Electronic Training Program to Increase Knowledge and Confidence in Staff Members
Supporting Seniors and Adults Experiencing Symptoms of Dementia and Stroke
by

Bronwyn Wardhaugh

A Thesis Submitted to the School of Community Services in partial fulfillment of the requirements for the Honours Bachelor of Behavioural Psychology

St. Lawrence College
Kingston, Ontario
Canada
April 14, 2019
Dedication

I would like to dedicate this thesis to Jan Roadhouse, who was a passionate advocate for her clients and always encouraged others to pursue their dreams, whatever the dream might be.
Abstract
Strokes are prevalent occurrences that can cause irreversible damage. Following the occurrence of a stroke, some survivors may subsequently develop dementia, which is known as Post-Stroke Dementia (PSD). The diagnosis and symptoms of stroke, dementia, or PSD can encourage patients to seek treatment, information, or support from local agencies. Conducting research and providing agencies that support individuals with stroke and dementia with information about PSD can be beneficial to clients and their families. The current study aimed to increase knowledge of risk factors, preventative measures, and treatment options of PSD for staff members of two agencies. The second objective of the thesis study was to increase staff confidence, specifically when initiating conversations and offering education and support for PSD to current or future clients. An electronic training program was developed and implemented at the agencies. The training was accompanied by a pre-test and post-test survey designed to determine the effectiveness of the training program on increasing knowledge and confidence of PSD among staff members at the agencies. It was hypothesized that participants from both agencies would have greater understanding of PSD and increased comfort in discussing and training others about PSD following the implementation of the electronic training program. The pre-test and post-test surveys consisted of 13 questions and were divided into multiple choice knowledge questions and Likert scale confidence items. The electronic training program consisted of PowerPoint slides and voice-overs to present information. Survey data was gathered anonymously, and a visual analysis and descriptive statistics were used to analyze trends and treatment effectiveness. Overall, the hypotheses were supported, and the electronic training program was deemed effective at increasing staff knowledge of PSD and confidence to share information with PSD with clients. Future studies should examine the effects of dementia prior to having a stroke as well as the effects of PSD among a variety of demographics. Further, more studies should be conducted using a larger sample size, different method of data collection, and more interactive learning material.
Acknowledgements

I would like to thank my family for helping me accomplish all that I did during the past four years. Thank you to my mom, dad, and David for your continuous and overwhelming support. I could not have completed my thesis without you. Thank you to my brother, who has always surpassed me in mathematical abilities, for your help in completing this thesis. Thank you for allowing me to constantly bother you with questions. Undoubtedly, my mathematical equations and tables would look very different without your help. I appreciate you.

Thank you to Lana DiFazio, my third-year college supervisor. I appreciate your patience, encouragement, and consistent feedback. All of your suggestions helped make my second placement a fantastic experience. Thank you for helping me find my passion.

Thank you to all the staff members at both agencies where I completed my fourth-year placement. Thank you all for willingly participating in the training program and for offering positive comments and feedback about my work ethic and thesis. Thank you for letting me be a part of every event and every group. I have learned so much from you. Thank you specifically to Shell-Lee Wert and Angela Meraw for agreeing to supervise my placement and for sharing me between both agencies. I am so grateful for your support and encouragement throughout my placement. Thank you so much for allowing me to have this experience, it is one I will never forget.

Thank you so much Rachel Williamson for helping me grasp the concept of descriptive statistics in such a short amount of time. I appreciate you making time for me to meet with you and bombard you with questions. My thesis is more concise and well-written because of you. I cannot thank you enough for your understanding and support.

Finally, I would like to extend the largest and deepest thank you to Lisa Lynch. I was lucky enough to have you as a college supervisor twice. I cannot express how thankful and grateful I am for your patience, enthusiasm, and work ethic during my placements. I have truly learned so much from you and have become a better writer, student, and person because of you. Thank you for encouraging me to pursue my passion, even though it was an unfamiliar field to you. I genuinely could not have succeeded in this program or completed this thesis without you. You are undoubtedly the most hardworking, detail-oriented, reliable, and caring person I have met. Your contribution to my learning and my success has been outstanding. Thank you so much.
Table of Contents

Dedication .......................................................................................................................... ii
Abstract .............................................................................................................................. iii
Acknowledgements ........................................................................................................ iv
List of Tables .................................................................................................................... viii
List of Figures ................................................................................................................... ix

Chapter I: Introduction ..................................................................................................... 1
  Stroke ................................................................................................................................. 1
  Dementia .......................................................................................................................... 1
  Post-Stroke Dementia ..................................................................................................... 1
  Relevance of Research ................................................................................................. 2
  Rationale for Research ................................................................................................. 2
  Objectives and Aim of Thesis ...................................................................................... 3
  Purpose of Study ............................................................................................................ 3
  Thesis Overview ............................................................................................................ 3

Chapter II: Literature Review ........................................................................................ 4
  Stroke ................................................................................................................................. 4
    prevalence ..................................................................................................................... 4
    types of strokes .......................................................................................................... 4
    importance of stroke care in communities ................................................................ 4
  Dementia .......................................................................................................................... 4
    prevalence ..................................................................................................................... 4
    types of dementia ....................................................................................................... 5
    importance of dementia care in communities ............................................................ 5
  Post-Stroke Dementia .................................................................................................... 5
    prevalence ..................................................................................................................... 5
    risk factors ................................................................................................................... 6
    preventative measures ............................................................................................... 6
    generic treatment options ......................................................................................... 7
    behavioural interventions ......................................................................................... 7
    importance of research ............................................................................................. 8
  Electronic Training Programs ....................................................................................... 8
    previous studies .......................................................................................................... 9
    strengths of electronic training .................................................................................. 10
    limitations of electronic training ............................................................................... 10
    voiceovers .................................................................................................................. 10
  Pre-test-Post-test Survey Design .................................................................................. 11
    strengths of pre-test-post-test survey design ............................................................. 12
## USING AN ELECTRONIC TRAINING PROGRAM

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter III: Method</td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>13</td>
</tr>
<tr>
<td>informed consent procedures/confidentiality</td>
<td>13</td>
</tr>
<tr>
<td>Research Design</td>
<td>14</td>
</tr>
<tr>
<td>Setting and Apparatus</td>
<td>15</td>
</tr>
<tr>
<td>materials</td>
<td>15</td>
</tr>
<tr>
<td>Measures</td>
<td>16</td>
</tr>
<tr>
<td>JotForm</td>
<td>16</td>
</tr>
<tr>
<td>survey layout</td>
<td>16</td>
</tr>
<tr>
<td>survey items</td>
<td>16</td>
</tr>
<tr>
<td>data collection</td>
<td>16</td>
</tr>
<tr>
<td>Procedure</td>
<td>17</td>
</tr>
<tr>
<td>assessments</td>
<td>17</td>
</tr>
<tr>
<td>intervention</td>
<td>18</td>
</tr>
<tr>
<td>rationale to methodology</td>
<td>18</td>
</tr>
<tr>
<td>Chapter IV: Results</td>
<td>19</td>
</tr>
<tr>
<td>Knowledge Section Data</td>
<td>19</td>
</tr>
<tr>
<td>Confidence Section Data</td>
<td>22</td>
</tr>
<tr>
<td>Chapter V: Discussion</td>
<td>26</td>
</tr>
<tr>
<td>Interpretations of the Results</td>
<td>26</td>
</tr>
<tr>
<td>Hypothesis</td>
<td>27</td>
</tr>
<tr>
<td>Results in the Context of Current Literature</td>
<td>28</td>
</tr>
<tr>
<td>electronic training programs</td>
<td>28</td>
</tr>
<tr>
<td>pre-test-post-test survey design</td>
<td>29</td>
</tr>
<tr>
<td>Strengths and Limitations</td>
<td>29</td>
</tr>
<tr>
<td>Limitations</td>
<td>30</td>
</tr>
<tr>
<td>Multilevel Challenges and Ethical Issues</td>
<td>31</td>
</tr>
<tr>
<td>client level</td>
<td>31</td>
</tr>
<tr>
<td>program level</td>
<td>32</td>
</tr>
<tr>
<td>agency level</td>
<td>32</td>
</tr>
<tr>
<td>societal level</td>
<td>32</td>
</tr>
<tr>
<td>Ethical Issues</td>
<td>33</td>
</tr>
<tr>
<td>Contributions to Behavioural Psychology Field</td>
<td>33</td>
</tr>
<tr>
<td>Recommendations for Future Research</td>
<td>34</td>
</tr>
<tr>
<td>References</td>
<td>35</td>
</tr>
<tr>
<td>Appendix A: Informed Consent Form</td>
<td>38</td>
</tr>
</tbody>
</table>
Appendix B: Research Ethics Board Approval ................................................................. 42
Appendix C: Electronic Training Program Survey ............................................................ 44
Appendix D: Electronic Training Program ..................................................................... 47
Appendix E: Participant Timeline Handout .................................................................... 51
Appendix F: Pre-Test Mass E-mail Example .................................................................. 52
Appendix G: Agency A Knowledge Section Raw Data ..................................................... 53
Appendix I: Agency A Confidence Section Raw Data ....................................................... 55
Appendix J: Agency B Confidence Section Raw Data ....................................................... 56
Appendix K: Agency A and Agency B Pre-Test and Post-Test Knowledge Results Graph .... 89
Appendix L: Agency A and Agency B Pre-Test and Post-Test Confidence Results Graph .... 90
List of Tables

Table 1: Differences in Knowledge Section Results Between Agencies..........................19
Table 2: Agency A Knowledge Section Results.................................................................20
Table 3: Agency B Knowledge Section Results.................................................................21
Table 4: Agency A Confidence Section Results.................................................................22
Table 5: Agency B Confidence Section Results.................................................................23
List of Figures

Figure 1: Differences in Knowledge Section Results Between Agencies .....................24
Figure 2: Agency A and Agency B Knowledge Section Results................................24
Figure 3: Agency A and Agency B Confidence Section Results.................................25
Chapter I: Introduction

Strokes have been described as causing lifechanging and sometimes irreversible or fatal damage to an individual (Heart and Stroke Foundation, 2018). Often, the people who experience the stroke must endure long recovery periods and/or re-learn skills, abilities, and activities that were once common and familiar. Approximately 30 percent of stroke survivors will subsequently develop dementia following the occurrence of their stroke (Mijajlovic et al., 2017). The condition of developing dementia symptoms and/or receiving a diagnosis of dementia following the occurrence of a stroke is called Post-Stroke Dementia (PSD; Hu & Chen, 2017). To better understand the nature and consequences of PSD, it is important to comprehend both illnesses as separate conditions.

Stroke

The Heart and Stroke Foundation (2016b) explained that a stroke is an incident when blood in the body does not flow to the brain, which in turn, causes damage to neural tissue. Damage to brain cells caused by a stroke can interfere with typical brain functioning, thus causing a future diagnosis of dementia among individuals (Heart and Stroke Foundation, 2016b). The Government of Canada (2016) states that the likelihood of experiencing a stroke increases rapidly as adults are in their late 50s or older. By 2013, almost 750,000 adults living in Canada were stroke survivors and were experiencing residual effects from their stroke (Government of Canada, 2016). Johns Hopkins Medicine (2018) states that depending on the location of the stroke in the brain, the residual effects range from vision, speech, and language difficulties to paralysis or death. Therefore, those who survive their strokes often experience long-term challenges such as visual impairments, lack of spatial awareness, lack of coordination, memory deficits, sudden behavioural changes, and limb paralysis (Johns Hopkins Medicine, 2018).

Dementia

The Government of Canada (2017) stated that the term dementia is used to describe the progressive or sudden decline of cognitive abilities, such as memory loss and behavioural changes, that is not a normal stage of aging. The term encompasses specific diseases such as Alzheimer’s disease, Lewy body dementia, and vascular dementia, among others (Government of Canada, 2017). Residual effects of dementia differ depending on the type of dementia that is diagnosed; however, common long-term effects of dementia include progressive memory deficits, speech and language difficulties, decline in reasoning and judgement abilities, and atypical changes in personality (Alzheimer’s Association, 2018). Dementia affects over 400,000 adults aged 65 or older in Canada (Government of Canada, 2017) and approximately 50 million people worldwide (World Health Organization [WHO], 2017).

Post-Stroke Dementia

More recent research shows that experiencing a stroke may be a precursor to a diagnosis of dementia. O’Brien et al. (2003) explained that strokes are a primary cause of dementia among adults (as cited in Tang, Robinson, & Stephan, 2017). Further, Pendlebury and Rothwell (2009) stated that a diagnosis of dementia following a person’s first stroke occurs in 10 percent of patients (as cited in Tang et al., 2017). In an article by Hu and Chen (2017), the authors explain that the occurrence of a stroke is the second primary cause for the diagnosis of dementia among individuals globally. The authors reference a meta-analysis by Pendlebury and Rothwell (2009) in which results showed that 10 percent of patients were diagnosed with dementia following their first stroke and over 30 percent of patients received a diagnosis of dementia after experiencing multiple strokes (as cited in Hu & Chen, 2017).
Relevance of Research

This research is relevant on a large scale. Over the last few decades, the population of adults over the age of 65 has consistently increased (Statistics Canada, 2017b). The senior population is expected to continue its increase, as researchers estimate that in less than twenty years, adults over the age of 65 could potentially represent upwards of a quarter of Canada’s entire population (Statistics Canada, 2017b). It stands to reason that as more people are becoming older, the amount of people experiencing medical conditions such as strokes, heart disorders, and neurodegenerative disorders is likely to increase as a natural consequence.

In 2013, strokes were identified as the third leading cause of death in Canada (Statistics Canada, 2017a). Similarly, the incidence rate of dementia has increased worldwide, with approximately 10 million new dementia diagnoses annually across the globe (WHO, 2017). As the prevalence of both strokes and diagnoses of dementia climb, it can be expected that the incidence of PSD will follow suit. Hu and Chen (2017) determined that researchers have recently observed a large and persistent increase of PSD diagnoses worldwide as a result of a higher frequency of stroke occurrences paired with lower mortality rates due to new innovative and effective treatment methods.

This research is also relevant on a small scale. The diagnosis and symptoms of stroke, dementia, or PSD can encourage patients to seek treatment, information, or support from local agencies. The placement agencies referred to in this study are two examples of organizations offering such services to the community. The staff at the agencies service hundreds of clients who have stroke symptoms, dementia symptoms, and/or both. One agency has regional boundaries, serving clients in a seven thousand square kilometre area. The second agency covers nearly the same area but has multiple agency locations to help successfully support the large number of senior clients in the community.

More specifically, in 2016, the population of the community in which the agencies are located was approximately 100 thousand people (Statistics Canada, 2018a). Of that population, 20 percent of residents in the town and neighbouring municipalities were adults over the age of 65 (Statistics Canada, 2018a). Due to the large influx of people requiring services from the dementia and stroke agencies, it is important that the staff members employed on the front line of these agencies be equipped with knowledge of PSD and the risk factors, preventative measures, and current treatment methodologies related to PSD. By increasing staff knowledge of PSD and staff confidence of sharing information of PSD to clients and caregivers, the student researcher and staff members at the agencies can work together against the rising problem of PSD in the community.

Rationale for Research

Although there are community agencies available that focus on strokes and dementia and aid to provide education, awareness, and support, staff members may not necessarily know the extent on how these two disorders are related, as dementia and stroke care are typically run as independent agencies. If these agencies are siloed, staff members at one agency may be extremely knowledgeable of dementia but may not be as informed or experienced in stroke care, or vice versa. This could impact client care, especially when considering the increased likelihood that clients could be experiencing symptoms of PSD. In fact, Pollock, St George, Fenton, and Firkins (2012), who worked cohesively with stroke survivors and health care professionals, described cognitive impairments following the occurrence of a stroke as a top research priority in the health care field. Further, the Heart and Stroke Foundation (2016b) stated that conducting more research will increase the population’s understanding of the stroke and dementia
connection. This may lead to an increased use of services in the community and ultimately improved understanding, empathy, and overall quality of care for clients and their families.

Objectives and Aim of Thesis

Conducting research and providing stroke and dementia agency staff members with more information about PSD can be beneficial to clients and families in the community who are experiencing the aftermath of a stroke. More information is needed on the prevalence, risk factors, preventative measures, and behavioural treatment options for clients who are experiencing or worried about the occurrence of PSD.

There are two main objectives of the thesis project. The first objective is to increase staff members’ knowledge of PSD, specifically the risk factors, preventative measures, and currently used behavioural treatment methodologies. The second objective is to increase staff members’ confidence about sharing the information learned with future clients and caregivers. More specifically, the goals are to increase staff members’ confidence when talking about the possibility and prevalence of PSD, when addressing client concerns about PSD, and when initiating conversations with clients about PSD.

The aim of the thesis project is to train staff members to be as effective at supporting clients who have PSD as they are at supporting clients who have had a stroke or are diagnosed with dementia. By training staff members of two agencies who serve hundreds of clients who have stroke symptoms, dementia symptoms, or both, this research study could raise awareness of treatment and support options for PSD in the community and prompt more frequent client referrals.

Purpose of Study

The purpose of the thesis project is to conduct research by searching and cross-referencing several sources and using the information gathered on PSD risk factors, preventative measures, and behavioural interventions to create an electronic training program for staff members employed at two local not-for-profit agencies. The training program can help to increase staff members’ knowledge of PSD and subsequently increase their confidence in initiating conversations with clients about PSD. Staff members with knowledge and confidence in this particular area will then be able to support a wider variety of clients and be more likely to cross-refer to appropriate community agencies.

It is hypothesized that the staff members at the agency that specializes in dementia care will have a higher knowledgeability score on average before the training than the agency that provides care for seniors who have a variety of health concerns. It is also hypothesized that training the staff members at both agencies using an electronic training program will result in greater understanding of PSD and increased confidence in discussing and training others about PSD.

Thesis Overview

This thesis study is composed of five chapters beginning with the introduction, and followed by a literature review, methodology, results, and a conclusion of the study. The literature review combines multiple sources of recent studies and current findings to offer a larger description of PSD risks, preventative measures, and treatment options and the importance of knowing these factors. Also presented in the literature review is detailed information on electronic training programs and the use of pre-test and post-test models in previous studies. The methodology section describes the agencies and participants involved in the study and the procedure of developing and implementing the electronic training program to staff members. The results and conclusion sections discuss the outcome of the study and the subsequent effects the
ETP had on the staff members at the agency. Additionally, the conclusion will explore the limitations and challenges of the study and the future impact of the training program on clients and caregivers in the community.

Chapter II: Literature Review

Stroke

**prevalence.** According to the Heart and Stroke Foundation (2016a), there are over 60 thousand instances of stroke that occur annually in Canada. It is estimated that each year, almost 15 thousand Canadians will die from experiencing a stroke (Heart and Stroke Foundation, 2016a). The Heart and Stroke Foundation (2015) states that every nine minutes, a stroke occurs in Canada. Although more research and prevention options have been explored over the past few years, researchers are predicting a continued, steady increase in stroke incidence rates nationally (Heart and Stroke Foundation, 2015). Further, strokes have been identified as one of the top five causes of death in Canada for the past decade (Statistics Canada, 2018b).

**types of strokes.** The National Stroke Association (2018) describes a stroke as an attack on the brain where blood flow and oxygen are blocked from entering parts of the brain, which causes brain cells to die. Nearly two million brain cells are killed every 60 seconds while experiencing a stroke (Heart and Stroke Foundation, 2017). There are two different types of strokes and each have their own way of causing damage to one’s brain cells.

The ischemic stroke is the most common type of stroke, representing approximately 85 percent of all strokes (National Stroke Association, 2018). This type of stroke is caused by a buildup of plaque in an artery, which is also known as a blood clot (Heart and Stroke Foundation, 2018). The clots can become large enough to prevent typical blood flow and oxygen flow to the brain, thus causing mild to severe brain damage (Heart and Stroke Foundation, 2018).

The hemorrhagic stroke is caused when an artery in the brain is torn or burst (Heart and Stroke Foundation, 2018). The Heart and Stroke Foundation (2018) explains that when the artery bursts, typical blood flow through the brain is interrupted, which in turn causes major damage to the brain including the death of millions of brain cells. The National Stroke Association (2018) states that approximately 15 percent of all strokes are identified as hemorrhagic strokes.

**importance of stroke care in communities.** There are now almost half a million stroke survivors in Canada and by 2037, this number is expected to double (Heart and Stroke Foundation, 2017). Unfortunately, the results of the Heart and Stroke Foundation’s (2015) poll showed that only about 30 percent of Canadians could accurately define a stroke. It is essential that communities have a better understanding and awareness of strokes and the residual effects strokes have on survivors. This is particularly relevant for the community examined in the current thesis study as 20 percent of the population is above the age of 65; a demographic shown to be more susceptible to strokes. Training more agency staff in the community of stroke prevalence, risk factors, preventative measures, and treatment options can increase awareness in the community and help to provide effective education and support to stroke survivors and their loved ones.

Dementia

**prevalence.** According to the Alzheimer Society of Canada (2018), there are now more than 500,000 people living with a diagnosis of dementia in Canada. Over 25 thousand Canadians are diagnosed with dementia annually (Alzheimer Society of Canada, 2018). Although it is possible for younger generations to acquire a dementia diagnosis, the disease is more commonly diagnosed in adults aged 65 and older (Wimo, Jonsson, Bond, Prince, &
Winblad, 2013). In fact, Wimo et al. (2013) explained that dementia is currently the primary cause of senior disability and the effects of dementia can wear greatly on the health care system, social services, and other societal resources.

**types of dementia.** Dementia is among the most common progressive brain disorder existing in Canada and is an increasingly larger problem globally (Alzheimer Society of Canada, 2018; Alzheimer’s Disease International, 2015). Dementia is an umbrella term that describes a class of neurodegenerative disorders that typically cause memory deficits and abnormal behaviour changes (Alzheimer Society of Canada, 2018). Common symptoms of dementia include gradual memory loss, loss of language, changes in mood, and difficulty recognizing people, places, or objects, that were once familiar (Alzheimer Society of Canada, 2018). Since dementia is a progressive disease, symptoms will gradually worsen until brain cells die, eventually causing death (Alzheimer Society of Canada, 2018).

Some different types of dementia include Alzheimer’s disease, frontotemporal dementia, vascular dementia, and dementia with Lewy bodies (Alzheimer Society of Canada, 2018). Alzheimer’s disease is the most common type of dementia, accounting for more than 60 percent of dementia diagnoses (Alzheimer’s Association, 2018). Alzheimer’s disease is caused by abnormal proteins in the brain (Alzheimer Society, 2017) and tends to be the most long-term subset of dementia, often affecting individuals for many years before leading to death (Alzheimer Society of Canada, 2018). According to the Alzheimer Society (2017), frontotemporal dementia is caused when the front, side, or both sections of the brain become damaged, typically due to head injuries. The symptoms of frontotemporal dementia include speech delays and obvious changes in behaviour or personality traits. Vascular dementia is caused by a lack of oxygen to brain cells, often occurring after a stroke. The Alzheimer Society’s (2017) factsheet explains that vascular dementia is the second most common type of dementia and has similar symptoms as Alzheimer’s disease. Dementia with Lewy bodies is caused by structures that grow in the brain, causing many brain cells to die. This type of dementia causes hallucinations and speech and movement difficulties (Alzheimer Society, 2017).

**importance of dementia care in communities.** The Government of Canada (2018) states that a national focus is on educating, preventing, and treating Canadians who are diagnosed with dementia and their loved ones. For the last five years, Canada has contributed almost 200 million dollars to fund dementia research (Government of Canada, 2018). Unfortunately, the problem remains that the primary risk factor is an aging population. The Government of Canada (2018) explains that to help dementia patients and their families, education, early diagnosis, promoting a healthy lifestyle, and offering support is essential. By continuing to educate and support clients and their loved ones, dementia awareness may be more prevalent in the community.

**Post-Stroke Dementia prevalence.** Leys (2009) describes post-stroke dementia (PSD) as any subtype of dementia that occurs following the occurrence of a stroke. The incidence rate of developing dementia after experiencing a stroke is approximately seven percent after one year and increases to nearly 50 percent after 25 years (Leys, 2009). In fact, the likelihood of developing dementia doubles following a stroke (Leys, 2009). Bornstein (2009) noted that approximately a quarter of stroke survivors will receive a diagnosis of dementia within six months following their stroke. Further, over 30 percent of Canadians will be diagnosed with dementia following a second stroke (Heart and Stroke Foundation, 2016a). The Heart and Stroke Foundation (2016a) states that the
size of the stroke does not always predict a diagnosis of dementia; the progressive disease can occur following large or mini strokes.

**Risk Factors.** Since PSD can only be diagnosed after experiencing a stroke, the Heart and Stroke Foundation (2016a) noted that risk factors of PSD are the same as the risk factors for having a stroke. This is concerning, as the Heart and Stroke Foundation (2015) determined that 90 percent of Canadians have a minimum of one risk factor for a stroke. When considering stroke risk factors, there are some that are controllable and some that are beyond an individual’s control.

Some risk factors that the Heart and Stroke Foundation (2015) identified as controllable are high blood pressure, lack of physical activity, eating an unhealthy diet, frequent and large weight increases or losses, heavy drinking, heavy smoking, diagnosis of diabetes, high blood cholesterol, and a high stress level. Additionally, a study of stroke risk factors completed by Park et al. (2015) identified hypertension and obesity as strong risk factors for a stroke. Other controllable risk factors that are specific to PSD include tobacco use and low education levels (Bornstein, 2009), as the brain may not be sufficiently stimulated on a daily basis. The Heart and Stroke Foundation (2018) states that by monitoring each individual’s controllable risk factors, the likelihood of developing PSD can be reduced by half.

Some uncontrollable risk factors for strokes include age, ethnicity, history of previous stroke, gender, and family history (Heart and Stroke Foundation, 2015). Park et al. cited similar risk factors, including a previous stroke and age. However, Park et al. also identified coronary heart disease as a risk factor for stroke. The National Stroke Association (2018) included the same risk factors, highlighting increased age as a significant risk, but also recognized circulation problems as a risk factor for strokes. These factors are examples of risks that are genetic, predisposed, and/or uncontrollable to individuals.

When considering more specific risk factors for developing dementia post-stroke, Ihara and Kalaria (2014) noted that predicting the likelihood of dementia to occur following a stroke depends on distinguishing details. Examples of this include determining the type of stroke that occurred, the location of the stroke, and the severity of the stroke (Ihara & Kalaria, 2014). More specifically, the researchers explained that experiencing a large hemorrhagic stroke in the frontal lobe of the brain, where memory and executive thinking is controlled, puts the victim at a higher risk of developing dementia post-stroke than experiencing a smaller ischemic stroke in the parietal lobe (Ihara & Kalaria, 2014). Surawan, Areemit, Tiamkao, Sirithanawuthichai, and Saensak (2017) also identified medical factors such as atrial fibrillation, which is an irregular heartbeat, as high-risk factors for developing dementia after a stroke.

**Preventative Measures.** The Heart and Stroke Foundation (2016a) explains that there is a strong connection between stroke and dementia; when the incidence of stroke increases, the likelihood of developing dementia follows. To prevent PSD from occurring in communities, individuals are encouraged to follow similar prevention protocol as one would to prevent a stroke (Heart and Stroke Foundation, 2018; National Stroke Association, 2018).

In order to prevent a stroke, people who have multiple identified risk factors may be referred to specialists such as neurologists, physicians, dieticians, and physiotherapists to help decrease the patients’ controllable risk factors (Heart and Stroke Foundation, 2016a). Other examples of reducing the risk of strokes include increasing daily physical activity, quitting smoking and/or tobacco use, and limiting alcohol consumption (Heart and Stroke Foundation, 2016a). The National Stroke Association (2018) states that in order to prevent a stroke, an individual’s risk factors must be identified and reduced. Researchers explain that becoming more...
knowledgeable about strokes and their symptoms can help to reduce severe damage following a stroke (National Stroke Association, 2018). For example, if people know the risk factors and warning signs of a stroke, they may be more aware when a stroke is occurring and more inclined to get help, thus reducing the severity of the stroke.

**generic treatment options.** Considering that strokes and dementia can affect an individual in different ways, the treatment options vary depending on the patient’s skillset and abilities that remain following a stroke and the diagnosis of dementia. For example, if the individual with PSD has a loss of language and/or motor skills, the treatment options may include speech therapy, physical therapy, and occupational therapy (McIntosh, 2017). The one-on-one therapies may help patients re-learn speech patterns, coordination, and typical daily activities.

Although there is evidence that encourages rehabilitation treatments, the Heart and Stroke Foundation (2017) explains that there are large gaps when it comes to long-term treatment and implementing evidence-based therapy techniques for stroke survivors and their loved ones, especially in smaller cities in Canada. More specifically, treatment options focusing on increasing socialization, targeting emotional needs, and reducing language barriers of stroke survivors are limited (Heart and Stroke Foundation, 2017). Additionally, conducting more research on the benefits of community services such as support groups and communication groups is encouraged (Heart and Stroke Foundation, 2017).

If the individual with PSD has symptoms that are more similar to those of dementia, treatment options may include pet therapy, aromatherapy, and music therapy (Alzheimer Society of Canada, 2018). The Alzheimer Society of Canada (2018) explained that although the interventions such as pet therapy and music therapy have shown to benefit dementia patients, there are still gaps in research that show the overall effectiveness of these therapies. In the case that the diagnosis of PSD is accompanied by abnormal behaviours or mood changes, behavioural interventions may be useful.

**behavioural interventions.** Applied Behavior Analysis Education (ABAE; 2018b) noted that it is very common for applied behaviour therapists to be part of a stroke survivor’s rehabilitation team. As strokes have the ability to cause debilitating damage to brain cells, stroke survivors often develop language and personality changes as a result (ABAE, 2018b). Applied Behavior Analysis Education (2018b) noted anxiety, aggression, agitation, depression, and lack of motivation as examples of residual behavioural symptoms that may occur following a stroke. For post-stroke patients, researchers note that observing the environmental factors prior to and following the atypical behaviour occurrences is crucial to developing an intervention to curb the unwanted behaviours (ABAE, 2018b). Clients’ brains can be re-trained to avoid engaging in the unwanted and/or inappropriate behaviours by implementing social cues such as smiling and eye contact when clients are engaging in behaviours previously deemed appropriate and positive (ABAE, 2018b). Additionally, using verbal praise, which includes specifically telling a client that they are doing a good job, as positive reinforcement may be rewarding to the client, thus reinforcing them to engage in the desired behaviour (ABAE, 2018b). Similarly, by making modifications in the individual’s environment to prevent specific sounds, items, or people from triggering the client, researchers say that the unwanted behaviours can be avoided (ABAE, 2018b).

Other behavioural symptoms that are common in the stroke and dementia population include loneliness, independence, and low self-esteem (Heart and Stroke Foundation, 2017). To increase socialization and confidence in social activities, stroke survivors are encouraged to
attend regular support groups. Including family members, loved ones, and other stroke survivors with similar experiences in one’s recovery can be very useful and encouraging (McIntosh, 2017; Heart and Stroke Foundation, 2017).

For post-stroke clients who have evident dementia-like symptoms, applied behaviour analysts can also be helpful to decrease the occurrence of atypical and/or unwanted behaviours (Applied Behavior Analysis Education, 2018a). Behavioural techniques that Applied Behavior Analysis Education (ABAE; 2018a) noted as beneficial to the stroke and dementia population include the Montessori Method, Spaced Retrieval, and token economies. The Montessori Method uses environmental stimuli to stimulate long-term memory and a token economy is a method of positively reinforcing appropriate behaviours by offering tangible rewards to clients (ABAE, 2018a). Arguably the most popular behaviour analysis technique used for clients displaying dementia symptoms is spaced retrieval, a method that stimulates short-term memory by repeating small amounts of information within a variety of time frames (ABAE, 2018a).

In an article by Buchanan (2006), some other behavioural interventions were identified as beneficial options for dealing with behavioural symptoms of dementia. For example, Buchanan cites cognitive behavioural therapy to help with depression and mood changes of dementia patients, music therapy for agitation or aggression, and antecedent-focused interventions for wandering. Buchanan also notes the importance of increasing social interactions of people with dementia, as the dementia population is more prone to loneliness and depression. By implementing some of these behavioural techniques, individuals diagnosed with PSD may be able to reduce the impact of the stroke and/or dementia symptoms.

In the current thesis study, behavioural intervention options for clients who have stroke, dementia, or PSD will be presented and explained. By including information on behavioural interventions for the stroke and dementia population in the electronic training program for both agencies, the staff members may be more knowledgeable on the importance that researchers are placing on behavioural interventions as treatment options. If the staff members are more knowledgeable on the options currently used and available, they may then feel more confident in sharing information on behaviour changes in PSD clients and be more likely to refer clients to behaviour analysts in the community.

importance of research. As the prevalence of developing PSD increases with age, Seshadri et al. (2005) estimated that one third of the population will experience a stroke, a diagnosis of dementia, or both. Furthermore, Leys (2009) noted that dementia is a primary cause of disability after having a stroke. This means that more people are relying on caregivers, facilities, and local agencies for help with the disease (Wong, Gilmour, & Ramage-Morin, 2016).

As the prevalence of PSD diagnoses increase, it is essential that people who work at agencies that deal with stroke or dementia patients learn the impact of both diseases separately and together. There are gaps in PSD research, specifically when considering unique risk factors such as age and onset of dementia symptoms and behavioural treatments for PSD. The current study cross-references multiple sources, aiming to target gaps by including information on individualized risk factors and the benefit of implementing behavioural treatments to clients with PSD. By informing staff members using the training program, information on risk factors, preventative measures, and treatment options are made more accessible to the community.

Electronic Training Programs

Online resources have become a more prominent option for individuals to learn and share information with others (Richard & Haya, 2009 as cited in Arkorful & Abaidoo, 2014). According to Arkorful and Abaidoo (2014), many authors have contributed to forming the
definition of e-learning. The authors noted that the widely-used definition of e-learning is using various technology outlets to offer informative resources to learners (Arkorful & Abaidoo, 2014). Algahtani (2011) explained that learning using computer technology is a relevant method for self-learning when people are not in a classroom setting (as cited in Arkorful & Abaidoo, 2014).

**previous studies.** A study conducted by Zhao, Lei, Chun Lai, and Tan (2005) aimed to evaluate the effectiveness of what they deemed distance education, which they defined as engaging in learning activity when the trainer is not physically present. After conducting research on previous studies that tested distance education, the authors concluded that electronic training and other examples of distance education techniques can be effective at teaching new subjects to participants (Zhao et al., 2005).

Palameta, Myers, Gyarmati, and Voyer (2012) and Roberts, Marshall, and Chaboyer (2017) were among other researchers who aimed to evaluate the effectiveness of training programs. Palameta et al. (2012) focused on highlighting and understanding effective training programs in the case of training Canadians who had low education levels. The aim of the study was to determine the effectiveness of current employment training programs for unemployed individuals without a post-secondary education (Palameta et al., 2012). The authors highlighted the importance of considering individual abilities and competencies when designing a training program for the public (Palameta et al., 2012). This information will be useful when creating the training program for the current thesis study, as the student researcher will use familiar terms when talking about strokes and dementia and lay terms when discussing behavioural interventions. This will ensure that the information provided on the slides in the electronic training meets the participants’ competencies.

Buckley et al. (2017) completed a study using an electronic training program to teach physicians and radiologists how to interpret specific brain scans. In the study, participants were asked to independently read information on a screen and practice classifying brain images based on the information provided (Buckley et al., 2017). The training incorporated interactive modules and participants were provided with a test following the training. The results of the training showed that the independent electronic training program was effective at training inexperienced participants to successfully classify brain scans (Buckley et al., 2017). Similar to the current thesis project, participants who are inexperienced will be asked to read and learn information on a new subject and be provided with a survey following the training. Considering the positive results of Buckley et al.’s study, the information in the training program was separated into interactive modules so the training content is organized based on the topic. This allows participants to read and understand the information easily.

He, Marquard, and Henneman (2017) also conducted a study focusing on the use of an electronic training program. In He et al.’s (2017) study, the researchers aimed to teach nursing students how to properly use an electronic health record. The researchers implemented training sessions that lasted a maximum of 90 minutes, which He et al. described as crucial in order to maintain good attendance of the participants. The study aimed to determine the factors needed to develop a successful training program, thus feedback about the convenience, length, wording, and difficulty of the training program was assessed rather than an increase of participant knowledge following the training (He et al., 2017). The participants completed the training using their own computer on their own schedule (He et al., 2017). When developing the training program for the current thesis study, factors such as the length of time it will take to complete the training and the staff members’ busy schedule will be heavily considered.
**strengths of electronic training.** Arkorful & Abaidoo (2014) explained that there are many advantages to learning information using technology. Some of the advantages include flexibility and cost effectiveness for the learner as they can choose when and where to participate and do not have to travel to participate (Arkorful & Abaidoo, 2014). Additionally, Roberts et al. (2017) found that staff members in their study determined the use of electronic programs to be beneficial at the hospital as it was easy to use and implement to patients. This is a strength in the current thesis study as the goal is to design the electronic training to be easy to implement for the student researcher and easy to use for the participants. Providing information electronically and using visuals, written material, and auditory clips allow individuals to exercise their own learning style and learn at their own pace (Arkorful & Abaidoo, 2014). Therefore, incorporating a combination of teaching strategies such as written material, graphics, and voiceovers will help participants understand the information provided in the current training program.

**limitations of electronic training.** Zhao et al. (2005) raised the concern that learning is very individualized. Therefore, depending on individuals’ learning styles and capabilities, lacking a face to face trainer may prove to be a larger challenge, thus resulting in ineffective training (Zhao et al., 2005). Additionally, Zhao et al. (2005) noted that the effectiveness of a training program may be limited to the actual content of the training; some subjects may be more difficult to teach without a trainer present. When considering the process of creating and designing an electronic training program, He et al. (2017) noted that information on how to develop a successful and effective electronic training program is often limited. Therefore, researchers implementing a new electronic training program for the first time may need feedback from participants to improve the effectiveness for any future use (He et al., 2017). This thesis will seek participant feedback using pre-test and post-test surveys to determine if the training program was effective at increasing participant knowledge of PSD and confidence with sharing information of PSD with clients. The feedback gathered from participants on the current thesis project may encourage future use of electronic training for new staff members at the agencies.

**voiceovers.** Another technique to use in electronic learning is voiceovers. Lipschultz, Vladescu, Reeve, Reeve, and Dipsey (2015) recently completed a study using voiceover instructions combined with video modeling to train staff members. Lipschultz et al. described voiceovers to be beneficial when trainers and/or supervisors are not available to teach new techniques to the learners. In the study, the voiceover and video combination were found to be effective at reducing the amount of time a trainer or supervisor had to be present (Lipschultz et al., 2015). Voiceovers can be used to mimic the effect of having a trainer verbally explain information face-to-face by offering a verbal explanation of the information being taught in addition to the written material on the screen. This repetition of information using two different communication methods could potentially be more useful than just having the learner read content from a screen on his/her own.

Additionally, a study conducted by Weldy et al. (2014) incorporated the same method of video demonstration and voiceovers to train staff members to implement specific assessments by using a PowerPoint presentation (as cited in Lipschultz et al., 2015). Results of Weldy et al.’s (2014) study concluded the method to be effective at training staff members (as cited in Lipschultz et al., 2015). Therefore, voiceovers will be used in the current thesis study to be inclusive to a variety of learning styles and to overcome the limitation of not having an opportunity to conduct an in-person training workshop for PSD due to the staff’s busy and uncoordinated schedules.
**Pre-test-Post-test Survey Design**

Alessandri, Zuffliano, and Perinelli (2017) described the pre-test-post-test model as being a very popular choice and favoured in the field of psychology where programs and interventions are implemented constantly. The pre-test-post-test model involves administering two tests to participants to measure a specific variable or point of interest in the participants (Gall, Gall, & Borg, 2003 as cited in Gouldthorpe & Israel, 2013). One of the tests is administered to participants before completing a program and one test is administered after participants complete the program (Gall et al., 2003 as cited in Gouldthorpe & Israel, 2013). Pratt et al. (2000) explained that the purpose of the pre-test-post-test model is to determine and examine the effects of the researcher’s program on participants’ knowledge acquired through the training (as cited in Gouldthorpe & Israel, 2013).

A study conducted by Kim et al. (2016) used pre and post surveys to analyze a safety workshop among staff members. The researchers distributed surveys before and after the safety workshop and the results showed an improvement in participants’ attitude of safety regulations in the workplace (Kim et al., 2016). Additionally, Kim et al. concluded a high response rate from participants. The surveys used in the study used only yes/no questions and Likert scale ratings to gather data from the participants (Kim et al., 2016). When examining the results from the current study, using a yes/no and Likert scale design in the current thesis study will aid to reach a high response rate from participants.

A study by Djalali, Tandjung, Rosemann, and Markun (2017) aimed to determine the increase of knowledge and relevant skillset in participants who are completing a vocational training program. More specifically, the researchers used the pre-test-post-test design to evaluate the participants’ confidence surrounding their professional and management skills and participants’ knowledge of entrepreneurship prior to and after completion of the vocational training (Djalali et al., 2017). This study was similar to Kim et al.’s (2016) study by using Likert scales to collect data, and by training participants who had similar invested interests. However, Djalali et al.’s (2017) study was unique because the researchers measured variables such as professional, organizational, examination, and management skills using pre-test-post-test surveys. Results of the study indicated that the training program was successful at increasing participants’ confidence of their skillset but was less successful at increasing participants’ knowledge of entrepreneurship (Djalali et al., 2017). When creating the training program for the current thesis study, the student researcher will use similar methodologies as Djalali et al. (2017) such as dividing the knowledge-based items and confidence-based items into two separate sections in the training program and survey. The student researcher will also incorporate self-administered electronic surveys to participants before and after the training program to try to replicate similar successful results when increasing confidence in participants.

Other examples of studies that incorporated pre and post surveys include Steen, Robinson, and Robinson (2015) and Davis, Baral, Strayer, and Serrano (2017). The aim of Steen et al.’s (2015) study was to use a pre-test-post-test design to determine the effectiveness of a mental health resilience program on increasing self-perceived resilience in pregnant women. When compared to other studies, this report focused on increasing a different variable on a unique set of participants. However, the researchers highlight the importance of independent survey completion, extensive informed consent, and the use of numerical codes to keep surveys anonymous. These are particularly important to acknowledge, as the current thesis study will include all three factors. Steen et al. noted that completing the pre-test and post-test surveys independently would reduce the potential bias that may occur if the researchers, trainers, or
program developers were helping the participants complete the surveys. Informed consent was considered vital to Steen et al.’s study as they stated that informed, voluntary participation from participants is necessary to prevent skewed or inaccurate results. Steen et al. used numerical codes to keep submissions anonymous and maintain participant confidentiality during the study. The current thesis study will aim to include independent survey completion, informed consent, and numerical codes to promote a fair, safe, and accurate study.

In Davis et al.’s (2017) study, the researchers aimed to evaluate the success of pre-test and post-test surveys at measuring the effectiveness of a training program. Davis et al. described factors that could possibly influence the efficacy of the pre-test-post-test method. Some examples are participants guessing or selecting random responses on the surveys and including an excess number of questions on the survey (Davis et al., 2017). Both factors can equally skew the results of the study, as both occurrences could present evidence of false improvement (Davis et al., 2017). To prevent random answers on survey items in the current thesis study, the student researcher will include a brief instruction at the beginning of the pre-test and post-test survey asking participants to consider all the items on the survey and choose items that accurately represent their current beliefs to the best of their ability. The surveys will also be short in length to prevent participant fatigue and frustration while completing the surveys.

**strengths of pre-test-post-test survey design.** By using the same survey questions before and after the intervention, this model can offer more information of the effectiveness of the intervention than other data designs such as a post-test only design (Gouldthorpe & Israel, 2013). Alessandri et al. (2017) and Kim et al. (2016) named the pre and post survey method as a very frequent and accepted measuring tool, specifically used to evaluate the effectiveness of training programs on changing participants’ knowledge and attitudes on particular topics. Therefore, using the pre-test-post-test design has not been an isolated occurrence. Instead, several researchers have used the method for a variety of studies, which speaks to the success and reliability of the design.

**limitations of pre-test-post-test survey design.** Although the occurrence of short-term changes was not concluded in Kim et al.’s (2016) study, the authors do recognize short-term changes as a result of using a pre and post survey design as a potential limitation. To reduce the likelihood of gathering only short-term data, Kim et al. (2016) noted that the pre-surveys be implemented a week before the training and post-surveys be implemented a week or more following the training.

Djalali et al. (2017) explained that by completing the pre-test surveys and post-test surveys independently, some cognitive bias is likely to occur, thus interfering with results of the studies. This notion differs from Steen et al.’s (2015) study discussion where it was noted that completing the surveys independently reduces the likelihood of bias. Researchers have also stated that since pre-test and post-test surveys must clearly reflect the information provided in the training program, the results of the surveys are difficult to generalize to other studies (Djalali et al., 2017).

**Summary**

Concerning the two not-for-profit agencies focused on in this study, there are clients who have experienced strokes, who are diagnosed with dementia, and who are diagnosed with or concerned about developing PSD. As many Canadians are underinformed of the prevalence and effects of stroke and dementia, it will be beneficial for staff members at local agencies to be more knowledgeable of PSD and more confident sharing their knowledge of PSD with others. By increasing participant knowledge and confidence of PSD the agencies may benefit more
clients and caregivers in their community. Unfortunately, staff members are increasingly busy with the influx of new clients needing supportive services in the dementia and stroke care field that extensive training sessions are simply too time-prohibitive. Electronic training offers a more accessible method of learning and can be completed at the staff members’ availability and convenience. By using voiceovers, the training can be more inclusive of participants’ learning styles. Additionally, using the pre-test-post-test method will be useful to determine if the electronic training program was effective at increasing knowledge and confidence and to examine the degree to which the training program is effective.

Chapter III: Method

Participants
The participants involved in the study were staff members at agency A and agency B. Agency A is an organization that provides education, support, and referrals to outside agencies for persons, caregivers, and families with memory loss. Agency B is an organization that provides programs and services to promote independence for adults and seniors with physical disabilities. Staff members at both agencies included Executive Directors (EDs), Service Coordinators, Operations and Program Support Coordinators (OPSCs), and funding coordinators.

There were seven participants from each agency included in the study. Therefore, there were 14 participants in total. The participants ranged from 24 years of age to 65 years of age. At the time of the study, there were only female staff members employed in a part-time or full-time position at agency A and agency B, therefore all participants in the study were female. To be included in the study, participants had to be employed in a part-time or full-time position or working between 18-35 hours per week at either agency A or agency B. Volunteers, clients, caregivers, or students who were not actively employed in a part-time or full-time position working between 18-35 hours per week at either agency A or agency B were excluded from the study. The student researcher determined this inclusion and exclusion criteria because volunteers, caregivers, and students were not on the agency premises on a daily basis and were likely not going to be the ones sharing the knowledge acquired from the training with clients. In addition, clients were excluded due to the nature of the content on the slides and because of their stroke and/or dementia, clients may not have been able to complete the necessary components independently.

The clients at the agencies were considered secondary recipients of the study, as they may benefit from staff members completing the electronic training program. However, there was no data taken from any clients supported by either agency A or agency B at any point during the study. Data was only gathered on the primary participants.

The student researcher recruited all participants in person at agency A and agency B. The student researcher recruited the participants by asking them verbally if they would like to participate in the study. If they agreed to participate, the consent form was provided to the participants by the student researcher.

informed consent procedures/confidentiality. An informed consent form (Appendix A) was provided to each participant prior to the study being conducted. The student researcher provided the consent forms in-person to each staff member individually. The consent form outlined the purpose of the study, the role of the participants, the potential risks and benefits of participating, and confidentiality guidelines. The consent form also informed participants that they could withdraw from the study at any time without any penalty. Participants were provided time to review the consent form with the student researcher and were verbally prompted to ask
any questions. The student researcher verbally explained to each participant individually that participating in the study was voluntary and if they had any further questions or concerns, they could contact the student researcher or the college supervisor using the contact information provided on the consent form.

Each staff member was asked to read the informed consent form and sign the bottom of the consent form to become an active participant in the study. The student researcher collected the signed consent form from each staff member after it was signed by the participant. Participants were encouraged by the student researcher to take a copy of the signed consent form for themselves.

The only identifier included in the study was the electronic training schedule that only the student researcher has access to. The training schedule included the names of each participant and the date and time they had chosen to complete the electronic training. Once every participant had a time slot on the schedule, the schedule was scanned onto the student researcher's password protected computer and the hard copy of the schedule was shredded.

The pre-test and post-test surveys did not include any of the participants' names, but instead participants were identified using a code that each participant was given by their Executive Director that distinguishes which agency they belong to. Additionally, the surveys did not prompt participants to share any identifying information. The data was collected online on a password secured account using a password secured laptop. Only the student researcher had access to the data at all times. The surveys were kept on a password secured JotForm account on a password secured laptop until May 2019 when the student researcher completed this thesis. Once the student researcher completed the thesis, the surveys were deleted and the JotForm account was permanently disabled. The signed informed consent forms were kept in a locked filing cabinet at St. Lawrence College for ten years. After ten years, the consent forms were shredded.

Research Design

The research study was reviewed and approved by the St. Lawrence College Research Ethics Board (Appendix B). This study used a pre-test-post-test design. All participants completed and submitted a pre-test survey (Appendix C) prior to completing the electronic training program (Appendix D). All participants also completed and submitted the same survey following their individual completion of the electronic training program.

The independent variable in this study was the electronic training program. The electronic training program was defined as the set of 27 PowerPoint slides composed of three modules that included information on post-stroke dementia in Canada. The dependent variables in this study were staff members’ knowledge of post-stroke dementia and staff members’ confidence in sharing the information about post-stroke dementia presented in the training with the current or future clients. Specifically, the variables measured before and after the electronic training program were the participants’ knowledge on post-stroke dementia and the participants’ confidence on sharing the risk factors, preventative measures, and suggested treatment options for post-stroke dementia to clients and caregivers. Participants’ knowledge of post-stroke dementia was measured based on the number of participants who submitted the correct answer per question. Participants’ confidence on sharing information about post-stroke dementia was measured based on the number of participants who rated their personal agreeance as an eight or above on the Likert scale per item.

The items in the pre-test and post-test survey were developed by the student researcher and were based on the content included in the electronic training program. The student
researcher decided to train the staff members about post-stroke dementia because the staff at the agencies service hundreds of clients who have stroke symptoms, dementia symptoms, and/or both. Therefore, the student researcher deemed the topic of post-stroke dementia relevant to both agencies. The student researcher chose to implement an electronic training program rather than an in-person workshop, so all agency members could participate. The electronic training program allowed more flexibility to accommodate the participants’ work schedule, as well as participants were able to use their own office space and computer. The student researcher chose to use a pre-test-post-test survey design so results of the study could be used to determine the effectiveness of the electronic training program at increasing staff members’ knowledge and confidence.

Setting and Apparatus

The setting was a local office space that housed both agencies. Agency A and agency B share a reception area but were located at opposite wings in the office space. Both agencies are not-for-profit organizations that primarily serve seniors in the community. Agency A had regional boundaries, serving clients in a seven thousand square kilometre area. Agency B covered nearly the same area but has multiple agency locations to help successfully support the large number of senior clients in the community.

The pre-test and post-test surveys were completed and submitted individually by each participant using their work computer. The electronic training program was administered on each participant’s own work computer in their individual office. The student researcher was not present while the participants were completing the training.

materials. The items developed for the study were a pre-test survey, a post-test survey, an electronic training program, and a participant timeline handout (Appendix E). The items on the pre-test and post-test survey were developed by the student researcher. The pre-test survey and post-test survey were offered online through the use of JotForm, an online survey program. The electronic training program consisted of 27 PowerPoint slides and voice-overs to present information about post-stroke dementia. The first PowerPoint slides offered instructions on how to complete the training, an outline of the three training modules, and a list of learning objectives for the participants to reach by the end of the training. The additional PowerPoint slides included specific information on the risk factors, preventative measures, and behavioural treatment options for clients who are experiencing post-stroke dementia. This information was separated into three separate training modules. The first module was an introduction to the training and included information on the growing Canadian population, the aging demographic, and the relevance of learning about post-stroke dementia. The second module focused on the risk factors and preventative measures of post-stroke dementia. The third module presented information on generic and behavioural treatment options for clients who have post-stroke dementia and show either symptoms of their stroke, symptoms of their dementia diagnosis, or both. The post-stroke dementia information was gathered and cross-referenced from multiple sources including local agencies, textbooks, and online peer-reviewed journal articles. The electronic training program was offered using a USB device.

The participant timeline was a handout that was created by the student researcher to help participants keep track of the due dates of the pre-test survey, electronic training program, and post-test survey. The participant timeline highlighted the order of the study and the amount of time that must occur between the completion of each component of the thesis study. The student researcher distributed the handout in person to each participant individually after they signed the consent form.
The items given to participants to complete the study were two numerical codes, a USB device, pens, and lined paper. The student researcher gave the Executive Director of agency A and Executive Director of agency B a pre-written e-mail (Appendix F) including the link to the electronic surveys, numerical codes, and brief instructions. The Executive Directors then e-mailed the above information to all their corresponding employees who signed the consent form prior to the study beginning. The student researcher gave each participant a pen and five pieces of lined paper to take notes while completing the electronic training program. Additionally, the student researcher left the USB containing the electronic training program and a hard copy of the PowerPoint slides at the reception desk of agency A and agency B after all staff members completed the training. The electronic training program was to be used to educate future volunteers, placement students, and employees on post-stroke dementia after the completion of the student researcher’s placement.

**Measures**

*JotForm.* The surveys were delivered electronically through the use of JotForm. JotForm is an online website that is used to design and build surveys to gather feedback or information from individuals. For example, companies use JotForm as a forum to gather feedback after employing a new marketing strategy. Over two million people use JotForm and rely on the company to offer accessible and easy-to-use surveys that are confidential and private (JotForm, 2018). JotForm has a privacy policy, which states that no other companies, agencies, or third party will have access to the information written and submitted on JotForm surveys (JotForm, 2018). Therefore, JotForm was selected to be used in this study due to its commitment to privacy and confidentiality of its users.

*Survey layout.* The pre-test and post-test survey were composed of 13 items. Both surveys contained the same 13 items, which were separated into two sections. The topic of the first section was participant knowledge. This section was composed of eight items and responses to items in the knowledge section were gathered using a multiple-choice format. The topic of the second section was participant confidence. This section was composed of five items. Responses to items in the confidence section were gathered using a 10-item Likert scale. Scores on the Likert scale will range from 1 (*Not at all*) to 10 (*Extremely*).

*Survey items.* The items in the knowledge portion of the survey focused on the prevalence, risk factors, preventative measures, and current behavioral interventions available for post-stroke dementia. The items in the confidence portion of the survey focused on the participants’ understanding of risk factors and treatments of post-stroke dementia, the relevancy of post-stroke dementia research, and the likelihood of the participants using information from the training with their current clients. The purpose of the pre-test survey was to gather participant knowledge on post-stroke dementia and participant confidence of understanding and sharing information on post-stroke dementia to others prior to completing the training program. The pre-test and post-test surveys were used to evaluate the effectiveness of the training program.

*Data collection.* The data was collected from the pre-test and post-test surveys completed by participants. Results from each agency were presented in separate tables and graphs to view any differences in trends between participants from agency A and agency B. Combined results of participants from agency A and agency B were also presented in a table and a graph to view the overall trend from all participants involved in the study.

For each question in the knowledge section of the surveys, the student researcher determined the number of participants at agency A who responded correctly and the number of participants at agency B who responded correctly. The data was analyzed using descriptive
statistics. The data collected was presented in three tables. One table represented the differences in knowledge acquisition between agencies and overall. Two tables depicted the results of the knowledge section of the surveys for agency A and agency B. The data was presented as the number and percentage of participants who submitted the correct answer per question for each agency. Results were presented in a bar graph to examine the results and reveal any specific agency trends. Additionally, a line graph depicted the change in mean scores for each agency from pre-test to post-test.

For each question in the confidence section of the surveys, the student researcher determined the number of participants at agency A who scored themselves as eight or higher on the Likert scale and the number of participants at agency B who scored themselves as eight or higher. The data was analyzed based on the trend of scores. The data collected was presented in two tables. One table presented the results of the confidence section of the surveys for agency A and one table presented the results of the confidence section for agency B. The data was presented as the number and percentage of participants who scored themselves as eight or higher per question for each agency. The results were presented in a bar graph. In total, there were two bar graphs and one line graph to present the results of the study.

Procedure

After consent was received from all participants, the student researcher provided each participant with a participant timeline handout that listed the due dates of the pre-test survey, electronic training program, and the post-test survey. The participant timeline handout also detailed the amount of time participants were allotted to complete each component of the study. When all participants received a participant timeline handout, access to the pre-test survey on JotForm was provided to each participant. The Executive Director of agency A distributed an accessible link and a four-digit numerical code to all agency A participants via mass e-mail. The Executive Director of agency B distributed an accessible link and a different four-digit numerical code to all agency B participants via mass e-mail. Both mass e-mails also included instructions stating that participants must complete the surveys individually using the code given to them in the e-mail. Participants were allotted three business days after receiving the mass e-mail to complete the pre-test survey. Therefore, the Executive Directors of the agencies knew who the participants were, but confidentiality was maintained by using individual codes.

On the date that the first participant was scheduled to complete the electronic training, the Executive Director of agency A and the Executive Director of agency B distributed a second mass e-mail. All of the participants completed and submitted the pre-test survey prior to the Executive Directors distributing the second mass e-mail to participants of their corresponding agency. The second mass e-mail contained a description of the location where the training USBs were kept in the office, brief instructions on when and how to complete the training using the USBs, and the due date for all participants to have completed the training. Also included in the second mass e-mail was the link to the post-test survey, a four-digit numerical code, and brief instructions on how and when to complete the post-test survey. There were four different four-digit numerical codes used in total. There was a numerical code for each agency to use on the pre-test survey and a numerical code for each agency to use on the post-test survey. The numerical codes were used to distinguish which agency the participants were affiliated with when they completed the surveys. The student researcher did not access JotForm until all participants completed their pre-test survey, electronic training program, and post-test survey.

assessments. Participants were verbally instructed individually to type their given code from their agency Executive Director in the name slot on the survey instead of their name. The
participants were informed that this procedure was to maintain anonymity in the study. Under the title of each section on the surveys, the student researcher included written instruction for participants describing how to answer the survey questions. The instruction for the knowledge section of the survey told participants to read each item on the survey carefully and completely and to select all of the choices that they believe answered the corresponding question or statement. The instructions for the confidence section of the survey told participants to read each question on the survey and select a number from the scale provided that corresponded with their agreement to the question. Once participants completed the survey and pressed submit, the survey was automatically sent to the student researcher account as an anonymous completion.

**intervention.** Research was conducted using resources from local agencies, textbooks, and online peer-reviewed journal articles. Information was gathered on the prevalence of post-stroke dementia and the risk factors, preventative measures, generic treatment options, and behavioural interventions of post-stroke dementia. The information was cross-referenced between resources and was used to create an electronic training program on a USB device. Each staff member at agency A and agency B who met the inclusion criteria was allotted a date and time to complete the electronic training program. Participants had to wait a minimum of 48 hours following the completion and submission of the pre-test survey before beginning the electronic training program. Dates and times for completion of the survey varied. Participants signed up for their timeslot between the dates of November 19, 2018 and November 23, 2018. Each participant was verbally instructed to insert the USB device into their office computer, read the information, and listen to the voice-overs on each slide provided.

The electronic training program took participants approximately 30-50 minutes and was completed in one sitting. The student researcher provided each participant with a pen and five pieces of lined paper to take notes on the information included in the PowerPoint slides. The electronic training program was considered to be completed by a participant when they had read and listened to every slide that was included in the PowerPoint slideshow on the USB device. After completing the electronic training, the student researcher asked each participant individually to verbally confirm that they had read and listened to every slide on the PowerPoint slideshow. If a participant did not complete the electronic training program in one hour, they were allotted an extra 30 minutes to complete the training.

**rationale to methodology.** The previous studies and their strengths and limitations were considered when developing the pre-test and post-test surveys for the current thesis project. To prevent potential limitations of the current thesis study, the student researcher considered the issues of short-term changes, cognitive bias, and generalizing the survey results.

In effort to prevent short-term knowledge and confidence changes from the electronic training program, the student researcher implemented the pre-test surveys three to seven days prior to the completion of the training program, depending on each participants’ availability. Similarly, the post-test surveys were implemented a minimum of three days following completion of the training program. The length of time between the pre-test survey and electronic training program and the training program and the post-test survey was predicted to be a limitation in the current project due to time restraints.

To maintain participant confidentiality, prevent possible bias, and reduce the risk of participant persuasion when completing the surveys, the participants were asked to complete the pre-test and post-test survey independently. Regarding the possible inability to generalize the results of the surveys to other studies, the current agencies do not place a heavy focus on
generalizing the pre-test and post-test surveys to other past or future studies at either agency; therefore, this specific limitation was not relevant to the current study.

**Chapter IV: Results**

The data for this study was displayed using five tables and three graphs to analyze and present the results of the pre-test and post-test scores for all participants from agency A and agency B. Three tables and two graphs were used to depict the pre-test and post-test results of the knowledge section. Table 1 shows the difference in knowledge acquisition between agencies and overall. Table 2 shows the results of participants from agency A on the knowledge section. Table 3 presents the knowledge section results of participants from agency B. Figure 1 shows the differences in mean scores of participants on the knowledge section results prior to and following the completion of the electronic training program. Figure 2 displays the knowledge section results of participants from agency A and agency B on the pre-test and post-test surveys.

Two tables and one graph present the pre-test and post-test results of the confidence section. Table 4 shows the pre-test and post-test confidence section results for agency A participants. Table 5 presents the confidence section results for agency B participants. Figure 3 presents the pre-test and post-test confidence section data for agency A and agency B participants.

**Knowledge Section Data**

Participants’ raw data (Appendix G - Appendix H) from the knowledge section of the pre-test and post-test surveys presents the number of participants who submitted the correct answer per question for agency A (Appendix G) and agency B (Appendix H).

Presented in Table 1 are the mean scores and standard deviation (SD) scores for agency A and agency B participants prior to and following the completion of the electronic training program. Additionally, the overall mean scores and SD scores from all participants are displayed in Table 1. Although there was a mean change for agency A (\(M_{\text{diff}} = 2.69\)), agency B

Table 1

<table>
<thead>
<tr>
<th>Program Training</th>
<th>Pre</th>
<th></th>
<th></th>
<th>Post</th>
<th></th>
<th></th>
<th>Mean Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>n</td>
<td>M</td>
<td>SD</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>Agency A</td>
<td>2.43</td>
<td>.53</td>
<td>7</td>
<td>5.12</td>
<td>1.77</td>
<td>7</td>
<td>2.69</td>
</tr>
<tr>
<td>Agency B</td>
<td>2.00</td>
<td>1.15</td>
<td>7</td>
<td>4.00</td>
<td>2.45</td>
<td>7</td>
<td>2.00</td>
</tr>
<tr>
<td>Overall</td>
<td>2.21</td>
<td>.89</td>
<td>14</td>
<td>4.57</td>
<td>2.14</td>
<td>14</td>
<td>2.36</td>
</tr>
</tbody>
</table>

*Note. \(M = \text{Mean}; \ SD = \text{Standard Deviation.} \) Highest possible score = 8.*

(\(M_{\text{diff}} = 2.00\), and overall (\(M_{\text{diff}} = 2.36\), due to data collection methods, statistical significance of the observed differences cannot be determined. The number of participants from agency A who submitted the correct response per question on the pre-test and post-test survey is displayed in Table 2. The pre-test data ranged from zero to six participants (85.71%) who answered the question correctly. The highest scoring item on the pre-test survey was question two, where six participants (85.71%) answered the question correctly. The lowest scoring items on the pre-test
survey were question five, question six, and question eight, which zero participants answered the question correctly. The post-test data from agency A participants ranged from two (28.57%) to seven (100.00%) participants who answered the question correctly. The highest scoring item on the post-test survey was question five, where seven participants (100.00%) answered the question correctly. The lowest scoring item on the post-test survey was question three, which two participants (28.57%) answered correctly. Agency A participants had improved scores on all questions, except question two and question four, where the number of participants who answered the question correctly was the same on the pre-test and post-test survey.

Table 2

*Number of Participants from Agency A who Submitted the Correct Response per Question on the Knowledge Section of the Pre-Test and Post-Test Survey*

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Change ( ^a )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 (Percentage to develop dementia)</td>
<td>4(57.14%)</td>
<td>5(71.43%)</td>
<td>1(14.29%)</td>
</tr>
<tr>
<td>Q2 (Controllable risk factors)</td>
<td>6(85.71%)</td>
<td>6(85.71%)</td>
<td>0(0.00%)</td>
</tr>
<tr>
<td>Q3 (Specific risk factors)</td>
<td>1(14.29%)</td>
<td>2(28.57%)</td>
<td>1(14.29%)</td>
</tr>
<tr>
<td>Q4 (Reducing likelihood of PSD)</td>
<td>4(57.14%)</td>
<td>4(57.14%)</td>
<td>0(0.00%)</td>
</tr>
<tr>
<td>Q5 (Preventative measures)</td>
<td>0(0.00%)</td>
<td>7(100.00%)</td>
<td>7(100.00%)</td>
</tr>
<tr>
<td>Q6 (Treatment options)</td>
<td>0(0.00%)</td>
<td>3(42.88%)</td>
<td>3(42.88%)</td>
</tr>
<tr>
<td>Q7 (Behavioural treatment for stroke symptoms)</td>
<td>2(28.57%)</td>
<td>4(57.14%)</td>
<td>2(28.57%)</td>
</tr>
<tr>
<td>Q8 (Behavioural treatment for dementia symptoms)</td>
<td>0(0.00%)</td>
<td>5(71.43%)</td>
<td>5(71.43%)</td>
</tr>
<tr>
<td>Total Participants (( n ))</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

\( ^a \)Subtracted difference between the Post-Test score and Pre-Test score.
The number of participants from agency B who submitted the correct response per question on the pre-test survey and the post-test survey is displayed in Table 3. The pre-test data ranged from zero to four participants (57.14%) who answered the question correctly. The highest scoring item for agency B participants on the pre-test survey was question one, which four participants (57.14%) answered the question correctly. The lowest scoring item were questions six and eight, where zero participants answered correctly. The post-test data of agency B participants ranged two (28.57%) to seven (100.00%) participants who answered the question correctly. The highest scoring item the post-test surveys was question four, where seven (100.00%) participants answered correctly. The lowest scoring item were question five, question

### Table 3

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Change&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 (Percentage to develop dementia)</td>
<td>4(57.14%)</td>
<td>4(57.14%)</td>
<td>0(0.00%)</td>
</tr>
<tr>
<td>Q2 (Controllable risk factors)</td>
<td>3(42.88%)</td>
<td>5(71.43%)</td>
<td>2(28.57%)</td>
</tr>
<tr>
<td>Q3 (Specific risk factors)</td>
<td>3(42.88%)</td>
<td>3(42.88%)</td>
<td>0(0.00%)</td>
</tr>
<tr>
<td>Q4 (Reducing likelihood of PSD)</td>
<td>1(14.29%)</td>
<td>7(100.00%)</td>
<td>6(85.71%)</td>
</tr>
<tr>
<td>Q5 (Preventative measures)</td>
<td>2(28.57%)</td>
<td>2(28.57%)</td>
<td>0(0.00%)</td>
</tr>
<tr>
<td>Q6 (Treatment options)</td>
<td>0(0.00%)</td>
<td>3(42.88%)</td>
<td>3(42.88%)</td>
</tr>
<tr>
<td>Q7 (Behavioural treatment for stroke symptoms)</td>
<td>1(14.29%)</td>
<td>2(28.57%)</td>
<td>1(14.29%)</td>
</tr>
<tr>
<td>Q8 (Behavioural treatment for dementia symptoms)</td>
<td>0(0.00%)</td>
<td>2(28.57%)</td>
<td>2(28.57%)</td>
</tr>
</tbody>
</table>

<sup>a</sup>Subtracted difference between the Post-Test score and Pre-Test score.
seven, and question eight, where two (28.57%) participants answered the item correctly. On the post-test survey, participants from agency B had improved scores on items two, four, six, and seven and no improvement on items one, three, or five.

Confidence Section Data

Participants’ raw data (Appendix I - Appendix J) from the confidence section of the pre-test and post-test surveys presents the number of participants who scored eight or above on the Likert scale per question for agency A (Appendix I) and agency B (Appendix J). The number of participants from agency A who scored eight or above on the Likert scale per question on the pre-test survey and the post-test survey is displayed in Table 4. The pre-test data ranged from two (28.57%) to five (71.43%) participants who scored themselves as eight or above on the item. The highest scoring item on the pre-test was question three, where five (71.43%) participants scored themselves as eight or above. The lowest scoring questions were items one, two, and five, where two (28.57%) participants scored eight or above. On the post-test survey, five (71.43%) participants from agency A scored themselves as eight or above on item four and five. On items one, two, and three, six (85.71%) participants scored themselves as eight or above. The number of participants who selected eight or above on the Likert scale increased on all questions. The percentage of participants from agency B who scored eight or above on the Likert scale per question on the pre-test survey and the post-test survey is displayed in Table 5. The pre-test data ranged from zero to three (42.86%) participants who scored themselves as eight or above.

Table 4

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>% Changea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 (Risk factors)</td>
<td>2(28.57%)</td>
<td>6(85.71%)</td>
<td>4(57.14%)</td>
</tr>
<tr>
<td>Q2 (Current treatments)</td>
<td>2(28.57%)</td>
<td>6(85.71%)</td>
<td>4(57.14%)</td>
</tr>
<tr>
<td>Q3 (Relevancy of topic)</td>
<td>5(71.43%)</td>
<td>6(85.71%)</td>
<td>1(14.28%)</td>
</tr>
<tr>
<td>Q4 (Sharing information from training)</td>
<td>3(42.86%)</td>
<td>5(71.43%)</td>
<td>2(28.57%)</td>
</tr>
<tr>
<td>Q5 (Conducting own research)</td>
<td>2(28.57%)</td>
<td>5(71.43%)</td>
<td>2(28.57%)</td>
</tr>
<tr>
<td>Mean (M)</td>
<td>39.99</td>
<td>77.14</td>
<td>37.15</td>
</tr>
<tr>
<td>Total Participants (n)</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

aSubtracted difference between the Post-Test score and Pre-Test score.
eight or above on the question. The highest scoring item was question four, which three (42.86%) participants scored themselves as eight or above. The lowest scoring item was question two, where zero participants scored themselves as eight or above. The post-test data of participants at agency B ranged from two (28.57%) to six (85.71%) participants who scored an eight or above on the question. The highest scoring item was question four, where six (85.71%) participants scored themselves as eight or above. The lowest scoring item was question five, where two (28.57%) participants scored eight or above. The number of participants who selected eight or above on the Likert scale increased on all items from pre-test to post-test.

Visual Analysis
Presented in Figure 1 are the differences in mean scores between agency participants prior to and following completion of the electronic training program. As indicated by the graph, a slightly higher difference in agency A participants following the training was observed. Both agencies had increased mean scores following the implementation of the electronic training program. Therefore, these results support the effectiveness of the training program in increasing knowledge of PSD, specifically risk factors, preventative measures, and behavioural interventions.

The data in Figure 2 presents the results of agency participants on the knowledge section of the pre-test and post-test survey (Appendix K). These results indicated an increasing trend

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>% Change$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 (Risk factors)</td>
<td>1(14.29%)</td>
<td>4(57.14%)</td>
<td>3(42.85%)</td>
</tr>
<tr>
<td>Q2 (Current treatments)</td>
<td>0(0.00%)</td>
<td>3(42.86%)</td>
<td>3(42.86%)</td>
</tr>
<tr>
<td>Q3 (Relevancy of topic)</td>
<td>1(14.29%)</td>
<td>3(42.86%)</td>
<td>2(28.57%)</td>
</tr>
<tr>
<td>Q4 (Sharing information from training)</td>
<td>3(42.86%)</td>
<td>6(85.71%)</td>
<td>3(42.85%)</td>
</tr>
<tr>
<td>Q5 (Conducting own research)</td>
<td>1(14.29%)</td>
<td>2(28.57%)</td>
<td>1(14.28%)</td>
</tr>
<tr>
<td>Mean (M)</td>
<td>17.14</td>
<td>51.43</td>
<td>34.29</td>
</tr>
<tr>
<td>Total Participants (n)</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

$^a$Subtracted difference between the Post-Test score and Pre-Test score.
with high variability. The variability in participant scores implies that participants from agency A and agency B demonstrate different levels of knowledge regarding PSD. Therefore, on the pre-test survey, participants’ knowledge significantly varies compared to more consistent and increased participant knowledge following the completion of the electronic training program.

---

**Figure 1.** Differences in Mean Scores of Agency A and Agency B Participants on the Knowledge Section Before and After the Electronic Training Program

**Figure 2.** Percentage of Participants at Agency A and Agency B who Submitted the Correct Answer Per Question on the Knowledge Section of the Pre-Test and Post-
Figure 3 exhibits the confidence section data of agency A and agency B participants on the pre-test and post-test surveys (Appendix L). Both agency A and agency B data show an increasing trend with high variability. This means that although the number of participants who scored themselves as eight or above on the survey increased following the electronic training program, the number of participants who selected eight or above still varies significantly per question.

Overall, survey scores were either maintained or improved following the implementation of the electronic training program. On the knowledge section, all participants from agency A and agency B showed an overall improvement of scores for all eight survey items. Agency A participants showed improvement on six of the eight survey questions and showed the greatest improvement in knowledge of PSD preventative measures and behavioural treatment options for dementia symptoms. Similarly, Agency B participants had improved scores on five of the eight survey questions and showed the greatest improvement in knowledge on reducing the likelihood of PSD and generic treatment options.

Concerning the confidence section, all participants from agency A and agency B participants showed improved confidence scores on all five survey items and had the greatest improvement in understanding risk factors and current treatment options of PSD. Specifically, participants at agency A showed the greatest confidence improvement on understanding risk factors and understanding current treatment options. Agency B participants showed the greatest improvement in understanding risk factors and understanding current treatment options of PSD.
Conclusively, participants appeared to have increased knowledge and confidence following the implementation of the electronic training program.

Chapter V: Discussion

This study was conducted to examine the effectiveness of an electronic training program to increase knowledge and confidence of staff members at agency A and agency B. Specifically, the study focused on increasing staff knowledge of PSD risk factors, preventative measures, and treatment options and staff understanding of PSD and likelihood to share the information with clients. This study used a pre-test survey, an electronic training program, and a post-test survey to increase staff knowledge and confidence. Overall, the data elicited positive results from the pre-test responses to the post-test responses from participants at both agencies.

Interpretations of the Results

Results for each question on the knowledge section of the pre-test survey was either maintained or improved on the knowledge section of the post-test survey. This occurred for participants at both agency A and agency B. Results could have been maintained from pre-test to post-test if participants responded correctly on the pre-test by a lucky guess and then responded correctly on the post-test survey because they were more knowledgeable on the information. Another possible explanation for maintained results is if the participants knew the correct answer on the pre-test survey from knowledge they had previously acquired prior to completing the thesis study. Results were improved from pre-test to post-test because participants retained information provided on the electronic training program and were able to select the correct responses on the post-test survey. Based on the results, participants appeared to have increased knowledge of PSD risk factors, preventative measures, and treatment options after completing the training. Additionally, participants appeared to have increased levels of confidence, which was measured by participants’ understanding of the topics and likelihood to use the information from the program, following the implementation of the electronic training program.

An interesting finding was that both agency A and agency B participants had more difficulty with the questions about treatment options on the pre-test survey. Specifically, all participants in the study selected the incorrect answer for the questions about the generic treatment options for PSD and the behavioural treatment options for dementia symptoms. This was interesting, especially for agency A, because some staff members at agency A are responsible for educating and offering support groups and other events on a weekly basis as a type of treatment for clients who have dementia and their families. Another interesting finding was question five, which asked about preventative measures of PSD. Agency A results increased from zero percent of participants who selected the correct response on the pre-test survey to 100 percent of participants who selected the correct response on the post-test survey while agency B results showed the same percentage of participants selected the correct response on the pre-test survey and the post-test survey. This finding was fascinating because it was unexpected that participants from agency A would improve so significantly on the post-test survey, while only two participants from agency B correctly answered the question on the pre-test survey and showed zero improvement following the completion of the same training. A potential reason for this could be that participants from agency A felt like they did not know the answer to the preventative measure question in the survey. This could have prompted them to be more attentive to the preventative measures material on the training program.

Results for each item on the confidence section was improved on when results from pre-test and post-test were compared. More participants from agency A and agency B selected eight
or above on all five items on the post-test survey than the pre-test survey, which showed that participants became more comfortable with their knowledge of PSD, were more willing to share information on PSD with clients and felt that PSD was relevant to their occupation in the community. There was no decline in results on the post-test survey for any items for agency A or agency B, thus demonstrating the effectiveness of the electronic training program on increasing participants’ confidence on sharing the information learned in the training with clients and the overall relevancy of the topic of PSD in their field.

When considering the confidence section results, some of the findings were unexpected. One of these was the data for question four, which scored the likelihood that participants would share the information learned in the training program with clients. On the pre-test survey, the same number of participants from agency A and agency B selected eight or above on the likelihood to share information about PSD, its risk factors, preventative measures, or behavioural interventions with current or future clients. However, on the post-test survey, more participants from agency B selected eight or above on the likelihood to share information with clients. A reason for this result could be the current process of sharing information with clients being different in agency A and agency B. Agency A participants must educate and support their clients by sharing and offering a variety of information and resources and have thus become used to constantly learning more about their clients’ specific diseases. Contrary to this, most staff members at agency B are not trained to offer specific health care information or support services, as the majority of their clients are not diagnosed with specific neurodegenerative disorders. Since the material on the training may be more relevant to agency A staff members on a daily basis, they may feel they require more information on PSD to become more comfortable with the material before offering the information to clients. Agency A staff may be used to more thorough and detailed workshops and training since they are constantly required to be extremely knowledgeable on dementia, Alzheimer’s disease, and other disorders causing memory loss. Agency B staff may feel as though they have learned a sufficient amount about PSD for their current employment role, especially if they are not required to participate in detailed training for other specific disorders and thus have nothing to compare to the electronic training program material.

Additionally, significantly more participants from agency A selected eight or above than agency B on all questions on the post-test survey except for question four. This is interesting as it shows that participants from agency A had more understanding of PSD risk factors and treatments, felt the topic of PSD was more relevant, and were more likely to conduct their own research on PSD. However, results showed that participants from agency B felt more comfortable sharing information of PSD with clients and therefore were more likely to do so. This is surprising because agency A participants work directly with clients who are more likely to require the information presented in the training program, whereas participants from agency B have far less opportunities to do so.

Expectedly, no participants from agency B selected eight or above on question two on the pre-test survey, which scored the understanding of current treatment options for PSD. Although more participants selected eight or above on this question on the post-test survey, it was expected that agency B participants did not feel as confident about knowing the current treatment options for PSD because staff at agency B do not implement treatments with their clientele.

**Hypothesis**

The first original hypothesis was that agency A would have higher pre-test knowledge scores than agency B. This hypothesis was supported by clinical change as the participants from
agency A, the agency that specializes in dementia care had a higher overall average on the knowledge section of the pre-test survey than agency B, the agency that provides care for seniors who have a variety of health concerns. Agency A results on the pre-test knowledge section were over five percent higher than those of agency B. The probable cause for agency A to have scored higher before the training program was because all of the staff members at agency A interact and work with clients who have dementia and/or their family members. All staff members at agency B have different job descriptions and therefore only one staff member interacts and works with clients who have had a stroke. All of the other staff members mainly work with typically functioning adults or seniors who have lower needs. Similarly, a potential reason for agency A participants to have scored higher on both the pre-test and post-test knowledge sections was the staff members from agency A felt as if the content of the surveys and training were more relevant to the job, thus they were more interested and attentive with the overall thesis study.

The second original hypothesis was that the staff members from both agencies would result in greater understanding of PSD and increased comfort in discussing and training others about PSD. This hypothesis was supported by clinical change as the participants from agency A and agency B scored higher on the knowledge section on the post-test survey than the pre-test survey. Additionally, more participants from agency A and agency B selected eight or above on items on the post-test survey than pre-test survey. This indicated that on average, participants from agency A and agency B appeared to have gained more understanding on PSD risk factors and treatment options and increased confidence to share information from the training program with current and future clients following the implementation of the electronic training program.

**Results in the Context of Current Literature**

**Electronic training programs.** There have been previous studies that have examined the effectiveness of electronic training programs for teaching new subjects or skills. For example, Zhao et al.’s (2005) research concluded that an electronic training was an effective strategy for distance education for participants. This thesis study mimics Zhao et al.’s (2005) conclusion as the data showed that the electronic training program was effective at increasing participants’ knowledge and confidence concerning information on PSD. Another report that was completed to determine the effectiveness of electronic training programs was Palameta et al. (2012). This research was different from the current thesis as the researchers considered the use of training programs to train individuals who were unemployed and did not have a post-secondary education. However, Palameta et al.’s research was similar to the current thesis study because both training programs took individuals’ specific abilities and competencies into consideration when creating the training program. Palameta et al. For example, Palameta et al. noted that personal circumstances and the design and method of training delivery affected the success of training participants. The current study used voiceovers and written material in the training program and participants were given a pen and paper so they could incorporate their own learning style while learning the information in the training. By considering individuals’ learning styles and abilities while creating the electronic training program, this could have affected how successful this study was at increasing participants’ knowledge of PSD information.

A strength of electronic training that was highlighted by Arkorful and Abaidoo (2014) was that learning information electronically offered flexibility and was cost effective for the learner. This was a strength in the current study because participants were able to complete the training at their convenience and did not have to pay a fee or travel to another location to complete the training. Overall, there was a significant meaning to the results of the current study because there were no previous studies found that used an electronic training program to
specifically train staff members on PSD risk factors, preventative measures, and generic and behavioural treatment interventions. Therefore, the results from this study were meaningful to the field of behavioural psychology because using the electronic training program to increase participants’ knowledge and confidence was effective and could be considered when developing similar studies in the future.

**pre-test-post-test survey design.** There have been previous studies that highlighted the advantages of using a pre-test-post-test survey design. Alessandri et al. (2017) described this survey design as being popular and favoured in the field of psychology as it collects data before and after implementing an intervention. An advantage of the pre-test-post-test survey design noted by Davis et al. (2017) was cost effectiveness. The authors specifically discussed a widely used nutrition education program that used a pre-test-post-test design and highlighted the cost-effectiveness of implementing the training and surveys online where participants can complete the surveys independently and at their convenience.

In the case of the current study, the pre-test-post-test survey design was effective because the student researcher was able to clearly analyse the results and examine the improvements from pre-test scores to post-test scores. Djalali et al. (2017) aimed to increase knowledge and confidence in participants in their study. This study elicited similar results to Djalali et al. because in both studies, participants experienced an increase in confidence following the intervention. However, the results in this study differed from Djalali et al.’s study because this study found a clear and significant increase in knowledge. Djalali et al.’s study result showed a lack of increase in entrepreneurship knowledge among participants was potentially due to respondent bias, as the authors discuss this as a limitation to the questionnaire used in their study.

Overall, the results of this study were meaningful to the field of behavioural psychology because they reinforced the notion that the pre-test-post-test survey design was an effective design and was preferred in the psychology field. By collecting data before and after the intervention of the electronic training program to examine the specific changes from the pre-test to post-test and therefore showed how effective the pre-test-post-test survey design was at showing improvements or declines in data.

Based on the results of this study, it can be concluded that electronic training was an effective intervention for staff members as it was accessible, cost-effective, and flexible with current workloads. Also, using written content, voiceovers, graphics, and allowing participants to take notes during the training program proved to be effective at increasing the absorption and retention of information in participants as their scores improved on the post-test surveys for knowledge and confidence. Additionally, using a pre-test-post-test survey design allowed the student researcher to determine the effectiveness of the intervention on the participants. Overall, participants from agency A and agency B increased their knowledge and confidence surrounding PSD risk factors, preventative measures, and treatment options. These results are meaningful because staff members are more knowledgeable following the training of behavioural strategies and can bring awareness to PSD and the behavioural psychology field by initiating conversation about the study with other professionals in the community.

**Strengths and Limitations**

There were a variety of strengths that were discovered throughout the entirety of the thesis study. The strengths were mainly related to the administration of the surveys and the overall application of the study. When focusing on administration of the pre-test and post-test surveys, strengths included accessibility, anonymity, security, measurement of knowledge and confidence, and length of the surveys. The surveys were easily accessible to participants as they
were administered at their individual desks and were completed on their individual work computers that all participants were using already on a daily basis. In terms of anonymity, participants were provided with a numerical code and the surveys were completed online to maintain confidentiality and to prevent the student researcher from determining who completed each survey.

Another strength of the study was measuring both staff knowledge and confidence on the pre-test and post-test surveys. This was a strength because instead of only measuring the staff knowledge of the PSD content, staff confidence was also measured to determine if the training program had a positive effect on the staff members’ understanding of the information and confidence to share the information learned. This was beneficial because if more staff members were confident and receptive to the information presented in the slides about PSD, it could potentially increase the awareness of PSD and risk factors, preventative measures, and treatment options to more people in the community. Finally, the length of the surveys was a strength of the study. By considering Davis et al.’s (2017) study, the surveys were short in length to prevent participant fatigue and frustration, therefore preventing potential error to occur while administering the surveys.

Strengths related to the overall application of the study included the equal number of participants, the number of agencies involved, and the availability of the student researcher. Firstly, there were the same number of participants from agency A and agency B who were involved in the study. This was a strength for the results because it was easier to evaluate and compare the results since all the questions were completed by the same number of staff members from each agency. Also, there were two agencies involved in the study instead of only one. This was a strength because the student researcher was able to bring awareness of PSD to a multitude of staff members, each with different job descriptions and impacts in the community. Additionally, having the participation of two agencies caused there to be a large variety of knowledge between all the participants, thus the results showed a true range in knowledge and confidence which may not have happened if all of the participants were employed at the same agency and had similar job descriptions. Finally, the student researcher was available on a daily basis to answer questions from participants concerning the project, confidentiality, and due dates for survey completion. This was a particular strength for the participants as some of the staff had questions regarding the confidentiality of the surveys and the dates to have each part of the study completed. If the student researcher was not as accessible, their questions may have not been answered, which could cause confusion or attrition and low treatment integrity.

Limitations

Similar to the number of strengths of the study, there were a variety of limitations involved. The limitations were mainly related to self-reporting, structure of the electronic training program, and participant variables. Self-reporting was a limitation because the participants completed the surveys and the electronic training program independently in their own offices. The student researcher was not witnessing each participant complete the surveys or training and therefore was not able to confirm that each participant completed the tasks as instructed.

A limitation to the structure of the electronic training program was the lack of participants. There were only 14 staff members who participated in the study. As that is a small number of participants, the limitation was that the results of the study could not be easily generalizable to a larger population, even if it was a similar agency with similar factors. Another limitation was the time of day that the participants completed the training. Since the training was
available to the participants to complete at any point during their workday, participants could have chosen different times during the day that may have ultimately affected their retention and attentiveness to the material. For example, completing the training on a Friday afternoon instead of a Tuesday morning could affect the participant’s results on the post-test survey as the participant could have been in a rush to finish work for the weekend and were less likely to pay attention. Also, the time frame to complete the electronic training program was a limitation. Due to time restraints, participants had two weeks to find time to complete the training. During that particular period, several staff members had prior commitments and could have felt rushed to complete the training by the due date, thus possibly affecting their effort and attentiveness to the training program.

A fourth limitation to the structure of the study were the number of days between the completion of the training program and the post-test survey. Participants had two weeks to complete all three steps of the study and were instructed to wait a minimum of 72 hours following the completion of the electronic training program to begin the post-test survey. This was a limitation as some participants could have completed the survey too soon or in contrast, significantly later than others. This could result in skewed data, as participants who completed the post-test survey earlier were more likely to have retained more information from the training program. Also, since the student researcher created the electronic training and surveys, they are considered non-standardized measures. Therefore, further evaluation is necessary to measure the validity and reliability of the materials to measure knowledge and confidence of participants. Finally, it is important to note that a major limitation was the method of data collection. In the future, a complete statistical analysis of results is required.

Some participant variables that caused limitations to the study were information prompting, date that the training was completed, and years of experience. Firstly, a limitation was information prompting. As the participants completed the pre-test survey before the training and were made aware that the post-test survey contained the same questions, this could have caused participants to know what key notions or words to specifically look for when completing the electronic training program. This was a limitation because participants could have focused on finding the answers to the survey items instead of approaching the electronic training with no preconceived notions of the training material.

The second limitation was that participants completed the surveys and training on different days. Therefore, there were opportunities for participants who had already completed a section of the study to discuss the content with participants who had not yet completed the same section. This is a limitation because based on what was discussed, some participants could have been influenced to answer a particular way on the surveys, thus possibly skewing the pre-test or post-test results. The final limitation was how much experience participants had in their field and how their experience molds their opinion of a training program prepared by a student. Due to participants’ years of experience, some staff members may have been less inclined to consider new research from a student who was less experienced. This was a limitation because a preconceived opinion of student-prepared material may cause participants to be less receptive to the training program. Overall, the thesis had many strengths that encouraged the success of the study and limitations that should be considered when undergoing similar research.

**Multilevel Challenges and Ethical Issues**

**client level.** Since clients were not involved in the thesis study, there were no challenges at the client level that took place during the course of the study being implemented. However, there are a few challenges that could occur in the future, after the study was implemented. A
challenge of the study at the client level was that the client would not be able to understand the information being presented from the staff members at the agency. If the staff member did not feel competent with the information about PSD, the staff member may not be able to clearly express the information or make suggestions to their clients. This could be a challenge because if the staff member was not able to share the information in a way the client understands, the client may not be able to benefit from the information provided.

Another challenge would arise if the staff member working with a specific client did not retain the information presented on the electronic training program. Since there was no follow-up procedure for this study, maintaining knowledge on PSD risk factors, preventative measures, and treatment options are the agency staff’s responsibility. It was a challenge, especially for clients who would greatly benefit from information on PSD and other resources for PSD, if staff members were not able to retain or review the information from the training program, thus potentially creating more steps to take for the clients to obtain information they may need.

program level. Challenges in the program level included the information being too broad and self-reporting from participants. Although there was a wide variety of information presented in the electronic training program, the information may not be specific enough for the staff members to use with their clients. When working with clients who have dementia and their families, it is essential to obtain enough personal information about the client in order to individualize their treatment. In this study, the information presented on the slides was a broad, general idea about risk factors, preventative measures, and treatment options. Therefore, the challenge was for the staff members to be able to successfully apply the information presented to an individualized program for a client.

Also, self-reporting was a challenge because the student researcher had to rely on the participants to follow the instructions to the best of their ability when completing the study. Although the student researcher implemented the e-mails, verbal confirmations with staff, and a written copy of the due dates for all parts of the study, the student researcher was not able to ensure that the participants completed all the steps of the study as they were instructed. This was a challenge as it was difficult for the student researcher to trust that the participants were self-reporting accurately.

agency level. A challenge at the agency level was participation in the thesis study. There were approximately 18 staff members at the agencies who were eligible to participate in the study; however, four of the staff members were either away during the period of the study or simply refused to participate. This was a challenge because it became more difficult for the student researcher to seek willing participants when staff members became aware that some of the staff in the office were not participating. Additionally, losing four eligible participants made the limitation of the low number of participants in the study more apparent.

Another challenge was the participants’ availability and workload during the period of the intervention being implemented. Due to vacation time, workshops out of the city, and a higher workload associated with the end of the year, it was difficult for the student researcher to ensure that all participants from agency A and agency B were able to complete the pre-test survey, the electronic training program, and the post-test survey within the allotted time frame. Also, a future challenge at the agency level may be the continued use of the training program. This could be a challenge because the student researcher will not be available to clarify any information or to respond to questions concerning the content of the training program.

societal level. The main challenge at the societal level was the lack of consistent knowledge among the staff members at both agencies. Many of the staff had previously worked
at jobs that were not in the field of stroke or dementia care. Therefore, some participants had less knowledge and understanding of how prevalent PSD was, especially in the community in which they were serving clients. This was a challenge because some participants verbally questioned the relevancy of the topic to their current employment and therefore the student researcher adjusted the electronic training program by adding information about the prevalence of PSD to increase staff understanding of the importance of learning about PSD risk factors, preventative measures, and treatment options. Additionally, another challenge at the societal level was the consistency to bring awareness of PSD to the community as only agency A and agency B have access to the electronic training program.

**Ethical Issues**

An ethical issue that was presented during this study were participants possibly feeling like they had to participate in the study even after being verbally told that it was voluntary. The executive directors of both agencies educated their staff on the student researcher’s role at the agencies and the plan of the thesis study. Staff members may have felt that it was necessary to agree to participate in the thesis study due to external pressure from their superiors. This could have resulted in some participants not being as attentive to the surveys or training program, thus potentially skewing the results of the study.

The second ethical issue that occurred in the study was the availability of the student researcher. While it was okay to ask the student researcher when the surveys and electronic training program had to be completed, some participants asked the student researcher questions about the content of the surveys. The student researcher was able to verbally state to the participants that some of the questions could not be answered. However, this was an ethical issue as it was difficult for the student researcher to distinguish which questions they could answer, and which would cause error in the study upon answering.

**Contributions to Behavioural Psychology Field**

This study contributed to the behavioural psychology field by bringing awareness about PSD while using a behavioural perspective. The study was successful at increasing staff knowledge and confidence with information of PSD risk factors, preventative measures, and treatment options, which ultimately brought awareness to the staff members at agency A and agency B who worked directly with clients who had stroke and/or dementia symptoms. Further, the study focused on preventative measures that involved changing clients’ overt behaviours and treatment interventions that were behavioural. By placing a focus on behavioural aspects of PSD risk factors, preventative measures, and treatment options, participants obtained relevant information on applying behavioural principles to clients with stroke and/or dementia symptoms that they may not have had prior to completing the study. Participants at both agencies A serve hundreds of clients and their families in the community. By training staff members on behavioural interventions and preventive measures, more individuals in the community have the opportunity to become aware of PSD and the behavioural treatment options to help the disease.

Additionally, this study introduced behavioural techniques and ideas to staff members who have influence in the health care field such as executive directors of the agencies, office managers, and stroke care coordinators. By including staff members of this caliber in the research study, they may have the interest and power to bring awareness of behavioural techniques and principles to more professionals in the community, thus potentially creating more conversation about behavioural psychology in the geriatric field, which is ever increasing in volume of clients and importance in the province.
Recommendations for Future Research

Future research similar to the topic and aim of the current study would be beneficial. A future study implementing the surveys and electronic training program should be completed with a larger sample size. This would help to generalize the results elicited from the current sample size to a larger population, thus potentially showing the effectiveness of the training program with participants who have varying knowledge of PSD. In the future, videos should be created based on the training material to be inserted into the training program. This may be useful to adapt the training material to a variety of learning styles, which could potentially increase the ability of participants to acquire more knowledge from the information presented in the training slides. Another recommendation is to analyze the data collection from participants using a statistical analysis. This is extremely important to consider as it will show the true effectiveness of the electronic training program on participants and determine whether the training caused the improvements in knowledge and confidence scores across participants. Finally, future research should put a stronger and more detailed emphasis on the use of behavioural interventions for clients who have PSD, as they are useful to know for employees in the field of geriatric care.
References


Using an Electronic Training Program


Appendix A: Informed Consent Form

**Project Title:** Using an Electronic Training Program to Increase Knowledge and Confidence in Staff Members Supporting Seniors and Adults who are Experiencing Symptoms of Dementia and Stroke

**Principal Investigator:** Bronwyn Wardhaugh  
**Name of Supervisor:** Lisa Lynch, M. ADS, BCBA  
**Name of Institution:** St. Lawrence College  
**Name of Institution/Agency:** Not-for-profit Organizations (Agency A* and Agency B*)

*Due to reasons of confidentiality, the names of the agencies are fictional.

**Invitation**
You are being invited to take part in a research study. I am a student in my fourth year of the Honours Bachelor of Behavioural Psychology program at St. Lawrence College. I am currently in a 14-week placement at the Agency A and Agency B. As a requirement of this placement, I am completing a research project called an applied thesis. I would like to ask you for your help to complete this research project. The information on this form will help you understand my project. Please read the information carefully and ask any questions you have before you decide if you want to take part.

**Why is this research being done?**
The topic for my project is post-stroke dementia. I have developed an electronic training program to help staff members at both agencies learn more about post-stroke dementia and the risk factors, preventative measures, and current treatments of post-stroke dementia. I want to study whether the training program is effective. I have created a survey to find out if the electronic training program is successful at making staff members more knowledgeable about post-stroke dementia and more confident in sharing information with others about post-stroke dementia.

**What will you need to do if you take part?**
To be included in this study, you must be currently employed in a part-time or full-time position working between 18-35 hours per week at either agency A or agency B. Exclusion criteria for this study will be volunteers, clients, caregivers, or students who are not actively employed in a part-time or full-time position at either Agency A or Agency B. If you choose to take part in the study, you will be asked to pick a timeslot that works best for you to complete the surveys and the training. You will be given a code from your Executive Director to use in the name section on both surveys. This code will help me to see which agency you work for. You will have three business days to complete the first survey, which will take approximately 10 minutes to complete. You will then complete the electronic training program on the date and at the time that you chose and signed for on the electronic training schedule. There will be a minimum of 48 hours between your completion and submission of the pre-test survey and your commencement
of the electronic training program. Completing the electronic training will take approximately 30-50 minutes and will be completed in one sitting. Three days after you complete the electronic training program, you will be allotted three business days to complete the second survey, which will take approximately 10 minutes to complete.

**What are the potential direct benefits of taking part?**
Benefits of taking part in this research study may include learning more about post-stroke dementia and becoming more confident in sharing this information with clients and caregivers. Additionally, you may appreciate knowing that by taking part in the study, you are helping me with my thesis research that will enable me to obtain my degree.

**What are the potential benefits of this research study to others?**
The potential benefits of this research study to others include increasing awareness of post-stroke dementia to caregivers and families in the community as well as informing clients of the risks, preventative measures, and treatment opportunities if they are concerned about or dealing with the effects of post-stroke dementia. By completing the electronic training program, you may be able to offer better service to your clients who are experiencing or worried about the symptoms of post-stroke dementia.

**What are the potential disadvantages or risks of taking part?**
There are no known risks to participants of this research project. The student researcher will conduct research using the St. Lawrence college database, Queen’s University database, Google Scholar, and websites and textbooks about dementia and strokes found at agency A and B. The research will be primarily conducted at the local library, agency A and B, the researcher’s residence, and at St Lawrence college campus.

**What happens if something goes wrong?**
All participants have different learning styles and abilities. If you have any concerns or negative reactions to the surveys or training program, you may talk to me, your Executive Director, or my college supervisor, Lisa Lynch. If a participant cannot complete the training or wants to withdraw before completion of the training, that participant’s post-test data will not be included in the study.

**Will the information you collect from me in this project be kept private?**
Your completed surveys will be kept completely confidential on a password protected account on a password protected laptop. No identifying information will be required. You will be assigned a code number to enter on the surveys and your name will not be used. The consent forms will be kept in a locked filing cabinet at St. Lawrence College for ten years. After ten years, the consent forms will be shredded. The results from my research are part of my thesis study and will be available at the St. Lawrence College library. The results may also be published in professional journals or presented at professional conferences, but no identifying
information about the agency or participants will be used in any reports, publications, or presentations resulting from this research.

**Do you have to take part?**

Taking part in this study is completely voluntary, whether you choose to take the training and participate in this research or not will have no impact on your employment at your agency. It is up to you to decide if you want to take part in this research project. If you do decide to take part in the study, you will be asked to sign this consent form. If you do decide to take part in this research project, you are free to stop at any time without giving any reason. If you decide to stop, please email me or my college supervisor. Our contact emails are listed below. Please note that if you decide to stop after completing one or both surveys, your data cannot be withdrawn, as the data obtained is anonymous.

**Contact for further information**

This research project has been reviewed and received ethical clearance from the Research Ethics Committee for Behavioural Psychology (REC-P). The project was developed under the supervision of Lisa Lynch, my supervisor from St. Lawrence College and made in collaboration with my agency supervisors, Angela Meraw and Shell-Lee Wert. I appreciate your cooperation. If you have any additional questions, please feel free to ask me, Bronwyn Wardhaugh (BWardhaugh16@student.sl.on.ca). You can also contact my college supervisor, Lisa Lynch (LLynch@sl.on.ca). If you have any concerns about the way this research is being conducted or about your rights as a participant, you may contact the St. Lawrence College Research Ethics Board (SLC-REB) Chair at reb@sl.on.ca.
Consent
If you agree to take part in this research project, please complete the following form and return it to me as soon as possible. A copy of this signed document will be given to you for your own records.
By signing this form, I agree that:

- The study has been explained to me.
- All my questions were answered
- Possible harm and discomforts and possible benefits (if any) of this study have been explained to me.
- I understand that I have the right not to participate and the right to stop at any time.
- I understand that data from the surveys will be kept on a password-secured account on a password-secured computer until May 2019 when the student researcher has completed her thesis.
- I am free now, and in the future, to ask any questions I have about the study.
- I have been told that my personal information will be kept confidential.
- I understand that no information that would identify me will be released or printed without asking me first.
- I understand that I will receive a signed copy of this consent form.

I hereby consent to take part:

<table>
<thead>
<tr>
<th>Participant Printed Name</th>
<th>Signature of Participant</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student Printed Name</th>
<th>Signature of Student</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

***Please keep a copy for your personal records.
Appendix B: Research Ethics Board Approval

October 23, 2018

Student name: Bronwyn Wardhaugh
Student address: RWardhaugh16@student.slon.ca

SLC-REB Reference Number: 2018-RECO9WB

Project Title: Using an Electronic Training Program to Increase Knowledge and Confidence in Staff Members Supporting Seniors and Adults who are Experiencing Symptoms of Dementia and Stroke

Dear Bronwyn:

I am writing to advise you that the Research Ethics Committee – Psychology (REC-P), a subcommittee of the St. Lawrence College Research Ethics Board (SLC-REB), which has been delegated the authority to review and approve SLC Bachelor (Honours) of Behavioural Psychology students’ thesis research protocols, has reviewed and found your thesis research protocol to exceed or satisfy the minimal requirements for the ethical conduct of research involving human participants as put forth by the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans (TCPS2, 2014). You may now begin your participant recruitment at your earliest convenience.

You have six (6) months to complete the project from the time of approval. Should you require more time to complete your project, you will be required to submit a SLC-REB Request for Renewal Form. This must be submitted prior to SLC-REB approval anniversary date. If you are proposing changes to your approved project then you will need to submit prior to implementing your changes a SLC-REB Request for an Amendment Form.

Any adverse events or unanticipated issues during the course of your research must be reported to the SLC-REB as soon as you become aware of them. The SLC-REB reserves the right
to review your file at any time to ensure that research is being conducted in accordance with all applicable SLC Policies and the TCPS2 (2014).

Once your project is complete, you are required to complete a Project Completion/Termination Form. This form must be submitted as a final report about your research to the SLC-REB by no later than April 30, 2018.

Best wishes for the successful completion of your project.

Best Regards,

Jody Souka-Marleau
Co-Chair, Research Ethics Committee-Psychology

cc. Dr. James Morris-Pocock, Chair, SLC-REB
Appendix C: Electronic Training Program Survey

Electronic Training Program Survey

Name *

*Please insert your assigned code here

Section 1: Knowledge

Read each question carefully and completely, then select any and all of the choices that you believe answer the corresponding question.

1. What percentage of stroke survivors will develop dementia following a stroke? *
   - 10%
   - 20%
   - 30%
   - 50%
   - 70%

2. Which of the following are considered controllable risk factors for Post-Stroke Dementia? (check all that apply) *
   - Genetics
   - Diet/Nutrition
   - Age
   - Weight
   - Blood Pressure
   - Stress Level

3. Risk factors that are specific to developing dementia following a stroke include: (check all that apply) *
   - Type of Stroke Experienced
   - Diet/Nutrition
   - Location of Stroke in Brain
   - Severity of Stroke
   - Genetics
   - Time of Day Stroke Occurred
4. By identifying and managing your risk factors, you can reduce the likelihood of developing Post–Stroke Dementia by what percentage? *
  - 10%
  - 25%
  - 50%
  - 60%

5. Which measures are identified by researchers as being beneficial to preventing the onset of Post–Stroke Dementia? (check all that apply) *
  - Taking Aspirin daily
  - Quitting Smoking
  - Becoming more knowledgeable about PSD
  - Reducing alcohol consumption
  - Changing sleeping patterns

6. Some treatment options for clients who have Post–Stroke Dementia include: (check all that apply) *
  - Aromatherapy
  - Hydrotherapy
  - Music therapy
  - Massage therapy
  - Speech therapy

7. Some behavioural intervention techniques that are considered beneficial for Post–Stroke Dementia clients with PRIMARY STROKE SYMPTOMS include: (check all that apply) *
  - Positive Punishment
  - Positive Reinforcement
  - Support Groups
  - Delayed Response Time
  - Antecedent-Based Intervention

8. Some behavioural intervention techniques that are considered beneficial for Post–Stroke Dementia clients with PRIMARY DEMENTIA SYMPTOMS include: (check all that apply) *
  - Delayed Response Time
  - Montessori Method
  - Spaced Retrieval Training
  - Positive Punishment
  - Token Economy
Section 2: Confidence

Read each question carefully and completely, then select a number from the scale that corresponds with your agreement to the question.

1. How well do you feel you understand the risk factors of Post-Stroke Dementia? *

1 2 3 4 5 6 7 8 9 10

Not at all o o o o o o o o o Extremely

2. How well do you feel you understand the current treatments and behavioural interventions of Post-Stroke Dementia? *

1 2 3 4 5 6 7 8 9 10

Not at all o o o o o o o o o Extremely

3. How relevant do you believe the topic of Post-Stroke Dementia is in your current position? *

1 2 3 4 5 6 7 8 9 10

Not at all o o o o o o o o o Extremely

4. How likely are you to share information on risk factors and treatment options for Post-Stroke Dementia to your current clients? *

1 2 3 4 5 6 7 8 9 10

Not at all o o o o o o o o o Extremely

5. How likely are you to conduct your own research on the topic of Post-Stroke Dementia? *

1 2 3 4 5 6 7 8 9 10

Not at all o o o o o o o o o Extremely
Appendix D: Electronic Training Program

Electronic Training Program: Post-Stroke Dementia

Training Instructions
- Use the arrow keys on your keyboard to change slides.
- Read all the information presented on each slide.
- If the slide includes a speaker icon ( ), press the icon to hear a verbal explanation of the information presented on that specific slide.
- Feel free to pause the voiceovers to take any notes on the information provided.

References for all the information presented in this training are included on the last three slides in alphabetical order.

Learning Objectives
- Be able to define Post-Stroke Dementia.
- Be able to list and describe some risk factors, preventive measures, and treatment options for people who have Post-Stroke Dementia.
- Be able to list and describe specific behavioral interventions for people with Post-Stroke Dementia.

The Aging Population
- The population of adults over the age of 65 has consistently increased (Statistics Canada, 2017).
- In less than twenty years, seniors could potentially represent upwards of a quarter of Canada’s entire population (Statistics Canada, 2017).
- In 2011, the percentage of Belleville’s population aged 65 and above was 13.1% (Statistics Canada, 2016).
- In 2016, the percentage of Belleville’s population aged 65 and above was 24.6% (Statistics Canada, 2018).

Relevance of Research
- In 2015, the rate of strokes in Hastings-Prince Edward was approximately 1.2 times the provincial rate (KPLPHL, 2017).
- Between 2003 and 2012, dementia and Alzheimer’s disease was the fourth leading cause of death in Hastings-Prince Edward (KPLPHL, 2017).
- Dementia is a primary cause of disability after having a stroke (Lyi, 2009).
- As the prevalence of developing PSD increases with age, Sehadi, et al. (2006) estimated that one-third of the population will experience a stroke, a diagnosis of dementia, or both.
Definition of Post-Stroke Dementia

- Post-Stroke Dementia is as any subset of dementia that occurs following the occurrence of a stroke (Ley, 2009).
- The condition of developing dementia symptoms and/or receiving a diagnosis of dementia following the occurrence of a stroke is called Post-Stroke Dementia (PSD) (Hu & Chen, 2017).

Prevalence of Post-Stroke Dementia

- The occurrence of a stroke is the second primary cause for the diagnosis of dementia among individuals globally.
- Damage to brain cells caused by a stroke can interfere with typical brain functioning, thus causing a future diagnosis of dementia among individuals (Heart and Stroke Foundation, 2014).
- Approximately 30% of stroke survivors will subsequently develop dementia following the occurrence of their stroke (Mijovic, et al., 2017).
- The incidence rate of developing dementia after experiencing a stroke is approximately 7% after one year and increases to nearly 25% after 25 years (Ley, 2009).

Risk Factors (Controllable)

- Risk factors of PSD are the same as the risk factors for having a stroke (Heart and Stroke Foundation, 2016a).
- Some risk factors that the Heart and Stroke Foundation (2015) identified as controllable are:
  - Hypertension
  - Lack of physical activity
  - Obesity
  - Diagnosis of diabetes
  - High blood pressure
  - Impaired thinking
  - Heavy smoking
  - High stress level

A study of stroke risk factors also identified hypertension and obesity as strong risk factors for a stroke (Park et al., 2015).

Risk Factors (Uncontrollable)

- Some uncontrollable risk factors identified by the Heart and Stroke Foundation (2015) include:
  - Gender
  - Family History

Risk Factors identified by Park et al. (2015) include:
- Age
- Previous Stroke
- Recent Stroke
- Radiation


Risk Factors Specific To PSD

- Medical factors such as hypertension, diabetes, and atrial fibrillation (Boswell, Arnett, Tershakovec, Stithanawatnichai, and Szenas, 2017).
- Age, gender, tobacco use, and low education levels (Boswell, et al., 2009).

- Predicting the likelihood of dementia following a stroke depends on the type of stroke that occurred, the location of the stroke, and the severity of the stroke (Boswell & Kalaria, 2014).
- By monitoring controllable risk factors, the likelihood of developing PSD can be reduced by half (Heart and Stroke Foundation, 2018).

Preventative Measures

- To prevent PSD from occurring in communities, individuals are encouraged to follow similar prevention protocols as one would to prevent a stroke (Heart and Stroke Foundation, 2018; National Stroke Association, 2018).
- May be referred to neurologists, physicians, dietitians, and physiotherapists to help decrease the patients’ controllable risk factors (Heart and Stroke Foundation, 2016).
- Examples of reducing the risk of strokes include increasing daily physical activity, quitting smoking and/or tobacco use, and limiting alcohol consumption (Heart and Stroke Foundation, 2016).
- Becoming more knowledgeable about strokes and their symptoms can help to reduce severe damage following a stroke (National Stroke Association, 2018).

Module IV Review

- Approximately 15% of stroke survivors will subsequently develop dementia following the occurrence of their stroke (Mijovic, et al., 2017).
- Controllable risk factors for a stroke include diet, weight, stress levels, blood pressure, lack of physical activity, etc. (Heart and Stroke Foundation, 2013).
- Specific risk factors for developing dementia after a stroke include the type of stroke, location of the stroke, and the severity of the stroke (Boswell & Kalaria, 2014).
- Preventative measures for PSD include quitting smoking, limiting alcohol consumption, increasing daily physical activity, and increasing knowledge and awareness about strokes (Heart and Stroke Foundation, 2018; National Stroke Association, 2018).

Module III
Post-Stroke Dementia Treatment Options: Generic and Behavioural

Generic Treatment Options and Specific Behavioural Interventions for Symptoms of Post-Stroke Dementia.
Generic Treatment Options

- If the individual with PSD has symptoms that are more similar to those of dementia, treatment options may include physical therapy, occupational therapy, and music therapy (Society of Canada, 2016).

  - **Physical Therapy**
    - Benefits include improved muscle tone, improved balance, and increased mobility.
    - Activities may include stretching, balance exercises, and strengthening.
  
  - **Occupational Therapy**
    - Benefits include improved upper limb strength and coordination, and improved daily living skills.
    - Activities may include tasks such as dressing, feeding, and self-care.
  
  - **Music Therapy** (Blackburn, 2015)
    - Can help improve mood, reduce anxiety, and improve cognitive function.
  
Target Behavioural Symptoms

- Depression
- Agitation
- Aggressive Behaviour (verbal outbursts, physical aggression)
- Non-compliance
- Anxiety
- Low Self-Esteem

- Symptoms vary depending if the client with PSD is primarily presenting symptoms from their stroke or symptoms from their dementia.

Generic Treatment Options

- If the individual with PSD is primarily presenting symptoms of their stroke, the treatment options may include speech therapy, physical therapy, and occupational therapy (McQuaid, 2017).

  - **Speech Therapy**
    - Benefits include improved communication, speech clarity, and overall quality of life.
    - Activities may include exercises to improve speech and language skills.
  
  - **Physical Therapy**
    - Benefits include improved mobility, strength, and balance.
    - Activities may include exercises to improve muscle strength, range of motion, and coordination.
  
  - **Occupational Therapy**
    - Benefits include improved daily living skills and self-care.
    - Activities may include tasks such as dressing, feeding, and self-care.

Behavioural Interventions for Clients with Primary Dementia Symptoms

- **Token Economy** (Blackburn, 2015)
  - Benefits include improved task completion and decreased challenging behaviour.
  - Activities may involve using tokens as a reward system to incentivize desired behaviors.

- **Montessori Method** (Blackburn, 2015)
  - Benefits include improved task completion and decreased challenging behaviour.
  - Activities may involve using the Montessori method to create a structured and purposeful environment.

- **Spaced Retrieval Training** (Blackburn, 2015)
  - Benefits include improved memory and decreased challenging behaviour.
  - Activities may involve using spaced retrieval training to improve memory and task completion.

Module V Review

- **Generic Treatment Options for PSD** (Blackburn, 2015)
- **Physical Therapy**
- **Occupational Therapy**
- **Music Therapy** (Blackburn, 2015)
- **Target Behavioural Symptoms**
- **Behavioural Interventions for Clients with PSD**
- **Token Economy** (Blackburn, 2015)
- **Montessori Method** (Blackburn, 2015)
- **Spaced Retrieval Training** (Blackburn, 2015)

SUMMARY

- As the population ages, the likelihood of developing PSD increases as well.
- With a high percentage of seniors in Belleville, it is important to have resources available.
- Early identification and intervention can help delay the onset of PSD.
- PSD can be managed with a multidisciplinary approach including medication, therapy, and family support.
- Encouraging clients to engage in regular physical and mental activity can improve quality of life.
Module V Review

• Growth-Transition Options for PSD (dementia, anxiety, memory, physical health)
  
  Strategy: 1) Identify key challenges and develop a plan of action to address them. 2) 
  
  • Examples of fictitious interventions for clients with PSD: 
    • Memory training 
    • Physical therapy 
    • Occupational therapy 
    • Social skills training 
    • Music therapy 

  SUMMARY

• As the population ages, the likelihood of developing PSD increases as well. 
  
  • With a high percentage of seniors in Billings, it is important to learn about 
    PSD and be able to address client questions or concerns. 

  REFERENCES

  References

  References
Appendix E: Participant Timeline Handout

ELECTRONIC TRAINING - THESIS TIMELINE

PRE-TEST SURVEY
*You have three business days to complete this survey after the link is e-mailed to you.

Tentative date:
**Tuesday November 20 - Thursday November 22**

ELECTRONIC TRAINING PROGRAM
*You must complete the training in one sitting. The training will take approximately 25-40 minutes. The training is on a USB and can be completed at your convenience. You must wait a minimum of 48 hours following the completion of the pre-test survey to begin the training.

Tentative date:
**Thursday November 22 – Friday November 30**

POST-TEST SURVEY
*You have three business days to complete this survey. You must wait a minimum of 72 hours following your completion of the electronic training program to complete this survey. The link will be e-mailed to you on the day that the first participant completes the electronic training program.

Tentative date:
**Monday November 26 - Friday December 7**
Good Morning All,

This e-mail is regarding the PRE-TEST survey of the student researcher’s thesis study. The link to the survey is provided below. The survey will take between 3-10 minutes to complete. Please DO NOT enter your name anywhere on the survey. Instead, enter the code 2323 in the name box. Once you have entered an answer for all 13 survey questions, please click the SUBMIT button at the very bottom of the page to submit your anonymous survey. You will have three business days to complete this portion of the thesis study. Therefore, please have your survey completed and submitted by **Thursday, November 22, 2018 at 4:30pm.** As a reminder, you must wait **48 hours** after completing the PRE-TEST survey to begin the 40-minute electronic training program. If you have any questions or concerns regarding the survey, feel free to contact the student researcher in the office or via e-mail. Thank you for your participation in the thesis study.

Please follow this link to complete the survey: [https://form.jotform.com/82567756949277](https://form.jotform.com/82567756949277)

**PLEASE ENSURE YOU HAVE SIGNED AND SUBMITTED AN INFORMED CONSENT FORM BEFORE BEGINNING THE PRE-TEST SURVEY**
Appendix G: Agency A Knowledge Section Raw Data

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 (Percentage to develop dementia)</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Q2 (Controllable risk factors)</td>
<td>6</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Q3 (Specific risk factors)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Q4 (Reducing likelihood of PSD)</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Q5 (Preventative measures)</td>
<td>0</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Q6 (Treatment options)</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Q7 (Treatment for stroke symptoms)</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Q8 (Treatment for dementia symptoms)</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Total Participants (n)</td>
<td>7</td>
<td>7</td>
<td>14</td>
</tr>
</tbody>
</table>
### Appendix H: Agency B Knowledge Section Raw Data

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 (Percentage to develop dementia)</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Q2 (Controllable risk factors)</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Q3 (Specific risk factors)</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Q4 (Reducing likelihood of PSD)</td>
<td>1</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Q5 (Preventative measures)</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Q6 (Treatment options)</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Q7 (Treatment for stroke symptoms)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Q8 (Treatment for dementia symptoms)</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total Participants (n)</td>
<td>7</td>
<td>7</td>
<td>14</td>
</tr>
</tbody>
</table>
Appendix I: Agency A Confidence Section Raw Data

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 (Risk factors)</td>
<td>2</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Q2 (Current treatments)</td>
<td>2</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Q3 (Relevancy of topic)</td>
<td>5</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Q4 (Sharing information from training)</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Q5 (Conducting own research)</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Total Participants (n)</td>
<td>7</td>
<td>7</td>
<td>14</td>
</tr>
</tbody>
</table>
Appendix J: Agency B Confidence Section Raw Data

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 (Risk factors)</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q2 (Current treatments)</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Q3 (Relevancy of topic)</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Q4 (Sharing information from training)</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Q5 (Conducting own research)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Total Participants (n)</td>
<td>7</td>
<td>7</td>
<td>14</td>
</tr>
</tbody>
</table>
Appendix K: Agency A and Agency B Pre-Test and Post-Test Knowledge Results Graph

Figure K1. Percentage of Participants at Agency A and Agency B who Submitted the Correct Answer Per Question on the Knowledge Section of the Pre-Test and Post-Test Survey
Figure L1. Percentage of Participants at Agency A and Agency B Who Scored Eight or Above Per Question on the Confidence Section of the Pre-Test and Post-Test Survey