

Interdisciplinary Innovations Fund
Final Report

**Accessible Biofeedback: Innovative Campus-Wide Strategies
for Stress Management and Test Anxiety**

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What has been accomplished:

1. A research team was established to examine the impact of the biofeedback programs on student stress, anxiety and physiological resilience. Data was collected through Learning Strategies classes, enBalance biofeedback classes and a one-credit hour biofeedback class. Over the course of one year, an estimated 300 students participated in biofeedback training through one of the above mechanisms.

A team of two professional staff, 3 graduate students, 2 undergraduates and 1 volunteer were involved in this research which was presented at the annual International Society for Neurofeedback and Research Conference. The title of the presentation was “The Impact of an 8-week Heart Rate Variability Biofeedback Training on Qeeg and LORETA Following a Cognitive Stressor.” This research showed that students participating in an 8-week HRV class reported significant improvements in coping self-efficacy. Compared to a Learning Strategies control group, the biofeedback group showed less anxiety and stress. A sub-set of the students in the biofeedback classes showed significantly reduced physiological reactivity in response to a cognitive stressor after participating in the class. Currently, research is being conducted with Dr. Stephanie Reid-Arndt in the Dept. of Health Professions comparing the 8-week biofeedback class to 3 other stress management courses. It is hoped that this research will clarify the specific impacts of biofeedback training on student resilience as well as helping to identify which students may benefit from specific interventions.

Grant monies were used in the following ways to achieve the above research:

- a. graduate and undergraduate research positions
 - b. equipment and software used in the physiological data collection and analysis
 - c. ear sensors used in the classes taught (where the data was collected)
 - d. incentives for some of the research participants
 - e. costs associated with travelling to the ISNR conference (PI and two graduate students)
2. 5 undergraduate students were trained to serve as biofeedback coaches. They assisted in the Learning Strategies and enBalance classes and provided live demonstrations at several campus-wide awareness events. It is estimated that over 120 students were introduced to biofeedback and stress management resources through these events. One undergraduate student was hired 5 hours/week for this portion of the program. Biofeedback sensors were made available at the Student Success Center, Career Center, Library, Reflector computer lab and Memorial Union computer lab.

Grant monies were used in the following ways to expand the accessibility of basic biofeedback training:

- a. Undergraduate biofeedback coach position
 - b. Ear sensors used to teach large classes and for check out at campus computer labs
3. 8 graduate students in the Department of Educational, School and Counseling Psychology have participated in a practicum, Graduate Assistantship or field placement position at the Student Health Center specifically to provide biofeedback to individual students. They received intensive instruction and weekly supervision from a Licensed Psychologist and (as a group) provided 15-25 individual sessions each week to students in the SHC biofeedback lab. The Student Health Center (SHC) built an office/biofeedback lab specifically to be used by these graduate students to provide biofeedback related services. SHC also hired a graduate student to provide biofeedback services in the biofeedback lab as well as teaching biofeedback classes. This position was increased from 5 hours/week to 20 hours/week beginning in the Fall, 2012. In addition, they have agreed to provide an additional 10 hour/week position beginning in the Fall, 2013.

Grant monies were used in the following ways to increase individual therapeutic use of biofeedback:

- a. Graduate student positions
 - b. Building and furnishing a biofeedback lab
 - c. Biofeedback equipment for biofeedback lab
 - d. On line training for biofeedback graduate students
4. A team of 4 students developed, designed and created two instructional biofeedback videos. A “teaser” is on the Student Health Center website and is designed to quickly introduce the concept of biofeedback as a self-regulation tool for anxiety and stress management. A second, longer video is also available on the SHC website and is also rotated through a series of educational videos in the SHC waiting area. This is a basic instructional video that demonstrates how to use the HRV biofeedback software and hardware to begin practicing.

Grant monies were used in the following ways to produce these videos:

- a. One undergraduate student was hired 5 hours/week devoted to this project.
5. Members of BREATHE student organization received training on biofeedback and stress management. They have participated in several campus-wide educational events to promote the programs. Most of these events were in conjunction with SHAC and StressBusters student organizations. The student leaders of BREATHE have developed a 30-minute training related to breathing techniques that has been used to teach residence hall floors, classes or groups requesting stress management strategies. BREATHE has used these opportunities to market the biofeedback programming on campus and teach basic skills.

Grant monies were used in the following ways to facilitate student training and marketing of the biofeedback program:

- a. Advertising/Reproduction
- b. Biofeedback sensors
- c. Software for screen recording

Future Directions:

The multi-faceted approach to expanding biofeedback services on campus resulted in many lessons learned. For example, it was discovered that students respond best to interventions offered for course credit or through individualized sessions. Interventions that involved voluntary attendance to a group training were generally poorly attended with significant attrition. Offering incentives to these students for attendance did little to improve the situation. Qualitative data suggests that students are interested in the interventions and find them helpful, but will frequently choose not to attend due to feelings of overcommitment and time pressures. Students specifically seeking services for stress or anxiety at the Student Health Center appear to be intrinsically motivated for the training and demonstrate excellent attendance for individual biofeedback sessions. Based on this data, an emphasis was placed on developing individualized services and courses for credit. The emphasis on individualized training is reflected in the Student Health Center's willingness to build a biofeedback lab and hire two graduate students for the program. This commitment by SHC is also reflected in the grant budget. One Graduate Assistant position was increased during the term of the grant, resulting in an increased contribution by Student Health, putting the overall budget higher than initially proposed. In addition, a formal biofeedback practicum has been established through Educational, School and Counseling Psychology, offering a clinical placement to graduate students and increasing the number of students reached for services each semester. The 8 week course for credit "Managing Stress: Heart Rate Variability Biofeedback" is offered as a seminar through Educational, School and Counseling Psychology to both undergraduate and graduate students. It has been offered every semester and was completely full last term. This class will continue to be offered. In addition, due to the success and popularity of these interventions, there is the possibility of creating a new course that would combine elements of the biofeedback class with mindfulness, positive psychology and other stress reduction techniques to be offered beginning Fall, 2013.