

Undergraduate Research Program

How to Create Posters

- Create your posters in Microsoft Publisher or PowerPoint
 - Be sure to set the page size to measure 30x40 or 40x30 inches (depending on how you want it viewed) to avoid photos and text from pixelating when printing.
- SJU Duplicating offers poster printing on campus. If you chose to use SJU duplicating, please email your completed poster to SJU Duplicating requesting that your poster be printed in following the format:
 - Color
 - Glossy finish
 - 30x40 inches in measurement (if this criteria fits in with the conferences recommendations)
- Posters can be mounted on foam board you must contact the UR (ursw@csbsju.edu) office if you need a foam board.

General Guidelines:

- Make sure fonts are legible. Size doesn't matter as long as you have the page proportion set correctly.
- Create professional and concise posters...don't use too many words. A poster should be an *aid* in your presentation rather than do it for you
- Thoroughly review for spelling/grammatical errors before sending to faculty advisor for approval

Other Resources:

- <https://www.makesigns.com/tutorials/scientific-poster-parts.aspx>
- <http://www.personal.psu.edu/drs18/postershow/>
- <https://ugs.utexas.edu/our/poster>

Undergraduate Research Program

CSB/SJU Poster Samples:

Music and Climate Change: Integration and Enrichment in the Elementary Classroom

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Introduction

- 10 weeks, 1 lesson/week
- One 3rd grade classroom
- Integration of science, music, language arts, and social studies linked to MN Standards
- Final performance of classical piano music and student groups sharing their research findings about climate change

Big Ideas Covered in Unit:

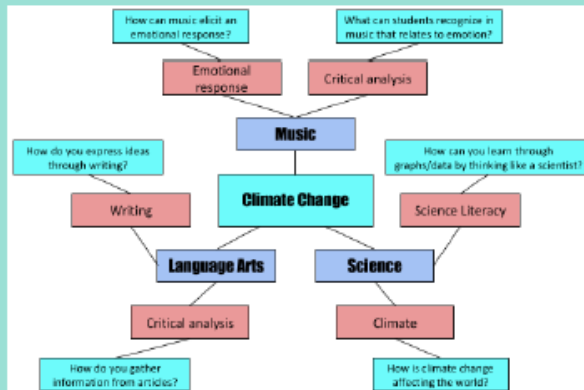
1. How do we observe our world? As scientists? As musicians?
2. How do these observations inspire us?
3. How do we take these different perspectives and meld them together?
4. How can we use these observations to look at real-world issues, like climate change?
5. I can make my voice be heard through collaborating, writing, and sharing my work.

Outline of Unit:

- | | |
|--|---|
| 1. Week One: Science observations | 6. Week Six: Discuss Inspiration in Music and Science. Class list of ways to fight climate change. |
| 2. Week Two: Music observations | 7. Week Seven: Symbolism in music and science |
| 3. Week Three: Climate change overview. | 8. Week Eight: Individual writing workshop. |
| 4. Week Four: Introduce group pieces and topics. Listen to classical pieces inspired by nature. Rest of unit will be spent researching these aspects of nature in groups and how they have changed due to climate change. | 9. Week Nine: Group writing workshop. |
| 5. Week Five: Group Research Day! | 10. Week Ten: Practice performing group paragraphs. |
| | 11. Final performance! Groups alternate sharing paragraphs with classical piano music. |

Why music and a final performance?

1. Opportunity to apply music outside of music class and relate to other fields.
2. Knowledge of music connects new vocabulary of music to emotional response of music.
3. Music bridges emotional and intellectual responses together to climate change and can be an outlet for both sides of the brain
4. Music gives space for students to make connections on their own and in their own time
5. Final performance gives chance to showcase students' hard work and raise awareness of climate change



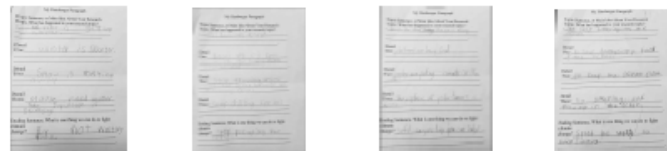
Results:

1. Students writing, spelling, and conventions vastly improved.
2. Students gained an appreciation of classical music and listening skills.
3. Students acquired an awareness of climate change and became empowered to fight it.
4. Students learned from each other through discussions and big her-order questions.

Student Group Paragraph Samples

Objectives Assessed:

Students will be able to synthesize research findings from the unit into a paragraph, practice using the writing process, and create a paragraph about their research findings as a group.



Undergraduate Research Program

Adverse Childhood Experiences and the Mediating Effects of Social Relations and Self-Compassion

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Abstract

A plethora of research exists about the impact of Adverse Childhood Experiences (ACEs) on mental and physical health and well-being in adulthood. To discover the underlying reasons for the relationship between adverse childhood experiences and well-being, 115 college students completed a one-shot, online questionnaire containing measures of ACEs, well-being, self-compassion, social connectedness, and perceived social support. As predicted, ACEs were negatively correlated with well-being. ACEs were also negatively correlated with self-compassion, social connectedness, and perceived social support. Self-compassion and social connectedness did not mediate the relationship between ACEs and well-being. Yet, perceived social support did mediate the relationship between ACEs and well-being. In addition, expanded ACEs (e.g., adverse experiences outside of the home) significantly predicted the relationship between ACEs and well-being beyond conventional ACEs (i.e., ACEs occurring at home). Clinicians should include expanded ACEs when assessing for ACEs and should focus on strengthening social support when working with ACE victims. Future directions of ACE research include longitudinal research of ACEs and well-being and relationships between ACEs and academic prestige.

Introduction

Childhood is a critical stage of life in which individuals develop the foundation needed for proper social, emotional, and physical growth. Traumatic experiences during childhood can hinder one's development and negatively influence how a child learns to socialize, play with, and develop friendships with other children. This is problematic because it has the potential to decrease social support, which is a vital component of developing interpersonal skills. Hindering interpersonal development can have a negative effect on one's intrapersonal development, as human beings are social creatures. Consequently, these interferences can transform into psychological illnesses in adulthood, occasionally with physical symptoms. This project is an empirical study on the topic of adverse childhood experiences (ACEs) and their manifestations in emerging adulthood.

The objective of the current study is to evaluate whether social relations and self-compassion mediate the relationship between ACEs and well-being in emerging adulthood. Based upon previous research, I predict that social relations mediates the relationship between ACEs and well-being. I also predict that self-compassion mediates the relationship between ACEs and well-being.

The study also seeks to understand how expanded ACEs (i.e., ACEs occurring outside of the household) affect well-being in emerging adulthood. Previous studies show that expanded ACEs negatively correlate with health risks in adulthood beyond the effects of the ACEs identified in Felitti et al.'s (1998) original study. I predict that expanded ACEs have a stronger negative correlation with well-being than the correlation between conventional ACEs and well-being.

Method

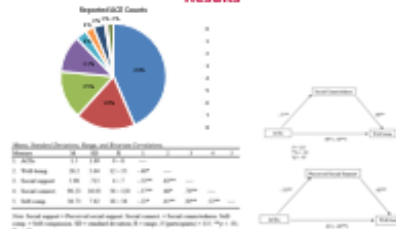
Participants

- 115 college students
- 71 were first-years, 36 were second-years, 6 were third-years, and 2 were in their fourth year of college
- 28 were male and 87 were female

Materials and Procedure

Participants completed a one-shot online questionnaire. The questionnaire consisted of *The Satisfaction With Life Scale*, the *Adverse Childhood Experiences International Questionnaire*, the *Multidimensional Scale of Perceived Social Support*, the *Social Connectedness Scale-Revised*, and the *Self-Compassion Scale – Short Form*.

Results



- Average number of ACEs reported was 1.5 out of 11. Frequencies reported were consistent with the MN Department of Health (2013).
- ACEs negatively correlated with well-being, perceived social support, social connectedness, and self-compassion.
- Self-compassion, social connectedness, and perceived social support were positively correlated with well-being.
- Perceived social support and social connectedness were positively correlated.
- Self-compassion and social relations did NOT mediate the relationship between ACEs and well-being.
- Perceived social support DID mediate the relationship between ACEs and well-being.
- Expanded ACEs significantly predict well-being beyond conventional ACEs.

Discussion

Results of this study align with previous findings. ACE frequencies were consistent with those of college students reported in the Minnesota Department of Health's study, as were relationships between ACEs and well-being, self-compassion, social connectedness, and perceived social support. In addition, relationships between well-being and social connectedness, social support, and self-compassion matched previous findings.

Although self-compassion and social connectedness did not mediate the relationship between ACEs and well-being, perceived social support proved to be a mediator. This provides direction for future clinical practice, as improvements to social support should correlate with improvements in well-being. Expanded ACEs also proved to significantly improve the prediction of well-being from conventional ACEs, as predicted. In future practice, expanded ACEs should be assessed in addition to the conventional ACEs identified by Felitti et al. (1998).

In future research, the SWEMWBS should be used to measure well-being in ACE studies. A possible direction for research in this area is changes in well-being over time. As this was a one-shot study, it is possible that well-being changes in ACE victims over time. Though ACEs significantly correlate with well-being in emerging adulthood, the relationship between ACEs and well-being in late adulthood has yet to be explored. In addition, relationships between ACEs and school success/prestige may be an interesting line of research. The average number of ACEs in this sample of college students was 1.5. It would be interesting to compare ACE levels among high school graduates, 4-year degree graduates, Master's level graduates, and PhD graduates. Are those with extensive ACE backgrounds less likely to pursue further schooling after high school? It may also be interesting to compare ACE frequencies between high school diploma and GED recipients to see if a significant difference is present in ACE levels between these populations.

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Undergraduate Research Program



Effects of Guided Mindfulness Meditation on Perceived and Biomarker Stress in a Pre-Healthcare College Student Population

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Introduction

- Chronic stress is highly prevalent in the pre-healthcare college student population and is associated with various negative effects on mental, emotional, and physical health of individuals.¹
- Mindfulness is linked to increased immune system function, decreased psychological distress, improved well-being, reduced anxiety, and improved empathy and compassion.²
- Heart rate variability (HRV) is an evidence-based physiological measure of biomarker stress indicating the relationship between the sympathetic nervous system (SNS) and parasympathetic nervous system (PNS).³

Purpose

- The purpose of this study was to examine the relationship between guided mindfulness meditation and perceived and biomarker stress using a brief web-based intervention method.

Methods

- Participants**
- 68 pre-healthcare participants began the study, 33 students (22 females and 11 males) completed all major components and were included in analysis (ages 19-22, M= 20.46 ± 0.94, n=63).
- Mindfulness Meditation**
- 5-12 min of daily meditation 6 days/week for 8 weeks
 - 452:25 total min of guided online mindfulness meditation with an average completion of 55.8% (M= 252.26 ± 117.4)
- Measures (Pre/Post Test: Sept. 2017- Nov. 2017)**
- Perceived Stress Scale (PSS)
 - State and Trait Anxiety Inventory (STAI)
 - Five Facet Mindfulness Questionnaire (FFMQ)
 - 3 min heart rate variability analysis using the *heartRateV* Pro
- Data Analysis**
- Paired Samples t-test and Bivariate Correlations (p<0.05)
 - Linear descent was analyzed and subsequently broken into 4 quartile groups based on minutes of mindfulness meditation

Results

Table 1. Difference between pre-test and post-test variables over an 8 week mindfulness meditation intervention. *Significant difference between groups

Variables	t	p-value	Cohen's d
HRV coherence score	-2.9	0.007*	0.469
PSS	4.20	0.000*	0.804
STAI state	3.45	0.002*	0.554
STAI trait	3.7	0.001*	0.425
Mindfulness total	-5.6	0.000*	0.689

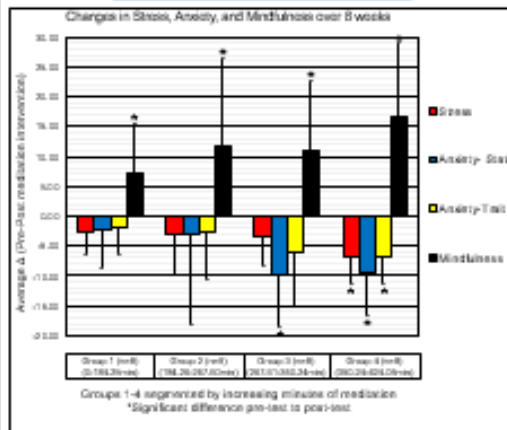


Figure 1. Changes in Stress (PSS), Anxiety (STAI), and Mindfulness (FFMQ) following an 8 week Mindfulness Meditation Web-based Intervention

FFMQ Subscores

- With a decrease. All mindfulness subscores were significantly different from pre-test to post-test.
- Step 1:** No significant change in subscores from pre-test to post-test.
- Step 2:** Significant increase in non-judging of inner experience (mean diff: 4.22), $F(1, 58) = 3.62, p = 0.033, \eta^2 = 0.058$.
- Step 3:** Significant increase in non-reactivity to inner experience (mean diff: 3.73), $F(1, 57) = 3.66, p = 0.033, \eta^2 = 0.057$.
- Step 4:**
 - Significant increase in observing with mindfulness (mean diff: 4.03), $F(1, 57) = 4.20, p = 0.024, \eta^2 = 0.069$.
 - Significant increase in acting with awareness (mean diff: 3.87), $F(1, 57) = 3.91, p = 0.028, \eta^2 = 0.064$.
 - Significant increase in non-identifying of inner experience (mean diff: 3.88), $F(1, 57) = 3.71, p = 0.032, \eta^2 = 0.061$.

Discussion

- Stress and anxiety decreased and mindfulness increased following an 8 week guided mindfulness meditation intervention. This is congruent with prior research, where short-term mindfulness practice resulted in benefits in a college student population.⁴
 - Students that engaged in more minutes of mindfulness meditation showed greater decreases in stress and anxiety and greater increases in mindfulness. This adds to the current literature and debate about length of meditation in practice and effects.⁵
 - Students that spent the most time mindfully meditating showed significant improvement in the following mindfulness subscores: observing, acting with awareness, and non-judging of inner experience in addition to overall mindfulness. The significant increase in acting with awareness may be due to high education level in this population.⁶
 - Mindfulness meditation may offer a pathway for better abdominal performance and cognitive flexibility to daily stresses.⁷
 - No significant relationship was discovered between minutes of mindfulness and heart rate variability coherence score, which conflicts with previous research.⁸
 - High individual variation in coherence scores could result from confounding variables such as sleep, exercise, and caffeine, which were not controlled for prior to testing.
 - Study is limited by a high drop-out rate over the 8 weeks.
- Future Research**
- Future researchers should consider other biomarkers of stress (e.g. cortisol) and consider the effects of mindfulness on empathy levels and compassion.

Conclusion(s)

- 5-12 minutes of daily mindfulness meditation is associated with decreased stress, anxiety, and increased mindfulness in a pre-healthcare college student population with greater changes observed following more minutes of meditation.
- Pre-healthcare students should prioritize mindfulness practices when aiming to reduce stress and anxiety.

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