Full name(s) of VIU faculty involved in the project and their Department(s): Leigh Blaney, BSc in Nursing, PI; Eric Agyekum, Mathematics, Collaborator; Liesel Knack, CIEL, Collaborator and Research User

Contact person email: leigh.blaney@viu.ca

Award: Inquiry Grant

Number of undergraduate student(s) involved: 2

Number of graduate student(s) involved: 1

Number of community partner(s) involved: 2 Nanaimo Regional General Hospital- (NRGH) and BC Support Unit - Supporting Patient Oriented Research (SPOR)

Abstract for the project:
Nurses in BC face complex stressors in their day-to-day work including routine exposure to human suffering & potentially traumatic events such as violence. Consequently, nurses are at high risk of moral distress, critical incident stress, workplace burnout, & compassion fatigue (BC Nurses Union [BCNU], 2015). There are over 40,000 nurses in practice in BC, the highest sector of healthcare professionals within the healthcare system; having healthy nurses aids the overall health of citizens (Boyle, 2011; Pipe et al., 2012).

Workplace mental health is a priority in Canada (Mental Health Commission of Canada - MHCC, 2013) & resilience is known to be a mitigating factor for workplace stressors and a predictor of overall mental health. This pilot project aims to test the efficacy of a resilience education programme for nurses. Building & sustaining a strong foundation of resilience & well-being are key for nurses to maintain mental health, cope with work-related stressors, & to effectively respond to various work (& life) challenges.

The research team will provide customized resilience training, & pretest/posttest the resilience scores of 50 nurses from Nanaimo Regional General Hospital (NRGH) to assess the effectiveness of resilience education. The training is innovative because it is underpinned by health promotion concepts rather than an illness-identification approach which underlies other training efforts (i.e. Canadian Mental Health Association’s Resilient Minds). Training will address core categories of resilience & offer evidence-informed strategies to build individual & collective resilience. The project will use mixed methods approaches: a qualitative questionnaire as well as validated scales (Wagnild & Young, 1993).

Expected outcomes are increased resilience scores; resilient nurses provide better quality patient care which in turns results in better patient outcomes (McAllister & McKinnon, 2009). Additional outcomes are:
• Implementation of resilience training at Island Health & ultimately in the VIU educational setting
• Pilot data demonstrating training effectiveness
• Pilot data to strengthen larger external grant applications (i.e. CIHR).
This application for Inquiry Grant funds is to augment other applications for funding for a large research project (Strengthening the Indomitable Spirit in Nursing…); the grant is aimed at supporting/mentoring student researchers in active and meaningful roles within the research project.

**PROJECT DESCRIPTION**

*Problem, issue, opportunity*

Nurses face complex stressors in their day-to-day work including routine exposure to human suffering and potentially traumatic events such as violence. Consequently, nurses are at high risk of moral distress, critical incident stress, workplace burnout, and compassion fatigue (BC Nurses Union, 2015). Surprisingly however the literature finds resilience is the most common outcome after adversity (see for example: Bonnano, 2004; Masten, 2001) despite common beliefs that adversity is always debilitating. There is little in the literature related to resilience in nurses hence the need for education to increase awareness and to enhance nurses’ capacity for resilience. This pilot study will ascertain if a cohort of nurses is resilient, see whether targeted education increases nurses’ resilience scores, and whether resilience scores are sustained over time. Further, this pilot study will determine the feasibility for future research with CIHR into resilience and resilience education for Canadian nurses.

There are calls for research into workplace resilience (Sarkar & Fletcher, 2017) including nursing resilience (McAllister & Lowe, 2011). Previous research on the mental health of nurses has primarily focused on the ‘illness’ outcomes such as post-traumatic stress disorder (PTSD) and physical illness/injury (see for example: Canadian Institute for Health Information, 2009; Informetrica, 2011; Shields & Wilkins, 2006); however there is little literature about nurses’ resilience. Using mixed methods questionnaires pre-test/post-test and best practices in design and delivery of resilience curriculum, this pilot study aims to address these gaps with the following research questions:

1. Are nurses’ understandings of resilience congruent with current theory/evidence?
2. What categories of resilience are most preferred by nurses to build and maintain resilience?
3. Are resilience scores of nurses affected by resilience training?
4. Is single session targeted resilience training effective in maintaining resilience scores over time (2 months)?

**Literature to support the approach**

Resilience is a mitigating factor for workplace stressors and a predictor of overall mental health (Mental Health Commission of Canada, 2013). Earvolino-Ramirez (2007) found evidence that learning about resilience confers protective effects on workers in demanding work settings such as healthcare. With over 40,000 nurses working in BC, a strong foundation of resilience is key for nurses to maintain mental health and cope with work-related stressors, in order to provide quality patient care and optimize patient outcomes (McAllister & Lowe, 2011; McAllister & McKinnon, 2009).

This pilot project aims to test a resilience education programme for nurses at Nanaimo Regional General Hospital (NRGH). NRGH has recently been in the news for its perceived ‘toxic’ workplace culture (see for example: Harnett, 2017; ‘Toxic’ culture of fear…, 2017). There is evidence that a toxic work culture negatively impacts patient care but resilience has been shown to counter the effects of workplace toxicity (Shatte et al., 2017). Indeed, a positive work culture that includes resilient employees is linked to positive patient outcomes such as reduced falls, length of stay, and mortality as well as higher increased patient satisfaction (McAllister & Lowe, 2009; Yilmaz, 2018)
The researchers will provide customized resilience training and pretest-posttest the resilience scores of 50 nurses from the emergency departments at NRGH to assess the effectiveness of resilience education. This project builds education from a resilience theory that was co-created with volunteer firefighters, applies it to nurses, and translates theory into nursing practice. The training is innovative because it is underpinned by health promotion concepts rather than an illness-identification approach which underlie other training efforts (i.e. Canadian Mental Health Association’s Resilient Minds). Training will address core categories of resilience and offer evidence-informed strategies to build individual and collective resilience.

Currently there is a paucity of literature demonstrating effectiveness of resilience education (Robertson et al, 2015; Sarkar & Fletcher, 2017) despite a global proliferation of resilience promotion programs. Most importantly there is a gap in evaluating the effectiveness of such programs hence a key component of this pilot project is to evaluate the effectiveness and thus the impact of education on resilience scores of nurses two months post-training.

Methods & timeline

Ethics approval will be obtained from the Vancouver Island University Research Ethics Board and the Island Health Ethics Board.

A cross sectional, mixed methods study design will be used. Pre- & post-education assessment tools include the Resilience Scale (Wagnild & Young, 1993) and MacEwen’s Resilience at Work (R@W) scale (Winwood et al., 2013). A narrative questionnaire adapted from a stress and coping questionnaire created by principal investigator (Blaney, 2003) and used in previous research with firefighters (Blaney & Brunsden, 2015) will be used to gather qualitative and demographic data. Adaptations to the narrative questionnaire include questions to assess nurses’ experiences and perspectives on coping with work-related stressors, definitions of resilience, and perspectives on building resilience; the questionnaire has been renamed to reflect the focus on resilience (Resilience Questionnaire or RQ). The demographic information collected on the RQ will also allow examination of possible correlating factors such as age, experience, role, etc. with resilience perspectives of participants. Both the Resilience Scale and the R@W scale have been tested and validated across a variety of populations.

Educational content: There are significant gaps in the literature however there are recommendations for resilience education research. Robertson et al. (2015) and Sarkar & Fletcher (2017) state that research into effectiveness of resilience education require two foundational components: a clear definition of resilience in the context of the population under study, and tools that are measures of resilience as opposed to those that measure states (such presence/absence of mental illness), traits (such as personality traits of neuroticism), morale (optimism), productivity (performance outcomes), etc. (Robertson et al., 2015). This study addresses both of these recommendations.

Participants: The researchers in this study will provide customized resilience training and pretest-posttest the resilience scores of 50 nurses from the emergency departments (ED) at NRGH to assess the effectiveness of resilience education. All nurses in the department, regardless of rank or role, are eligible to participate in the education/research. This convenience sample for the pilot is nurses in the emergency department who have previously expressed interest in participating in health research; the ED has a nursing staff complement of approximately 100. The hospital is close the research team’s worksite, allowing for reasonably easy access to participants.

A two-pronged qualitative and quantitative approach allows for rich exploration of the dynamism and heterogeneity of resilience responses which, in turn, require innovative education methods that reflect current understandings of adult pedagogy and learners. The PI brings over 20 years’ experience with curriculum design, delivery, and evaluation with adult learners and, in collaboration with other members of the research team will design the customized resilience education programme.
An ad hoc advisory committee including educators within the organization, and external educators and mental health professionals will guide the curriculum process, including curriculum design and delivery, and ‘reporting out’ of the draft and final research reports; this process has already begun with informal discussions with nurses, educators, and mental health providers about the project and exploring interest in being part of an ad hoc Project Advisory Group (PAG).

The educators for the ED will be recruited to establish a ‘master list’ of nurses/participants; participants will be assigned numeric codes to match each nurse with numbered packages of questionnaires; the research team will receive only the numbered questionnaires and will not have access to the master list. The master list is necessary in order to ensure match between each participant and data to each pre- and post-test questionnaire particularly at 2-month post-education.

The research trainees/research assistants (RAs) will be responsible for collecting the pre-test questionnaires and ensuring that each has a signed consent attached. The consents will then be torn off the questionnaire, matched with the alphanumeric code and noted to be signed or unsigned, and filed in a secure setting. Following the education session, the trainees will collect the post-education questionnaire package, match them with the pre-test alphanumeric code, and secure the completed questionnaires for the PI to begin data analysis. The consent will also be attached to the 2-month post-test and the research trainees will also detach those prior to giving the raw data to the PI.

The questionnaire packages will contain the following:

- **Pre-test package:** Consent, Resilience Questionnaire (RQ), Resilience Scale (RS), Resilience at Work (R@W) scale;
- **Post-test immediately following training:** RQ, RS, R@W, course evaluation
- **Post-test 2-months:** Consent, RQ, RS, R@W

Raw data will be transcribed/coded/handled by the PI. The PI will do a thematic analysis of the RQ; the themes will be validated by the research initially by the Co-lead and research trainees, and then by the research users group.

**Data Analysis:** Data from the RS and the R@W will be coded by the PI onto either an Excel spreadsheet or directly into SPSS, and forwarded to the statistician for analysis of pre- and post-training scores. The PI will combine themes and outcomes with information from the literature and integrate those into recommendations that will answer the research questions. The recommendations will be presented by the research team at a face-to-face meeting with the research users for discussion and evaluation. This group will provide additional validation by functioning as a quasi-focus group, providing data through discussion of themes and recommendations; the research users will have no access to raw data. All information gathered in the course of this project will be coded for privacy and any individual identifying data will be removed from survey responses by the research assistants and the unit educators prior to the PI and co-lead having access to the data.

The resilience training programme is in development; principles of teaching/learning including ‘team-based learning’ are being incorporated into the process. The curriculum is based on current resilience research and resilience education research (see for example Robertson et al, 2015; Sarkar & Fletcher, 2017) and integrates a novel definition and theory of resilience (Blaney, 2017). Learning outcomes have been developed, and questions about the curriculum/course content and delivery will be assessed in a ‘course evaluation’ form following delivery of the education session. The course will be interactive, and there will be handouts to ‘take away’ for future reference and for inclusion in the organization’s psychological health materials/future training. The pre-test/post-test tools are a qualitative measure of nurses’ resilience (the RQ) as well as two tools that quantitatively measure resilience scores (RS and R@W) as recommended by recent literature (Sarkar & Fletcher, 2017). The research trainees will be responsible for collecting the pre-test questionnaires and ensuring that each has a signed consent attached. The consents will then be torn off the questionnaire, matched with the
alphanumeric code and noted to be signed or unsigned, and filed in a secure setting. Following the education session, the trainees will collect the post-education questionnaire package, match them with the pre-test alphanumeric code, and secure the completed questionnaires for the PI to begin data analysis. The consent will also be attached to the 2-month post-test and the research trainees will also detach those prior to giving the raw data to the PI.

**Outputs, Outcomes, and Knowledge mobilization**

There are short-, mid-, and long-term outcomes expected from this research.

1. In the short term this research will:
   a) Strengthen team building and collaborations across institutions
   b) Train/mentor student researchers
   c) Build and strengthen VIU’s research capacity

2. In the medium term this pilot project will:
   a) Pilot the implementation of resilience education for nurses
   b) Demonstrate, through pre and post training pilot data, the effectiveness of resilience education two months post training (i.e. increased resilience scores & perceptions of resilience) thereby protecting as well as improving nurses’ mental health
   c) Provide pilot data to strengthen larger external grant applications
   d) Generate research reports for dissemination to staff, & per the reporting requirements of funders and VIU, dissemination to public domains (i.e. VIUspace https://viurrspace.ca/handle/10613/3277)
   e) Advance knowledge of resilience and resilience education nationally & internationally:
      a. Conference presentations such as: Canadian Federation of Mental Health Nurses annual general meeting/conference; Canadian Health and Wellness Innovations conference, etc.
      b. Journal articles focusing on the overall research outcomes; submissions will be made to a variety of peer-reviewed journals such as the Canadian Journal of Nursing Research; the International Journal of Emergency Services, etc. The team will also publish more widely in occupational health/safety journals again to highlight research collaboration, and effectiveness of resilience education. As well, articles will also be submitted to trade journals such as: the Canadian Nurse, Nursing Times, etc.

3. Long-term outcomes of this research will be:
   a) Improved workplace health outcomes: resilient nurses provide better quality of care
   b) Pilot implementation of the resilience training curriculum for VIU & other high-risk professions such as fire, paramedic, police, and other nursing settings.
   c) Demonstrated feasibility of further research into resilience education thus forming the foundation of external grant applications such as a CIHR Collaborative grant.
   d) International collaborations for further resilience education research (i.e. the project co-leads are well-connected with national & local nursing organizations in the United Kingdom, United States, Belgium and other European nations who are leaders in supporting the psychological health of nurses & other emergency providers; hence these supporters provide a foundation of stakeholders/research users & potential collaborators).
<table>
<thead>
<tr>
<th>Phase</th>
<th>Task</th>
<th>Timeline</th>
<th>Responsibility</th>
<th>Deliverable/Output</th>
</tr>
</thead>
</table>
| **Phase I  
PROJECT SET UP** | Team meeting | April 2019 | LB, AG | Meetings to go over roles, expectations, timeline etc. Create Project Advisory Group (PAG) for project oversight & support. |
| | Hiring | May 2019 | LB, AG | Research assistants hired (VIU work op fund) (summer 2019 with possible extension to April 2020) |
| | Finish literature review | May-Aug 2019 | LB, RT | Literature review update particularly any recent published studies on effectiveness of resilience education |
| **Phase II  
PROJECT DEVELOPMENT** | Complete ethics application | April 2019 | LB | Complete and submit VIU Research Ethics Board application (ethics application is partially drafted & awaits outcome of funding proposal before submission to VIU’s Research Ethics Board |
<p>| | Community consultation | May-June 2019 | LB, AG RT &amp; 2-3 research users &amp; ED educators | Introduction of PAG members (may be virtual); advise re: curriculum design, etc Review drafts of curriculum |
| | Team meeting | July 2019 | LB, AG, RT | Progress review, assign tasks moving forward |
| | Finalize questionnaire package &amp; curriculum | June-Aug 2019 | LB, AG, RT, PAG | Final revisions of questionnaires/consent may be necessary following ethics review; Final draft of curriculum |
| | Team meeting with PAG | Aug 2019 | LB, AG, RT, PAG | Review progress, evaluate timeline/schedule, and book training events |
| <strong>Phase III</strong> | Training | Sept-Nov 2019 | LB, AG, RT | Deliver 4 workshops – dates &amp; scheduling of attendees to be determined by ED educator |</p>
<table>
<thead>
<tr>
<th>PROJECT IMPLEMENTATION</th>
<th>Data collection</th>
<th>Sept-Oct 2019</th>
<th>RT, ED educators</th>
<th>Collect &amp; secure completed questionnaires</th>
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</thead>
<tbody>
<tr>
<td>Narrative Data analysis</td>
<td>Oct-Dec 2019</td>
<td>LB, AG, RT</td>
<td>Narrative questionnaires analyzed, interpreted, coded, themed, and collated</td>
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<tr>
<td>Data Analysis using SPSS</td>
<td>Nov 2019</td>
<td>LB, RT</td>
<td>All data analysed and figures made of results</td>
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<tr>
<td>Team meetings</td>
<td>Oct 2019, Nov 2019</td>
<td>LB, AG, RT, PAG</td>
<td>Assessment of progress, trouble shoot where necessary Mentor RAs (students) re: research processes</td>
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<tr>
<td>Data analysis of final questionnaires (2-month post)</td>
<td>Nov 2019</td>
<td>LB, RT</td>
<td>All data analyzed; table &amp; figures developed; ongoing ‘writing up’ of project</td>
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</table>

**Phase IV PROJECT WRAP UP (Knowledge Mobilization)**

| Team, participants, & PAG meetings | Mar 2020 | LB, AG, RT, PAG, ED nurses (3 x 1 hr meetings) | Bring together research participants, PAG knowledge users, other researchers to share outcomes, discuss implementation of research findings |
| Internal & external dissemination | Mar-June 2020 & beyond | LB, AG, RT, KB | Collaborate with knowledge broker (Jenny) & Director CIEL (Leisel) to advance knowledge of resilience/resilience education to local, national, & international research users (i.e. submit article to peer reviewed journal; present POR outcomes at conferences and to relevant POR stakeholders) |

**Key to Abbreviations**

- LB – Leigh Blaney – PI/project lead
- AG – Ann Greene – project co-lead
- RT – Research trainees - students
- ED – Emergency department(s)
- PAG – Project advisory group comprised of knowledge users: Carrie Boland, Lisa McLeod, Liesel Knaack, ED educators at NRGH
- KB – Jenny Cartwright – Knowledge broker from the BC Support Unit- supports SPOR (Patient-Oriented Research)
References


BlaneyL Inquiry 2018


# Leigh Blaney Inquiry Grant 2018- Project Budget

<table>
<thead>
<tr>
<th>CATEGORIES</th>
<th>SPOR – P2P Cash</th>
<th>VIU Cash</th>
<th>VIU In-Kind</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Personnel Costs</td>
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<tr>
<td>Co-applicant</td>
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<td>Reimbursement for co-lead participation (100 hrs@$44/hr) &amp; travel</td>
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<td>2 Undergraduate students - research assistants</td>
<td>$1676</td>
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<td>Total salary needed for 2 student trainees incl. 12% benefit = $5644 - collate material, prepare for meetings, training, data collect/interpretation</td>
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<td>Statistician</td>
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<td>Top-up VIU Inquiry Grant for the length of the project</td>
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<td>Graduate student $20/hr x 50 hrs - Quantitative data analysis</td>
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<td>Research Project Costs</td>
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<td>Resilience measurement tools ($300) necessary for data collection.</td>
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<td>Four 6 hr workshops at Oliver Woods Recreation Centre ($600 to be confirmed)</td>
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<td>Catering for four 6hr workshops x 20 people including research staff ($30/person total $2,400)</td>
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<td>Flipcharts, paper, pens, materials for workshop participants ($750)</td>
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<td><strong>Sub-Total Research Project Costs</strong></td>
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<td>Knowledge Mobilization Costs</td>
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<td>Conference attendance for presentation of outcomes</td>
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<td>Student research assistants</td>
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<td>Research lead and two nursing research trainees travel to Canadian Nurses Association 2020 conference - Ottawa, Ont.</td>
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PROJECT TEAM ROLES & RESPONSIBILITIES

1. **PI** – Leigh Blaney
   - Project lead & project coordination
   - Permissions, ethics approval
   - Develop training curriculum; ensure collaboration with Project Advisors – schedule meetings/teleconferences for feedback on curriculum drafts, etc.
   - Implement evidence-informed curriculum
   - Co-create and deliver dissemination activities (journal articles, conference presentations)

2. **Co-lead** – Ann Greene – nurse/educator – nurse with experience of workplace stress/resilience; recognizes need to bolster resilience in nurses
   a. Collaborate on curriculum development – content, delivery
   b. Assist with data analysis particularly theming qualitative data
   c. Collaborate on preparation/delivery of dissemination activities (journal articles, conference presentations).

3. **Research trainees (RA)** – two 3rd year BSN students. Duties of the RAs include:
   a. Edit training materials
   b. Administrative duties – ensure photocopying, training materials ready for each training session; ensure materials and supports (food/fluids) available for each meeting and workshop;
   c. Assist with data collection at each site
   d. Assist with data analysis – VIU research centre
   e. Assist with preparation/delivery of dissemination activities

4. **Statistician** – Dr. Eric Agyekum. The role of the statistician includes:
   a. Aligning statistical processes with the research questions,
   b. Performing and interpreting statistical analyses, etc.
   c. Advise graduate student working on project statistics

5. **Knowledge broker** – Jennifer Cartwright from the BC Support Unit- CIHR funded to support SPOR. The role of the knowledge broker is to:
   a. Bring researchers together with research users, target audiences and decision makers
   b. Contribute Knowledge Transfer (KT) expertise throughout the project ensuring that the resilience training research evidence generated from this project will be implemented and benefit nurses’ health outcomes.

6. **Decision-makers/research users**
   i. **Teaching/learning excellence** – Dr. Liesel Knack - role includes:
      a. Working with the research team on this project but also to begin to consider 'bigger picture' with a long-term goal of integrating resilience education into VIU’s BSN curriculum (and perhaps other VIU programs)
b. Ensure fidelity to evidence-informed principles of teaching/learning (pedagogical, technical)

c. Advise on teaching/learning matters (as with past BSN coursework with PI)

ii. Ad hoc Project Advisory Group (PAG) comprised of nurse managers & educators at NRGH – roles include:
   a. advise on curriculum (adapting to nursing context)
   b. coordinate research team visits to unit(s) to introduce then implement project
   c. support project leads to engage nurses in resilience training participation
   d. coordinate the linking of individual nurses with coded resilience scale packages to ensure that the follow-up data collection is matched with the data set each nurse created at pretest, immediate posttest and follow up
   e. responsible for delivery of the 2-month follow-up resilience training evaluation data to the research team