at UCF, my peers and I created a student club called Access at UCF to reach out to students with disabilities and create a space where students with disabilities can advocate for changes on campus and be a part of a peer support group. While not STEM-based in nature, many students in STEM fields were part of this club. Through peers in my club, I learned a lot about research at my university and the exciting things my peers were working on. Most importantly, I learned the importance of creating accessible opportunities.

Creating accessible opportunities for others can come in the form of being a mentor. I have had many fantastic mentors, my faculty mentor, my Access at UCF mentors, my FTIC mentors; I want to be a mentor as others have been to me. I am a mentor for the Multiple Sclerosis Foundation and help young adults with MS acclimate to university life, get involved with research and clubs at their universities, and view college opportunities through a disability lens. A skill only a minority of individuals can empathize with. In this role, I have a real-world impact in helping create future leaders on college campuses. Universities lack faculty members with disabilities, so I wish to be a leader in the STEM disability community and encourage others to do so as well, doing so will broaden STEM participation of the underrepresented individuals in this community.

I have been an officer in Psi Chi: International Honor Society in Psychology for my last two years of undergrad, as Events Coordinator and Treasurer. In these roles, I served as a mentor for many other psychology undergrads, discussing how to become involved in research, poster making, networking, and other topics that were taught to me as a younger student. Since I have been an officer in Psi Chi, membership interaction at my university increased by 40%. The best leaders in a field are the ones who mentor future leaders, and I firmly stand by that idea.

Future Goals: As a scientist, my goal is to further understand the basic underpinnings of social psychology theories, such as DRT, and translate that basic research into applied settings. Furthermore, I plan to create more mentorship opportunities in the local community by connecting with high schoolers interested in STEM, but scared of attending college because of impeding obstacles such as disabilities.

My ultimate goal is to have a career in research at a psychology faculty member at an RI institution. As stated, I would use that role as a platform to help other students with disabilities in the STEM field by providing research mentorship to those underrepresented students. If honored with the NSF Graduate Research Fellowship, I would be able to fully focus on my goals, and flourish in my research, academic, professional, and personal life. I would also be able to continue with more mentorship and outreach work with the funding provided. Being awarded as a fellow would allow me to create the best lemonade, continue any future as a scientist as well as provide me with the opportunity to create other opportunities for people, as opportunities were created for me.
Identity as a Mechanism of Behavior Change in Deviance Regulation Theory

Introduction & Rationale: Research shows that identity is a robust predictor of behavior. Theories of behavior change emphasize the need for consistency in values and actions, highlighting the fact that values form the core of our identity. These values are drawn from experiences, but also from how we believe we are perceived by others. Therefore, understanding how behavioral theories of change affect social identity is a vital mechanism of all models of behavior. The current study examines the effects of a relatively new behavioral theory (Deviance Regulation) on personal identity as a mechanism of change in intentions and actions.

Deviance Regulation Theory (DRT) posits that messaging and social norms interact to predict behavioral engagement. DRT assumes individuals strive to portray a positive identity, and avoid negative social consequences, to avoid negative social consequences. Deviation from the norm evokes a large group response, hence information about those deviating from the norm holds salience for the individual. Specifically, DRT predicts that if an individual believes a positive behavior is common (normative), then negative information about those who DO NOT engage in that behavior is particularly relevant, providing a guide to avoid standing out in negative ways. In contrast, if they believe a positive behavior is uncommon (counter-normative), then positive information about those who DO engage in that behavior is more relevant, as this offers a guide on how to standout in positive ways. Thus, behavioral change can be seen by using targeted messaging based on perceived norms. For example, if a community indicates a high norm for positive behaviors (e.g., healthy eating), a negative message such as “Your peers report that those who DO engage in this behavior are less competent” could be used to avoid standing out. In contrast, if someone indicates the norm is low, a positive message such as “Your peers report that those who DO engage in this behavior are seen as leaders” could be used to reinforce standing out (Fig. 1). Various studies have supported DRT as a model for explaining behavior change (8). However, these studies have not investigated the mechanisms of change in DRT. This paper that changes in behavior, following DRT consistent messaging based on normative beliefs, driven by changes in personal identity. The proposed study will address a gap in the literature by testing a potential mechanism of change in this theory.

Aims: The proposed study tests the hypothesis that identity is a major component in explaining behavior change via DRT. The aim of this study is to investigate if DRT changes identity (Aim 1) and if these changes impact mediate the effects of DRT messaging on actual behavior (Aim 2). Therefore, understanding how behavioral theories of change affect social identity is a vital mechanism of all models of behavior. The current study examines the effects of a relatively new behavioral theory (Deviance Regulation) on personal identity as a mechanism of change in intentions and actions.

Hypothesis (Fig. 2): Aim 1: I hypothesize that, (H1a) among individuals with low normative beliefs about positive health behaviors, a positive message about those that DO engage in the behavior will result in higher personal identity for those behaviors, and (H1b) among individuals with high normative beliefs about positive health behaviors, a negative message about those that DO NOT engage in the behavior will also result in higher personal identity for that behavior. Aim 2: I further hypothesize that changes in personal identity will mediate the effects of DRT messaging on actual behavior (H2a: low norm/positive messaging; H2b: high norm/negative messaging), such that higher personal identity leads to more behaviors of interest.

Study Overview: To test my hypotheses, I will conduct an ecological momentary assessment (EMA) study, where behaviors and identity are studied in real-time. Participants will be assigned to conditions that either receive positive or negative messaging about individuals that DO NOT make healthy behavior choices (for low norms) or receive negative messaging about individuals that DO make healthy behavior choices (for high norms). Participants will also control their health lifestyle information. Participants will use an EMA app and mobile device (provided by the lab) for 14 days, to record food choices and engagement in a variety of daily health activities. Assessments occur 6 times throughout the day. Participants also rate their current personal health identity at each assessment, which predicts engagement in healthy behaviors. I expect these associations to be the same across conditions, but I hypothesize that the means of all activities will be higher in the experimental condition. This approach allows for a test of my general hypotheses, but also a pure examination of personal health identity as a predictor of health behavior regardless of messaging. A priori power analysis indicated that 39 participants per condition (6 observations each day) would be required; assuming a small to medium effect (f = 0.30), I plan to recruit 100 participants, providing a minimum of 6,720 observations for analysis (80% compliance). Data will be analyzed using multilevel structural equation modeling.

Intellectual Merit: Nearly every theory of behavioral change, including DRT, suggests the importance of personal identity. Yet, few published studies have been completed exploring the underlying mechanisms of identity on behavioral change. If the results show identity change as a function of DRT messaging, future studies could be modified to ensure investigations of identity changes, rather than strictly behavioral changes. This finding would close a research gap in DRT and, possibly, other theories of behavioral change.

Broader Impact: If the hypotheses are supported, this study may ultimately shape how practitioners and researchers view behavioral change in the context DRT, and potentially influence future public health campaigns reliant on this theory. Even if identity is not a mechanism of change, the structure of the study allows for the examination of identity in the context of health behaviors, providing important evidence for future public health campaigns. Considering broader impacts of mentorship, undergraduate students will be a part of this project and will learn the basic processes of research to become researchers of the near future. Lastly, the results will be disseminated in relevant academic outlets (e.g., publications, presentations, etc.).
**Intellectual Merit Criterion**

**Overall Assessment of Intellectual Merit**
Very Good

**Explanation to Applicant**
This is an outstanding applicant, with 5 publications and 5 additional conference presentations already. Their experience with social/clinical psychology research is extensive, with a broad analytic toolkit, including multi-level modelling, and a deep experimental one, including an ecologically valid way of presenting health dilemmas to participants in their daily lives and assessing their reactions. This applicant has engaged in research from design/first questions to interpretation/writeup, and has managed a research lab, including supervising undergraduates. The project is generally clearly explained, although the primary goal, to assess changes in personal identity, was not well fleshed out to a non-specialist reader—just what is personal identity, and how are the participants to reveal their changes. The letter writers were uniformly glowing, highlighting the applicant's speed and thoroughness of acquisition of research skills and theoretical knowledge, including data analytic and specialized data collection, and the applicant's stellar accomplishments in completed projects and publications, as well as their ability to take on challenges!

**Broader Impacts Criterion**

**Overall Assessment of Broader Impacts**
Very Good

**Explanation to Applicant**
The applicant's project has some very important possible broader impacts, in that facilitating changes in core personal beliefs wrt one's health might be transferable to intervention curricular and indeed policy curricula. The applicant also highlights a needed plan for adolescents and adults with disabilities to be connected to academic success in general and to STEM research in particular; their experience with mentoring college and high school students already speaks well for the plan's success.

**Summary Comments**
The intellectual merits of this applicant are superb, their accomplishments already stellar. I have just a bit of concern about the definition/characterization and measurement of the key aspect of the project, core personal identity change. The broader impacts also have high potential, both wrt the project itself and the applicant's plan for STEM outreach to adolescents and adults with disabilities.
Intellectual Merit Criterion

Overall Assessment of Intellectual Merit
Good

Explanation to Applicant
The applicant has already been productive in research, being an author on several publications as well as several conference presentations, with first-authorship on many of these posters. The applicant's graduate and undergraduate research is on the same general topic (and comes from work in the same lab), giving a coherent research trajectory although somewhat more limited breadth.

Broader Impacts Criterion

Overall Assessment of Broader Impacts
Excellent

Explanation to Applicant
The applicant has a history of outreach to students with disabilities, focusing on science as well as other types of peer support. In addition, the application's focus on changing alcohol use in college students has clear societal impacts.

Summary Comments
This is a strong proposal from an applicant with a unusual and valuable perspective. The applicant has considerable promise to advance knowledge on the social psychology of alcohol use and shows a commitment to engagement with underrepresented individuals in academia.
Intellectual Merit Criterion

Overall Assessment of Intellectual Merit
Excellent

Explanation to Applicant
The applicant has demonstrated great intellectual potential through high course grades and a very productive research career to date, having co-authored quite a large number of publications and presentations for a first-year graduate student. The proposed research builds on existing theory and the applicant's previous work. The study is designed well, but the research plan does not discuss the intended statistical analysis.

Broader Impacts Criterion

Overall Assessment of Broader Impacts
Excellent

Explanation to Applicant
The applicant is interested in research questions that have practical implications for how we approach public health in the United States and abroad and could potentially reach into other disciplines that are interested in behavior change (i.e., education or political science). The applicant has a strong track record of disseminating research findings and has expressed interest in work that crosses cultural boundaries. In addition, the applicant is eager to mentor students, particularly students with disabilities.

Summary Comments
This is a very strong applicant with the potential to become a leader in psychology research and in making the field more inclusive.
My advice...

To have a strong application:
Read past winners’ essays with their feedback and ask other past winners for advice (what you are doing now 😊)
University Writing Center, faculty mentor, friends, Office of Prestigious Awards

To be a strong applicant:
Get as involved as you can on-and off-campus
Get started with research opportunities that interest you ASAP
Be passionate about your work and self-motivated to be your best self
What if I do not get the GRFP?

- It is NOT A REFLECTION of your intellect or your worth
- It’s very competitive, and sometime subjective
Any questions?

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