RESEARCH INSIDER

JANUARY 2021 ISSUE 4

THIS SECTION HIGHLIGHTS THE WORK OF GRANT FUNDED HUNTER COLLEGE FACULTY MEMBERS.

Dr. Danielle Berke

Project Title(s): *Trajectories of Adaptation to Traumatic Stress in a Vulnerable Population; Empowerment Self-Defense Training for the Prevention of Victimization of Transgender Women*

Funding Agency: *National Institutes of Health*

Dr. Danielle S. Berke, assistant professor of Psychology has recently been awarded two grants from the National Institutes of Health (NIH) to study the impact of traumatic stress, violence and discrimination experiences on transgender and gender diverse New Yorkers and to deliver a tailored violence prevention program to these communities.

Many transgender and gender diverse individuals (i.e., people who have a gender identity that differs from the sex assigned to them at birth, who do not identify with gender binary constructs [man or woman], or who are expansive or fluid in their gender identities) experience violence and discrimination as an ongoing threat in daily life. In 2020 alone, over 350 transgender and gender diverse people have been killed around the world, the large majority of whom were trans women and transfeminine people. These chronic traumatic stressors and threats to safety can have serious negative impacts on long-term health and wellbeing of transgender and gender diverse people. Unfortunately, transgender individuals have been left out of much of the research on violence prevention and trauma recovery. In order to address the ongoing and unmet public health needs of transgender and gender diverse individuals, Dr. Berke's NIH funded projects aim to understand how discrimination interrupts trauma recovery and to deliver behavioral health programs that effectively reduce threats to integrity and safety for transgender people.

The first project, a 4-yr NIGMS-sponsored SC3 grant, "Trajectories of Adaptation to Traumatic Stress in a Vulnerable Population," uses a longitudinal multi-method design to assess biopsychosocial influences of traumatic stress and stigma-related experiences on mental health risk and resilience pathways among transgender and gender diverse trauma survivors living in New York City. Whereas the majority of transgender individuals demonstrate resilience in a context of pervasive societal oppression, uncovering

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biopsychosocial mechanisms underlying vulnerability to and protection against chronic trauma-related distress and functional impairment represents a key research priority.

This project will examine trajectories and biopsychosocial mechanisms of risk and resilience among trauma-exposed transgender individuals in New York City. Participants who enroll in the study will complete a gold-standard clinical interview to assess posttraumatic stress symptoms, provide salivary stress-response biomarker samples, and report of gender-related stress and resilience resources within 1-year of trauma exposure, and again at a 3, 6, and 12-month follow-up assessments. For 14-days following the baseline, 3, and 6-month assessment session, participants will also complete daily diary measures assessing degree and type of exposure to daily discrimination. Findings from the study will culminate in the development of research and practice guidelines for the prevention and treatment of PTSD among those exposed to ongoing gender-related stigma and stress.

The second project, a 2-yr NIMHD-sponsored R21 grant, “Empowerment Self-Defense Training for the Prevention of Victimization of Transgender Women” will develop, refine, and deliver a tailored empowerment-based violence prevention program for diverse transgender women and assess its preliminary feasibility, acceptability, and impact in a pilot trial conducted in partnership with the Lesbian, Gay, Bisexual, and Transgender Community Center of New York (The Center). Empowerment Self-Defense (ESD) violence prevention training, a specific violence prevention approach that teaches participants strategies for actively resisting assault, holds tremendous promise for reducing risk of violent victimization among vulnerable populations; however, transwomen and the unique pathways predicting risk of violent victimization in this highest need population have been largely excluded from ESD programming and research.

In this project, we will draft a tailored ESD curriculum will be developed in consultation with a community board comprised of transwomen, transfeminine individuals, and locally engaged service providers. The tailored ESD violence prevention curriculum will be further refined and pilot tested through delivery to three cohorts of participants each in a 20-hour training program. Evaluation of the feasibility and acceptability of the intervention and study procedures will be informed by data gathered from program participants and facilitators. We will also assess the impact of the program on participants’ self-efficacy, use of violence resistance strategies, psychological well-being, and victimization experiences across a 6-month follow-up period. This research will establish whether evidence based ESD violence prevention principles can be adapted to address the unique needs of transfeminine folks.

Together these projects aim to advance public health solutions to gender-based social inequities by identifying pathways to trauma recovery and informing primary prevention programming for transgender and gender diverse people.

Dr. Godfrey Gumbs

Project Title: *Effect of Strain and Magnetic Field on the Transport, Excitonic and Plasmonic Properties of Twisted Heterostructures*

Funding Agency: *AIR FORCE RESEARCH LABORATORY SPACE VEHICLES DIRECTORATE*

The goals of this basic research work aims at exploring influences of applied local strain and strong perpendicular magnetic field on varieties of physical processes within twisted heterostructures composed of novel two-dimensional (2D) materials. The research objectives include studies of transport, optical and electromagnetic responses of electrons in these twisted heterostructures with 2D materials. More specifically, the grant investigates electronic materials with advanced applications for high-performance optoelectronics, and unconventional plasmonic materials beyond electronics/optoelectronics.The electronic properties of these materials have come under growing scrutiny for a number of important reasons which are fundamental and technological. The potential tunability of these materials ranging from their optical and transport properties to their response to a uniform magnetic field presents researchers with the opportunity to investigate new materials.

The outcomes of the basic research works are expected to provide a deep-level understanding to the complex physics processes associated with the existence of strong electronic correlations in twisted heterostructures involving 2D materials, which can be applied to development of next-generation non-dissipative information transfer and quantum memory devices.

Research Goals

By the end of the award period, the Recipient shall complete the following:
[a] Investigating 2D materials that are formed from interacting and mechanically stiff atomic layers;
[b] Verifying that sliding and twisting these layers with respect to each other will give rise to superstructures with new physics, such as strongly correlated phenomena already observed in slightly twisted graphene layers. Graphene is a monolayer thick material consisting of two interpenetrating lattices of A and B carbon atoms;
[c] Demonstrating that electronic correlations in these systems ultimately can lead to the formation of narrow energy bands due to interference on a long-scale Moiré pattern;

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[d] Performing investigation of electronic and optical properties of twisted graphene bilayer, and stacks of other materials such as graphene nanoribbons and bismuthine, along with looking into study of graphene nanoribbons with edge defects;
[e] Bose-Einstein condensate is a state of matter which is typically formed when a gas of particles called bosons at low densities is cooled to low temperatures We will be studying the Bose-Einstein condensation and superfluidity of polaritons (hybrid particles consisting of a photon strongly coupled to an electron-hole pair) in these systems, formed by direct excitons (a bound state formed by an electron and its antiparticle hole) in semiconducting twisted graphene bilayer on a substrate, embedded in a microcavity, and cavity photons; [f] Exploring the best twist angle to provide the highest critical temperature of superfluidity at fixed concentration and lower critical concentration at chosen temperature for the superfluidity of excitons and polaritons;
[g] Evaluating the allowed quantum states referred to as Landau levels, the distribution of these states over a range of energy, i.e., their density of states and optical conductivity for optical properties of these systems.

Technical Scope

The Recipient will develop the computer codes to explore the energy bands of armchair- and zigzag-edge graphene nanoribbons under the influence of edge-modification, bilayer graphene nanoribbons (GNRs), and twisted bilayer graphene. The research team will manipulate the band structure of edge states in edge-defect GNRs by controlling the edge modification to break the lattice symmetry breaking and create the sublattice polarized states. For bilayer GNRs, the team will consider various types of atomic structures, including armchair and zigzag edges in AA and AB stacking arrangements. Energy bands of bilayer bismuthene with AA and AB stacking configurations will be calculated. Furthermore, the team will investigate the role played by twisted angles in the electronic properties of twisted bilayer graphene.

Deliverables

The complete criteria for deliverables of this project will include journal and proceedings publications, conference and meeting presentations, book chapters, and projects of graduate students. This also includes a comprehensive web-based document, a talk to CUNY Graduate Center and other Universities. Summaries of all publications and works will be posted on-line.

Dr. Monica Deza

Project Title: *Exploration of the Relationship between Substance and Employment: A Structural Approach*

Funding Agency: *National Science Foundation*

Are policies outside criminal justice policy comparably effective at decreasing crime? What factors affect early substance use initiation and early criminal participation? What are determinants that could potentially prevent adolescents from entering the criminal justice system? Could preventing substance use and crime during adolescence potentially affect long term outcomes? Dr. Monica Deza of the Economics Department specializes on Economics of Risky Health Behaviors and Economics of Crime. A common theme in her work is how various policies affect adolescent propensity to engage in crime and drug consumption. In particular, most of Dr. Deza's research is dedicated to study the extent to which policies unrelated to the criminal justice system and household characteristics ultimately affect criminal participation, and sometimes the efficacy of such policies are comparable to the efficacy of criminal justice policies, which were targeted to deter crime.

Dr. Deza has been awarded a grant from the National Science Foundation (Exploration of the Relationship between Substance and Employment: A Structural Approach) for her ongoing research that aims to study the relationship between alcohol, tobacco and employment, allowing for heterogeneous effects by levels of consumption. Limitations of the available methodology have been a barrier to jointly model the relationship between alcohol, tobacco and employment, while separating moderate versus high consumption levels using structural models of state dependence and unobserved heterogeneity. The contributions of this research agenda are twofold. First, the methodological contribution component will remove these barriers. Second, the newly developed method will enable revisiting the relationship between different dosages of alcohol, tobacco and employment and to conduct policy counterfactuals.

While heavy alcohol consumption has detrimental effects on labor market outcomes, moderate consumption could potentially increase employment by increasing social capital. While tobacco us is unlikely to affect employment positively, it is possible that heavy tobacco consumption leads to poor health and hence lower employment while moderate consumption may not affect employment significantly. Finally, alcohol and tobacco impact each other heterogeneously depending on levels of consumption.

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While the methodology innovation component will be employed to revisit the relationship between alcohol, tobacco and employment, this innovative proposed structural multiple-equation model can be applied to other settings where outcomes affect each other differently depending on their intensity or level or consumption.

FUNDING OPPORTUNITIES

THIS SECTION HIGHLIGHTS UPCOMING FUNDING OPPORTUNITIES.

Crisis Counseling Assistance and Training Program

The Crisis Counseling Assistance and Training Program (CCP) provides grants and technical assistance to help individuals and communities recover from natural and human-caused disasters through community outreach and access to mental health services.

Sponsor: U.S Department of Health Services Substance Abuse and Mental Health Services Administration (Federal/State)

Award Amount: Based on need and available funds

Deadline: Applications accepted on an ongoing basis

Link: https://www.grantforward.com/grant?grant_id=298451&offset=0

Mental Health Research: Benjamin R. Brown and Charles G. Brown Funds

The Benjamin R. Brown and Charles G. Brown funds support organizations conducting mental health research to help people lead better lives. Grants range from $1,500 to $15,000. Applications are due October 1, 2021.

Sponsor: Hampton Roads Community Foundation

Award Amount: From $1,500 to $15,000

Deadline: October 1, 2021

Form: https://www.grantinterface.com/Common/LogOn.aspx?eqs=B9OfTluxi4mecqh5TmBQuiW17MGJCSAP0

Link: https://www.grantforward.com/grant?grant_id=444267&offset=0

Stranahan Foundation Grant - Physical And Mental Health

We support programs - in both the physical and mental health arenas - that build healthy communities, with a particular interest in those that: create better access to care, educate people to take better care of themselves and their families, support alternative care methods, support preventive measures, support research to eradicate health crises

Sponsors: Report Icon & Stranahan Foundation

Deadline: April 15, 2021

Link: https://www.grantforward.com/grant?grant_id=472003&offset=0

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Statewide Consumer Network Program

The Substance Abuse and Mental Health Services Administration (SAMHSA), Center for Mental Health Services (CMHS) is accepting applications for fiscal year (FY) 2021 Statewide Consumer Network grant program (Short Title: SCN). The purpose of this program is to improve efforts to address the needs of adults with serious mental illness (SMI) by developing and/or expanding peer support services, peer leadership, and peer engagement strategies statewide. SAMHSA is limiting eligibility to mental health consumer-operated organizations to strengthen the capacity of individuals with serious mental illness to improve efforts to address their needs, including enhancing access to and quality of mental health services. Only organizations that are operated and managed by mental health consumers are eligible applicants.

Award Amount: Up to $95,000 per year
Deadline: January 4, 2021
Link: https://www.samhsa.gov/grants/grant-announcements/sm-21-001

Mental Health Grant

The National Psoriasis Foundation (NPF) is seeking grant applications from researchers interested in conducting projects focused on mental health in psoriatic disease.

Sponsor: National Psoriasis Foundation
Award Amount: Up to $100,000
Deadline: January 13, 2021
Link: https://www.grantforward.com/grant?grant_id=466427&offset=0

National Science Foundation (NSF)

1. NSF issued new guidance on the format for Biographical Sketch and Current and Pending Support proposal documents which is mandatory for all proposals. NSF approved biosketches created in SciENcv and their NSF fillable PDF form. More information can be found on their website at https://www.nsf.gov/bfa/dias/policy/cps.jsp. A link to FAQs about SCiENcv can be found at https://www.research.gov/common/attachment/Desktop/SciENcv-FAQs.pdf. We strongly recommend the use of SciENcv.

2. NSF is moving away from Fastlane to Research.gov for proposal submissions. Research.gov includes automated compliance checks for NSF-approved formats. The complete lists of FastLane and Research.gov automated proposal compliance checks effective October 5, 2020, are available on the Automated Compliance Checking of NSF Proposals website. If you are working on a collaborative proposal you must both be working on the same system (Fastlane or Research.gov). We encourage the usage of Research.gov for all proposal.

3. Please remember to use the NSF approved font type and size. While research.gov has automated compliance checking for some aspects of the proposal, it is not checking the font type and size; and your proposal will be rejected if you have not used the approved font type and size. More details about this compliance can be found here: https://www.nsf.gov/pubs/policydocs/pappg20_1/pappg_2.jsp#IIB2

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National Institutes of Health (NIH)

1. The NIH eRA System has been recently enhanced. There is a new look and also validations for some fields such as IRB and IACUC approval dates. More details can be found at https://nexus.od.nih.gov/all/2020/12/02/check-out-the-new-era-commons/