

CSURF 2025

COLORADO SPRINGS UNDERGRADUATE RESEARCH FORUM

Redefining research with
undergraduate presentations
from students within the
Pikes Peak Region.

Hosted by
Colorado College

Student Presenter Registration: 1 February – 4 April 2025



SATURDAY | 26 APRIL 2025

Information & Registration at www.uccs.edu/csurf



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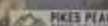
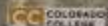


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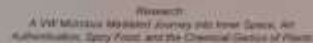
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COLORADO
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WILEY InterScience® DISCOVER SOMETHING GREAT



Dr. Murphy G. Brasuel
Professor
Colorado College
Department of Chemistry and Biochemistry



Abstract: Research is a technical term for the process of discovery. The task will be to rapidly bring a variety of research projects that I have had the honor of being involved in. On this trip, through discovery, covering everything from nanotechnology to space food, we will explore convergences of discovery that can be hidden by the technical tools, forms, and formats that shape our own research ecosystems.

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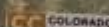


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Information Table - We're here to help!

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STENO University of Toronto
2280 BATHURST ST.





KATHRYN MOHRMAN
THEATRE







2025 CSURF KEYNOTE ADDRESS

Dr. Murphy G. Brasuel

Professor

Colorado College

Department of Chemistry and Biochemistry

Research:

A VW Microbus Mediated Journey into Inner Space, Art Authentication, Spicy Food, and the Chemical Genius of Plants



Abstract: Research is a technical term for the process of discovery. This talk will be a rapid trip through a variety of research projects that I have had the honor of being involved in. On this trip through discovery, covering everything from nanotechnology to spicy food, we will explore components of discovery that can be hidden by the technical tools, forms, and formality that shape our own research ecosystems.



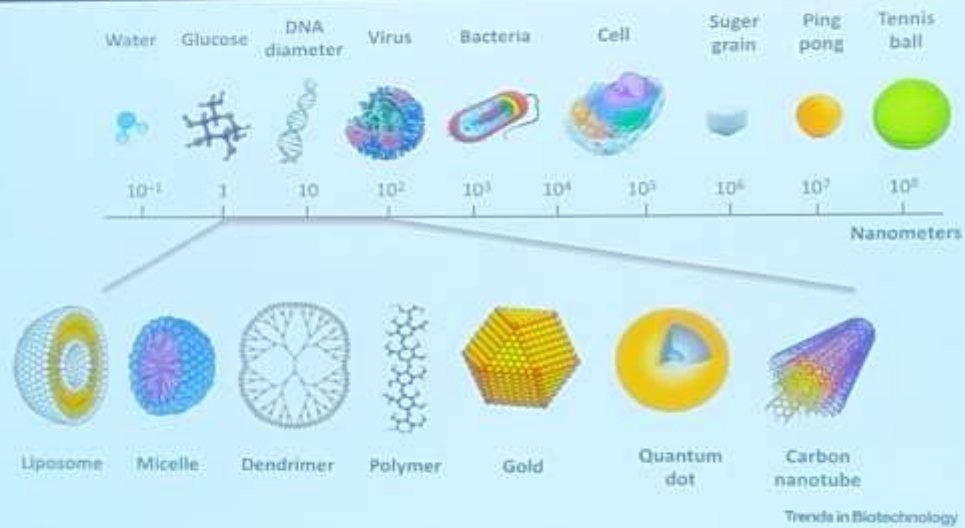
Lucas Film™ stock image

Star Wars: Episode V – The Empire Strikes Back



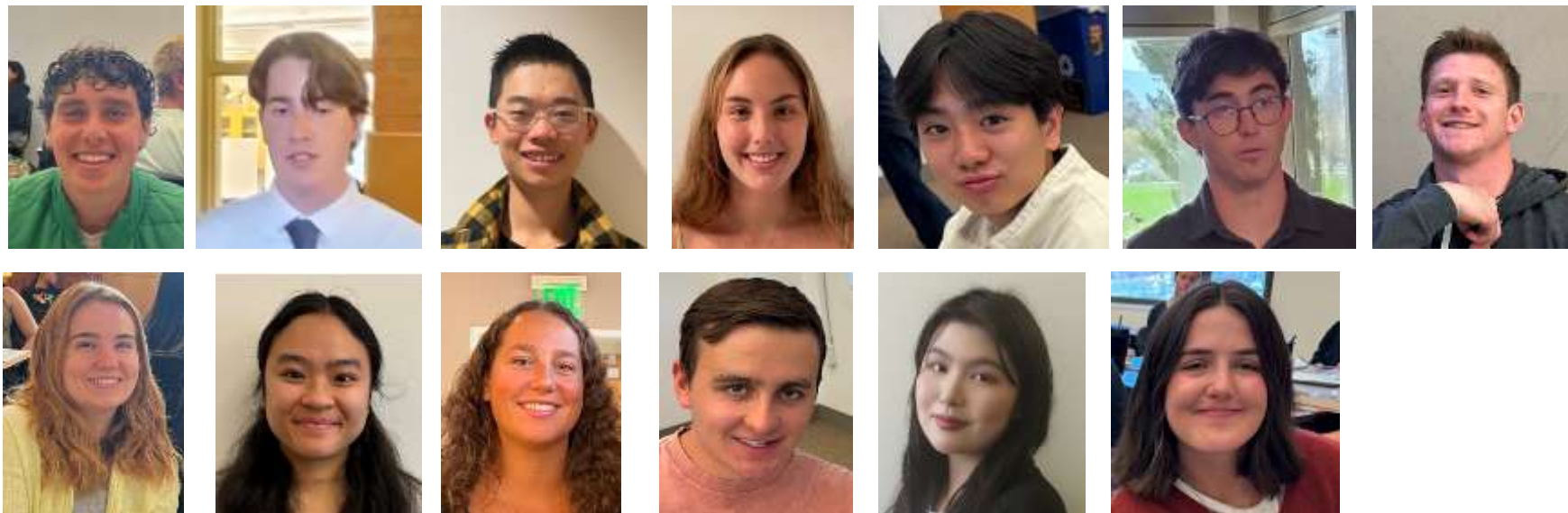
I want to be a
scientist and do
research





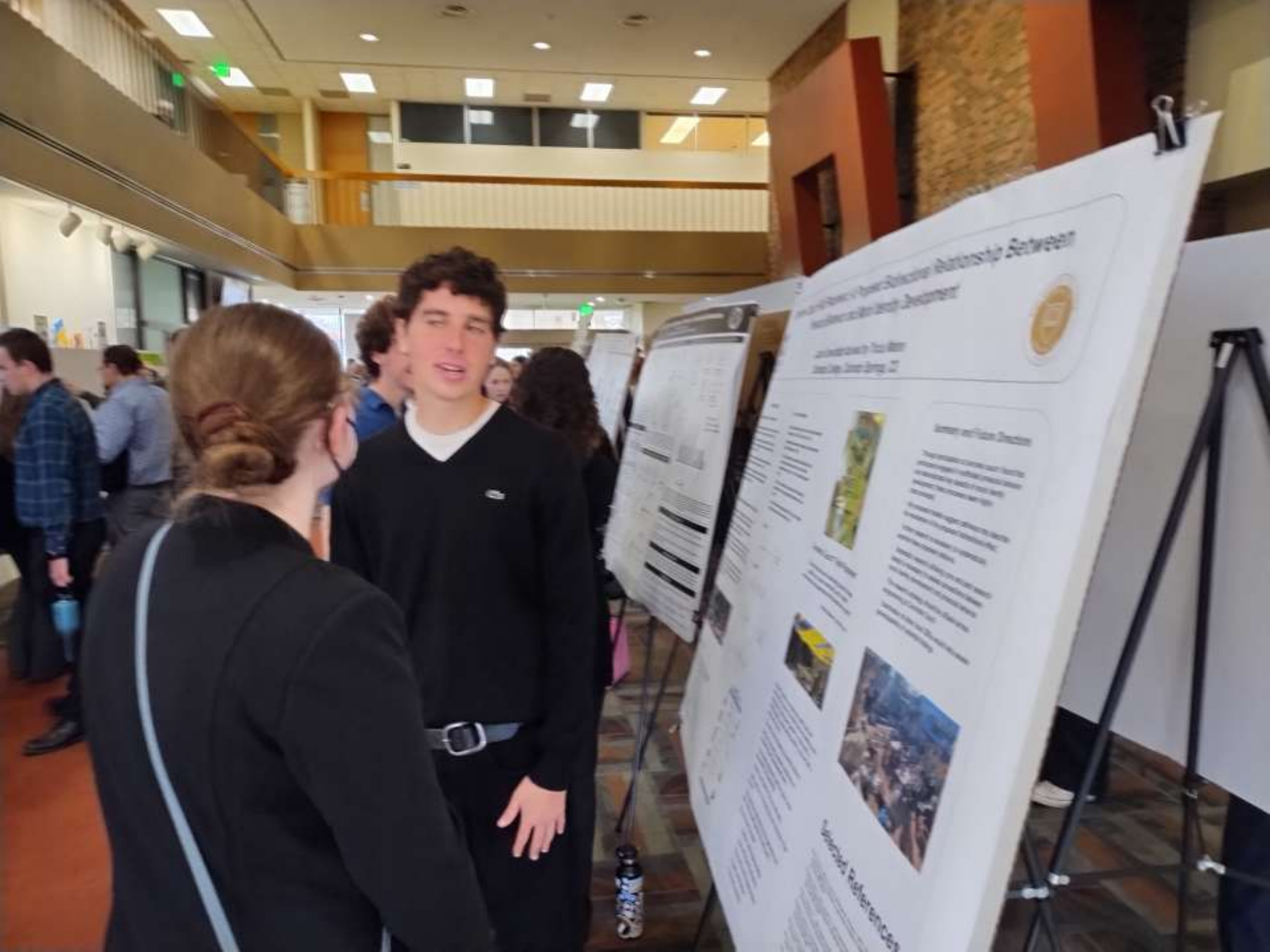
Wong, Joanna K.L. et al. Will Nanotechnology Bring New Hope for Gene Delivery?, Trends in Biotechnology, 2017, Volume 35, Issue 5, 434 - 451





Top: Jake Greenblatt, Tayo Hopfer, H. Knox Huang, Áine Kaminski, Hyungyu Kim,
Ben Leibowitz, Remi Maher

Bottom: Ana Martin, Grace Nguyen, Nicole Peirson, Kole Petersen, Xinran Wang,
Hannah Yeary



The Relationship Between Independent Variable and Dependent Variable



Abstract

The purpose of this study was to determine the relationship between the independent variable and the dependent variable. The results of the study are as follows:

The study was conducted in a controlled environment. The independent variable was manipulated, and the dependent variable was measured. The results of the study are as follows:

References



Support Influences Burden, Partially Mediated by Stigma: A Study of Family Caregivers for Schizophrenia

Theodor Hopfer and Kristi Erdal
The Colorado College, Colorado Springs

Introduction

The Family Caregiver's Experience in Schizophrenia

- Families experience difficult caregiving burdens and high levels of stress when a family member suffers from schizophrenia (Li et al., 2024).
- Common burdens include disruption of routines and
- Stigmatization due to their association with a person with schizophrenia worsens caregiver burden in family members.
- Previous work on family caregivers found that reduced self-stigma in family (Kane & Baker, 2022).

Self-Stigmatization

- Affiliate stigma is stigmatization of family members due to their kinship with a person with mental illness (Chuang, 2011).
- Self-stigma in caregivers is internalized negative self-perception and isolation (Kane & Baker, 2022).
- Feelings of oneself stigmatizing a mental illness.
- Potential for variability of the mental illness.

The Interaction of Caregiver Support

- Support for the caregiver is protective against stigma.
- Support stems from the patient, from community, and from friends and organizations.
- Even positive perceptions about the patient can be protective against stigma.

Method

Measures

- The Caregiver Burden Scale (CBS) was used in this study.
- The CBS included five subscales:
 - Stress Burden
 - Individual Burden
 - Physical Burden
 - Community Engagement
- Stigma was measured with the Self-Stigma Inventory for Families (SSI-F; Kane & Baker, 2022).
- The SSI-F had not been used for US research.
- Stigma was measured with the Self-Stigma Inventory (SSI; Lee et al., 1992).
- The SSI is a common instrument for assessing self-stigma, such as internal, external, and interactional stigma.

Participants

- 30 Participants were family members of persons with schizophrenia or schizoaffective disorder.
- Participants came from a college community (n = 12), mental health clinics (n = 10), and the public or private sector (n = 8).

Selected Demographic Table

	Age	Gender	Race	Marital
Female	36	50%	60%	50%
Male	34	50%	40%	50%

Reliability Analysis

The CBS demonstrated good reliability (r = 0.92) and the SSI-F demonstrated good reliability (r = 0.92).

Results

Mediation Analysis



The results of the mediation analysis indicated that the relationship between support and burden was partially mediated by stigma.



Discussion

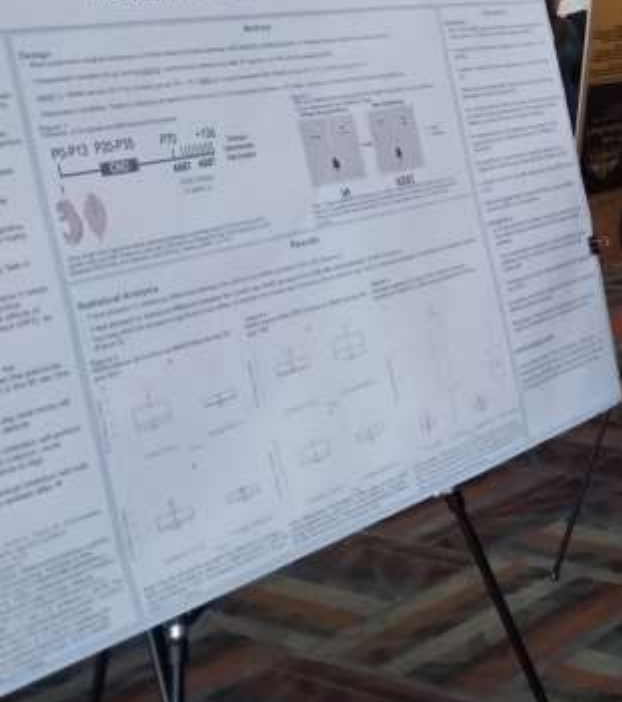
Implications

Findings suggest that support for family caregivers can reduce burden by reducing self-stigma. Future research should explore the role of support in reducing self-stigma and its impact on caregiver burden.

These findings have implications for clinical practice and policy. Support interventions for family caregivers should focus on reducing self-stigma and increasing social support.

Limitations of this study include the cross-sectional design and the reliance on self-report measures. Future research should use longitudinal designs and objective measures of caregiver burden.

Role of the Mediodorsal Thalamus to Medial Prefrontal Cortex Pathway
Days 20 and 35 in Mice on Attentional Set Shifting at Columbia University
Aime Kaminski
The Colorado College, Colorado Springs, CO



KATHRYN MOHRMAN
THEATRE



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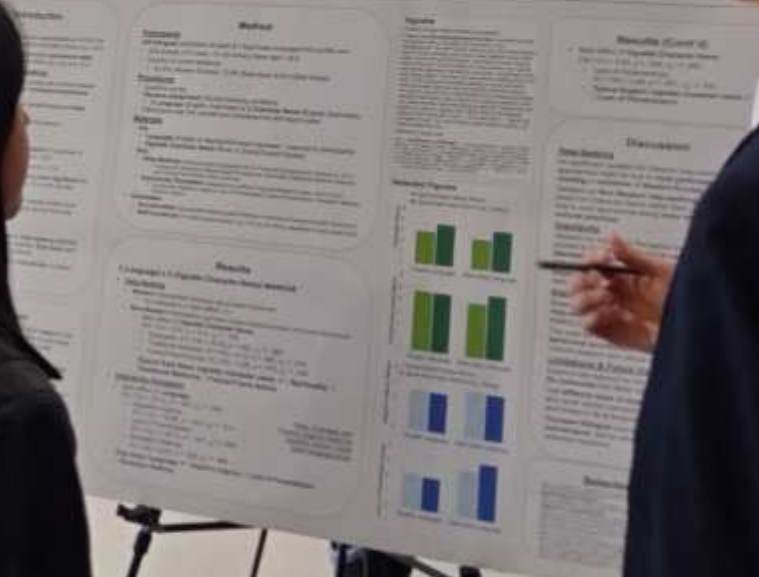


EXIT



The Sociocultural Shaping of Depression Perception: Help-Seeking and Impulsivity

H. Krista Huang
The Colorado College, Colorado Springs, CO



ARTIFICIAL LIGHT EXPOSURE SHORTENS SLEEP LATENCY AND IMPROVES MOOD IN COLLEGE STUDENTS



4504 J. Neurosci., September 24, 2008 • 28(39):4498–4506

© 2000 Blackwell Science Ltd, *Journal of Internal Medicine* 247: 395–401

Abstract

DISCUSSION

Figure 1 shows whether a difference between the two light sources and morning and night results was

Limitations

Limitations

Estimate of σ^2

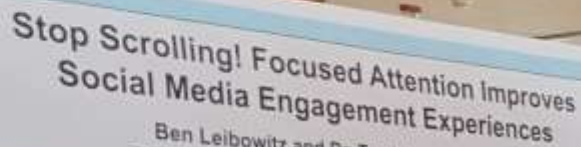
- Reporting on study with a larger sample
- Reporting on study with longer treatment period
- Examining differences in the effects of treatment across all 10 light intensities

SELECT

ADDITIONAL REFERENCES

400

ACKNOWLEDGEMENTS



Ben Leibowitz and Dr. Tomi-Ann Roberts
The Colorado College, Colorado Springs, CO

Network and Digital Switching

- Many social media users will be more in control of their own lives and more likely to switch and avoid through technical means of digital content
- However, although people perceive being less likely to be used, media about they really need to watch. Research shows that people are more likely to be used than they think they are (e.g., [Barnes, 2008](#)).

Education Agency

- Provided introduction of agency to new named lines of business
- Essential to understanding Sundt's 2001 Economics 2001
- The capability to assist in such state efforts were the source

Focused Attention

- Higher levels of prefrontal attention are associated with greater well-being (Hogarth et al., 2021)
- Prefrontal attention is a characteristic of flow experience (Csikszentmihalyi, 1997)

Attention and Choice Overload

- ### Attention and Choice Overload
- Choice overabundance people are less likely to make a choice and are more overwhelmed with choices than they are when faced with an array of options, compared to when you choose (Iyengar et al., 2000)
 - Social media induces choice overload, users unable to choose between options
 - Information agency undermines effectiveness on social media by making reporting agencies more focused attention

Hypotheses

- ### Hypotheses
1. People anticipating having more positive experiences on Instagram when they use affordances (agency, but not when given the opportunity for focused attention).
 2. Instagram agency does not need to have positive value experiences exceeding Instagram's content, but higher focused attention does.

Matthew

© 2003 by Blackwell Publishing Ltd, *Journal of Internal Medicine* 253: 105–112

Independent Variables (1 & 2)

- Agency:** a nonfinancial entity that is authorized to conduct the primary business of the Agency; it is authorized to originate and receive securities on its own behalf.
- Finance:** a department of the institution that handles issues of money in the form of loans, mortgages, etc. (Finance is considered to be the source of capital assets and securities, provided it does not originate them.) (See Finance.)

Preparation

Participants were assigned to one of two conditions:

- High Aggression Low Power** - characterized by dominance through the use of physical force; aggression is motivated
- High Aggression High Power** - dominant; tends to involve showing off or intimidating others; often involves fear; often involves showing off or intimidating others
- Low Aggression High Power** - aggressive; tends to involve showing off or intimidating others; often involves fear; often involves showing off or intimidating others
- Low Aggression Low Power** - aggressive; tends to involve showing off or intimidating others; often involves fear; often involves showing off or intimidating others

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- *What are the major categories of international management research?*
 - *Human Resources* (1980-1990)
 - *Marketing* (Marketing, Strategic marketing)
- *Small business and export management*
 - *Trade fairs, 1970s*
 - *Globalization, 1980s and 1990s*
 - *Product innovation, service internationalization*
- *Top management and organizational behavior*
 - *International management research*
- *History of Small Business 1980s (Exportation)*
 - *1980s, 1990s and 2000s*
 - *Globalization and regional integration*

2009年10月

Profound Current Experience

- Word 1667 of 176



Journal of Interpersonal Violence 28(12)

- ...the ... of ...

Figure 1

- High levels of pollution in the atmosphere
- High levels of pollution in the atmosphere
- High levels of pollution in the atmosphere

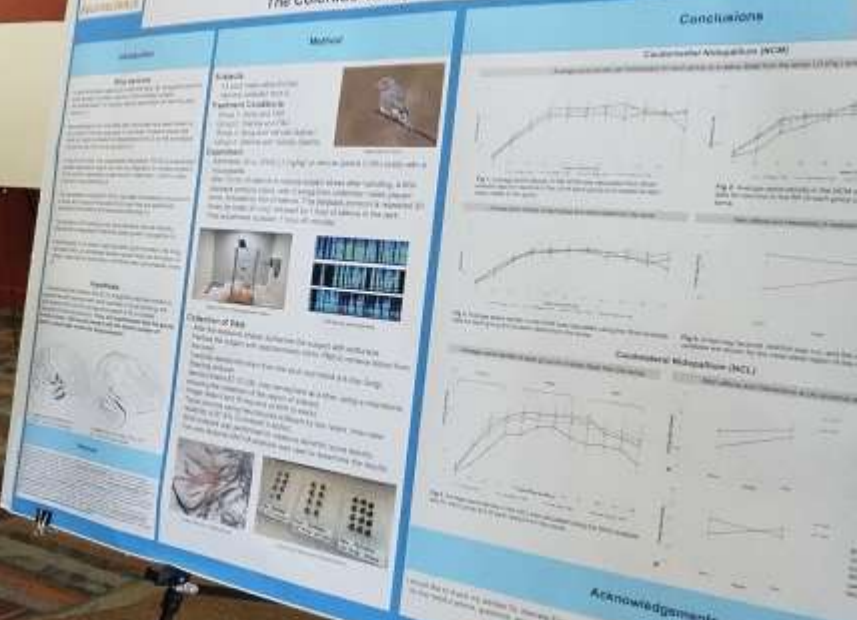
Abstract

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KATHRYN MOHRMAN
THEATRE

Effects of Aromatase Inhibition on Rapid Dendritic Spine Neuroplasticity in Songbirds

Nicole Peirson & Marcela Fernandez-Peters
Department of Psychology
The Colorado College, Colorado Springs, CO



Addressing the Treatment Gap: An Evolutionary Perspective on Addiction's effect on the Stigmatization of Substance Use Disorders

Robert E. Maher IV & Dr. Gregory J. Peters
Department of Psychology, The Colorado College



Participants: $n = 181$
Gender: 107 (59%) male, 74 (41%) female
Age: 18-24 (M = 19.5, SD = 1.2)
Race: 107 (59%) White, 74 (41%) Other
Location: 107 (59%) Urban, 74 (41%) Suburban
Education: 107 (59%) Undergraduate, 74 (41%) Graduate

Methods

Measures:

Stigmatization

Stigma?

Results

The EPA

The EPA's impact on addiction

Discussion

Limitations & Future Directions

Conclusion



PLEASE
NO FOOD OR
DRINKS IN THE
THEATER

PLEASE
NO FOOD OR

Effects of Gender-Affirming Hormone Therapy: The Effects of Testosterone or Estrogen on Sexual Behavior in Long-Evans rats

Chantel Beyer, Mia Fajardo, Ivan Yabor-Igheba, Kyla Peterson, & Pay A. Guernsey
Southwestern University, Georgetown, TX, Colorado College, Colorado Springs, CO

Introduction

Testosterone (T) is an androgenic hormone used for masculinizing gender-affirming hormone therapy (GAHT).
Estrogen (E) is used for feminizing GAHT.
GAHT in transgender men and women modifies their physical characteristics to align with their experienced gender.
GAHT is associated with changes in sexual orientation.
GAHT in animal models disrupts reproductive physiology (e.g., estrous cycle disruptions, alterations in body and weight).

Method

- **Motivation**
 - Partner Preference Test (PPT) Contact (10 min)
 - Time with and without sexual contact
- **Sexual Behavior**
 - Latency to first copulation
 - Frequency of copulations
 - Intermittent and ejaculations
- **Estrous Cycle**
 - Daily, 12 days of estrus

Results

Male CONTACT



Body Weight



Summary and Conclusions

- Future studies should test sexual motivation and behavior separately. It is unclear if effects of TE are altering preference or sexual motivation, in general.
- GAHT should be tested in animals that were delayed in puberty.
- Interestingly, female rats never entered proestrus/estrus, yet displayed lordosis. Future studies can examine pre-TE group.



Analysis of Cognitive Function in Colorado College Students in Correlation with Carbon Dioxide Levels

Grace Nguyen, Dr. Sally Meyer
Department of Chemistry at Colorado College



Abstract

[illegible]

Background

Background

But there is also significant impact on human cognitive function, ranging from mild to severe. In this laboratory, we've found that the level of carbon dioxide in the air affects cognitive function. At 1000 ppm, there is a moderate impairment after 4 hours of exposure. At 1500 ppm, there is a moderate impairment after 2 hours of exposure. At 2000 ppm, there is a significant impairment. Cognitive function was previously tested by using a computerized test that measures the ability to respond to changes in the environment. Cognitive function was previously tested by using a computerized test that measures the ability to respond to changes in the environment.

Carbon dioxide levels can easily change, usually down by the respiratory rate of a person and how much of the gas leaves and enters the room through any openings from other systems. The equation here is a simplification of how to calculate the rate of carbon dioxide entering and leaving a room.

$\Delta C = \frac{C}{C_0} \times 100\%$
 rate of change of concentration of carbon dioxide
 in the room with time (in %/h)
 $\Delta C_i = \frac{C_i}{C_0} \times 100\%$
 rate of change of concentration of individual hydrocarbon
 in the room with time (in %/h)
 $\Delta C_{CO_2} = \frac{C_{CO_2}}{C_0} \times 100\%$
 rate of change of concentration of carbon dioxide
 in the room with time (in %/h)

Data/Results



Figure 1. A schematic diagram of the experimental setup. The subject is seated in a chair, viewing a video screen. The video screen displays a target (a red dot) and a starting point (a green dot). The subject's hand is positioned at the starting point. The video screen is connected to a computer system.

	Performance	Productivity	Efficiency
Task 1: Plan	100	100	100
Task 2: Design	100	100	100
Task 3: Develop	100	100	100
Task 4: Test	100	100	100
Task 5: Deploy	100	100	100
Task 6: Monitor	100	100	100
Task 7: Maintain	100	100	100
Task 8: Improve	100	100	100
Task 9: Scale	100	100	100
Task 10: Optimize	100	100	100

Methods

[illegible]

1280

There are a number of different types of
computer systems, ranging from desktop
systems to mainframe systems.

Future Work

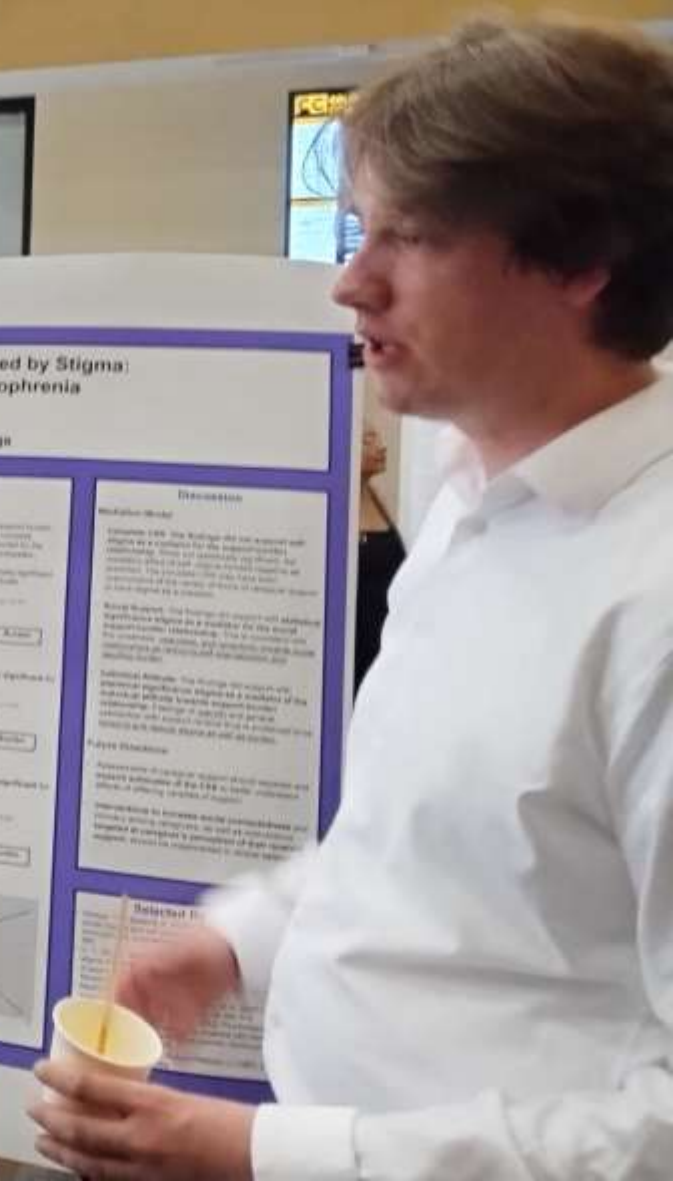
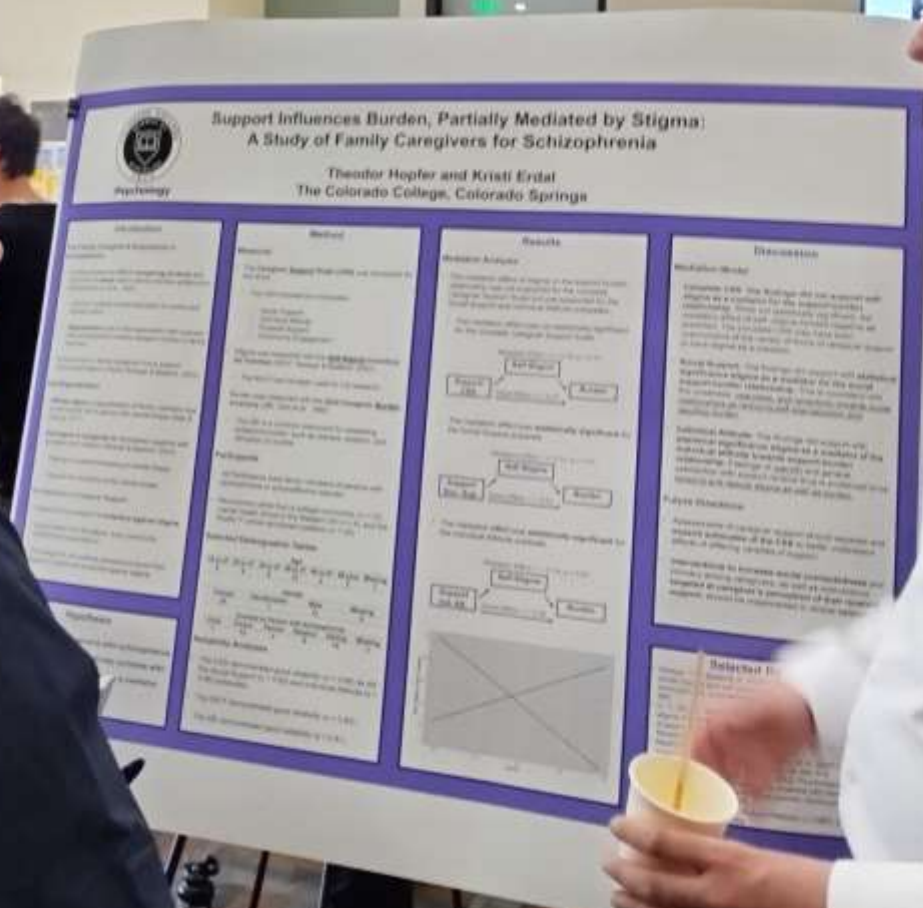
There are a number of important things to remember. The first is that the system is not a magic box. It is a tool that can be used in a number of ways. The second is that the system is not a one-size-fits-all solution. It is a tool that can be used in a number of ways. The third is that the system is not a one-size-fits-all solution. It is a tool that can be used in a number of ways.

References

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Also

...ual Shaping of Depression Perception:
...-Seeking and Impulsivity
... in Social Psychology
... Colorado College, Colorado Springs, CO





KATHRYN MOHRMAN
President of Eastern College



Non-Thermal Plasma Treatment: Breakdown of Polyfluoroalkyl Substances on Plant Surfaces

Balaban, Henry & Kim, Hyeonju



Introduction

Background

Non-thermal plasma (NTP) is a partially ionized gas at low temperature. It is used for various applications, including surface treatment, sterilization, and environmental remediation. This study focuses on the breakdown of polyfluoroalkyl substances (PFAS) on plant surfaces using NTP.

Methods

Plant Surface Preparation

- 1. Clean the plant surface with distilled water.
- 2. Dry the plant surface at 60°C for 24 hours.
- 3. Apply the PFAS solution to the plant surface.
- 4. Allow the PFAS to dry on the plant surface.

Plasma Treatment

- 1. Set up the NTP system.
- 2. Treat the plant surface with NTP for 10 minutes.
- 3. Repeat the treatment for 20, 30, and 40 minutes.

Discussion

Results

The results show that NTP treatment significantly reduced the amount of PFAS on the plant surface. The reduction was more pronounced with longer treatment times.

Conclusion

NTP is a promising method for the breakdown of PFAS on plant surfaces. Further research is needed to optimize the treatment parameters.

Results: Mum Petals

Non-Treatment



Treatment



Materials



Results: Camellia petals

Before



After Treatment



Plasma treatment did not remove color additive stains from flower petal surfaces.

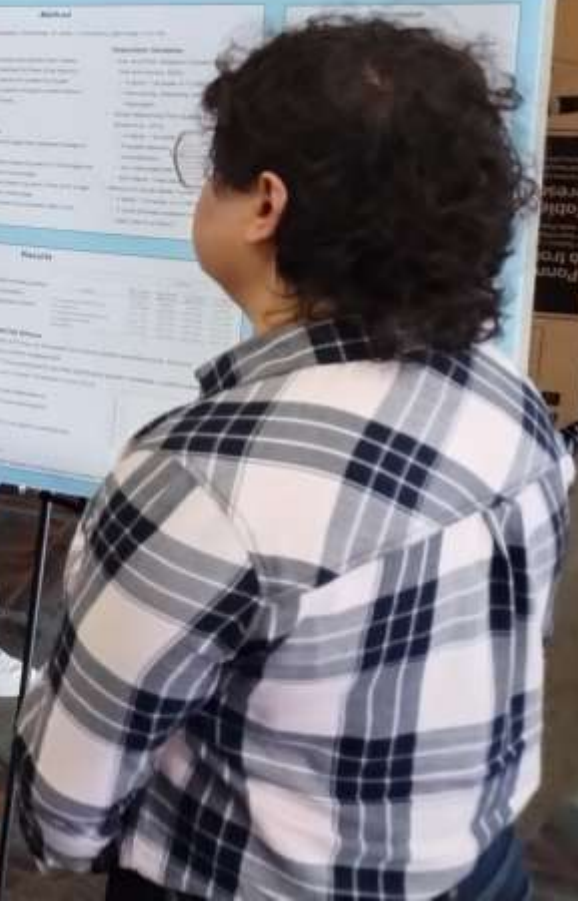
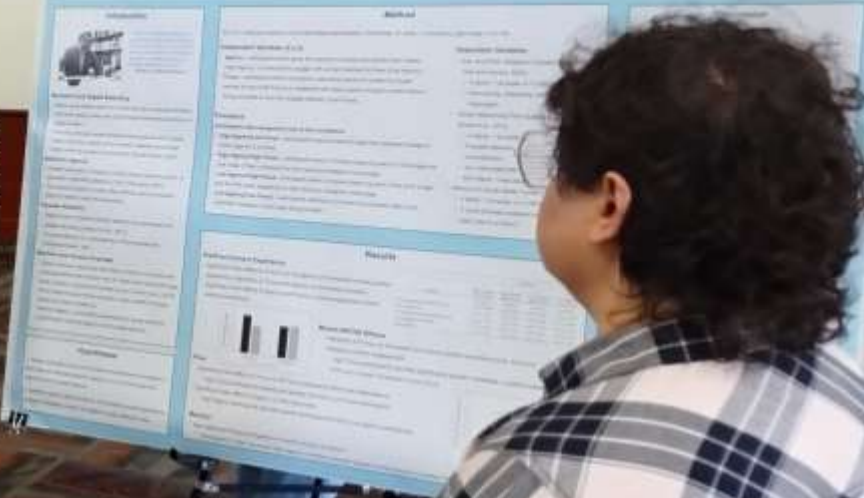
KATHRYN MOHRMAN THEATRE

KATHRYN MOHRMAN



Stop Scrolling! Focused Attention Improves Social Media Engagement Experiences

Ben Laibowitz and Dr. Tomi-Ann Roberts
The Colorado College, Colorado Springs, CO





COLORADO COLLEGE

Addressing the Treatment Gap: An Evolutionary Perspective on Addiction's effect on the Stigmatization of Substance Use Disorders

Robert E. Maher IV & Dr. Gregory J. Peters
Department of Psychology: The Colorado College

Treatment Gap
Approximately 10% of the population who need treatment for substance use disorders do not receive it. This is due to a variety of factors, including lack of insurance, lack of access to care, and stigma.

Stigmatization of SUD's
Stigma is a negative attitude or feeling towards a person or group of people. It is often based on stereotypes and can lead to discrimination and social exclusion. Stigma is a major barrier to seeking treatment for SUD's.



Methods

Research Question: How does stigma affect treatment seeking?	
Independent Variable	Dependent Variable
Stigma (measured by the Stigma Scale)	Treatment Seeking (measured by the Treatment Seeking Scale)
Control Variables: Age, Gender, Education, Income, Insurance Status	

Results



Concrete Couch Field Placement: A Proposed Bidirectional Relationship Between Prosocial Behavior and Moral Identity Development

Jacob Greenblatt Advised by Tricia Waters
Colorado College, Colorado Springs, CO

Introduction

Community engagement has positive outcomes for the individual and the community (James et al., 2017). Community-based organizations (CBOs) facilitate community engagement with diverse and compelling (James et al., 2017). Community engagement facilitates adolescent moral identity development (James et al., 2017). Adolescents who engage in community service better in emerging adulthood than those who do not (James et al., 2017).

Moral identity development in the community... Identity is the degree to which being moral is an integral aspect of one's self-concept (Alberta & Whetten, 2005). Identity is a relatively stable self-concept (Alberta & Whetten, 2005). Identity is a relatively stable self-concept (Alberta & Whetten, 2005).



Community engagement has positive outcomes for the individual and the community (James et al., 2017). Community-based organizations (CBOs) facilitate community engagement with diverse and compelling (James et al., 2017). Community engagement facilitates adolescent moral identity development (James et al., 2017).

The Proposed Models

Prosocial behavior leads to moral identity development (Baumeister et al., 2000; James et al., 2017). Moral identity development leads to prosocial behavior (Baumeister et al., 2000; James et al., 2017). As for the research, we assessed bidirectional links between prosocial behavior and moral identity development (see Figure 1 for the simple proposed model).

Figure 1

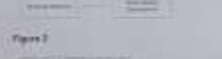


Figure 2



Concrete Couch Field Placement

"We work with arts and community groups to create public art in local community, and to create environments and experiences that foster civic spirit."



Concrete Couch is an on-site public park and community art center that offers arts and wellness, a program, online programming, a library, a reading studio, a wood working studio, a social hall, a kitchen, and a library. Concrete Couch is based on prosocial behavior. Staff and community members collaborate on programming and development plans. Involvement in prosocial work sets given social responsibility and increasing. Concrete Couch is a free and open place. Staff continue to volunteer time and resources to the place. Participants are dedicated to the organization and continue participation for many years. My involvement included: Summer camp programming, Book reading and lunch eating, Community event programming, Program development, Community relations.

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