SUPPORTING STATEMENT

Part B: Collection of Information Employing Statistical Methods

B1. Respondent Universe and Sampling methods:

The respondent universe for individuals completing The Milwaukee Police Department Stress Resiliency Study Questionnaires is the roster of sworn police officers on the date of recruitment onset who meet the condition of being between 21 and 65 years of age (universe size is approximately 1,900). Recruitment of the 20 study participants will be made on a completely voluntary basis (non-random), although an attempt will be made to recruit participants that vary by age, gender, and rank. Given that this is a pilot study and with a modest sample size, generalizations and statistical inferences (if significant findings are found) will be limited to their implications for the Milwaukee Police Department (MPD). No generalizations will be made from these tests with respect to implementing similar training across law enforcement agencies in general.

B2. Procedures for the Collection of Information

Sandra Ramey, Ph.D., of the University of Iowa, School of Nursing, will be engaged on a contractual basis as primary researcher/principal investigator for this pilot research project. She and her University support staff will serve as contractors to the MPD. Dr. Ramey will teach the sample of MPD sworn person on techniques to self-regulate their emotional and physiological responses to job stressors. She will also oversee the research, data collection, analysis, and report writing associated with this project.

With respect to the five survey instruments submitted to OMB for approval, *the Milwaukee Police Department Stress Resiliency Study Questionnaires*, police personnel engaged in the study will be asked to complete each questionnaire at three points: prior to receiving training (baseline) and the end of the stress regulation training (3-months), as well as at a designated follow-up point (6 months following training). The five surveys are all self-contained simple surveys designed for self-administration and require no external training or instructions to complete. These will be self-administered surveys. Study participants will be provided Scantron™ Forms to expedite survey completion. Respondents may complete the surveys at the data collection sessions but also will be supplied with a pre-addressed stamped envelope to be mailed to Dr. Ramey should they chose to complete the surveys later.

B3. Methods to Maximize Response Rates and Deal with Issues of Non-Response

The questionnaire instruments will be discussed as part of the training process and the importance of their completion will be stressed as part of the recruitment process. Candidates' acknowledgment and willingness to complete the survey instruments and general research protocol will be considered in the participant selection process and incorporated as part of informed consent. In an effort to incentivize participation in the training, candidates will also be informed of the potential health benefits associated with full-participation in the training protocol.

As discussed above, study participants will be provide pre-addressed, stamped envelopes with which to return completed survey instruments should they elect not to complete the survey at the time physiological measure are taken.

B4. Tests of procedures or methods to be undertaken

This data collection supports a study that is limited in funding ($50,000 overall) and is specifically designed as pilot study with a limited sample size (n=20 in total). With respect to the self-administered psychological survey of stress submitted for OMB approval, two stages of statistical analysis will be conducted.

The first stage of analysis will involve descriptive and exploratory analysis to assess which particular response items (individual questions on the surveys) were impacted by the training. This will involve examining response items changes at pre-, post, and follow-up intervals. The purpose of this analysis is to better understand which psychological and behavioral dimension are most affected by the training and to provide information about potential changes to the training should these efforts be replicated in the future.

The second stage of analysis will depend on the results of the first stage of analysis. When descriptive analyses suggest it is appropriate, paired t-tests will be conducted for composite measures for relevant survey instruments.

Although sample size is limited for this pilot study, Dr. Ramey will still employ a robust study design. She has previously used this design in similar studies to optimize the utility of the research with small samples as well as better enable potential replication of the research design at later dates.

Several methodological issues are noteworthy relative to the limitations inherent in this pilot study, the statistical inference testing described above, and sampling strategy that will used.

a) An experimental, cluster-randomized, wait-list controlled design (see Table 1 below) will be employed in which the early-intervention group will receive the intervention immediately after the baseline data collection and the wait-listed control group will receive the intervention after a three-month delay. This design provides a scientific, ethical, and cost-effective way to assess the intervention because the wait-listed group serves as control until it also receives the intervention. The advantage of the wait-list approach is that both “treatment” and “comparison” groups potentially benefit from treatment intervention. To minimize contamination bias, the early intervention group and the delayed intervention group will be drawn from different police districts, so that participants within a single district receive the intervention at the same time. Assignment to the two study groups will be conducted in manner that matches groups on participant age, gender and rank to the extent possible.

Table 1. Diagram of Study Design

Baseline	Random assignment	Intervention	Month 3	Intervention	Month 6
Data Collection	Early Intervention	Stress resilience intervention	Data Collection		Data Collection
Data Collection	Delayed Intervention		Data Collection	Stress resilience intervention	Data Collection

b) This wait-list controlled experimental design will allow evaluation of the 1) differences between the early intervention and delayed intervention (wait-listed control) groups at three months and change within the group receiving the intervention. *At the end of the study, the number of subjects who receive the intervention will double, which is an additional advantage of this study design*.

c) Dr. Ramey and her colleagues performed a power analysis to assess the adequacy of sample size for this pilot study. The targeted number of participants in this study is 20 (10 officers from each district, with one district wait-listed). Based on data from Dr. Ramey's previous studies and published results from similar studies, the treatment effect sizes (ES) for the outcomes measures in this study are expected to range from 0.4 to 1.0. Assuming no more than two of the twenty participants drop out, and using a two-sided paired t-test with alpha=.05 with n=18, the present study is anticipated to achieve 67% power to detect ES=0.6 and 98% power to detect ES=1.0.

d) Paired t-tests will be used to assess changes in the global scales (instrument level) for each of the five survey instruments to assess areas of impact between the baseline measures and the post-intervention measure (at 3-months) with statistical significance being set at $p < 0.05$ level. Similar analysis will be conducted compare baseline measures to the follow-up period (at 6 months). Changes will be assessed consistent with the wait-list study design.

e) The MPD and Dr. Ramey recognize that statistically significant differences may not be achieved across each (or any) of the five psychological surveys that make up the *Milwaukee Police Department Stress Resiliency Questionnaire Battery*. In keeping with the goals of this pilot study, data analysis will be used to chiefly to inform areas in which the training protocol may need to be refined and refocused. These pilot study findings would also inform subsequent research efforts should those be pursued.

f) Finally, it is recognized that as a single sight pilot strategy no generalization beyond the MPD will be made (should statistically significant findings be revealed).

B5. Individuals consulted on statistical aspects of the design and organization/persons collecting and analyzing the data.

Dr. Ramey has completed similar research protocols on self-regulated stress reduction methods with law enforcement personnel. This study will be a replication and extension of her previous work within the MPD and elsewhere.

In preparing the proposal for this project, Dr. Ramey consulted with the following associates:

Dr. Yelena Perkhounkova, Ph.D., Statistician in the College of Nursing: Dr. Perkhounkova is consulted initially in the design of all research studies conducted within the College of Nursing. She suggests and oversees the types of data analysis necessary for each specific study. Dr. Perkhounkova and the College Data Manager regularly confer with research teams at the onset of projects, during analysis phases, and through the dissemination process. Dr. Perkhounkova and her colleague conducted the power analysis that informed the research selection of sample size for this pilot project.

Rollin McCraty, Ph.D., the Chief Research Scientist from HeartMath: Dr. McCraty is conducting similar projects for the U.S. Army and Navy and is consulted on an ongoing basis to maintain conversation about the continuity of the projects being conducted within the military and the natural progression of that work to law enforcement.

Warren Franke Ph.D., an Exercise Physiologist and Professor at Iowa State University: The principal investigator consults with Dr. Franke frequently about various aspects of studies and projects. Dr. Franke has worked with law enforcement personnel in the Iowa State Department of Public Safety for over 2 decades. He regularly conducts quantitative research studies. Dr. Franke and the principal investigator regularly confer on selecting and developing research instruments and research methodologies; collaborate on publications and confer on appropriate statistical analyses.

Jennifer Robinson, MD, MPH Director of the Lipid Center and Preventative Research Center at the University of Iowa. Dr. Robinson is a physician specializing in cardiology and offers expertise in physiological measurements e.g. laboratory tests and collection methods. Drs. Robinson and Ramey confer regularly on aspects of our studies including methodology, design and appropriate outcome measurement.

Collectively, these and other colleagues serve as resources for this and other projects; they are respected experts in their fields with many years of experience designing and conducting both clinical and applied research studies.