Deconstructing the Delivery of Peer Mentorship for Persons with Spinal Cord Injury

by

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DECONSTRUCTING THE DELIVERY OF PEER MENTORSHIP FOR PERSONS WITH SPINAL CORD INJURY

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Abstract

Spinal cord injury (SCI) peer mentorship typically involves interactions between two individuals where one (the mentor) provides support to the other (the mentee). Mentees associate a wide variety of positive physical, and psychosocial outcomes with this service. Interestingly, despite the known benefits of peer mentoring, little is known about the impact of certain delivery characteristics (i.e., interaction modality) on the quality of this service. Given how multifaceted this service is, understanding the impact that specific delivery characteristics have on the quality of peer mentorship is critical for ensuring that peer mentorship programs are providing the best possible service. This dissertation aimed to deconstruct the delivery of peer mentorship to determine what delivery characteristics are currently utilized in SCI peer mentorship research and community programming and examine the impact of interaction modality on leadership behaviours and counselling skills of peer mentors. First, a scoping review was conducted to provide a comprehensive synthesis of the research evidence regarding delivery characteristics of research-based peer mentorship interventions for people with SCI. Second, an environmental scan was conducted to support the scoping review by examining delivery characteristics of peer mentorship programs delivered by community organizations across Canada. Third, a qualitative study, informed by the tenets of transformational leadership theory (Bass & Riggio, 2006) was performed to examine leadership behaviours used by SCI peer mentors. Lastly, an experimental within-subjects design was used to study the effects of interaction modality on the leadership behaviours, motivational interviewing skills and behaviour change techniques used by SCI peer mentors. Overall, SCI peer mentorship is being delivered through a variety of modalities (e.g., telephone, video-chat) in both research and community-based programs. During SCI peer mentorship, mentors use a range of leadership behaviours and counselling skills, but the use of these behaviours/skills does not seem to differ between telephone and video-chat interactions.
While Canadian peer mentorship programs can have confidence that similar quality mentorship is being provided through telephone and video chat modalities, further research is needed to examine the impact of other interaction modalities (e.g., face-to-face) and delivery characteristics (e.g., matching criteria) on the quality of SCI peer mentorship services.
Lay Summary

Spinal cord injury (SCI) peer mentorship involves interactions between two individuals where one (the mentor) provides support to the other (the mentee). An increased understanding of the benefits of peer mentorship has led to growing interest about how best to deliver this service. This dissertation examined how peer mentorship interventions and programs are delivering their services and the impact of interaction modality on the quality of peer mentorship. A review of current research evidence, an environmental scan of community programming, a qualitative study, and a controlled laboratory experiment were conducted. Overall, peer mentorship is being delivered through a variety of different interaction modalities. Importantly, peer mentors’ behaviours, and the quality of the mentoring relationship is minimally affected whether the interaction occurs through the telephone or video-chat. Future research should examine the impact of other interaction modalities and delivery characteristics on the quality of peer mentorship services for people with SCI.
Preface

I declare that the composition of this thesis in its entirety is my own. In the case of co-authored work, all sources have been acknowledged and contributions to each study are outlined below. All experimental chapters in this thesis were approved by the respective research ethics boards at McMaster University, the University of British Columbia (Vancouver), and the University of British Columbia (Okanagan).

Chapter 2 (Study 1)


Data Collection: University of British Columbia (Okanagan)
Data Analysis: University of British Columbia (Okanagan)
Manuscript/Chapter Writing: University of British Columbia (Okanagan)

R. B. Shaw’s role in Study 1:

- Conceived scoping review searches and methods
- Conducted full systematic search and study selection process
- Completed full data extraction and charting
- Primary and corresponding author of manuscript, drafted manuscript, provided revisions for publication

Role of co-authors in Study 1:

- KMG provided guidance for all stages of the project
- SVCL assisted in screening titles during study selection
- KRT assisted in data extraction and charting
• KMG, SVCL and KRT revised and approved of the final version of the manuscript before submission to *Health Communication*

**Chapter 3 (Study 2)**


Data Collection: University of British Columbia (Okanagan)
Data Analysis: University of British Columbia (Okanagan)
Manuscript/Chapter Writing: University of British Columbia (Okanagan)

R. B. Shaw’s role in Study 2:

• Author of ethics application to University of British Columbia Research Ethics Board
• Conceived the study design and methods
• Responsible for creating material used to recruit participants
• Lead investigator responsible for developing measures and designing data collection instrument
• Administered all study protocols and measures and data collection
• Completed all data input, analysis and interpretation
• Primary and corresponding author of manuscript, drafted manuscript, provided revisions for publication

Role of co-authors in Study 2:

• KMG provided guidance for all stages of the project
• CBM and BA assisted with the study design and participant recruitment
• SNS assisted with study design and developing study measures
• KMG, SNS, and CBM, assisted RBS with interpretation of the data
• KMG, SNS, CBM, and BA revised and approved the final version of the manuscript before submission to *BM C Public Health*

Ethics Approval: This study protocol was approved by The University of British Columbia Okanagan Research Services Behavioural Research Ethics Board (BREB H17-00578).

**Chapter 4 (Study 3)**


Data Collection: University of British Columbia (Vancouver)
Data Analysis: McMaster University
Manuscript/Chapter Writing: McMaster University

R. B. Shaw’s role in Study 1:
• Conceived the research question
• Conducted the full thematic analysis of interview transcripts (coding, theming, refining, and reporting)
• Primary and corresponding author of manuscript, drafted manuscript, provided revisions for publication

Role of co-authors in Study:
• KMG provided guidance for all stages of the project
• CBM and SC assisted with the study design and participant recruitment
• KMG and CBM assisted RBS with interpretation of the data
• KMG, CBM, and SC revised and approved the final version of the manuscript before submission to *Rehabilitation Psychology*
Chapter 5 (Study 4)


Data Collection: University of British Columbia (Okanagan)
Data Analysis: University of British Columbia (Okanagan)
Manuscript/Chapter Writing: University of British Columbia (Okanagan)

R. B. Shaw’s role in Study 4:
- Author of ethics application to University of British Columbia Research Ethics Board
- Conceived the study design and methods
- Responsible for creating material used to recruit participants
- Lead investigator responsible for selecting measures and data collection instruments
- Administered all study protocols and measures and data collection
- Completed all data input, analysis and interpretation
- Primary and corresponding author of manuscript, drafted manuscript, provided revisions for publication

Role of co-authors in Study 2:
- KMG, HLG provided guidance for all stages of the project
- CBM assisted with the study design and participant recruitment
- EEG, MV, HGL assisted with data analysis
- KMG, HGL, MV, EEG assisted RBS with interpretation of the data
- EEG, KMG, HGL, MV, CBM revised and approved the final version of the manuscript before submission to *Patient Education & Counselling*

Ethics Approval: This study protocol was approved by The University of British Columbia Okanagan Research Services Behavioural Research Ethics Board (BREB H20-01064).
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## List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>BCT</td>
<td>Behaviour change technique</td>
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<tr>
<td>CLAS</td>
<td>Coaching Leadership Assessment System</td>
</tr>
<tr>
<td>CPA</td>
<td>Canadian Paraplegic Association</td>
</tr>
<tr>
<td>HCCQ</td>
<td>Health Care Climate Questionnaire</td>
</tr>
<tr>
<td>IKT</td>
<td>Integrated knowledge translation</td>
</tr>
<tr>
<td>MI</td>
<td>Motivational interviewing</td>
</tr>
<tr>
<td>PABAK</td>
<td>Prevalence and bias-adjusted kappa</td>
</tr>
<tr>
<td>RE-AIM</td>
<td>Reach, Effectiveness, Adoption, Implementation, Maintenance</td>
</tr>
<tr>
<td>SCI</td>
<td>Spinal cord injury</td>
</tr>
<tr>
<td>SCI BC</td>
<td>Spinal cord injury British Columbia</td>
</tr>
<tr>
<td>SCI Canada</td>
<td>Spinal cord injury Canada</td>
</tr>
<tr>
<td>SDT</td>
<td>Self-determination theory</td>
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<tr>
<td>SSG</td>
<td>State space grid</td>
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<tr>
<td>TFL</td>
<td>Transformational leadership</td>
</tr>
<tr>
<td>WAI</td>
<td>Working Alliance Inventory</td>
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<tr>
<td>YMCA</td>
<td>Young Men’s Christian Association</td>
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Chapter 1: Introduction

1.1 Impact of Spinal Cord Injury

The most recent Canadian data estimate that nearly 86,000 people have a spinal cord injury (SCI) (Noonan et al., 2012). However, given the estimated incidence rate of roughly 4,000 per year for both traumatic (e.g., car accidents, falls) and non-traumatic (e.g., spinal tumours, congenital diseases) SCI, we can predict that today over 100,000 people in Canada have a SCI. Though this figure may appear relatively small and insignificant, the severe physical, social, and psychological implications of sustaining a SCI can have a profound effect on the individual and society.

Long-term health complications of a SCI, including pressure ulcers, chronic pain, bladder and bowel dysfunction, autonomic dysreflexia, cardiovascular complications and respiratory problems place strain on hospitals, medical professionals and attendants/service workers (Chan et al., 2014). The inability of workplaces to adapt to an individual’s impaired physical functioning following a SCI can complicate obtaining or returning to employment which places additional strain on public/government services (e.g., disability support programs) (Chan et al., 2014). The complex interaction of secondary health conditions and physical impairment associated with a SCI can also change the dynamics of the injured individual’s social relationships and impair their ability to participate in social activities (Barclay et al., 2016; Craig et al., 2015; Piatt et al., 2016). This reduced social participation places a person with a SCI at an increased risk of experiencing long term social isolation and depression which are known risk factors for all-cause morbidity and mortality (Kennedy & Garmon-Jones, 2017; Williams & Murray, 2015).
The totality of these challenges has an alarming economic impact. Some estimates place the financial burden of a SCI between $1.47-$3.03 million Canadian over the course of an individual’s lifetime (Krueger et al., 2013). Moreover, in Canada alone, the annual economic burden associated with SCI is $2.67 billion (Krueger et al., 2013). These numbers are staggering and could increase as the incidence of SCI is expected to rise with the aging population (Noonan et al., 2012).

Interventions and public services that help individuals with a SCI manage and overcome the challenges of living with a SCI play an important role in improving their quality of life and reducing the strain on public health care and government services. For example, telephone-based counseling services that promote physical activity (e.g., Chemtob et al., 2019; Latimer-Cheung et al., 2013; Tomason et al., 2018) have the potential to improve the health of people with a SCI thereby reducing SCI-related health complications that strain health care systems. Vocational services that actively engage people with a SCI in job searching and on-the-job support can help improve employment outcomes and potentially reduce the number of individuals relying on government support programs (Ottomanelli et al., 2015; Sherman et al., 2004; Trenaman et al., 2015). Another widely available service in North America with the potential to reduce the economic impact of SCI, while simultaneously improving overall well-being and quality of life, is peer mentorship.

1.2 Peer Mentorship Research in the General Population

While the field of peer mentorship research is relatively young, mentoring, as an archetype, has origins dating back to Greek mythology. In Homer’s *The Odyssey*, Mentor was a wise, responsible friend entrusted to advise and guide Odysseus (Homer, 2015). Modern-day definitions of mentorship vary greatly (Crisp & Cruz, 2009), but the majority incorporate this
idea; an individual with greater experience imparting wisdom and sharing knowledge with a less experienced mentee. Peer mentorship is distinguished from general concepts of “peer-support” and “peer-led programming” in that peer mentorship is deliberate, purposeful, and unidirectional. Peer mentors function to support their mentee whereas in peer support, the relationship tends to focus on mutual support being provided between individuals (Hayes & Balcazar, 2008).

Kathy Kram (1988) planted the theoretical foundation for the field of peer mentorship research by defining the construct of mentoring within a work environment. Her book, “Mentoring at Work: Developmental Relationships in Organizational Life”, ignited a program of research that crosses disciplines, professions, continents, and population groups (e.g., Lindsay et al., 2016; Petosa & Smith, 2014; Lorenzetti et al., 2019). This body of peer mentorship literature has uncovered a host of benefits associated with peer mentorship including improved psychosocial outcomes (e.g., self-efficacy, motivation, well-being), work outcomes (e.g., career advancement, skill acquisition), academic outcomes (e.g., writing/research skills) and communication outcomes (e.g., active listening, providing critical feedback). These outcomes have been reported across a variety of sectors including health care, government, business, education, and sports. Within disability populations, the benefits of peer mentorship have been investigated using both qualitative (e.g., Balcazar et al., 2011; Hillier et al., 2019; Kessler et al., 2014; Veith et al., 2004) and quantitative (e.g., Bell, 2012; Heppe et al., 2020; Powers et al., 2012) methods, and across various disability types including physical, visual, hearing, intellectual, learning, and mental illness (Athamanah et al., 2019).

1.3 Peer Mentorship for People with Spinal Cord Injury

The history of SCI peer mentorship in Canada dates to the years following World War II. John Counsell, a Lieutenant who incurred a SCI during the Dieppe Raid, would visit veterans
receiving treatment at the Christie Street Hospital in Toronto and talk to them about their future. These interactions are likely the first evidence of informal SCI peer mentorship in Canada.

Counsell, along with a few other injured veterans, swiftly established the Canadian Paraplegic Association (CPA) in 1945 to serve as an association to support injured veterans with a SCI. The CPA’s mandate was to minimize social barriers faced by persons with disabilities so that they could benefit from an improved quality of life. Within a year, the CPA would establish chapters in Manitoba, Quebec, and Ontario, and by the 1950’s, chapters would be established coast-to-coast. Present day SCI peer mentorship remains strong in Canada with this service being provided by community organizations in each of the 10 provinces.

Despite evidence that certain CPA chapters have been providing some form of peer mentorship service since 1946 (Shaw et al., 2019), it’s not until Boschen et al.’s (2003) paper, describing factors influencing community reintegration following a SCI, that we see evidence of the benefits of Canadian SCI peer mentorship published in the academic literature. The qualitative portion of Boschen et al.’s study, involving focus groups with 34 Canadians with a SCI, identified that having access to peer mentorship is important to facilitate successful reintegration following a SCI. Specifically, the authors stated that, “Our respondents were also very vocal in their support of peer mentoring and peer support programmes. This underscores the need for rehabilitation programmes and community services to offer both informal and formal opportunities for individuals to share advice and support with peers, to facilitate the adjustment process”.

Since the publication by Boschen et al. (2003), a strong foundation of SCI peer mentorship research has been established in Canada. Leading the way is the Canadian Spinal Cord Injury Peer Mentorship Community-University Research Group; A community-university
partnership comprising scientists and representatives from two universities and five community organizations. Together, this group of stakeholders and researchers are using an integrated knowledge translation approach, and a systematic set of studies, to co-create a SCI peer mentorship evaluation tool (Canadian Spinal Cord Injury Peer Mentorship Community-University Research Group, 2020).

The work being done by the Canadian Spinal Cord Injury Peer Mentorship Community-University Research Group, compliments the growing international research on the topic of SCI peer mentorship. Though mainly descriptive, research has demonstrated peer mentorship to be beneficial for both mentors and mentees with a SCI. Some of these benefits include improved self-efficacy and sense of purpose, increased knowledge of resources, increased relatedness, and reduced stress (e.g., Divanoglou & Georgiou, 2017; Gassaway et al., 2017; Houlihan et al., 2017; Ljungberg et al., 2011; Veith et al., 2004).

Importantly, benefits of peer mentorship have been reported in several countries (e.g., Norway, New Zealand, USA, Sweden) demonstrating the universal value of this service. Within Canada, evidence suggests that peer mentorship has an important role in promoting participation (i.e., outdoors, health, work/education, social), life satisfaction, positive coping strategies, self-confidence, and motivation for mentees (Beauchamp et al., 2016; Chemtob et al., 2018; Munce et al., 2014; Rocchi et al., 2018; Sweet et al., 2018). And, while Canadian research investigating outcomes for mentors is minimal, international research suggests mentors can experience an increased sense of purpose, self-worth, relatedness and satisfaction (e.g., Balcazar et al., 2011; Hernandez, 2005; Weitzner et al., 2011).
1.4 Delivery of Spinal Cord Injury Peer Mentorship

The last two decades of SCI peer mentorship research has consisted predominately of descriptive studies examining outcomes of peer mentorship (e.g., Balcazar et al., 2011; Shem et al., 2011; Sweet et al., 2018; Veith et al., 2006). Although important, this body of research has largely failed to investigate how specific delivery characteristics of peer mentorship may impact the observed outcomes for both mentees and mentors. When deconstructed into its individual components, the delivery of peer mentorship is a complex process. Figure 1 below provides a glimpse into the variety of characteristics associated with peer mentorship interactions (Barclay & Hilton, 2019). Each of these characteristics could potentially impact the quality and outcomes of peer mentorship. For example, the frequency by which mentors and mentees interact and how they are matched (e.g., age, injury level, similar interests) could impact relatedness between dyads (Gainforth et al., 2019; Martin Ginis et al., 2018). Similarly, how mentors are trained, and how they interact with mentees (e.g., in-person, telephone) could affect mentors’ use of leadership behaviours, communication skills, and behaviour change techniques (Gayed et al., 2019). Lastly, the model of mentorship (e.g., having one mentor meet with several mentees) could limit a mentor’s ability to provide specific, personalized feedback or advice that is targeted towards each mentee’s individual needs.

As these delivery characteristics are interrelated, modification to one could impact another. For example, the peer mentorship setting (e.g., community versus hospital) could impact the mode of interaction by which mentors and mentees communicate (e.g., phone versus in-person). Both the setting and communication mode could impact the effectiveness of the mentorship. Gassaway et al. (2017) provided an example of this complexity in their combined hospital/community randomized controlled trial investigating the effects of peer mentoring on
self-efficacy and hospital readmission for individuals with a SCI. During the in-patient phase of the trial, mentors interacted with mentees weekly, face-to-face. However, once mentees were discharged to the community, interactions took place using a variety of mediums including face-to-face, telephone, and email. Though the study reported positive outcomes for mentees, particularly increased self-efficacy, we are left wondering what impact interaction modality may have had in moderating the results. Perhaps mentees who continued to receive face-to-face interactions post-discharge experienced greater increases in self-efficacy compared to those who only interacted through email.

These types of questions and concerns regarding how delivery characteristics impact the quality of SCI peer mentorship have been mainstays in discussion and future-directions sections of published manuscripts for over a decade (e.g., Boschen et al., 2003; Houlihan et al., 2017; Lucke et al., 2004; Martin Ginis et al., 2018). Yet, despite the consensus belief that delivery
characteristics need to be investigated, a dearth of research on the topic remains. Given that
decisions concerning delivery characteristics have the potential to impact both controlled peer
mentorship research interventions (e.g., Houlihan et al., 2017; Gassaway et al., 2017; Martin
Ginis et al., 2018) and peer mentorship community programming, this area of research warrants
attention.

1.5 Gaps in the Literature

Peer mentorship has long been viewed as a valuable service for people with a SCI;
International and domestic researchers continue to investigate the outcomes of peer mentorship
for both mentees and mentors using primarily descriptive designs (e.g., Balcazar et al., 2011;
Shem et al., 2011; Sweet et al., 2018; Veith et al., 2006). However, a recent uptick in the number
of randomized controlled trials investigating SCI peer mentorship (e.g., Gassaway et al., 2017;
Houlihan et al., 2017; Martin Ginis et al; 2018) demonstrates the concerted attention this topic is
starting to receive. Unfortunately, due to the scarcity of evidence, researchers designing peer
mentorship interventions have made decisions about how to deliver their interventions without
empirical data to support their decisions. It is not known, for example, if peer mentorship is more
effective when delivered over the phone or in-person. The optimal frequency of peer mentorship
sessions is also unknown. Researchers are left to make arbitrary decisions about these and other
delivery characteristics when designing their interventions. For better or for worse, these
decisions could impact the extent to which mentors share information, connect with mentees, and
form trustworthy relationships. Of concern, researchers may be potentially stunting the overall
quality of peer mentorship, which could render the service ineffective.

The lack of knowledge concerning optimal delivery characteristics also impacts
community-based peer mentorship programming. Currently in Canada there are several non-
profit organizations delivering peer mentorship to the SCI population (Shaw et al., 2019). As funding for non-profit organizations is often unpredictable, it is vital that these organizations are armed with the best possible research evidence to design and implement optimal programming. Without systematically investigating the impact of delivery characteristics in controlled research settings, we are unable to make informed recommendations for designing interventions let alone deliver real-world peer mentorship programming. Understanding the impact that specific delivery characteristics have on the quality of peer mentorship is critical for ensuring that these community programs remain in existence and are not defunded due to a lack of perceived or actual effectiveness.

1.6 General Purpose of the Dissertation

Though research has demonstrated the benefits of peer mentorship, little is known about what makes this service effective. Given the complexity of delivering peer mentorship, research needs to begin isolating specific delivery characteristics by deconstructing the service into its various components. This deconstruction would allow for the impact of specific delivery characteristics to be examined and create a starting point to systematically determine the factors that contribute to the successful delivery of peer mentorship. As such, this dissertation set out to determine what delivery characteristics are currently utilized in SCI peer mentorship research and community programming and explore the impact of interaction modality on leadership behaviours and counselling skills of peer mentors.

First, a scoping review was conducted to provide a comprehensive synthesis of the research evidence regarding the design and delivery characteristics of research-based peer mentorship interventions for people with SCI. Second, an environmental scan using the Reach, Effectiveness, Adoption, Implementation, Maintenance (RE-AIM) framework (Glasgow et al.,
1999) was conducted to support the scoping review by examining delivery characteristics of peer mentorship programs delivered by community organization across Canada. Using the evidence gleaned from the above studies, peer mentor training was identified as an area of research that required attention. As such, a qualitative study, informed by the tenets of transformational leadership theory (Bass & Riggio, 2006) was performed to inform the content of future peer mentor training programs by examining leadership behaviours used by SCI peer mentors. Lastly, to further contribute to evidence-based decisions about how peer mentorship is delivered, an experimental within-subjects design was used to study the effects of interaction modality on the leadership behaviours and counselling skills of SCI peer mentors. An overview of the objectives of each chapter is presented below.

1.7 Chapter Objectives

1.7.1 Chapter 2

Objectives: The primary objective of the scoping review in Chapter 2 was to describe the various intervention characteristics employed by peer mentorship studies in the academic literature for adults with disabilities. Primarily, the review focused on documenting the modalities and frequency of interactions and the rationale for these intervention decisions. The secondary objective was to document the results of studies testing relationships between the outcomes of peer mentorship and interaction modality or frequency. Lastly, by cataloguing this evidence, this review aimed to identify methodological issues and research gaps in this body of literature to formulate recommendations for future research.

1.7.2 Chapter 3

Objectives: The primary objective of the study described in Chapter 3 was to conduct an environmental scan of SCI peer mentorship programs delivered by community organizations in
Canada. The scan employed the RE-AIM framework to evaluate the collective impact of SCI peer mentorship programs across Canada while simultaneously documenting the peer mentorship delivery characteristics of each program. A secondary objective of this study was to provide a set of recommendations to inform future research and application of the RE-AIM framework in community settings. The results generated from this study, in addition to those reported in Chapter 2, helped inform the research questions for Chapters 4 and 5.

1.7.3 Chapter 4

**Objective:** The objective of the qualitative study described in Chapter 4 was to investigate the leadership behaviours of SCI peer mentors from their own perspectives. The study was informed by transformational leadership theory and involved semi-structured interviews with 12 experienced peer mentors belonging to SCI community organizations in Canada. A directed content analysis was performed to categorize peer mentors’ behaviours into the four leadership behaviour categories described by transformational leadership theory (Bass & Riggio, 2006).

1.7.4 Chapter 5

**Objective:** The objective of the study described in Chapter 5 was to examine how interaction modality influences the use of leadership behaviours and counselling skills by SCI peer mentors. The leadership behaviours examined in this study were identified in Chapter 4. This within-subjects experiment made use of Gridware, a state space grid software that allowed for conversation patterns between mentors and mentees to be visualized.

1.8 Summary

A scoping review, environmental scan, descriptive qualitative study, and within-subjects experimental study were undertaken in order to contribute to the empirical literature that is
needed to further our understanding of what delivery characteristics are currently utilized in SCI peer mentorship interventions/programs and how interaction modality impacts the leadership behaviours and counselling skills of peer mentors. These studies are presented in the subsequent four chapters, followed by a general discussion summarizing how this dissertation has contributed to the literature on peer mentorship for persons with a SCI.

2.1 Overview

Peer mentors are individuals who have successfully faced a particular experience and can provide good counsel and empathetic understanding to help another person through a comparable experience (Hayes & Balcazar, 2008). Peer mentorship can be defined as a peer interaction that aims to provide encouragement, counsel, and information to individuals who share similar lived experiences (Canadian Spinal Cord Injury Peer Mentorship Community-University Research Group, 2020). Peer mentorship is distinguished from general concepts of “peer-support” and “peer-led” in that peer mentorship is deliberate, purposeful, and unidirectional. Peer mentors function to support their mentee whereas in peer support the relationship tends to focus on mutual support being provided between individuals. Peer mentors often benefit from the peer mentorship relationship (e.g., improved sense of purpose; Shaw et al., 2018; Sweet et al., 2018), but this is not their primary purpose for mentoring (Hayes & Balcazar, 2008).

Through peer mentorship, valuable information is exchanged, including information relating to personal self-care, general health, prevention of secondary conditions, and quality of life (Gassaway et al., 2017; Houlihan et al., 2017; Ljungberg et al., 2011; Martin Ginis et al., 2018). Importantly, a growing body of research indicates that people with disabilities can derive various physical, social and psychological benefits from peer mentorship (e.g., motivation, confidence, self-efficacy, participation, life satisfaction) (Gassaway et al., 2017; Houlihan et al., 2017; Martin Ginis et al., 2018; Sweet et al., 2016). To illustrate, a recent systematic review of peer mentorship interventions involving people with acquired brain injury reported that peer mentors positively influenced aspects of social support, coping, behavioral control and physical
quality of life of mentees and their caregivers (Wobma et al., 2016). Yet, while experimental
peer mentorship research for people with disabilities (e.g., stroke, spinal cord injury, traumatic
brain injury) has focused mainly on psychosocial and health outcomes of peer mentorship, less
attention has been paid to characteristics of the delivery of the peer mentorship (e.g., how
mentors and mentees interact and their frequency of communication) and how these
characteristics may impact participant outcomes.

For instance, in two recent randomized controlled trials (Gassaway et al., 2017; Houlihan
et al., 2017), a peer mentorship intervention was delivered to people with disabilities through
various modalities (e.g., face-to-face, telephone) and at different frequencies (e.g., weekly, bi-
weekly). However, neither study reported testing whether the investigated health outcomes
varied across the mentor-mentee interaction modalities or frequencies. An understanding of the
moderating effects of mentor-mentee interaction modality and frequency would add to the
emerging literature on factors that impact the effectiveness of peer mentorship (Gainforth et al.,
2019; Martin Ginis et al., 2018). Understanding the effects of these delivery characteristics will
also be valuable for designing, testing, and implementing future peer mentorship interventions,
including those designed to improve health outcomes for people with disabilities.

Currently there are no best practice standards for designing peer mentorship interventions
for people with disabilities. This gap could be due to a lack of research investigating the impact
of specific characteristics (e.g., ideal matching criteria, preferred interaction frequency and
modality) of the mentorship experience. For example, prior to Gainforth et al. (2019), no study
systematically examined the preferred criteria for matching peer mentors with mentees with a
disability. Instead, mentors typically get matched with mentees based on similar demographic
characteristics such as age, gender, and level of injury (Gassaway et al., 2017; Hanks et al., 2012;
Veith et al., 2006). This approach is not evidence-based. Gainforth et al. (2019) provided empirical evidence for matching based on common lived experiences and shared interests as opposed to common demographics. These findings now provide researchers with evidence on which to base their decisions for matching mentors with mentees in future intervention studies.

Peer mentorship intervention research is sorely needed to design more effective community-based peer mentorship programs (Shaw, Sweet, et al., 2019). However, there is limited research evidence to inform key research design decisions. For instance, when designing peer mentorship interventions, researchers are forced to select the mentor-mentee interaction modality and frequency without knowing the impact of these decisions on the effectiveness of their intervention (Gassaway et al., 2017; Houlihan et al., 2017; Martin Ginis et al., 2018). In an environment of increasing competition for funding (Bloch & Sørensen, 2015), researchers should be wary of implementing large scale peer mentorship interventions without fully understanding intervention delivery characteristics that may influence effectiveness. Moreover, it is virtually impossible to make recommendations for delivering real-world peer mentorship interventions without first studying the effects of these delivery characteristics in controlled research settings.

In summary, researchers testing peer mentorship interventions have made intervention delivery decisions without empirical data to support their decisions. Such decisions should be evidence-informed and not simply based on the beliefs about what may be effective. A systematic and comprehensive review of the literature would help researchers determine the impact of these characteristics on mentee outcomes. As such, the overarching purpose of this review was to describe research evidence from peer-reviewed, published studies investigating peer mentorship for adults with disabilities. The primary objective was to document the modalities and frequency of interactions and the rationale for these intervention decisions. A
secondary purpose was to document the results of studies testing relationships between the outcomes of peer mentorship and interaction modality or frequency. Lastly, by cataloguing this evidence, we aimed to identify methodological issues and research gaps in this body of literature to formulate recommendations for future research.

2.2 Method

A scoping review methodology was employed, as the field of disability-specific peer mentorship literature is still emerging and the paucity of randomized controlled trials would make a systematic review difficult (Levac et al., 2010). A scoping review is useful when an overview of the available literature is needed to formulate future research priorities (McKinstry et al., 2014). This scoping review followed the methodology developed by Arksey and O’Malley (2005) as well as the method enhancements suggested by Levac et al. (2010). According to these frameworks, researchers should follow six steps when undertaking a scoping review: 1) Identify the research question. 2) Identify relevant studies. 3) Select studies. 4) Chart the data. 5) Collate, summarise and report the results. 6) Consult with relevant stakeholders. The protocol for this review was published on Open Science Framework (Shaw, Lawrason, et al., 2019).

2.2.1 Stage 1: Identifying the Research Question

Consultations between the research team and key stakeholders from community disability organizations led to five distinct research questions: 1) What interaction modalities were utilized in peer mentorship studies for adults with disabilities? 2) What rationales were provided for selected modalities in peer mentorship studies? 3) How frequently did mentors and mentees interact during their participation in peer mentorship studies? 4) What rationales were provided for selected interaction frequencies in peer mentorship studies? 5) How were outcomes influenced by modality and interaction frequency in peer mentorship studies?
2.2.2 Stage 2: Identifying Relevant Studies

Relevant studies were identified by searching electronic databases of the published literature including: MEDLINE, EMBASE, PsycINFO, CINAHL, Web of Science, and SPORTDiscus. These databases represent the disciplines where peer mentorship research is likely conducted and were selected through consultations with a library scientist. Authors also hand searched the reference lists of included studies identified through the search process to identify additional studies of relevance and the first author (RBS) searched his personal files. Lastly, to ensure all potential studies were captured by the search, a bibliography of the included articles was circulated to the scoping review team, as well as to a researcher with expertise in peer mentorship for people with disabilities, with a request to check for missing studies. Examples of terms used in the literature search included: peer support or peer mentor* or peer counsel*, disability* or impairment. Multiple terms such as ‘peer’ along with, ‘support’, ‘mentorship’, ‘counseling’, or ‘navigator’ were used to account for the varying terms used to describe peer mentorship in the literature. Terms were searched as both keywords (in the title, abstract, or main text), and subject headings (e.g., MeSH) as appropriate. After finalizing the MEDLINE search strategy, it was adapted to the syntax and subject headings of the other databases. The first author (RBS) conducted all searches with no limits (i.e., study design, language, date). All citations returned by the search process were downloaded and exported to RefWorksTM, an online web-based bibliography and database software platform. Duplicate articles were identified and removed from the database.

2.2.3 Stage 3: Selecting Studies

Two levels of screening were performed: 1) Title and abstract review. 2) Full text review. The first and second authors independently screened the titles and abstracts against the inclusion
criteria. The criteria were tested on a sample of abstracts prior to beginning the review to ensure that they were robust enough to capture any articles that may relate to peer mentorship. Full reports for all titles/abstracts that appeared to meet the inclusion criteria were obtained. The first and second authors then independently screened the full text reports against the inclusion criteria. Authors sought guidance from the third author when necessary to resolve questions about article eligibility. All disagreements were resolved through discussion until full consensus was obtained. During the second level of screening (full text review), reasons for excluding studies were recorded. Neither of the review authors were blinded to the journal titles, study authors, or institutions during both stages of the screening process.

The published protocol presents the full article inclusion and exclusion criteria (Shaw, Lawrason, et al., 2020). Briefly, articles were included if they described a peer mentorship study where participants were adults (18+) with a reported acquired or congenital physical disability (i.e., spinal cord injury, cerebral palsy, multiple sclerosis, amyotrophic lateral sclerosis, stroke, spina bifida, spinal stenosis, amputee, muscular dystrophy, fibromyalgia). Other disability types (e.g., hearing impairments) were not included to mitigate the complexity of addressing the research questions when accessibility requirements would likely dictate the selection of intervention characteristics. Limiting the inclusion criteria to this subset of disability populations also made the scope of the review manageable and the results interpretable. Studies had to be original research articles that either employed or described a peer mentorship intervention with a 1:1 (mentor:mentee) protocol. Studies were excluded if they were in a language that the research team or Google Translate could not translate, if study participants had a disability other than the ones listed in the inclusion criteria, or if the study described a peer mentorship intervention or protocol other than a 1:1 relationship (e.g., one-to-many, group-based). One-to-many and group-
based protocols were excluded as the distinction between peer support and peer mentorship in these studies is vague. All study designs were included.

2.2.4 Stage 4: Charting the Data

The first and third authors completed the data extraction process using a form developed by the first author. Initially, the first author extracted and charted the following data from each article: author(s), year of publication, study design, study setting (hospital, community), study duration, participant characteristics (age, gender, disability type), and characteristics of the peer mentorship program (i.e., interaction modalities, interaction frequencies, mentor training information). The third author then checked the extractions to ensure all relevant data were captured. The authors were not blinded during the extraction and charting process.

Data were extracted according to which outcome areas the intervention was aiming to address for mentees. Barclay and Hilton (2019) identified eight intervention outcome areas in their scoping review of peer-led interventions for people with spinal cord injury. After discussions with the research team, this list was modified to include outcome areas most relevant to the disability populations examined by this review. These included: health self-management (e.g., prevention of secondary health conditions); health service usage (e.g., hospital readmissions); community integration (e.g., social participation); employment and education outcomes; psychological outcomes (e.g., depression, self-efficacy); knowledge about resources; social welfare; and other (i.e., attainment of personal goals, mentor supportiveness).

2.2.5 Stage 5: Collating, Summarising and Reporting the Results

Data were summarised and reported according to the scoping review research questions. Following the suggestions by Arksey and O’Malley (2005), a quality appraisal of the evidence
was not undertaken because the goals of scoping reviews are to consider the full breadth of research without consideration of quality.

2.2.6 Stage 6: Stakeholder Consultation

Levac et al. (2010) suggest that stakeholder input can help provide insights beyond what is reported in the literature. For example, community stakeholders can provide a real-world perspective regarding the meaning, and applicability of both the research question and the findings. Stakeholders can also help ensure that study objectives remain relevant to research end-users. The authors consulted two stakeholders from community disability organizations during several stages of the review process. Both stakeholders were male executive directors of their respective organizations. These community not-for-profit organizations serve people with spinal cord injury, spina bifida, cerebral palsy, multiple sclerosis, muscular dystrophy, amputations, as well as other individuals with a physical disability. The stakeholders have over 35 years of combined experience in the development and delivery of peer mentorship programming for persons with disabilities and were elected leaders for a network of eight disability organizations across Canada.

Stakeholders were engaged through teleconferencing consultations and email to develop the study objectives, create the inclusion/exclusion criteria, and to populate the keywords used in the systematic search process. The first author led these consultations. Example questions that were asked of the stakeholders include (a) what research would advance the peer mentorship literature? (b) how could research improve the delivery of community peer mentorship programming? Stakeholders were also engaged when summarising and reporting the results to ensure they were presented in a relevant format for end-users.
2.3 Results

2.3.1 Articles Retrieved

The online database search yielded a total of 3083 citations (see Figure 2.1). After screening for inclusion/exclusion criteria, 13 published articles consisting of 13 original research studies were included in the review. Table 2.1 and Table 2.2 show the data extracted from each article.

2.3.2 Article Characteristics

Articles were published between 2006-2018. All studies were conducted in North America (Canada n= 2; USA n=11) with a total sample of 569 participants across all studies, consisting of people with spinal cord injury, cerebral palsy, muscular dystrophy, stroke, chronic pain, and multiple sclerosis. A total of seven studies were conducted exclusively in community settings while the remaining six articles described studies that took place in both hospital and community settings. Most studies used quantitative methods (n=11) with only two studies employing a qualitative design. Quantitative studies implemented single-group pretest-posttest study designs (n=8), and randomized controlled trial designs (n=3).

Study durations ranged from eight weeks to 104 weeks. Articles reported several different outcomes with psychological (n=10), community integration (n=5), and health self-management (n=4) being the most frequently reported. Additional outcomes included employment/education (n=2), health service usage (n=1), knowledge about resources (n=1), and other (n=2).

2.3.3 Interaction Modality

Articles reported five different interaction modalities including telephone (n=12), face-to-face (n=9), email (n=4), video chat (n=2), and texting (n=2). Most studies (n=10)
incorporated more than one interaction modality with the highest number of modalities being five (n=1). Mentors and mentees self-selected their mode of interaction in four of the studies, while the other nine studies prescribed the interaction modality. Face-to-face interactions were reported in the majority of studies that took place in both hospital and community settings (5/6) as well as in studies that occurred exclusively in community settings (4/7).

Only five of the articles provided an explicit rationale for the interaction modalities used in the intervention. These rationales included: (a) efficacy of the modality was shown in previous research (n=2), (b) the modality reduced geographic distance and functional limitation barriers to delivering peer mentorship (n=3) and, (c) the study occurred within an existing community mentorship program with established standard operating procedures using a particular modality (n=1). No article in this review described training peer mentors on how to deliver peer mentorship specifically through the modalities utilized in the study. Furthermore, of the 10 studies that employed multiple interaction modalities, no study reported on the potential moderating effects of modality on the outcomes reported.

2.3.4 Frequency of Peer Mentorship Interactions

The majority (n=9) of articles reported the frequency of mentor-mentee interactions, with five reporting the average, two reporting the exact number, one reporting the median, and one reporting the minimum number of interactions. The fewest interactions reported by a mentee was 3 while the most was 77. Mentors and mentees self-selected their frequency of interaction in four of the articles, while the other nine articles either prescribed interaction frequency (n=6) or employed a hybrid approach (n=3) whereby mentors and mentees were required to interact a minimum number of times (e.g., once a month) but could interact more often if needed/desired (e.g., once a week). Of the six studies that prescribed the frequency of interaction, only one
provided a clear rationale for this. Ljungberg et al. (2011), purposely reduced interaction frequency from weekly to bi-weekly to monthly over their year-long study in attempt to “better prepare mentees to transition to the community” (pp. 253).

Of the 9 studies that reported the interaction frequency, no study tested the potential moderating effects of this variable on the outcomes reported. However, Martin Ginis et al. (2018) did test the relationship between total mentorship time, number of interactions and perceived mentor supportiveness using Pearson correlation coefficients. They reported that as total mentorship time and number of interactions increased, so did mentees’ perceptions of the supportiveness of the mentor. However, these findings were limited to mentors and mentees in an experimental condition in which peer mentors had received advanced leadership training.

2.4 Discussion

This review aimed to examine interaction modalities and frequencies employed in peer mentorship studies for adults with disabilities. Through a scoping review, 13 articles were systematically identified that reported on peer mentorship studies employing a 1:1 mentor:mentee protocol. Our review catalogued and synthesized the literature relating to both interaction modality and frequency in peer mentorship relationships, with the intention to facilitate discussion regarding research gaps and important issues.

Findings from the review indicate that interaction modality varies greatly in peer mentorship interventions. Unsurprisingly, interventions that take place in hospital settings make use of face-to-face interactions more frequently when compared to community-based interventions which favour the use of the telephone. This finding could reflect that when mentees return to the community, the geographical distance between mentors and mentees becomes an added barrier to meeting in-person (Cohen & Light, 2000; Kramer et al., 2018; Martin Ginis et
al., 2018; Veith et al., 2006). Furthermore, telephones are both an accessible and convenient form of communication especially for individuals who have severe functional limitations (Houlihan et al., 2017; Kramer et al., 2018; Seymour & Lupton, 2004). Interestingly, although 12 studies utilized the telephone as an interaction modality, no article described mentor training specific to interacting over the phone.

Rosenfield (2013) suggests that in order for a counsellor to be effective at interacting with a client over the phone, at a minimum, the counsellor needs to develop a set of core communication skills such as active listening, skilled questioning, appropriate empathic reactions, and clear enunciating. Although peer mentors and counsellors offer unique services, given the similarities in their roles (e.g., active listening, provision of support), telephone-specific training on these core communication skills would likely also benefit peer mentors, potentially leading to higher quality mentoring. We are unaware of any training studies that have focused on developing telephone communication skills within a peer mentorship context for people with disabilities. A recent Cochrane Review (Vaona et al., 2017) investigating training interventions for improving telephone communication skills in clinicians included only a single study. This study, a controlled pretest-posttest (Wood et al., 1989), determined that following a role-play curriculum, clinicians improved performance in at least one aspect of telephone communication compared to a control group. Although the study was considered of high risk for bias, the findings suggest that training could improve telephone communication skills.

Considering the frequency by which mentors utilize the telephone in peer mentorship studies, research focusing on developing, implementing, and testing telephone communication skills training programs for peer mentors is warranted.
Interestingly, only six articles reported using modalities that could be categorized as electronically-mediated communication (i.e., email, Skype). These interaction modalities seem underutilized given the recent evidence highlighting the effectiveness of electronic mentoring for persons with disabilities (Kramer et al., 2018; Lindsay et al., 2018). The older age of participants in some of the reviewed studies could partially explain the tendency for researchers to implement more conventional forms of communication (e.g., telephone, face-to-face). Research has shown that older people with disabilities (45+) use the internet far less frequently compared to younger people with disabilities (Duplaga, 2017). In this review, nine of the thirteen studies included participants over the age of 45.

However, another possible explanation is that regardless of age, individuals with disabilities tend to use the Internet less and are only half as likely as those who are non-disabled to have access to a computer and Internet in their home (Dobransky & Hargittai, 2016; National Telecommunications and Information Administration, 2013; Vicente & Lopez, 2010). Given the capability of the Internet to circumvent communication barriers in the physical world (e.g., geographical distance), a more concerted effort to ensure people with disabilities have internet access is warranted. This notion aligns with Article 9 in the United Nations Convention on the Rights of Persons with Disabilities, which stresses the importance of promoting access for persons with disabilities to new information and communications technologies and systems, including the Internet (United Nations, 2006). With increased internet access for people with disabilities, there will likely come increased need for training on how to effectively communicate via the internet. Accordingly, researchers might consider developing training programs that educate persons with disabilities how to use internet communication modalities most effectively (e.g., email, Skype). For example, if peer mentorship occurs through email, mentors could be
taught how to access and operate an email account, how to improve their written communication skills, and how to operate speech-to-text software.

Another potential explanation for the lack of electronically-mediated communication modalities could be that the majority of interventions did not allow mentors and mentees to have autonomy over their interaction modality. People with disabilities may prefer computer-mediated forms of communication when provided the choice and access (Seymour & Lupton, 2004). Indeed, electronically-mediated communications were used in two out of the four studies that allowed mentors and mentees to choose their interaction modality. Although based on just two studies, this finding suggests people with disabilities may want to use computer-mediated communications when given the choice. Because so few articles provided a rationale for the interaction modality employed, it is unclear why, in five studies, mentors and mentees were instructed to use exclusively non electronic-mediated forms of communication. Unlike some disability populations (e.g., persons with hearing impairments) that may be unable to use certain forms of communication (e.g., the telephone) as effectively as others, the disability populations examined in this study have the capability to use all forms of communications. Peer mentoring interventions might consider allowing participants more autonomy over the way they communicate especially if functional ability is not a limiting factor. This recommendation aligns with theoretical perspectives on the value of autonomy.

According to self-determination theory (SDT) (Deci & Ryan, 1985), autonomy (self-initiation, volition, and willing endorsement of one’s behavior) is one of the three basic psychological needs that can influence the quality of close relationships (La Guardia & Patrick, 2008). SDT posits that optimal functioning, within a specific social context, can be influenced by the provision and reception of autonomy support from a partner (La Guardia & Patrick, 2008).
For example, Deci et al. (2006) examined mutuality of autonomy support in close friendships (analogous to a mentor-mentee relationship) and found that greater autonomy support within friendships predicted greater closeness, satisfaction, positive relational functioning, and overall well-being. Based on the tenets of SDT (Deci & Ryan, 1985), allowing mentors and mentees the capability to mutually agree on their communication methods could provide an opportunity to foster autonomy support within the relationship potentially leading to higher quality peer mentoring and more positive peer mentorship outcomes.

A lack of participant autonomy was also demonstrated regarding frequency of interaction between mentors and mentees. Six articles prescribed the number of interactions without consulting participants. Although it’s unknown if a minimum number of contacts are required to elicit positive outcomes from a peer mentoring relationship, restricting interaction frequency might impact mentors’ and mentees’ perceptions of relatedness. Relatedness, another basic psychological need described by SDT, refers to feeling connected to others, to caring for and being cared for by others, and to having a sense of belongingness both with other individuals and with one’s community (Deci & Ryan, 2004). Given that relatedness has been shown to mediate the relationship between peer mentorship and quality of life outcomes for people with disabilities (Sweet et al., 2018), it may be important that mentees have the opportunity to develop positive relatedness experiences. Specifically, if mentors can increase the sense of relatedness experienced by their mentees, mentees could report greater improvements in quality of life and social participation (Sweet et al., 2018). As every mentoring relationship is unique, restricting interaction frequency may not afford mentees the time they need to connect and relate with mentors, which might ultimately influence both the quality of the relationship and the observed outcomes. For example, one of the studies included in this review, that allowed participants to
self-select their interaction frequency, reported that total time with the mentor and the number of interactions were positively correlated with perceived mentor supportiveness (Martin Ginis et al., 2018). These findings provide preliminary evidence of the potential importance of allowing mentors and mentees the opportunity to self-select their interaction frequency.

2.4.1 Research Gaps and Recommendations for Future Research

While it is encouraging to see peer mentorship being used as an intervention strategy to improve psychosocial and health outcomes for people with disabilities, it is important to discuss some of the significant gaps that currently exist in the literature. First, this review found that only one study (Martin Ginis et al., 2018) conducted a moderation analysis to explore the effect of modality or frequency of interaction on the reported outcomes. These types of analyses are likely important for advancing our understanding concerning specific intervention characteristics that contribute to quality peer mentorship. For example, Gassaway et al. (2017) utilized both telephone and face-to-face forms of communication in their study and reported positive health outcomes for mentees. However, further analyses may have indicated different effects for each mode of communication. These potential findings could inform future study designs and help bring to light specific characteristics of the peer mentoring experience that contribute to its effectiveness.

Second, theory-based research is needed to examine why and how interaction frequency and modality affect peer mentorship outcomes. Using theoretical frameworks to test research questions about peer mentorship would aid in the design of studies, help to provide explanations for findings, and allow results to be connected across studies so as to provide much-needed theoretical developments in the area of peer mentorship research. Given recent evidence that the satisfaction of certain psychological needs (i.e., relatedness and competence) partially explain the
role of peer mentorship on quality of life and participation outcomes for people with disabilities (Sweet et al., 2018), SDT appears to be a potential theoretical framework to apply to peer mentorship studies. Therefore, a possible next step would be to examine the relationship between the three basic psychological needs and their potential roles in mediating or explaining the effects of intervention frequency or modality on peer mentorship outcomes.

Third, there is a noticeable lack of end-user engagement during the design of peer mentorship protocols for people with disabilities. Specifically, no studies in this review reported using an integrated knowledge translation (IKT) approach when designing their peer mentorship protocol. IKT occurs when research is designed to be a collaborative venture between researchers and knowledge users where both parties contribute knowledge and make decisions throughout the entire research process (Bowen & Graham, 2013). True IKT occurs when these collaborative efforts allow knowledge users to help inform all processes of research including the shaping of the research questions, deciding the methodology, involvement in the data collection and tools development, interpreting the findings and helping disseminate the research results. Through a peer mentorship lens, knowledge users (e.g., person with disabilities) have unique expertise pertaining to the challenges, barriers, and facilitators of participating in peer mentorship. Engaging these individuals from the development of the research question, to the design of the study, to the analysis and dissemination of the results would likely lead to more informed peer mentorship protocols that are tailored to the needs and abilities of persons with disabilities. For example, persons with disabilities could provide input regarding what modes of communication they would prefer to use when engaging in peer mentorship. This input would provide researchers with credible information to base their protocol design decisions from and could lead to higher quality peer mentorship and improve participant retention. Druss et al.
(2010) provide an example of IKT being successfully implemented in a peer mentorship setting. In their study designed for people with mental illness, the researchers held multiple consultations with people with mental illnesses and performed a pre-pilot trial, followed by focus groups to inform the content of their pilot study. These end-users helped inform key aspects of the pilot study design, likely contributing to the positive impact of the intervention.

Lastly, this review revealed that researchers have employed several different peer mentorship protocols utilizing a wide variety of interaction modalities. However, no study described peer mentor training that was specific to the interaction modalities employed in the study. Furthermore, no study detailed how their mentor training program may have impacted mentoring skills. Peer mentorship programming would likely benefit from a concerted research effort directed towards understanding how mentor training impacts the quality of peer mentorship. These efforts should include exploring how training-program content and delivery impact the mentoring skills of peer mentors.

2.4.2 Limitations

Although this review has several strengths, there are limitations that should be acknowledged. While the methods used to search the published literature were rigorous, we did not search the grey literature so any potential unpublished interventions may have been omitted. This study also excluded interventions if participants had disabilities different than those that were of high interest to the stakeholders on this project. Including all disability populations in the search strategy may have yielded different results but would likely have made interpreting the findings too challenging given the different research priorities and abilities of different disability groups. Comprehensive reviews of peer mentorship interventions for disability groups not included in our study are warranted. Lastly, as we followed a traditional scoping review
approach (Arksey & O’Malley, 2005), we did not consider the quality of studies when formulating conclusions. While this approach allowed for a comprehensive review of the published literature, the strength of the conclusions are potentially weakened as they are likely informed by a combination of higher and lower quality studies. As the field of peer mentorship continues to grow, future reviews should include quality appraisals.

2.5 Summary

This review provides important information regarding the characteristics of one-to-one peer-mentoring studies for adults with disabilities. A variety of interaction modalities are currently being employed with telephone and face-to-face communication being the most common. The large range in interaction frequency across the studies suggests a finite number of interactions may not be necessary to elicit positive outcomes. Interestingly, most published studies have not provided justification for the method and frequency of interaction between mentors and mentees and none have implemented mentor training programs specific to the interaction modalities employed. Virtually all studies have not included persons with disabilities in the design of protocols; thus, not allowing for valuable knowledge to be gleaned regarding the needs and preferences of end users. Ultimately, further research is required that uses an IKT approach, to explore how interaction modality and frequency impact the delivery of peer mentoring for people with disabilities and the observed outcomes of interventions.
<table>
<thead>
<tr>
<th>Author, year and country of study</th>
<th>Aim of study</th>
<th>Study design + Setting</th>
<th>Study Duration (weeks)</th>
<th>Participants</th>
<th>Participant Demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balcazar et al. (2011) USA</td>
<td>To evaluate if peer mentorship can help people with spinal cord injury reintegrate into the community after discharge from hospital.</td>
<td>Quasi-experimental one-group pre-test/post-test. Hospital/Community</td>
<td>52</td>
<td>Spinal cord injury</td>
<td>Mentors (M=5, F=1; AR=19-41) Mentees (M=28, F=0; AR=18-38)</td>
</tr>
<tr>
<td>Cohen et al. (2000) USA</td>
<td>To explore aspects of the on-line mentoring process that may be unique to people with cerebral palsy who rely on augmented communication.</td>
<td>Quasi experimental one-group pre-test/post-test. Community</td>
<td>26</td>
<td>Cerebral palsy</td>
<td>Mentors (M=3, F=1; AR=27-43) Mentees (M=2, F=2; AR=14-25)</td>
</tr>
<tr>
<td>Gassaway et al. (2017) USA</td>
<td>To evaluate the effects of peer mentoring on self-efficacy and hospital readmission after inpatient rehabilitation of individuals with spinal cord injury.</td>
<td>Randomized controlled trial. Hospital/Community</td>
<td>21</td>
<td>Spinal cord injury</td>
<td>Mentors (M=NR, F=NR; AR=NR) Mentees (M=121, F=37; AR=NR)</td>
</tr>
<tr>
<td>Houlihan et al. (2017) USA</td>
<td>To evaluate the impact of a peer-delivered, telephone-based intervention on the health self-management of mentees with spinal cord injury.</td>
<td>Randomized controlled trial. Community</td>
<td>26</td>
<td>Spinal cord injury</td>
<td>Mentors (M=NR, F=NR; AR=NR) Mentees (M=62, F=22; AR=18-78)</td>
</tr>
<tr>
<td>Kessler et al. (2014) Canada</td>
<td>To evaluate the benefits, harms, and impact of an individual peer mentorship program offered to stroke survivors in an acute care setting.</td>
<td>Qualitative instrumental case study design. Hospital/Community</td>
<td>26</td>
<td>Stroke</td>
<td>Mentors (M=4, F=3; AR=47-72) Mentees (M=12, F=4; AR=35-81)</td>
</tr>
<tr>
<td>Author, year and country of study</td>
<td>Aim of study</td>
<td>Study design + Setting</td>
<td>Study Duration (weeks)</td>
<td>Participants</td>
<td>Participant Demographics</td>
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<tr>
<td>Kramer et al. (2018) USA</td>
<td>To investigate the feasibility of electronic peer mentoring for people with intellectual and developmental disabilities.</td>
<td>Quasi experimental one-group pre-test/post-test. Community</td>
<td>12</td>
<td>Down syndrome, Cerebral palsy, Dubowitz syndrome, Muscular dystrophy</td>
<td>Mentors (M=4, F=5; AR=17-35) Mentees (M=26, F=16; AR=NR)</td>
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<tr>
<td>Ljungberg et al. (2011) USA</td>
<td>To explore the experiences of people with spinal cord injury on participating in peer mentoring, including its effects on self-efficacy beliefs and medical complications.</td>
<td>Quasi-experimental one-group pre-test/post-test. Hospital/Community</td>
<td>52</td>
<td>Spinal cord injury</td>
<td>Mentors (M=3, F=2; AR=26-53) Mentees (M=28, F=9; AR=19-69)</td>
</tr>
<tr>
<td>Lucke et al. (2004) USA</td>
<td>To evaluate how a peer mentorship program could improve hope, adjustment, and quality of life for mentees with spinal cord injury.</td>
<td>Quasi experimental one-group pre-test/post-test. Hospital/Community</td>
<td>24</td>
<td>Spinal cord injury</td>
<td>Mentors (M=NR, F=NR; AR=NR) Mentees (M=7, F=3; AR=18-72)</td>
</tr>
<tr>
<td>Martin Ginis et al. (2018) Canada</td>
<td>To evaluate the impact of a mentor leadership training program on feelings of relatedness and self-efficacy for mentees with spinal cord injury.</td>
<td>Randomized controlled trial. Community</td>
<td>26</td>
<td>Spinal cord injury</td>
<td>Mentors (M=16, F=7; AR=22-70) Mentees (M=8, F=8; AR=25-75)</td>
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<tr>
<td>Matthias et al. (2015) USA</td>
<td>To explore the effectiveness of a peer-led intervention on pain management, depression, anxiety, perceived social support, and self-efficacy for people with chronic musculoskeletal pain.</td>
<td>Quasi-experimental one-group pre-test/post-test. Community</td>
<td>28</td>
<td>Chronic musculoskeletal pain</td>
<td>Mentors (M=9, F=0; AR=50-71) Mentees (M=17, F=0; AR=35-66)</td>
</tr>
<tr>
<td>Author, year and country of study</td>
<td>Aim of study</td>
<td>Study design + Setting</td>
<td>Study Duration (weeks)</td>
<td>Participants</td>
<td>Participant Demographics</td>
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<tr>
<td>Mohr et al. (2005) USA</td>
<td>To provide a preliminary evaluation of a skills-based telephone-administered peer-led programme for patients with multiple sclerosis on management of emotional symptoms, problems in social roles, and symptom management.</td>
<td>Quasi-experimental one-group pre-test/post-test. Community</td>
<td>8</td>
<td>Multiple sclerosis</td>
<td>Mentors (M=1, F=3; AR=40-60) Mentees (M=13, F=3; AR=31-66)</td>
</tr>
<tr>
<td>Shem et al. (2011) USA</td>
<td>To evaluate how peer mentorship could improve the percentage of young adults with spinal cord injury, who access post-secondary education or employment opportunities.</td>
<td>Quasi experimental one-group pre-test/post-test. Community</td>
<td>104</td>
<td>Spinal cord injury</td>
<td>Mentors (M=NR, F=NR; AR=NR) Mentees (M=28, F=11; AR=16-26)</td>
</tr>
<tr>
<td>Veith et al. (2006) USA</td>
<td>To identify salient dimensions and outcomes of the peer-mentoring relationship for people with spinal cord injury.</td>
<td>Qualitative. Hospital/Community</td>
<td>16</td>
<td>Spinal cord injury</td>
<td>Mentors (M=4, F=2; AR=29-40) Mentees (M=5, F=2; AR=26-54)</td>
</tr>
</tbody>
</table>

* Male=M; Female=F; Age range=AR; Data not reported=NR
<table>
<thead>
<tr>
<th>Study</th>
<th>Interaction Modality</th>
<th>Self-selected or prescribed interaction modality</th>
<th>Frequency of mentor/mentee interaction</th>
<th>Self-selected or directed interaction frequency</th>
<th>Primary outcomes</th>
<th>Outcomes influenced by peer mentorship</th>
</tr>
</thead>
</table>
| Balcazar et al. (2011)   | Face-to-face, telephone   | Self-selected                                   | 594 total contacts (average of 21.21 contacts per mentee) | Self-selected                                   | a) Psychological outcomes  
b) Community reintegration  
c) Employment/Education outcomes  
d) Health self-management | a) Positively influenced  
b) Not influenced  
c) Positively influenced  
d) Not influenced |
| Cohen et al. (2000)      | Email                     | Prescribed                                      | 77 total messages (average of 19.3 per mentee)    | Self-selected                                   | a) Other                                                                     | a) Positively influenced             |
| Gassaway et al. (2017)   | Face-to-face, telephone, email | Self-selected                                   | 2,305 total sessions (average of 14.6 per mentee) | Prescribed & Self-selected                      | a) Psychological outcomes  
b) Health service usage                                   | a) Positively influenced  
b) Positively influenced |
| Houlihan et al. (2017)   | Telephone, email, text    | Prescribed                                      | Average of 12 interactions per mentee            | Prescribed & Self-selected                      | a) Psychological outcomes  
b) Health self-management  
c) Knowledge about resources | a) Not influenced  
b) Positively influenced  
c) Positively influenced |
| Kessler et al. (2014)    | Face-to-face, telephone   | Prescribed                                      | Not reported                                  | Prescribed                                      | a) Community integration                                                | a) Positively influenced             |
| Kramer et al. (2018)     | Face-to-face, telephone, video chat | Prescribed                                      | 8 interactions per mentee                    | Prescribed                                      | a) No outcomes for Mentees                                                      | a) NA                                 |
| Ljungberg et al. (2011)  | Face-to-face, telephone   | Prescribed                                      | Minimum of 24 sessions per mentee             | Prescribed & Self-selected                      | a) Psychological outcomes  
b) Health self-management                                   | a) Not influenced  
b) Positively influenced |
<p>| Lucke et al. (2004)      | Telephone                 | Prescribed                                      | Not reported                                  | Prescribed                                      | a) Psychological outcomes                                                             | a) Unclearly influenced             |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Interaction Modality</th>
<th>Self-selected or prescribed interaction modality</th>
<th>Frequency of mentor/mentee interaction</th>
<th>Self-selected or directed interaction frequency</th>
<th>Primary outcomes</th>
<th>Outcomes influenced by peer mentorship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin Ginis et al. (2018)</td>
<td>Face-to-face, telephone, text, email, skype</td>
<td>Self-selected</td>
<td>140 total contacts (average of 15.5 per mentee)</td>
<td>Self-selected</td>
<td>a) Psychological outcomes b) Other</td>
<td>a) Not influenced b) Positively influenced</td>
</tr>
<tr>
<td>Matthias et al. (2015)</td>
<td>Face-to-face, telephone</td>
<td>Prescribed</td>
<td>Median of 6 meetings per mentee</td>
<td>Prescribed</td>
<td>a) Psychological outcomes b) Community integration</td>
<td>a) Not influenced b) Not influenced</td>
</tr>
<tr>
<td>Mohr et al. (2005)</td>
<td>Telephone</td>
<td>Prescribed</td>
<td>8 sessions per mentee</td>
<td>Prescribed</td>
<td>a) Psychological outcomes b) Community integration</td>
<td>a) Positively influenced b) Positively influenced</td>
</tr>
<tr>
<td>Shem et al. (2011)</td>
<td>Face-to-face, telephone, email</td>
<td>Prescribed</td>
<td>Not reported</td>
<td>Prescribed</td>
<td>a) Psychological outcomes b) Community reintegration c) Employment/Education outcomes d) Health self-management</td>
<td>a) Not influenced b) Unclearly influenced c) Positively influenced d) Not influenced</td>
</tr>
<tr>
<td>Veith et al. (2006)</td>
<td>Face-to-face, telephone</td>
<td>Self-selected</td>
<td>Not reported</td>
<td>Self-selected</td>
<td>a) Psychological outcomes</td>
<td>a) Positively influenced</td>
</tr>
</tbody>
</table>
Figure 2.1 PRISMA flow-chart of the systematic literature search and selection

Citations retrieved from online database searches

<table>
<thead>
<tr>
<th>Database</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDLINE</td>
<td>628</td>
</tr>
<tr>
<td>EMBASE</td>
<td>1317</td>
</tr>
<tr>
<td>PsychINFO</td>
<td>533</td>
</tr>
<tr>
<td>SPORTDiscus</td>
<td>16</td>
</tr>
<tr>
<td>CINAHL</td>
<td>367</td>
</tr>
<tr>
<td>Web of Science</td>
<td>222</td>
</tr>
</tbody>
</table>

Total citations downloaded to RefWorks: 3083

Duplicate articles removed: 978

Non-duplicated citations screened: 2105

Articles excluded after title/abstract screen: 2024

Additional articles identified through other sources: 4

Full text assessed for eligibility: 81

Articles excluded after full text screen: 68
- Not one-to-one protocols (n=31)
- Not original research studies (26)
- Mentors or mentees didn’t have a disability (n=7)
- Excluded because of disability type (n=4)

Articles included for review: 13
Chapter 3: Operationalizing the Reach, Effectiveness, Adoption, Implementation, Maintenance (RE-AIM) Framework to Evaluate the Collective Impact of Autonomous Community Programs that Promote Health and Well-being

3.1 Overview

The World Health Organization supports the implementation of community interventions to combat noncommunicable diseases but stresses the importance of monitoring their effectiveness and progress (World Health Organization, 2017). Monitoring the impact of community-based public health programs, interventions and public services that promote a healthy lifestyle can be a complex task. To fully capture the impact of a program, one needs to evaluate not only the impact on participants, but also the impact on the organization providing a program and the broader community. The RE-AIM planning and evaluation framework is a framework that can be used to comprehensively evaluate both the individual and organizational impact of a program or intervention (Glasgow et al., 1999).

Consisting of five evaluation dimensions (Reach, Effectiveness, Adoption, Implementation, Maintenance), RE-AIM has been used effectively across a variety of settings (e.g., community, policy, public health) (Gaglio et al., 2013). The definitions of the five RE-AIM dimensions are intended to be straightforward to enable the framework to be easily understood and applied (Glasgow & Estabrooks, 2018; Harden et al., 2018). Reach represents the absolute number and proportion of individuals who are willing to participate in a given initiative and how representative participants are compared to the target population. Effectiveness describes the impact of an intervention or program on important outcomes, including potential positive and negative effects, quality of life, and economic outcomes. Adoption is the absolute number and proportion of settings and intervention staff who are willing to initiate an intervention or
program. Implementation refers to the degree to which the intervention or program staff deliver the initiative as intended as well as the related costs. Implementation also refers to participants’ use of the intervention’s strategies or the program’s services. Lastly, maintenance refers to the sustained delivery and effectiveness of the initiative.

The RE-AIM framework was originally developed to provide researchers with an evaluation tool that could determine the public health or population-based impact of a program or policy while taking into consideration programs indicators relating to both internal and external validity (Glasgow, Harden, et al., 2019; Glasgow, Klesges, et al., 2006; Glasgow, Vogt, & Boles, 1999). Over time, the framework has evolved to incorporate several evaluation items for each RE-AIM dimension (Gaglio et al., 2013), has been used across diverse content areas (Eakin et al., 2006; Glasgow, Gaglio et al., 2006; Toobert et al., 2005), and has expanded to use as both a planning and evaluation tool (Gaglio et al., 2013). RE-AIM has been applied to study planning or evaluation in over 450 published studies (Tabak et al., 2012), has been cited in numerous grant proposals (Gaglio et al., 2013), and has allowed researchers to evaluate the population health impact of both clinical and community-based interventions.

Typically, RE-AIM has been used by researchers to assess the impact of a single research intervention in achieving behaviour change at the individual level. Within a public health context, the framework has been used to evaluate behaviour change interventions targeting healthy eating (Dunton et al., 2009), physical activity and exercise participation (Dunton et al., 2009; Kahwati et al., 2011), smoking cessation (Glasgow et al., 2000), and disease management (Glasgow et al., 2001). Recently, RE-AIM was operationalized successfully to evaluate the impact of a community-based public health initiative delivered in partnership between community organizations and academic researchers (Sweet et al., 2014). Implementing RE-AIM
to evaluate the impact of this partnership not only demonstrated the utility of the framework within a public health context, but also highlighted its value for providing community organizations with information that could directly impact their operations.

Though these examples provide evidence of the utility of the RE-AIM framework to evaluate community-based public and population health interventions, implementing the RE-AIM framework can be challenging. A recent review of 42 National Institutes of Health grant applications determined that only 10% of applications intended to address all five RE-AIM dimensions (Kessler et al., 2013). Moreover, a recent systematic review found that only 62% of published studies using the RE-AIM framework reported on all five dimensions and not a single study was able to address all 34 criteria (Gaglio et al., 2013). When considered alongside each other, these findings highlight how challenging it can be to perform a complete RE-AIM analysis, even in well-funded research projects, let alone for community-based public health programming delivered by community organizations.

3.1.1 Applying RE-AIM to Evaluate Programming Developed by Community Organizations

While the RE-AIM framework has seen an increase in usage in policy, primary care, and public health care settings, its use in community settings has still largely been to evaluate the translation of public health research interventions into real world programming (Gaglio et al., 2103). Seldom has the framework been applied to evaluate real-world community-based public health programming developed and delivered by community organizations. For example, Burke et al (2015) applied the framework to evaluate the feasibility of a summer camp that was delivered in part through the Young Men's Christian Association (YMCA). More recently, Jung et al (2018) applied the framework in its entirety to evaluate a physical activity and healthy
eating program delivered across ten different sites by a not-for-profit organization. Although both studies applied RE-AIM in an evaluative capacity, the evaluated programs had first existed as research interventions that were translated into community programming. To our knowledge, Koorts and Gillison’s (2015) evaluation of a community-based physical activity program is the only published study to use all five dimensions of the RE-AIM framework to evaluate programming developed and implemented independently by a community organization. Furthermore, we are unaware of any published study that has used the framework to evaluate the collective impact of several autonomous community-based programs (e.g., peer mentorship programs delivered by different spinal cord injury organizations) that have similar health promotion objectives.

The challenges of using the RE-AIM framework in community settings (e.g., Galgio et al., 2013; Glasgow & Estabrooks, 2018; Kessler et al., 2013; Koorts & Gillison, 2015) may be exacerbated when using it to evaluate the collective impact of multiple autonomous community-based programs delivered by separate organizations. For example, community organizations, who often encounter funding challenges, may be unable to collect the primary data required to complete a full RE-AIM analysis (Glasgow & Estabrooks, 2018). This challenge could result in missing or incomplete data across several programs which could limit the analysis to only a few indicators within each RE-AIM dimension. Furthermore, aggregating data to evaluate the collective impact of certain outcomes may not be possible if organizations are collecting slightly different data. Engaging stakeholders from multiple organizations would be necessary to ensure that a) data being collected are similar enough to be aggregated, and b) the measures used in the evaluation are appropriate indicators within the RE-AIM framework (Kessler et al., 2013).
Despite the potential challenges, using the RE-AIM framework to evaluate the collective impact of community-based health promoting programs/initiatives could provide organizations with important information regarding the maintenance and implementation of programming. Although most organizations track basic metrics (e.g., fitness program memberships), greater insight could be gained by evaluating the collective impact of a specific program offered across a variety of organizations (e.g., yoga classes). The framework could also be used to evaluate the collective impact of various health promoting programs for people living with a particular chronic condition.

A specific context where the RE-AIM framework could be beneficial would be the evaluation of peer mentorship programs that promote healthy living for people with spinal cord injury (SCI). Secondary complications associated with SCI contribute largely to the burden placed on the public health system and its services (Chan et al., 2014). Long-term health complications, including cardiovascular complications and respiratory problems place strain on hospitals, medical professionals and attendants/care workers. Furthermore, impaired physical functioning following an SCI can complicate obtaining or returning to employment which places additional strain on public/government programs (e.g., disability support programs) (Escorpizo et al., 2018). Interventions and public programs that help individuals manage these secondary complications therefore play an important role in reducing the strain on public health care systems.

Community-based peer mentorship programs, offered in the public sector, have potential to reduce the economic impact of SCI. Research has shown that SCI peer mentorship has a positive impact on self-management to prevent secondary conditions (Houlihan et al., 2017), can reduce rehospitalization rates (Gassaway et al., 2017), and is associated with work/education
participation (Sweet et al., 2016). Across North America, there are several non-profit SCI organizations that offer peer mentorship for community-dwelling individuals living with SCI. Although each organizations’ peer mentorship program is unique, they all share the same mission, to help people with SCI adapt and thrive in the community. Within a SCI context, peer mentorship involves initiating a relationship between a peer mentor (an individual who has successfully faced living with a SCI) with a peer mentee (someone with a SCI who is in need of support). A mentor-mentee relationship can be short-lived or last for years. The mentor, because of their lived experience, is able to provide a wide variety of support types (i.e., emotional, informational, esteem, instrumental) to the mentee. Research examining these programs has focused mainly on the individual level benefits associated with receiving peer mentorship [Gassaway et al., 2017; Houlihan et al., 2017; Martin Ginis et al., 2018). Interestingly, despite the known individual level benefits of peer mentorship, little is known about the impact of peer mentorship programs at the organizational level. Operationalizing the RE-AIM framework to describe the impact of peer mentorship at the organizational level could provide community organizations with valuable information to inform the creation of new programming and to help maintain existing programs.

The application of the RE-AIM framework to evaluate the collective impact of community-based public health programming addresses the WHO call to monitor the progress of public health interventions (World Health Organization, 2017). Despite the potential challenges of using the framework in this capacity (Glasgow et al., 2001; Glasgow & Estabrooks, 2018), previous studies have shown its utility as an evaluation tool across various settings and populations (Gaglio et al., 2013). Therefore, given RE-AIM’s utility as an evaluation tool for “real-world” programs, the purposes of this study were to a) operationalize and apply each
dimension of the RE-AIM framework to evaluate similar community-based public health programs delivered by multiple, autonomous community organizations and b) present findings regarding the impact of Canadian SCI peer mentorship programs. As the present study is the first to apply the RE-AIM framework in this context, a set of recommendations to inform future research and application of the RE-AIM framework will be provided.

3.2 Method

3.2.1 Program Selection and Recruitment

A purposive sampling method was used to select programs. Recruitment was facilitated by SCI Canada, a not-for-profit organization whose mission is to assist people with SCI and other physical disabilities to achieve independence, self-reliance, and full community participation (Spinal Cord Injury Canada, 2016). SCI Canada’s national network consists of eight autonomous provincial organizations who serve people with SCI as their main clientele. These eight organizations provide their own individualised peer mentorship programs for people with traumatic (e.g., car accidents, falls), non-traumatic (e.g., acquired from disease), and congenital (e.g., spina bifida) SCI in both hospital and community settings. The executive director of SCI Canada contacted the executive directors from each of the eight provincial organizations through email and provided a study information sheet. Additional emails were sent to two provincial disability organizations who do not belong to the SCI Canada national network but who provide similar community-based peer mentorship programming for people with SCI. Organizations that expressed interest were then contacted by the lead researcher who obtained informed consent from the executive director of the organization. Ten organizations, and their executive directors, from ten different provinces provided informed consent and nine completed the study. The one organization that did not complete the study withdrew for unknown reasons.
3.2.2 Design and Operationalization of RE-AIM Dimensions

This study used a cross-sectional survey study design, whereby two surveys were administered to collect data from participating organizations/executive directors. Questions for both surveys were developed by operationalizing indicators within each RE-AIM dimension for SCI peer mentorship. Brief descriptions of how each dimension was operationalized are provided below.

Reach: Given that community organizations may aim to reach individuals who may play different roles within a specific program, reach indicators needed to capture all key individuals who play a role in delivering program services or who receive services. Conceptualizing reach indicators for SCI peer mentorship was unique in that individuals who provide (mentor) or receive (mentee) mentorship can be considered “participants”. Therefore, when conceptualizing reach indicators, we included separate questions for both types of participants and collected separate demographic characteristics for each. Further, although the Reach dimension should include data on excluded individuals (e.g., people who contact SCI organizations for PM but who do not qualify for the service) (Gaglio et al., 2013), the stakeholders who co-designed the survey were confident that SCI organizations were not collecting this information due to resource restrictions. Therefore, we did not include this indicator in our survey.

Effectiveness: Unlike clinical research interventions, high levels of experimental control and rigour are not practical or feasible for community-based organizations to evaluate their programs (e.g., using pre-post assessments). Rather, community programs may monitor members’ general experiences through testimonials or simplified surveys that do not necessarily include validated measures. The lack of valid and reliable measures would limit a researcher’s ability to accurately report on the effectiveness of a program. In consultation with our
stakeholders regarding the evaluation of peer mentorship programs in SCI community organizations, we conceptualized effectiveness indicators that would capture the extent that organizations were tracking outcomes, the methods they used to assess outcomes, and descriptions of both positive and negative outcomes reported by their members. Although these indicators did not allow us to measure a primary outcome relative to a public health goal (Gaglio et al., 2013), they did allow us to better understand how community-based organizations are measuring the effectiveness of their programs.

Adoption: When evaluating community-based programs, it may be irrelevant to include the typical adoption indicator to assess the number of organizations that have adopted a peer mentorship program given that the inclusion criteria required that organizations provide this program. Instead, it may be most appropriate to capture specific programmatic details that may differ between organizations. For the peer mentorship programs, we conceptualized adoption using two indicators to: 1) assess the setting in which peer mentorship is being offered and 2) learn how many organizations have adopted a formal training program for their peer mentorship staff. The first indicator allowed us to evaluate certain characteristics of the organizations that are providing peer mentorship (Gaglio et al., 2013), while the second provided important information pertinent for new organizations who wish to implement a peer mentorship program.

Implementation: Given our purpose was to use RE-AIM to evaluate the collective impact of several community-based programs, we did not include indicators that would assess specific adaptations that individual organizations have made to their program (Gaglio et al., 2013). Contrary to most RE-AIM analyses (Kessler et al., 2013), SCI organizations often track number of staff and staff time dedicated to the program and the costs of the programs. We were able to include these types of implementation indicators to compare the consistency of implementation
across the organizations. For example, to address staff implementation, we evaluated the percentage of staff that were specifically dedicated for peer mentorship at each of the nine organizations. Moreover, we evaluated the number of current staff dedicated to peer mentorship compared to the desired number that an organization would like to have. This indicator is unique to the community setting as research-based RE-AIM analyses typically know in advance the number of staff required to operate the intervention. Evaluating the cost of peer mentorship (time and money) was accomplished through two indicators: 1) how many full-time equivalent staff are dedicated to peer mentorship (time), and 2) what proportion of an organization’s budget is allocated to peer mentorship (money). Given that peer mentorship programs are on-going (no completion date), the above indicators were the only way to effectively conceptualize the cost of peer mentorship. Indicators to evaluate fidelity were not conceptualized given that: 1) fidelity checks are not common in community organizations due to resource constraints, and 2) organizations most likely deliver their programs differently from one another (i.e., varied delivery processes).

Maintenance: At the setting level, the length of time that an organization offers a program is one of the only indicators that can be collected, including in our study. A strength of this indicator is that it provides data on the extent to which the program has been institutionalized, a common limitation in research-based RE-AIM analysis. As it was in our study, evaluating maintenance at the individual level can be challenging in community settings as community-based programs may monitor effectiveness differently compared to typical research interventions. For our purposes, maintenance at the individual level comprised of two indicators for mentors (i.e., the number of peer mentors that joined the organization in the past 5 and 10 years) and three for mentees (i.e., the number of peer mentees that received mentorship in
the past year, 5 years, and 10 years). The strength of these indicators is that they allowed us to evaluate the sustainability of peer mentorship from a participant enrollment perspective.

3.2.3 Procedures

All procedures were approved by the research ethics board at The University of British Columbia (Okanagan Campus) before data collection. All organizations willing to participate completed a consent form administered by the lead researcher and were sent a link to an online survey. Survey questions were developed in collaboration between researchers and community stakeholders to ensure the questions were theoretically sound, practically meaningful for the end user (i.e., community SCI organizations), and targeted each of the RE-AIM dimensions. Stakeholders included the executive director of SCI Canada, as well as a current executive director of a provincial SCI organization. These stakeholders work closely with individuals with SCI and are extremely knowledgeable about the peer-mentorship programming currently being delivered in Canada.

The lead researcher contacted each organization two weeks after they received the survey link to answer questions and provide technical support. Organizations were not given a timeline to complete the survey but were encouraged to complete it at their earliest convenience without interrupting their day-to-day operations. On-going support was provided through email or telephone as needed until the survey was complete.

After completing the online survey, executive directors were contacted by the lead author to complete a short telephone interview regarding their participation in the study. To avoid limiting participant responses and encourage richer conversations, questions were open-ended, grouped around the five RE-AIM dimensions, and tailored based on the survey responses
from each individual organization. Organizations were remunerated with an hourly wage based on the time it took them to complete the study.

3.2.4 Measures

**Online Survey:** Indicators specific to SCI peer mentorship were formulated for each of the five RE-AIM dimensions as outlined in Table 3.1. These indicators were then worded in the form of 48 open-ended questions that were administered through Fluid Surveys. Organizations took an average of 4 hours to complete the survey. A complete list of the questions can be found in Appendix A.1.

**Telephone Interview:** The interview schedule (Appendix A.2) was developed by two of the authors and a stakeholder with the intent to a) further probe the answers provided in the online survey, and b) elicit ideas for future research related to SCI peer mentorship. Interviews began with questions pertaining to respondents’ experience completing the survey and transitioned into specific questions related to the answers they provided. Interviews lasted, on average, 25-30 minutes. All executive directors were offered the opportunity to follow up with the interviewer if they had any further questions or concerns.

3.2.5 Data Analysis

The data analysis was performed by the first author using summary statistics (e.g., proportions, medians, frequencies) to address the study objectives. The numerators and denominators used in each of the RE-AIM calculations are described in Table 3.1. The telephone surveys were transcribed verbatim and used to help interpret responses and address missing data from the online survey.
3.3 Results

3.3.1 RE-AIM Analysis of SCI Peer Mentorship Programs

*Reach:* For the 2016/17 fiscal year, peer mentorship programs belonging to participating organizations reached 1.65% of the estimated number of people living with SCI in their home provinces (range = 0.6% - 3.5%) and 1.63% of the entire estimated Canadian SCI population (Noonan et al., 2012). Mentors currently belonging to organizations were representative of the general SCI population for gender (male=64.8%, female=35.2%) but were slightly overrepresented by people with tetraplegia (54.7%) compared to the general SCI population (tetraplegia=43.6%, paraplegia=56.4%). Mentees who had received mentorship were also representative of the general SCI population for gender (male=59.9%, female=30.7%) and for severity of injury (tetraplegia=47.7%, paraplegia=52.3%). A summary table outlines the reach results in more detail (Appendix A.3).

*Effectiveness:* A total of 67% of organizations tracked positive outcomes/outputs and 56% tracked negative/unintended outcomes of peer mentorship. Organizations tracked outcomes and outputs using various methods (e.g., surveys, testimonials) and had documented some of the unique benefits of engaging in peer mentorship for both mentors and mentees. Key positive outcomes reported by mentors included an improved sense of purpose and increased relatedness while negative outcomes included feeling helpless and tired. Positive outcomes for mentees included improved well-being, increased confidence, and an improved outlook on life while the only negative reported outcome was not feeling ready to receive mentorship. A summary table outlines the effectiveness results in more detail (Appendix A.4).

*Adoption:* Of the nine recruited organizations, 89% offered a formal peer mentor training program and 100% provided peer mentorship in both hospital and community settings. Peer
mentorship was being provided at 41 hospitals across Canada and in hundreds of different communities. Although the exact number of communities served was not able to be calculated, there were a total of 39 official offices/locations between the nine responding provincial organizations that provided peer mentorship. A summary table outlines the adoption results in more detail (Appendix A.5).

Implementation: Organizations utilized their available peer mentors efficiently, despite operating with just 61.5% of their desired number of peer mentors: 96.5% of registered peer mentors (n=454) had mentored someone with a spinal cord injury. During the 2016/2017 fiscal year just over 1.9 million dollars (Canadian) were allocated to the operation of peer mentorship programming across the nine organizations, which accounted for 10.4% of the total operation budget across the organizations. A total of 25.7 (full time equivalent) paid staff (i.e., paid peer mentors and other staff) were employed specifically for peer mentorship across the nine organizations, accounting for 9.8% of the total staff employed. However, this number is only 39.8% of the preferred number of staff (n=57) that organizations would like to have available for peer mentorship. In addition, 374 volunteers were dedicated to peer mentorship accounting for 30.2% of the total number of volunteers (n=1239) across the organizations. And finally, 55.6% of organizations tracked their mentor-mentee interactions/relationships (e.g., frequency of interactions, topics of discussion). A summary table outlines the implementation results in more detail (Appendix A.6).

Maintenance: All nine organizations maintained the delivery of their peer mentorship programming for many years (M=46.4 years, SD=27.4, R=7-71) with 89% having offered programming for over 10 years. Peer mentor membership across all nine organizations continues to grow with an increase of 183 new peer mentors across the organizations in the past 5 years,
accounting for 35% of the current membership. Organizations who were able to provide data (n=7) have provided peer mentorship to a total of 3872 peer mentees over the past 5 years with 10% of these occurring during the past year. A summary table outlines the maintenance results in more detail (Appendix A.7).

3.4 Discussion

The first purpose of this paper was to operationalize and apply the RE-AIM framework to evaluate community-based public health programming developed and delivered by multiple, autonomous community organizations. A second purpose was to apply RE-AIM to evaluate the impact of Canadian SCI peer mentorship programs. Operationalizing the RE-AIM framework to evaluate the impact of Canadian SCI peer mentorship programs proved to be challenging but nevertheless achievable. Collaborating with key community stakeholders throughout the study allowed us to conceive and define key peer mentorship indicators within each of the five RE-AIM dimensions which facilitated assessment of the impact of peer mentorship at both the individual and organizational level.

3.4.1 Operationalizing the RE-AIM Framework to Evaluate Multiple Programs

This study provided a new way to conceptualize RE-AIM to evaluate similar community-based public health programs delivered by multiple autonomous community organizations. Operationalizing the framework for these purposes led to several challenges. First, determining universal indicators that were appropriate to evaluate all nine different programs proved to be difficult. Typically, when evaluating a single program or intervention using RE-AIM, the researcher is able to determine specific indicators that fully capture the components within each RE-AIM dimension. For example, Schwingel et al. (2017) determined the effectiveness of a community health program for older Latinas using three separate indicators based on valid and
reliable measures administered during the program. Due to the lack of program standardization across the nine organizations, we were only able to evaluate effectiveness using two general indicators (Table 3.1) that our stakeholders believed to be consistent across all organization. In doing so, we were unable to evaluate the effectiveness of individual organizations whose effectiveness could potentially have been conceptualized using indicators unique to their program. This lack of program standardization affected the way we conceptualized the indicators for all five RE-AIM dimensions and demonstrates a challenge of using RE-AIM to evaluate more than a single autonomous community-based program.

Another challenge was the variability in the types and amount of data being collected by each peer mentorship program. Although we engaged two stakeholders (both SCI program executive directors) to help create questions that fellow organizations would likely have data for, we still only collected complete data for 25 of the 48 questions. Data availability will likely always be a challenge when using the RE-AIM framework in a community setting (Jung et al., 2018; Koorts et al., 2015; Estabrooks et al., 2008). The engagement of stakeholders to inform the survey questions and the use of a telephone survey to further explore responses and missing data (Holtrop et al., 2008; Kessler et al., 2013) were crucial in ensuring that we collected as much useable data as possible.

Lastly, because this study attempted to operationalize the RE-AIM framework pragmatically in a community-based setting, the authors deliberately loosened the constraints regarding what constitutes fully-developed use of the framework (Kessler et al., 2013). In doing so, we conceptualized how to address certain RE-AIM criteria differently than how these criteria would be evaluated in a clinical or research setting. For example, Kessler et al. (2013) recommend that an essential criterion for evaluating the implementation of a program is to assess
the percentage of perfect delivery or calls completed. After discussions with our stakeholders, this criterion was conceptualized as the percentage of peer mentors who mentor after being trained. Organizations may not have a system for evaluating if a peer mentor is delivering their mentorship “perfectly” (i.e., fidelity) as this is not a realistic objective that a peer mentor can attain. Instead, the objective may be to have as many trained mentors providing high quality mentorship as possible. Furthermore, using “the percentage of mentorship sessions completed” in place of “percentage of calls completed” is not appropriate as there would be no valid denominator. These examples highlight the challenge of using the RE-AIM framework in a community-based setting as the distinction between internal program objectives and external evaluation criteria can be challenging (Koorts & Gillison, 2015). Researchers should strive to include a breadth of evaluation indicators that evaluate both the internal and external validity of a program despite the challenges posed in community settings.

3.4.2 Evaluating the Impact of SCI Peer Mentorship Programs

Reach: At first glance, the individual-level reach of peer mentorship programs appears to be low at just 1.65% of the estimated SCI population of the provinces where organizations are located. However, in comparison with other large community interventions and programs that have used RE-AIM as their evaluation framework, we see that the reach of peer mentorship programs is relatively high. For example, Walk Kansas (Estabrooks et al., 2008), a state-wide physical activity initiative, was able to reach 1% of the total population of the counties where the program was delivered. Similarly, an obesity program for children in the city of London, Ontario (Burke et al., 2015) reported a reach of 0.7%, and a recent physical activity and healthy eating program delivered across Canada reported a reach of 0.45% (Jung et al., 2018). Thus, the annual reach of peer mentorship programs is as good, if not better than other population level programs.
Furthermore, the historical reach could be quite large given that some organizations have been providing programming for over 70 years.

Although we attempted to capture data that would allow for assessment of historical reach, many organizations did not have accurate data-tracking practices for several years, which inhibited our ability to state their true reach. Furthermore, we defined our reach indicator as the number of unique individuals who have delivered (mentors) or received (mentees) peer mentorship. Restricting our interpretation of reach to this sole indicator most likely led to an underestimation of the true reach of peer mentorship. Other potential reach indicators (e.g., the number of peer mentorship events that were delivered, the number of resources distributed by peer mentorship programs, the number of informal peer mentorship occurring at community events) could have provided a better representation of the impact of these programs, which highlights the importance of evaluating all activities of a program when using the RE-AIM model (Toobert et al., 2005). Researchers should strive to include a breadth of evaluation indicators that evaluate both the internal and external validity of a program despite the challenges posed in community settings. Stakeholders, who are key-decision makers, should also be involved throughout the entire research process to ensure that all potential indicators are being captured and are meaningful to the organization/program (Glasgow, 2013; Harden et al., 2018; Kessler et al., 2013).

**Effectiveness:** Although several positive outcomes for peer mentors (e.g., improved emotional health, improved sense of purpose, increased relatedness) and peer mentees (e.g., sport, recreational, and social participation, improved knowledge of resources, improved self-care) were described, only 67% of organizations reported systematic tracking of these outcomes. During the interviews, a lack of resources was commonly described as a barrier to tracking
outcomes methodically. Interestingly, some organizations also reported that they simply don’t know what measures to use. These concerns directly align with the findings from a recent Canada-wide consultation process which identified that the measures currently used to examine the outcomes of SCI peer mentorship do not capture the impact of these programs (Canadian Spinal Cord Injury Peer Mentorship Community-University Research Group, 2018). Tracking effectiveness becomes burdensome and unproductive without reliable measures that capture the intricate and often subtle benefits of peer mentorship (Martin Ginis et al., 2018).

Assessing the individual-level impact of peer mentorship quantitatively (e.g., calculation of effect sizes) was therefore not possible. Rather, impact could only be inferred using the data collected through the interviews. This limitation highlights the importance of using diverse methodology when performing a RE-AIM analysis (Kessler et al., 2013), especially in community settings where collecting valid and reliable quantitative outcome data may not be feasible (Glasgow & Estabrooks, 2018).

Although this study was unable to calculate the population health impact of peer mentorship programs, the qualitative data do allow for some discussion of the potential impact. For example, mentees indicated that a major benefit of engaging in peer mentorship was sport and recreational participation. Given that individuals with SCI are considered the least active segment of the population (Todd et al., 2019; van den Berg-Emons et al., 2010), interventions/programs, like peer mentorship, that encourage and facilitate participation are critical. Based on recent economic evaluations (Miller & Herbert, 2016), regular participation in physical activity by people with SCI can result in a cost savings of $290,000-$435,000 over a lifetime, primarily due to fewer hospitalizations and less reliance on assistive care. Another benefit of peer mentorship listed by mentees was improved self-care. A recent intervention
demonstrated significantly reduced re-hospitalization rates for people with SCI as a result of improved self-care learned by participating in peer mentorship (Gassaway et al., 2017). Houlihan et al. (2017) also demonstrated significant improvements in self-care management for people with SCI after engaging in a peer mentorship intervention. These findings are important given that the costs associated with SCI-related secondary conditions (e.g., pressure ulcers) can be upwards of $4745 per person, per month (Chan et al., 2013). Taken together, the potential cost-savings associated with better SCI self-care are significant. As over one thousand Canadians receive mentorship through these organizations each year, the potential population health and economic impacts of Canadian SCI peer mentorship programs are likely profound.

Adoption: Given our inclusion criteria, it was unsurprising that 100% of organizations provided peer mentorship in both community and hospital settings. Of particular interest, was the number of hospitals where peer mentorship is occurring. Across Canada, there are 16 official SCI rehabilitation hospitals (Craven et al., 2012) yet peer mentorship is occurring in at least 41 hospitals, as indicated by the eight organizations who provided these data. This finding is encouraging as it suggests that community organizations are communicating and working in collaboration with various types of hospitals (e.g., rehabilitation, general, convalescent) to ensure people with SCI who could benefit from peer mentorship are being reached and served.

Unfortunately, due to the lack of clarity in our community adoption question (Additional File 5), we were unable to calculate the adoption rate at the community level. This oversight could have been avoided by providing definitions of ‘community’ to the participating organizations or eliciting greater feedback regarding the clarity of the questions from participants during the data collection process. Lastly, although not all organizations offer a formal peer mentor training program, there is not yet any clear consensus in the SCI literature as to what
should be included in such a program (Martin Ginis et al., 2018; Schwingel et al., 2017). As such, it is difficult to formulate recommendations regarding peer mentorship training.

**Implementation:** Organizations are managing to reach a fair proportion of the SCI population despite only operating with 39.8% of their preferred number of peer mentorship specific staff. Burnout among staff of non-profit organizations has been well documented as serving one’s community can come at the price of great personal sacrifice (Bray, 2016; Kanter & Sherman, 2016). Peer-mentorship programs across Canada must continue to monitor the physical and mental health of their staff to mitigate the negative outcomes associated with providing peer mentorship (i.e., feeling tired and hopeless). One way to potentially mitigate the risk of burnout is for organizations to allocate more funding towards their peer mentorship programs. Currently there is a large range in the amount of money allocated to the operation of peer mentorship programs with one organization allocating almost 46% of their operating budget while five others allocated between just 0-5%. Interestingly, despite this large range, the 2016/2017 peer mentee reach of organizations within their own home provinces did not vary greatly (range=0.3-3.5%). The large number of volunteers dedicated to peer mentorship could explain how certain organizations are providing peer mentorship despite allocating minimal amounts of their operating budget and having less than the preferred number of staff. Calculating the economic value that peer mentor volunteers have on their respective organizations would be challenging (Bowman, 2009) but warrants consideration for future research.

**Maintenance:** Despite each organization allocating different percentages of their funding to operate their peer mentorship program, each has been able to sustain the delivery of their programs for many years. Furthermore, all organizations have been able to sustain their programing despite having different service delivery models (e.g., one-to-one mentorship versus
group-based mentorship, focus on mentorship in community versus hospital settings). These findings demonstrate that long-term maintenance of peer-mentorship programming is not restricted to a specific delivery model. This observation is encouraging given that an organization’s mandate may change depending on their funding (Scott, 2003). For example, one organization indicated that their service delivery model (i.e., one-to-one mentorship focusing on employment) was directly influenced by the requirements outlined by their main funding source. However, if their funding source were different, they would offer more group-based mentorship opportunities and place less focus on employment. Further research needs to be conducted to evaluate the cost effectiveness of different peer mentorship service delivery models and the impact they have on the maintenance as well as the individual-level reach of a program.

### 3.4.3 Recommendations for using the RE-AIM Framework

Based on the challenges experienced during this study, we have provided the following recommendations for researchers to consider when applying the RE-AIM framework to evaluate the impact of real-world, community-based, public health programming developed and delivered by autonomous community organizations.

- Involve stakeholders from all participating organizations throughout the entire research process. Conceptualizing indicators that are reflective of the available data can only be accomplished by understanding the data monitoring methods of each organization. Furthermore, continuing to engage stakeholders during data collection can help inform qualitative follow-up questions to ask about the data that are being collected which will help facilitate a deeper understanding of results. Engaging with stakeholders will also allow you to facilitate conversation between organizations which could lead to collaborative health promoting initiatives between organizations.
For example, organizations that serve people with chronic conditions (e.g., heart disease, diabetes) may choose to deliver similar health promoting initiatives (e.g., awareness runs) simultaneously to a) increase the potential reach of the initiative and b) reduce the financial cost to deliver the event.

- Understand the funding model used by each organization and how it impacts their programming. Every non-profit organization will have its own unique funding model that typically includes funding from a variety of sources (e.g., donations, grants, fundraising). The outcomes and outputs that an organization delivers, and monitors are often dictated to them based on the funding they receive. Thus, the data that are collected and the programs that individual organizations provide will likely vary. Having a complete understanding of the funding model for all participating organizations will aid in the development of indicators that are universal across those organizations. This recommendation is imperative if using RE-AIM to evaluate health promotion programming delivered by a combination of non-profit and for-profit organizations. For example, a for-profit gym may have more funding and staff available to track specific outcomes for a certain exercise class compared to a non-profit gym that may not have the resources to collect robust data. Understanding these funding differences would be crucial to develop indicators that are meaningful and relevant for both exercise programs.

- Include indicators that may only be applicable to some programs. Evaluating the cumulative impact of several programs would require that all organizations collect the exact same data. As this may not always be the case, it is important not to exclude indicators that could still be used to evaluate the impact of some of the programs. For
example, one organization may evaluate reach by examining the number of new members in a given year while the others may evaluate reach based on the number of resources distributed to the community. These sets of data could not be amalgamated, thus restricting our ability to evaluate the cumulative impact of these programs. However, the results from both reach indicators could still be compared, and a further understanding of why programs collect different data could be achieved through qualitative methods. Unique findings from one organization may be insightful for others about how they can improve their reach, monitor effectiveness, or implement their health promoting programs more effectively.

• When conceptualizing indicators for each RE-AIM dimension it is important to not only consider individuals that may be receiving services from a program but also those who are providing the program, especially if they are members of that community organization. Careful consideration must be given when conceptualizing indicators to ensure that all potential “participants” are considered. For example, when using RE-AIM to evaluate a community-based summer camp as Burke et al. (2015), it may be prudent to conceptualize reach indicators for camp counsellors in addition to campers, especially if counsellors belong to the same organization.

3.5 Summary

This study helps extend the literature on the pragmatic uses of the RE-AIM framework by demonstrating a unique application of the framework in a community setting. Through the application of RE-AIM, we were able to provide preliminary information regarding the impact of SCI peer mentorship programs across Canada at both the individual and organizational level. Furthermore, this research has highlighted challenges with implementing the RE-AIM
framework to evaluate community-based public health programming across multiple organizations and demonstrates the importance of involving stakeholders and using diverse methodology to account for missing, inconsistent, or unavailable data. The findings suggest that a better understanding of how to effectively use RE-AIM to evaluate programming delivered by multiple autonomous community organizations is needed. Researchers are encouraged to continue using the framework to evaluate the collective impact of multiple public health programs but should continue to report recommendations to iteratively improve our understanding of how to use RE-AIM in this context.
Table 3.1 RE-AIM Indicators, numerators, and denominators

<table>
<thead>
<tr>
<th>RE-AIM Elements</th>
<th>Descriptions</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Other</th>
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<tbody>
<tr>
<td>Reach</td>
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<td>National</td>
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<tr>
<td>Peer Mentors</td>
<td>The percentage of Canadians with SCI who are peer mentors</td>
<td>Total number of registered peer mentors</td>
<td>All Canadians with SCI [28]</td>
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<tr>
<td>Peer Mentor Representativeness</td>
<td>How representative registered peer mentors are compared to general Canadian SCI population</td>
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<tr>
<td>Peer Mentees</td>
<td>The percentage of Canadians with SCI who have received mentorship</td>
<td>Total number of Canadians with SCI who have received mentorship</td>
<td>All Canadians with SCI [28]</td>
<td></td>
</tr>
<tr>
<td>Peer Mentee Representativeness</td>
<td>How representative people who have received mentorship are compared to general Canadian SCI population</td>
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<tr>
<td>Provincial</td>
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<tr>
<td>Peer Mentors</td>
<td>The percentage of persons with SCI who are registered peer mentors in each province</td>
<td>Total number of registered peer mentors in a province</td>
<td>Total number of Canadians with SCI in the province [28]</td>
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<tr>
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<td><strong>Effectiveness</strong>&lt;br&gt;Provincial Peer Mentor Outcomes</td>
<td>The reported positive and negative outcomes of engaging in mentoring for peer mentors</td>
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<td>Qualitative data from surveys</td>
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<tr>
<td>Peer Mentee Outcomes</td>
<td>The reported positive and negative outcomes of engaging in mentoring for peer mentees</td>
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<td>Qualitative data from surveys</td>
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<td>The % of organizations providing peer mentoring</td>
<td>The # of SCI organizations providing peer mentoring</td>
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<td>Peer Mentor Programming – community</td>
<td>The % of organizations who provide community peer mentoring</td>
<td>The # of SCI organizations providing peer mentorship in the community</td>
<td>The # of SCI organizations provided inpatient peer mentorship</td>
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<td>Peer Mentor Programming – hospital</td>
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<td>Hospital adoption of peer mentoring</td>
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<td>The # of hospitals where inpatient mentoring is provided by a SCI organization</td>
<td>The # of SCI rehabilitations hospitals in Canada</td>
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<td>Information collected from surveys</td>
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<td>RE-AIM Elements</td>
<td>Descriptions</td>
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| **Implementation**  
*National Level*  
Outcome data collection | The % of organizations that collect outcome data | The # of organizations that collect outcome data | The total # of SCI organizations | |
| On-going Training | The % of organizations that provide continued/on-going training | The # of organizations that offer on-going training | The total # of organizations that offer training | |
| Monitoring Practices | The % of organizations that monitor their mentor/mentee relationships | The # of organizations that track mentor-mentee interactions | The total # of SCI organizations | |
| **Provincial Level**  
Cost of Service | The % of money dedicated to peer mentoring | The amount of money allocated for peer mentorship program | Total amount of money in operation budget of an organization | |
| Cost per member | Operational budget cost per mentor | The amount of money allocated for peer mentorship program | Total number of registered mentors in an organization | |
| Peer mentors as intended | The % of peer mentors in the organization as intended | The total # of registered peer mentors in an organization | The # of peer mentors an organization wants available | |
| Program efficacy | The % of mentors who actually end up mentoring | The # of mentors who have mentored someone | The # of mentors who have been trained | |
| **Staff Level**  
Peer mentoring staff | | The # of staff employed for peer | | |
<table>
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<th><strong>RE-AIM Elements</strong></th>
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<th><strong>Other</strong></th>
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<tr>
<td><strong>Peer mentoring staff as intended</strong></td>
<td>The % of staff dedicated to peer mentoring</td>
<td>mentoring (FTE equivalent)</td>
<td>The # of staff employed by an organization</td>
<td>The # of staff employed for peer mentoring (FTE equivalent)</td>
</tr>
<tr>
<td><strong>Peer mentoring volunteers</strong></td>
<td>The % of staff in an organization dedicated to peer mentoring as intended</td>
<td>The # of volunteers dedicated to peer mentoring</td>
<td>The # of staff (FTE equivalent) an organization wants available for peer mentoring</td>
<td>The # of volunteers employed by an organization</td>
</tr>
<tr>
<td><strong>Maintenance Setting Level</strong></td>
<td><strong>Long term sustainability</strong></td>
<td>The long-term sustainability of the program</td>
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<td>How long the program has been operating</td>
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<tr>
<td><strong>Individual Level</strong></td>
<td><strong>Growth of peer programming – Mentor</strong></td>
<td>The growth of the peer mentoring program within an organization</td>
<td>The # of registered peer mentors in the organization</td>
<td>The # of registered peer mentors in the organization 5 and 10 years ago</td>
</tr>
<tr>
<td><strong>Growth of peer programming – Mentee</strong></td>
<td>The growth of the peer mentoring program within an organization</td>
<td>The # of people who have received mentorship in the past year</td>
<td>The # of people who received mentorship 5 and 10 years ago</td>
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Chapter 4. Transformational Mentoring: Leadership Behaviours of Spinal Cord Injury

Peer Mentors

4.1 Overview

The World Health Organization estimates the global incidence rate of spinal cord injury (SCI) at 250,000-500,000 cases annually (World Health Organization, 2013). Despite affecting a relatively small segment of the population compared with other physically disabling conditions, SCI commands intense interest from researchers as the physical, psychological, and social implications of sustaining a SCI can be profound. For example, self-reported pain levels, prevalence of depression, cost of living, and unemployment rates, are all greater for people with SCI compared to the general population (Craig et al., 2009; Lidal et al., 2007; National Spinal Cord Injury Statistical Center, 2015; van Gorp et al., 2015). Although the disabling consequences of incurring a SCI can be severe, and once significantly reduced life expectancy, individuals with SCI can now expect to live almost as long as those without SCI, depending on their degree of neurological impairment (Middleton et al., 2012). With improved outcome expectations after a SCI, research has shifted to issues associated with long term survival, such as examining support needed to facilitate community reintegration, and improving participation and quality of life (Boninger et al., 2012; Heinemann et al., 2012).

One potential strategy to improve participation and factors that influence the quality of life of people with SCI is peer mentoring. A peer mentor is commonly defined as someone who has gone through a comparable experience to that of another individual, and because of this shared experience, is positioned to act as a positive role model and provide believable hope (Ensher et al., 2001; Hayes & Balcazar, 2008; Holt & Hoar, 2006; Sherman et al., 2004). SCI peer mentoring typically involves interactions between two people where one (the mentor)
provides support to the other (the mentee). The type and frequency of support provided will necessarily vary depending on the needs of the mentee and may include assisting with community integration, secondary health conditions, emotional support, socialization, and physical activity participation (Letts et al., 2011; Veith et al., 2006).

Given the wide range of support that SCI peer mentors may provide, researchers have begun to focus on identifying specific outcomes of mentorship and how they may relate to improvements in mentees’ community reintegration and overall quality of life. For example, Sweet et al. (2016) analyzed data from a large population-based survey (Spinal Cord Injury Community Survey) of over 1500 Canadian adults with SCI, in which peer support, need fulfillment, life satisfaction, and participation were measured. Interestingly, the extent to which one’s peer support needs were fulfilled was positively associated with three aspects of participation--work/education, health, and autonomous outdoors participation--as well as life satisfaction. These results complement findings from an earlier retrospective case-control study which revealed that individuals who received SCI peer mentoring within 1 year post-injury reported greater occupational participation (Sherman et al., 2004). When considered alongside qualitative evidence describing various benefits (Boschen et al., 2003; Hammell, 2007; Veith et al., 2006), it becomes evident that peer mentoring has the potential to positively influence an array of areas that could contribute to the quality of life of people with a SCI.

Although these benefits have garnered some research attention, less is known about what makes peer mentors effective. Identifying and understanding the leadership behaviours and skills of effective SCI peer mentors could help inform the content and development of better mentor training programs. To date, only one study has addressed this issue (Beauchamp et al., 2016). In that study, 15 adults with SCI were interviewed about the leadership behaviours of their current
and past peer mentors. Participants reported that effective mentors displayed behaviours that the study authors characterized as closely aligning with the tenets of transformational leadership theory (Bass & Riggio, 2006).

Conceptualized within the field of organizational psychology, transformational leadership occurs when leaders go beyond their own self-interests to inspire, motivate and empower their followers (Bass & Riggio, 2006). According to Bass and Riggio, there are four behavioural dimensions of transformational leadership: (1) Inspirational Motivation—promoting a set of values or vision through enthusiasm and optimism; (2) Intellectual Stimulation—encouraging creativeness, problem solving and innovation from followers; (3) Idealised Influence—emulating desired behaviours by acting as a role model; and (4) Individualised Consideration—treating others’ as unique individuals and empowering independent decision making (Bass & Riggio, 2006). Beauchamp et al. (2016) proposed that effective leadership is analogous to effective mentoring, and that the transformational leadership framework could be used to understand characteristics of effective SCI peer mentorship.

Consistent with this hypothesis, Beauchamp et al. (2016) found that mentees who perceived their mentors to be using transformational leadership behaviours, reported a wide range of adaptive psychological and behavioural outcomes such as improved motivation, self-confidence, hope, well-being, and social participation. Mentees also described a greater level of comfort and acceptance with their situation along with improved perceptions of their own capabilities. Interestingly, not all mentees reported their mentors using all four transformational leadership dimensions. Specifically, 9 of 15 mentees reported their mentors using behaviours aligning with idealised influence and intellectual stimulation, 12 of 15 using inspirational motivation behaviours, and 13 using individualised consideration behaviours.
Although these findings provide preliminary evidence of transformational leadership in SCI peer mentorship, the findings are limited insofar as behaviour use was only examined from the perspective of mentees. SCI peer mentoring is often a one-to-one relationship, and because of this, a mentee may only interact with a single mentor over his or her lifetime. Thus, the mentee can only report on how the mentor worked with him/her individually. Given that peer mentors are often paired with multiple mentees (Balcazar et al., 2011; Ljungberg et al., 2011), examining transformational leadership behaviour from the mentor’s perspective would help ensure that information on behavior use is not constrained to the views of a single mentee. Interviewing peer mentors would also allow for a more comprehensive examination of SCI mentorship and could help inform about the applicability of transformational leadership across a variety of unique mentee relationships. Furthermore, obtaining the mentor’s perspective provides opportunity to identify specific examples of behaviours that could be integrated into subsequently developed transformational leadership training programs specifically designed for SCI peer mentors. With this in mind, the purpose of the present study was to extend previous research by examining the leadership behaviours of SCI peer mentors from their own perspective and determine the extent to which these align with transformational leadership theory (Bass & Riggio, 2006).

4.2 Method

4.2.1 Participants

A total of 12 adults with an SCI who were between the ages of 28 and 79 (M=49.4, SD=16.5) participated in the study. The sample consisted of 7 men and 5 women with injury levels ranging from L1-C4. At the time of recruitment, participants had been injured for between 5 and 56 years (M=24.5, SD=15.2) and were between the ages of 8 and 67 (M=24.9, SD=16.3) when they incurred their SCI.
Participants were recruited through two well-established peer mentoring programs in Canada: Spinal Cord Injury Ontario (SCI Ontario) and Spinal Cord Injury BC (SCI BC). These two independent, provincial, non-governmental organizations provide peer mentoring services for people with SCI within the community and rehabilitation settings. Both organizations have unique training programs that teach potential mentors about their role as a volunteer, confidentiality/privacy, where to access resources, and how to effectively communicate with mentees and their families. Mentors are expected to provide information and support on a wide variety of topics (e.g., self-care, returning to work, community reintegration) and be prepared to commit to a long-term mentoring relationship when necessary. Mentors were endorsed by their organization, had between 3 and 56 years (M=13.9, SD=15.2) of mentoring experience, and had mentored between 2 and 40 mentees (M=14, SD=10.7). While both organizations are well-established, neither of their peer mentoring training programs are based on a theoretical framework nor do they teach specific leadership behaviours such as those associated with transformational leadership.

4.2.2 Procedures

All procedures were approved by the research ethics boards at McMaster University and the University of British Columbia before data collection. A flyer outlining the purpose of the study was emailed to members of the organizations involved in the research (i.e., SCI Ontario, SCI BC) and other partner organizations. Interested volunteers were asked to contact a research assistant to obtain further information about the study. Individuals who contacted the research assistant received an information letter describing the objectives and requirements of the study along with a consent form. All consenting mentors were contacted by the researcher and participated in a semi-structured interview via Skype. To avoid limiting participant responses
and encourage richer conversations, questions were open-ended and grouped around similar themes. Sample size was determined by interviewing eligible participants until saturation of concepts was observed. Saturation was defined as the point when all questions had been thoroughly explored in detail and no new concepts or themes emerged in subsequent interviews (Trotter II, 2012).

The interview schedule (Appendix B.1) was developed by scientist and community members of the research team, with the intent to investigate the behaviours of SCI peer mentors during mentoring interactions. Interviews began with background and demographic questions and transitioned into questions related to mentoring experience. Specifically, participants were asked about their peer mentoring history, their mentoring philosophy, and a variety of questions related to their experiences interacting with a mentee (e.g., “How have you responded when your mentee has asked you for help on a specific issue?”). Interviews lasted, on average, 45-55 minutes. Participants received a $20 honorarium upon completion of the interview. All participants were offered the opportunity to follow up with the interviewer if they had any further questions or concerns.

4.2.3 Data Analysis

In this study, we drew from a social constructivism paradigm, as the primary objective was to understand the behaviours of SCI peer mentors by focusing on the individual views of the study participants (Kim, 2001). Although using an a priori defined lens could align with a postpositivism paradigm (Creswell, 2013; Mackenzie & Knipe, 2006), acknowledging the influence of our biases, engaging peer mentors with broad open-ended questions, and relying on the viewpoints of peer mentors to shape our results, are concepts consistent within a social constructivism framework (Creswell, 2013; Kim, 2001).
Data management and analysis were facilitated using the QSR-NVivo 10.0 qualitative data analysis software (QSR International Pty Ltd, Melbourne, Victoria, Aus). Interviews were recorded, transcribed verbatim, and subjected to a directed content analysis (Hsieh & Shannon, 2005). Transcripts were deductively coded, unit-by-unit, to identify meaningful units that reflected the four dimensions of transformational leadership (i.e., idealised influence, inspirational motivation, individualised consideration, intellectual stimulation; Bass & Riggio, [2006]). Chenail (2012), defined a meaningful unit as “a single undivided entity upon which you direct your analysis and express the qualities you perceive in that element” (p. 266). Using this definition, meaningful units that reflected the four dimensions of transformational leadership were coded question-by-question, as opposed to line-by-line, to minimize over- or under-sizing potentially meaningful units (Chenail, 2012). After completing the deductive analysis to organize the data into meaningful units that reflected the four broad dimensions of transformational leadership, the analysis progressed by inductively coding the meaningful units to allow sub-categories to emerge that represented potential subcomponents of the four transformational leadership dimensions. Sub-categories were organized under the four larger-order categories until all meaningful units had been categorized. This method of analysis allowed for the categorization of data using a step-by-step structured approach (Hsieh & Shannon, 2005; Saldaña, 2016; Sparkes & Smith 2014), strengthening methodological rigour.

The first author performed the initial analyses, which involved coding meaningful units within the transcripts, and organizing the meaningful units into the four larger categories and subsequent sub-categories. To ensure plausibility of the coding structure and the results, all coded transcripts and categories were reviewed by the fourth author and two experienced colleagues, who acted as critical friends. In this capacity, the critical friends served as
“intellectual watchdogs” (Rossman & Rallis, 2003, p. 69) responsible for challenging the first author’s interpretations of the data and ensuring that meaningful data were not excluded. The lead author and critical friends discussed discrepancies with the original coding, internal and external homogeneity of the categories (Mayan, 2016), the content of the sub-categories and the interpretation of their meaning. Two subsequent phases of analysis were completed to address the concerns that were raised. Upon completion of the third round of analysis, consensus was reached regarding the coding scheme, the appropriateness of the coding, and the internal and external homogeneity of the proposed categories and sub-categories. This process whereby the lead author’s interpretations were evaluated by other experts enhanced the quality and rigour of the analysis by helping to reduce potential biases and improving the transparency during the data analysis (Tracy, 2010). The analysis concluded by categorizing each participant’s meaningful units into the sub-categories of transformational leadership behaviours that emerged and creating a matrix of participant responses (Table 4.1) that captured the extent of each mentor’s reported transformational leadership behaviours.

4.3 Results

A total of 116 meaningful units were coded from the transcripts. These meaningful units were subsequently categorized into four higher-order categories corresponding to the four a priori transformational leadership dimensions. Within the four higher-order categories, nine sub-categories emerged representing specific subcomponents of the four behavioural dimensions of transformational leadership (Figure 4.1). The variability of mentor behaviours was evident in the experiences discussed by participants, the number of sub-categories that encompassed each major category, as well as the total number of meaningful units comprised within each higher-
order category. Findings are described in detail below with exemplary quotes used to support the representative categories (pseudonyms have been used to respect participant anonymity).

4.3.1 Inspirational Motivation

According to Bass and Riggio (2006), inspirational motivation occurs when leaders instill confidence in their followers by inspiring them, and motivating them to reach ambitious goals. Behaviours aligning with the dimension of inspirational motivation were reported by 12 mentors who reported examples of providing optimism and enthusiasm and encouraging and promoting achievement (Table 4.1). Several mentors reported instances of their intentions to be optimistic and enthusiastic when interacting with a mentee. For example, Susan stated:

I’m not just sitting there saying, “oh, life’s great, and it doesn’t matter that you can’t walk or do the things you did before”. I’m, I’m totally honest with them and say, “ya, some days suck, you know? I have great days, I have bad days, but those great days eventually start to get more and more frequent.

Mentors described encouraging and promoting achievement either through verbal encouragement or active promotion. Verbal encouragement occurred when mentors verbally shared their own experiences to motivate mentees and promote achievement through conversation. For example, when discussing travelling with a mentee, Jacob stated:

You know, I talked to him about my social life, uh, but again, I guess mine… like I try to explain that you know, he can still travel, and still do things, uh…cause there’s, you know, a lot of places are accessible, so you just have to make accommodations.

Mary also described how she would verbally promote achievement with her mentees:

Encourage them to keep trying, and try different ways, and eventually it’s going to work.

Eventually, you know, things work out.
Active promotion differed from verbal encouragement and was characterized as the mentor encouraging and promoting achievement by doing the activities alongside the mentee. For example, when describing her interactions with female mentees, Susan stated:

*I’ve taken people, you know I’ve gone to like the mall with a couple girls, like the first time they went out shopping and stuff like that.*

Jacob also provided an example of how he would not only provide information verbally, but how he would accompany a mentee to learn more about engaging in sport:

*I’m a treasurer for a wheelchair basketball club, so if somebody is interested in, you know, doing that, I can introduce them to the coach.*

### 4.3.2 Idealised Influence

Leaders provide an idealised influence for their followers by clearly expressing their values and morals, being charismatic, and displaying a sense of purpose (Bass & Riggio, 2006). Eleven mentors described behaviours associated with idealised influence. These behaviours were further categorized into two lower-order sub-categories: being a positive role model, and being open and honest (Table 4.1). Several mentors described instances of how they perceive themselves as being a positive role model. For example, Jane indicated that:

*I’ve had a very successful career. I’ve had, you know, a good education. I’ve been very fortunate in, in a number of respects, so… um, I like to think in a way that, that you know, that people, like when they’re getting information from me that, or they’re… when they’re interacting with me that it’s uh, a positive experience, and they’re seeing that, they’re seeing that they can lead a good and productive life.*

Mentors described several instances of how they could be open and honest with their mentee including times when being honest would be difficult. For example, Jacob stated:
I think, I, you have to alter your response, and... and kind of be realistic to the situation. You know, if somebody isn’t going to walk again you can’t tell them that they’re going to walk again.

4.3.3 Individualised Consideration

Leaders display individualised consideration towards their followers by providing customized support, and understanding the individual unique physical and psychological needs of each follower (Bass & Riggio, 2006). A total of 10 participants reported providing individualised consideration toward their mentees by recognizing individual needs and by being responsive and caring (Table 4.1). Recognizing individual needs was described by several mentors who stressed the importance of treating mentees as unique individuals. For example, Susan stated:

I have learned over the years that not everyone requires the same type of support, that some people just want you to sit there and listen, other people want you to give them, you know, ideas about what you’ve done in your life to make things better. So, it uh, it really depends, everyone is very different.

Mentors also provided examples of how they would be responsive and caring when interacting with a mentee. For instance, Jacob stated:

I think it’s important to, you know, tell people, that they’re gonna be ok. When, like when you see it. I think, uh, most people are kind of ... you know, they’re scared, and they... they, like they need to know that it’s gonna be fine.

Amy recalled the importance of caring about the well-being of a mentee and remaining responsive especially with someone who is newly injured and not ready to accept support:
I was in the same place at that point in time, so I understand. And, you know, I just, you know, provide my email address or information, and say maybe there is a time when you are interested, and you can contact me, or anyone else when you are.

### 4.3.4 Intellectual Stimulation

Intellectual stimulation occurs when leaders stimulate independent thinking from followers by encouraging them to come up with their own solutions and to think about old problems in new ways (Bass & Riggio, 2006). Intellectual stimulation was identified by 10 participants who described behaviours that fell under three sub-categories: reframing problems, changing perspectives and promoting independent thinking (Table 4.1). Several mentors provided examples of how they would reframe problems with their mentee. For example, when discussing how she would help a mentee solve a problem, Mary stated:

Um… I would just say be patient. Um, it will work out. Um, we could maybe find a different way to do it. If maybe a certain way wasn’t working, we’d look at other ways of doing something.

Mentors indicated how they would attempt to change the perspective of mentees by focusing on the positives of a situation. This behaviour was exemplified in a statement by Brittany who said:

*It’s … sort of getting them to look at how far they’ve come now and say that, yes, you have had success already. It may not seem like, cause you’re, you know, you’re just doing what you’re doing every day. You know, getting up, doing this, doing that. But if you think about it, were you doing that 3 or 4 months ago? No.*

A select number of mentors also provided explicit examples of how they have helped to change the perspective of their mentees. For example, Amy described how she helped a mentee realize how independent she could still be regardless of having a SCI:
So the first thing we did was took a cab, like from her rehab hospital and I took her to a concert, and she was so impressed. The other thing that I taught her was how to go to the bathroom on her own, and you know, she ended up being very independent and driven.

Lastly, mentors provided examples of how they would encourage mentees to think for themselves by promoting independent thinking. For instance, rather than telling a mentee what to do, Dan stated:

*Probably the other best thing to say is it’s, I mean, not to tell the other person what to do, just basically, this is what I’ve done. Not impose your ideas on someone else. Like, just show them just basically, this is what I decided to do, I’m not saying it’s right. This is what I found works for me, if you want to do it, go ahead, but if not I mean that doesn’t mean you have to.*

Brittany also provided an example of how instead of telling her mentee what to do, she simply shared her experience and allowed them to think for themselves:

*I just thought there was a better way, and from my experience it was definitely an easier way. And I just told her, that you know, what, what you’re doing, you’ve been doing it for X amount of years, and that’s the system you’re comfortable with, but if you tried this… it may… make your life easier. I told her how it was easier and the only drawbacks, and I said you know, I’ll leave it up to you if you want to try it, but these are the benefits that I have found. And she tried it and found that it really is a lot better, and is a lot easier. So I was glad she took it, because it improved her health. Which I sort of knew it would, but people have to come to that themselves.*
4.4 Discussion

The purpose of this study was to examine the leadership behaviours of SCI peer mentors within the framework of transformational leadership theory. Twelve mentors with varying levels of experience provided examples of leadership behaviours they currently or would use when interacting with mentees. These behaviours aligned with the four dimensions of transformational leadership proposed by Bass and Riggio (2006); namely, idealised influence, inspirational motivation, individualised consideration, and intellectual stimulation.

Our findings provide insight into the transformational leadership behaviours SCI peer mentors currently, or intend to use, when interacting with mentees. Specifically, idealised influence was represented by acting as role models and being open and honest. Similarly, mentors displayed optimism & enthusiasm while encouraging and promoting achievement, concepts that are subsumed by inspirational motivation. Individualised consideration was reported by mentors who were recognizing individual needs of their mentee as well as being responsive and caring. Lastly, intellectual stimulation was reflected in reframing problems, changing perspectives, and promoting independent thinking. Comparing these findings to the limited qualitative investigations of behaviours of transformational leaders, we find that SCI peer mentors are displaying similar subcomponents of transformational leadership (i.e., acting as role models, being open and honest, providing optimism and enthusiasm, recognizing individual needs, being responsive and caring, and promoting independent thinking) as elite level coaches and captains (Smith et al., 2016), school principals (Balyer, 2012), and childcare managers (Andersen et al., 2018).

However, one behaviour that appears to be unique to SCI mentorship, is the active promotion of achievement. This subcomponent of inspirational motivation was described by six
mentors and, to our knowledge, has not previously been identified within the broader transformational leadership literature. The unique challenges that mentees encounter when adjusting to life after an SCI may explain why this behaviour emerged in the present context. For example, having to reintegrate back into an inherently inaccessible environment while simultaneously learning to cope with impaired physical and physiological functioning can be a complex and overwhelming endeavor. Knowing how complex the challenges can be, mentors may consider verbal encouragement to be insufficient to motivate mentees and, instead, may find that doing activities alongside them is more beneficial.

Although we found evidence that all four dimensions of transformational leadership behaviours were being applied, not all behaviours were reported equally. Specifically, while idealised influence, inspirational motivation, and individualised consideration were represented by 40+ meaningful units, intellectual stimulation was only represented by 18. Furthermore, only six mentors gave examples of behaviours from all four transformational leadership dimensions despite some mentors having upwards of 56 years of mentoring experience. This finding is consistent with the results of Beauchamp et al.’s (2016) study, in which only five of fifteen mentees perceived their mentors to be using transformational leadership behaviours from all four dimensions.

According to Bass and Riggio (2006), transformational leaders do not necessarily use behaviours from the four behavioural dimensions simultaneously or equally. Rather, their use is dependent on the needs of the follower. Additional research is needed to identify antecedents and consequences of the different transformational leadership behaviours in SCI peer mentorship contexts. For example, examining leadership behaviours in different mentoring settings (i.e., hospital versus community) may reveal that mentors use certain behaviours with mentees at
certain stages of recovery. Further, the reason a mentee is seeking support and the outcome desired (e.g., learning to manage incontinence) may prompt the use of certain transformational leadership behaviours (e.g., individualized consideration) more so than others.

In addition to examining mentor behaviours in different settings, future research should also examine mentorship using other theoretical frameworks such as self-determination theory or social cognitive theory. Self-determination theory asserts that satisfaction of three basic psychological needs (i.e., autonomy, competence, and relatedness) is necessary for growth/well-being (Deci & Ryan, 2002). SCI mentors who support these needs may be more successful in eliciting behavioural change than those who do not (Sweet et al., 2018). Interestingly, our study participants described several behaviours that could be considered supportive of the three basic needs. For example, promoting independent thinking could help foster a mentee’s sense of autonomy while encouraging and promoting achievement could improve perceived competence (Kovjanic et al., 2012). Mentors also described behaviours that could be explained using a social cognitive theory framework. According to this theory, two ways in which individuals learn, and become self-efficacious and motivated to try new behaviours, are through verbal persuasion and by observing and imitating others (i.e., modeling/vicarious experiences; Bandura, 1986). Promoting achievement through verbal encouragement is one way that mentor behaviours align with the concept of verbal persuasion and could result in more self-efficacious mentees. Additionally, mentors who reported examples of acting as a role model could be providing an idealised influence for mentees to observe, imitate, and ultimately learn from. Given these alternative theoretical interpretations, the examination of SCI peer mentorship from other theoretical perspectives is warranted.
4.4.1 Implications

Historically, leadership was bestowed upon individuals with high achievements and was thought to be an innate skill-set that predisposed certain individuals to become leaders. Today we know this is not the case. Regarding transformational leadership, research evidence supports the notion that transformational leadership skills can be learned and that training programs can be effective for developing transformational leaders (Beauchamp et al., 2011; Duygulu & Kublay, 2011; Dvir et al., 2002; Kelloway et al., 2000). Given previous research indicating that adults with SCI derive psychological and behavioural benefits when their peer mentors use transformational leadership behaviours (Beauchamp et al., 2016), education on how to effectively use these behaviours could lead to more effective mentoring practices and outcomes. The specific examples identified in this study of how mentors may use transformational leadership could be applied to help guide the content development of SCI peer mentorship training programs. For instance, to help promote mentee autonomy, mentors could be trained to adjust their wording to ensure they are promoting independent thinking, rather than telling mentees what to do. Training programs could include observation of recorded sessions of experienced mentors displaying transformational leadership behaviours (e.g., promoting independent thinking), teaching mentors to recognize and identify transformational leadership, and simulated practice sessions to work on using the behaviours.

4.5 Limitations and Summary

Although this study has generated new information that contributes to the SCI peer mentoring literature, it does have some limitations. First, because participants were recruited from two Canadian peer mentoring organizations, the generalizability of the results may be limited, as peer mentoring programs may be different in other provinces and countries. Second,
because the research question was focused on transformational leadership, we inherently approached the data with an informed, but nonetheless, strong bias toward identifying transformational leadership behaviours. This approach could have influenced the data analysis and results. Third, given our study design, we were unable to examine if the reported use of transformational leadership behaviours is associated with characteristics of the mentors or their mentees.

Despite these limitations, our study provides a foundation for future research on SCI peer mentorship by uncovering some of the leadership behaviours reported by SCI peer mentors. An important next step will be to determine the effects of these behaviours on SCI peer mentoring outcomes. In addition, given that positive mentee-reported outcomes have been linked to mentors’ use of transformational leadership (Beauchamp et al., 2016), our results may help to inform the content of peer mentor training programs. Such programs could lead to more effective SCI peer mentorship practices.
Table 4.1
Transformational Leadership Behaviours of Peer Mentors

<table>
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<tr>
<th>Pseudonym</th>
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<th>Mentoring Experience (in years)</th>
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<th>Idealised Influence</th>
<th>Individualised Consideration</th>
<th>Intellectual Stimulation</th>
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<td>Openness &amp; Honesty</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Transformational Leadership

Higher-Order Categories

- Inspirational Motivation
  - Optimism & Enthusiasm
  - Encourage & Promote Achievement
- Idealised Influence
  - Openess & Honesty
  - Being a Positive Role Model
- Individualised Consideration
  - Recognizing Individual Needs
  - Responsive & Caring
- Intellectual Stimulation
  - Reframing Problems
  - Changing Perspectives
  - Promote Independent Thinking

Lower-Order Categories

- Active Promotion
  - Verbal Encouragement

Figure 4.1: Higher and lower order categories of transformation leadership behaviours
Chapter 5. Investigating the Influence of Interaction Modality on the Communication Patterns of Spinal Cord Injury Peer Mentors

5.1 Overview

Individuals who are adjusting to life after a spinal cord injury (SCI) encounter unique and extremely complex challenges. For example, these individuals often feel overwhelmed while learning to cope with impaired physical and physiological functioning as they reintegrate into inherently inaccessible environments (Boschen et al., 2003). SCI peer mentorship can help individuals overcome these unique challenges. Defined as a peer interaction that aims to help individuals who share similar lived experiences adapt and/or thrive (Canadian Spinal Cord Injury Peer Mentorship Community-University Research Group, 2020), SCI peer mentorship research has identified several benefits for mentees (i.e., individuals who receive mentorship), including increased motivation, self-efficacy, and participation (i.e., outdoors, health, work/education) (Balcazar et al., 2011; Shem et al., 2001; Sweet et al., 2016; Veit et al., 2006). SCI peer mentors (i.e., those who provide mentorship) also report a range of benefits including an increased sense of purpose, self-worth, relatedness, and satisfaction (Balcazar et al., 2011; Hernandez, 2005).

Considering peer mentorship’s effectiveness at improving health care self-management and reducing unplanned hospital visits for mentees (Gassaway et al., 2017; Houlihan et al., 2017), peer mentors are now being recognized as valuable members of the health care team and may occupy paid positions within hospital settings. Across Canada alone, there are over 39 official offices that provide peer mentorship for persons with SCI in hundreds of communities and in over 40 hospitals (Shaw et al., 2019). Given that peer mentorship is provided for individuals with recent and long-standing injuries in both hospital and community settings, researchers have begun investigating characteristics of the mentor-mentee relationship that might contribute to the
effectiveness of peer mentorship (Gainforth et al., 2019; Martin Ginis et al., 2018; Shaw et al., 2019).

The delivery of peer mentorship is complex. Factors including how peer mentors are trained (e.g., the behaviours they are trained to use), the criteria used to pair mentors and mentees, the frequency of their interactions, and settings where interactions occur (i.e., hospital, community) can all impact the mentorship experience (Gainforth et al., 2019; Martin Ginis et al., 2018). Moreover, the interaction medium (e.g., in-person, telephone, e-mail, video chat) could influence the leadership behaviours, motivational interviewing (MI) skills, and behaviour change techniques (BCTs) used by mentors (Gayed et al., 2019). Given the frequent use of telephone and face-to-face interactions in real-world peer mentorship interventions, it is important to understand whether there are differential effects between these communication mediums.

We are unaware of any research that has examined this issue within the context of peer mentorship. However, recent studies in the fields of psychological therapy and counselling (Fann et al., 2015; Himelhoch et al., 2013; Mulligan et al., 2014; Stiles-Shields et al., 2014) have addressed the issue of communications mediums. Results from a recent review suggest that telephone-delivered counselling is not only as effective as face-to-face counselling, but the two delivery modalities have virtually no differential impact on counsellor measures (i.e., empathy, attentiveness, participation), client measures (i.e., disclosure) or on the quality of the relationship between the counsellor and client (i.e., therapeutic alliance) (Irvine et al., 2020). Given the similarities in behaviours used by therapists/counsellors and peer mentors (e.g., active listening, provision of support, sharing perspective), presumably, the two modalities should not differentially affect outcomes in peer mentoring contexts.

While the literature on delivery modality in therapy/counselling is informative, it is limited
by a reliance on numerical rating scales as the primary outcome measure (Irvine et al., 2020). These measurement tools provide an assessment of the overall interaction experience but fail to evaluate specific interaction characteristics. For example, many of the measures typically used in this research (e.g., Working Alliance Inventory (Horvath & Greenberg, 1989), Helping Alliance Questionnaire (Luborsky et al., 1996)) capture the overall interpersonal significance of an interaction, but they do not provide a direct assessment of the individual, interactional features of the conversation (e.g., turn taking, pauses, behaviours used). In doing so, rating scales inadvertently treat conversations as static instead of dynamic structures. It is possible that these dynamic, interactional features of a conversation differ across counseling delivery modalities.

State space grids (SSGs) are an observational data analysis method that holds promise to improve understanding of the dynamic communication patterns in mentoring, therapy, and counselling. Developed from a dynamic systems approach (Hollenstein, 2007), SSGs provide a visual representation of how two individuals interact with each other over time. Uniquely, SSGs treat the mentor’s and the mentee’s behaviour as “one” system that moves together. As such, SSGs take the dynamic and reciprocal nature of conversations into account, allowing researchers to understand how two actors (i.e., mentor-mentee) interact together. Successfully used to examine the interaction patterns of clinician-patient (Gainforth et al., 2019), coach-athlete (Erickson et al., 2011), and teacher-student dyads (Pennings & Hollenstein, 2020), SSGs are an effective analysis technique for investigating one-to-one interactions. SSGs have not yet been used to explore how communication patterns might change between dyads depending on their interaction medium (i.e., telephone versus face-to-face).

Given the use of telephone and face-to-face modalities in peer mentorship delivery, coupled with the lack of research examining effects of these modalities on aspects of the peer
mentorship experience, the purpose of this study was to examine how the quality of the mentor-mentee relationship and mentor-mentee behaviours are impacted by interaction modality. Specifically, using a controlled, within-subjects experimental design, we tested the effects of simulated face-to-face (video chat) and telephone peer mentoring on measures of therapeutic alliance and autonomy supportiveness, as well as the mentor’s use of leadership behaviours, MI skills and BCTs. Video chat was used to simulate face-to-face in-person interactions due to COVID-19 research restrictions. Therapeutic alliance and autonomy supportiveness were chosen as indicators of the mentoring relationship quality. These indicators align with the concept of “person centered care” -- a fundamental principle of many peer mentorship programs. We also looked at the effects of interaction modality on mentors’ use of leadership behaviours, MI skills and BCTs given previous research has identified these as important SCI peer mentor behaviours (Beauchamp et al., 2016; McKay et al., 2021; Martin Ginis et al., 2018; Shaw et al., 2018); understanding how interaction modality impacts these mentor behaviours, along with mentee behaviours, is important.

Based on a recent synthesis of research examining differences between telephone and face-to-face therapy (Irvine et al., 2020), we hypothesized that therapeutic alliance and autonomy supportiveness would be similar regardless of how mentors and mentees interacted. The scarcity of research evaluating the impact of interaction modality on leadership behaviours, MI skills, or BCTs, prevented us from making an informed directional hypothesis regarding how the use of behaviours/skills/techniques might change between the two conditions or how conversation patterns might change.
5.2 Method

5.2.1 Stakeholder Involvement

This study employed an integrated knowledge translation (IKT) approach that aligns with the recently developed IKT Guiding Principles for conducting and disseminating SCI research (Gainforth et al., 2020). The authors collaborated with the executive director (CBM) from a community SCI organization during several stages of the research process: developing the study objectives and study design, creating participant inclusion/exclusion criteria, and determining the measures used to ensure they were meaningful within the context of SCI peer mentorship. CBM also facilitated the participant recruitment process and assisted in the interpretation of the results.

5.2.2 Study Design

This study used a within-subjects, repeated measures, experimental design, whereby each participating mentor completed two mentoring sessions with a standardized mentee: one telephone and one face-to-face. To minimize ordering effects, a block randomization method was used to randomize mentors to conditions. Randomization was performed in blocks of 4 by KMG using an online randomizer (Randomness and Integrity Services, 2020).

5.2.3 Participants

Recruitment was facilitated by SCI British Columbia (SCI BC), a not-for-profit organization that provides peer mentoring services for people with SCI in both hospital and community settings. The organization’s executive director contacted all regional peer support service coordinators (paid staff members who provide mentorship themselves) and provided a fact sheet outlining the study purpose, protocol, time commitment, and remuneration. Peer coordinators distributed the fact sheet to all local volunteer peer mentors (N=26) via e-mail. Importantly, all peer coordinators and volunteer mentors had received the same standardized
training through SCI BC for their role as mentors. Eligibility criteria included: 1) ≥18 years of age, 2) fluent in English, 3) access to a laptop/smartphone/tablet, 4) ≥1 year post SCI, 5) registered as a peer mentor with SCI BC, and 6) ≥1 year of mentoring experience. Interested mentors received an e-mail from the principal investigator (RBS), containing further study information and a consent form. All participants provided written consent prior to data collection.

Nine peer mentors expressed interest and provided informed consent and demographic information; eight completed the study. Mentors identified as either men (n=4) or women (n=4), were an average age of 49 (SD=11), had 14 years of mentoring experience (SD=9), and had lived with a SCI for 30 years (SD=16) (Table 5.1).

The standardized mentee for this study was a 41 year-old man who incurred a SCI 6 years ago. He had four years of professional acting experience, a communications degree, and four years of experience as a standardized patient in a medical school program. He was not known to any of the participating peer mentors and was blinded to the study hypotheses.

5.2.4 Measures

5.2.4.1 Questionnaires

Health Care Climate Questionnaire (HCCQ): The HCCQ was designed to assess the degree to which patients perceive their health care providers, physicians or counselors as autonomy supportive (Williams et al., 1996). The short form of the questionnaire includes six items, scored on a 7-point Likert scale from 1-strongly disagree to 7-strongly agree, that are summed to create a total score. For the purpose of the present study, the language of the seven HCCQ items was modified from references to ‘my healthcare providers’ to ‘my peer mentor’. For example, “I felt understood by my peer mentor”. In response to input from our community
partners, a 7th item was added querying perceived trust in the peer mentor (Martin Ginis et al., 2018). This modified 7-item questionnaire has shown acceptable internal consistency (Cronbach’s Alpha > 0.7) (Martin Ginis et al., 2018). Cronbach’s Alpha value for the current study was 0.84.

Working Alliance Inventory (WAI): The WAI was designed to assess the level of collaboration and therapeutic alliance between practitioner and client (Horvath & Greenberg, 1989). The scale consists of 36 items with each item rated on a 7-point Likert scale from 1 – never to 7 – always. Both the client and practitioner versions of the scale have been previously validated and have shown good internal consistency with Cronbach’s Alpha values of 0.93 and 0.87, respectively (Horvath & Greenberg, 1989). For the purpose of the present study the language of the 36 WAI items were modified from reference to ‘my therapist’ to ‘my peer mentor’, and from ‘my patient’ to ‘Jackson’ (the standardized mentee’s pseudonym). For example, “I felt comfortable with my mentor” and “I felt comfortable with Jackson”. Cronbach’s Alpha values for the current study were 0.97 and 0.84.

5.2.4.2 Coding of leadership behaviours, MI skills and use of BCTs

Transformational leadership (TFL) is a leadership style which involves leadership behaviours that individually motivate followers to seek challenges and reach their full potential (Bass & Riggio, 2006). Mentors’ transformational leadership (TFL) behaviours were coded using a modified version (Appendix C.1) of the Coach Leadership Assessment System (CLAS) (Turnnidge & Cote, 2019). According to the CLAS, mentor behaviours were coded as one of eleven TFL behaviours or as a generic Non-TFL behaviour. The CLAS has shown good initial inter- (range: 78–84%, M=80, SD=2.62; kappa range: .75-.82, M=.78, SD=.03 and intra-rater
reliability (range: 75–77%, M=76, SD=.82; kappa range: .75-.76, M=.75, SD=.05) but has not been validated for use outside of sport coaching settings (Turnnidge & Cote, 2019).

MI is a collaborative, person-centered form of communication guiding an individual towards motivation for change (Miller & Rollnick, 2009). BCTs are “observable, replicable, and irreducible” mechanisms of change within a behavioural intervention (Michie et al., 2016; Michie & Johnston, 2011). Mentors’ use of MI skills and BCTs were coded using a modified version of a coding manual (Appendix C.2.) previously developed to code the use of these two types of behaviours specifically in SCI peer mentorship situations (McKay et al., 2021). The manual includes 17 MI skills+3 BCTs and has shown good initial inter-rater reliability (kappa=0.86±0.11, PABAK=0.98±0.01).

5.2.5 Study Protocol

This study was designed to simulate the usual protocols of SCI BC’s peer mentorship program, to inform an evidence-based decision on whether interaction medium (telephone versus face-to-face) impacts the delivery of peer mentorship by peer mentors. Due to COVID-19 restrictions, in-person research contact was not permitted. Thus, to simulate in-person face-to-face interactions, video chat was used. All procedures were approved by the behavioural research ethics board at The University of British Columbia.

Using video-conferencing software (Vidyo), mentors engaged in two mentoring sessions over a two-week period, one with their video off (audio only to simulate a telephone conversation), and another with their video on (to simulate a face-to-face conversation). One week and one day prior to their upcoming mentoring sessions, participating mentors were sent a standardized e-mail with basic demographic information about the mentee (e.g., age, injury level), and information relating to the problems the mentee was having (e.g., bowel and bladder
care). Mentors did not know that the mentee was a trained standardized patient until the study was concluded.

The standardized mentee followed open-structured scripts (Appendix C.3.) that were co-developed by the research team and the mentee, and designed to be as open as possible, allowing the mentee autonomy over the conversation. The scripts focused on the general topics of health and self-care after a SCI and were informed by the mentee’s real-life experiences. Having the scripts focus on a broad topic (i.e., health and self-care) was deliberate so that behaviours/skills/techniques between mentors could be compared with less confounding variables (i.e., topics of conversation). Two pilot sessions were performed to test the scripts. After piloting, minor modifications were made to the scripts.

On the day of an experimental mentoring session, the mentor and mentee were emailed an invitation-link to join the Vidyo call. After they joined the call, RBS re-confirmed that both participants consented to having the conversation recorded. RBS began the recording and left the call to allow the mentor and mentee to engage in their private mentoring session. After each experimental session, the mentor was e-mailed a link to complete the WAI and the mentee was e-mailed links to complete the WAI and HCCQ on a secure web application (REDCap).

5.2.6 Analyses

5.2.6.1 Questionnaires (WAI and HCCQ)

Paired samples t-tests were performed to test for between-conditions differences (telephone versus face-to-face) on the HCCQ and WAI.

5.2.6.2 Leadership behaviours, MI skills and use of BCTs

Recordings of the experimental sessions were transcribed verbatim prior to analyses. Independently, two coders deductively coded transcripts line by line using the CLAS and the SCI
peer mentorship coding manual. All disagreements were resolved through discussion. Coded transcript data was transferred from an Excel file into Noldus Observer XT, a software designed to allow for continuous coding of multiple individuals from audio and/or video files (Noldus et al., 2000). Noldus software was used to calculate the frequency and duration (seconds) of each individual behaviour for each mentoring session. Paired samples t-tests were used to test for between-conditions differences on relative frequency and duration (seconds) of time that mentors spent using TFL behaviours, MI skills, and BCTs.

The Observer XT software was also used to create a duration-based stream of data for both the mentor and mentee by recording the codes, second by second, as the audio/video files were played. These duration-based continuous streams of data were then analyzed using SSG Gridware software (Hollenstein, 2007). Each transcript produced two streams of time-series data: one for the mentor and another for the mentee. Gridware integrated the two streams of categorical data to create x- and y-coordinate SSGs representing each mentoring session. SSG analyses of attractor states and variability were performed to examine the behaviour patterns between conditions (see Table 5.2 for descriptions).

5. 3 Results

5.3.1 Session characteristics and WAI/HCCQ scores

Peer mentoring sessions lasted an average of 26.69 minutes (SD=5.02). As shown in Table 5.3, perceived therapeutic alliance (WAI) and perceived autonomy supportiveness (HCCQ) were not significantly different between the two conditions (all ps > 0.12). Individual participant WAI and HCCQ scores are available as supplementary files.
5.3.2 Leadership behaviours

The relative duration $t(7) = -0.999, p = 0.351$ and frequency $t(7) = -0.117, p = 0.910$ of mentor TFL behaviours were not significantly different between the two interaction mediums (Table 5.4).

5.3.3 MI skills and BCTs

The relative duration $t(7) = -1.113, p = 0.303$ and frequency $t(7) = -1.409, p = 0.202$ of mentor MI skills and BCTs were not significantly different between the two interaction mediums (Table 5.4).

5.3.3.1 Attractor states: The top 5 co-defined MI/BCT attractor state duration times for each modality are presented in Table 5.5. These data suggest that mentors and mentee spent similar amounts of time speaking and listening during the conversation and engaged in conversational turn-taking (i.e., listening while the other is speaking). Both mentors and mentee spent most of their time sharing their perspectives and giving personal information while mentors also spent time providing advice without permission. The content of conversations remained similar regardless of modality as the top 5 attractor states were the same when interacting face-to-face or through the telephone.

5.3.3.2 Variability: Viewing the SSGs in Figure 5.1, and examining the quantitative variability results in Table 5.6, conversation patterns between mentors and mentees were similar regardless of modality. While slightly more cells were visited when mentors and mentees engaged over the telephone, the number of transitions between cells and the length of time they stayed in a particular cell was similar. These data suggest that peer mentoring interactions were equally variable with respect to mentor and mentee behaviours regardless of modality. Individual SSGs for each mentor-mentee dyad are available as supplementary files (Appendix C.4).
5.4 Discussion

The purpose of this study was to examine how the quality of the mentor-mentee relationship and mentor-mentee behaviours are impacted by interaction modality. In support of our hypothesis, measures of therapeutic alliance and autonomy supportiveness were similar when mentors and mentee interacted using the telephone versus face-to-face. The frequency and duration of leadership behaviours, MI skills, and BCTs used by peer mentors were not significantly different between the two conditions. SSG analyses revealed similar conversation patterns between conditions with similar variability in MI skills/BCTs used by both mentors and the mentee. These findings provide novel and important implications regarding the delivery of peer mentorship for people with SCI.

Therapeutic Alliance and Autonomy Supportiveness

Consistent with $H_1$, and the results of studies in the counselling/therapy literature (Irvine et al., 2020), therapeutic alliance and autonomy supportiveness were similar between interaction modalities, suggesting that mentors can establish a supportive relationship with a mentee regardless of whether they are able to visually see each other. This finding has meaningful implications, as individuals with disabilities are only half as likely to have access to a computer and Internet, and therefore access to video chatting platforms, when compared to those without disabilities (Dobransky & Hargittai, 2006; Kaye, 2020, Vicente & Lopez, 2010). Furthermore, many people with SCI experience profound transportation barriers, making face-to-face meetings impossible. Given the large geographic distance between some mentors and mentees (Cohen & Light, 2000; Kramer et al., 2018, Martin Ginis et al., 2018), and the propensity for peer mentorship interventions to utilize telephones as an interaction medium (Shaw et al., 2020), it is encouraging that mentors can still build rapport with mentees using the telephone. This finding is
also reassuring for the continued delivery of telephone-based peer mentorship by community organizations (Shaw et al., 2019).

**Leadership Behaviours, MI skills, and BCTs**

Despite TFL being one of the most popular leadership theories (Judge et al., 2006; Wang et al., 2011), we are aware of only one study that explicitly examined the impact of modality on leaders’ TFL behaviours (Purvanova & Bono, 2009). Purvanova and Bono (2009) examined TFL behaviours of 39 leaders who interacted with teams either in-person or using a video chat platform. Although our study involved dyads and examined slightly different modalities, the findings still align with those of Purvanova and Bona (2009) in that leadership behaviour use remained similar regardless of modality. Unfortunately, as we coded TFL behaviours using a coding system that has not been validated for the SCI peer mentorship context, we were unable to investigate the behavioural patterning of TFL behaviours using SSGs. Future work should attempt to validate the CLAS for the SCI peer mentorship context so that more in-depth behavioural analyses using SSGs can be conducted.

MI skills and BCTs have been shown to be effective for behaviour change in interventions delivered through the telephone or face to face (Britt et al., 2004; French et al., 2014; Jiang et al., 2017; Samdal et al., 2017). While this study did not examine outcomes of using MI skills/BCTs, we found there to be no statistical difference in the duration and frequency of MI skills/BCTs used by mentors between conditions. Furthermore, SSGs analyses revealed that the dynamic structure of mentoring conversations remains similar when interactions occur through the telephone versus face-to-face. Mentors and mentees tended to use the same behaviours and transition between these behaviours at a similar frequency.
Our findings align with those of McKay and colleagues (2021) in that mentors and mentees tended to use techniques that focused on sharing stories and building rapport (e.g., sharing perspective), as opposed to BCTs that focus on behaviour change (e.g., commitment language). This shift from typical BCTs suggests that the positive long-term impact of peer mentorship might be due largely to relational outcomes formed through building connection, as opposed to mentors’ explicit use of BCTs. Future evaluations of the quality or effectiveness of peer mentorship should investigate the impact of mentors’ high- versus low-frequency use of BCTs on mentees’ long-term outcomes (e.g., quality of life, participation). SSGs analyses should also be used to investigate if specific elements of peer mentorship conversations (e.g., variability measures) can explain changes in immediate outcomes (e.g., therapeutic alliance) and long-term outcomes (e.g., mentee’s well-being, self-efficacy). Lastly, future research could use SSGs to examine how matching criteria (e.g., gender, injury level, shared interests) impacts mentoring conversations.

5.4.1 Limitations

Our study utilized a rigorous, controlled experimental design to extend knowledge on the impact of modality on SCI peer mentorship. The results, particularly the consistency in conversational patterns across the two modalities, provide urgent, preliminary evidence to inform further decisions around delivery of SCI peer mentorship research and community programming (Shaw et al., 2020). Nevertheless, the study is not without limitations. First, due to COVID-19, we were forced to simulate face-to-face interactions using video chat. Had interactions been in-person we may have found different results as the interpretation of non-verbal communication (e.g., body language) might be affected by modality (Nadler, 2020; Petriglieri, 2020). Second, mentoring sessions were kept relatively brief compared to typical
community-based mentoring interactions (Martin Ginis et al., 2018; McKay et al., 2021). It is possible that if we allowed for longer sessions, mentors and mentees could have displayed different behavioural tendencies (e.g., different attractor states) than those observed. Also, for experimental control, we engaged a standardized patient instead of real mentees which limits generalizability of our findings to real-world settings. Lastly, as we recruited mentors from only one Canadian organization, the leadership/counselling behaviours that were observed could be unique to these specific mentors.

5.5 Summary

Peer mentorship plays an important role in helping individuals with SCI transition from hospital to community living and overcome challenges with reintegrating back into society. Our results suggest that mentors are equally effective at forming positive, autonomy supportive relationships with mentees regardless if the interaction happens through a face-to-face medium or the telephone. Mentors also use leadership/counselling behaviours similarly when interacting through these two modalities. Further examination of how these modalities compare to in-person face-to-face mentoring is still needed. Enhancing our understanding of the impact of modality on peer mentorship will provide an evidence base that can inform the design of tailored approaches for delivering this service.

5.6 Practice Implications

Across Canada (and in many other countries), there are several not-for-profit SCI organizations that offer peer mentorship for individuals living with SCI. Although each organization provides their own unique peer mentorship programming, all organizations allow mentors to provide mentorship through various modalities (Barclay & Hilton, 2019; Shaw et al., 2019; Shaw et al., 2020). The results of the present study provide these organizations with
evidence to continue providing mentorship through both the telephone and video conferencing platforms as mentors can form positive, autonomy supportive relationships using both modalities. These findings suggest that COVID-19 pandemic-approved methods to deliver peer mentorship are still effective; providing evidence that peer mentorship programing should continue to receive funding during the current, and future pandemics.
<table>
<thead>
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<th>Participant #</th>
<th>Age</th>
<th>Level of injury</th>
<th>Years since SCI</th>
<th>Mentoring experience (years)</th>
<th># of reported mentees</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>33</td>
<td>L1</td>
<td>11</td>
<td>4</td>
<td>&gt;200</td>
</tr>
<tr>
<td>2</td>
<td>48</td>
<td>C6</td>
<td>24</td>
<td>15</td>
<td>&gt;100</td>
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<tr>
<td>3</td>
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<td>C6</td>
<td>36</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>62</td>
<td>L4-5</td>
<td>62</td>
<td>15</td>
<td>&gt;20</td>
</tr>
<tr>
<td>5</td>
<td>62</td>
<td>T6</td>
<td>27</td>
<td>22</td>
<td>&gt;100</td>
</tr>
<tr>
<td>6</td>
<td>39</td>
<td>T11-12</td>
<td>22</td>
<td>14</td>
<td>&gt;150</td>
</tr>
<tr>
<td>7</td>
<td>55</td>
<td>L2-4</td>
<td>40</td>
<td>30</td>
<td>&gt;500</td>
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<tr>
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<td>38</td>
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<td>20</td>
<td>10</td>
<td>100</td>
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<td>Measure description</td>
<td>Analytic approach</td>
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<td>-------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Attractor States</td>
<td>Reciprocity</td>
<td>What are the most prevalent mentor-mentee interaction states for each modality?</td>
<td>Identification of co-defined states to which a mentor and mentee is drawn.</td>
<td>Comparisons of duration of time spent in, or frequency of visits to, different cells or regions of the state space.</td>
<td></td>
</tr>
<tr>
<td>Variability</td>
<td>Temporal patterning</td>
<td>How often/quickly do mentors and mentees change MI skills/BCTs they are using?</td>
<td>Degree of variability across the total state space, within a particular modality.</td>
<td>Whole grid measure of the degree of “spread” across the total state space and the degree of movement around the grid (i.e., range of cells utilized, the number of transitions between cells, and the average duration per visit across all cells).</td>
<td></td>
</tr>
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Table 5.3. WAI and HCCQ Scores

<table>
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<tr>
<th></th>
<th>Face-to-face WAI scores</th>
<th>Telephone WAI scores</th>
<th>t</th>
<th>Sig.</th>
<th>Cohen’s d</th>
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</thead>
<tbody>
<tr>
<td>Mentors</td>
<td>(216.25 ± 12.36)</td>
<td>(218.75 ± 15.52)</td>
<td>-.465</td>
<td>.656</td>
<td>-.164</td>
</tr>
<tr>
<td>Mentee</td>
<td>(170.00 ± 36.86)</td>
<td>(171.13 ± 27.57)</td>
<td>-.095</td>
<td>.927</td>
<td>-.034</td>
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<tr>
<td>Combined</td>
<td>(386.25 ± 36.55)</td>
<td>(389.88 ± 31.48)</td>
<td>-.396</td>
<td>.704</td>
<td>-.140</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Face-to-face HCCQ scores</th>
<th>Telephone HCCQ scores</th>
<th>t</th>
<th>Sig.</th>
<th>Cohen’s d</th>
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<td>Mentee</td>
<td>(40.25 ± 5.52)</td>
<td>(37.63 ± 6.41)</td>
<td>1.751</td>
<td>.123</td>
<td>.619</td>
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</table>

*WAI=Working alliance inventory; HCCQ=health care climate questionnaire*
**Table 5.4. Duration and frequency of mentors’ use of TFL/MI/BCT behaviours**

<table>
<thead>
<tr>
<th>Modality</th>
<th>% of time spent using TFL behaviours (duration)</th>
<th>% of time spent using MI/BCT behaviours (duration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone</td>
<td>20.04% (SD=11.71)</td>
<td>51.79% (SD=19.82)</td>
</tr>
<tr>
<td>Face-to-face</td>
<td>17.66% (SD=6.76)</td>
<td>46.97% (SD=15.67)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modality</th>
<th>% of behaviours that were coded TFL (frequency)</th>
<th>% of behaviours that were coded MI/BCT (frequency)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone</td>
<td>22.93% (SD=5.08)</td>
<td>53.56% (SD=10.44)</td>
</tr>
<tr>
<td>Face-to-face</td>
<td>23.46% (SD=4.86)</td>
<td>50.58% (SD=10.15)</td>
</tr>
</tbody>
</table>

*TFL=Transformational leadership; MI=Motivational interviewing; BCT=Behaviour change techniques*
Table 5.5. Top 5 attractor states across all MI/BCT codes

<table>
<thead>
<tr>
<th>Face-to-face</th>
<th>Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concurrent state (mentor-mentee)</td>
<td>Duration in seconds (Mean ± SD)</td>
</tr>
<tr>
<td>1. SP – Listening</td>
<td>334.39 ± 164.50</td>
</tr>
<tr>
<td>2. GIP – Listening</td>
<td>203.21 ± 111.27</td>
</tr>
<tr>
<td>3. Listening – GIP</td>
<td>200.12 ± 63.19</td>
</tr>
<tr>
<td>4. Listening – SP</td>
<td>189.04 ± 115.95</td>
</tr>
<tr>
<td>5. AP – Listening</td>
<td>115.71 ± 46.41</td>
</tr>
</tbody>
</table>

*SP=Sharing perspective; GIP=Giving personal information; AP=Advice without permission
Table 5.6. Variability

<table>
<thead>
<tr>
<th></th>
<th>Cell range per 20 min (Mean ± SD)</th>
<th># of visits per 20 min (Mean ± SD)</th>
<th>Duration per visit (s) (Mean ± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face</td>
<td>22.88 ± 4.28</td>
<td>135.78 ± 15.64</td>
<td>8.97 ± 1.24</td>
</tr>
<tr>
<td>Telephone</td>
<td>22.10 ± 3.14</td>
<td>146.91 ± 23.41</td>
<td>8.35 ± 1.31</td>
</tr>
</tbody>
</table>
Figure 5.1. MI/BCT raw state space grids. Note: Both grids depict the combination of all 8 mentor-mentee dyad interactions for each modality. The horizontal axis shows the mentor’s behavior and the vertical axis the mentee’s behavior. The lines represent the change in behavior in the interaction over the course of a mentoring session. Dense areas indicate a high frequency of exchange between two concurrent behaviour states. A list of all mentor and mentee behaviours is available as a supplementary file as are the individual mentor-mentee SSGs.
Chapter 6. General Discussion

By deconstructing the delivery of peer mentorship for persons with spinal cord injury (SCI), this dissertation was able to contribute to the SCI peer mentorship literature by answering the following questions: 1) what delivery characteristics are currently utilized in SCI peer mentorship research and community programming, and 2) what impact does interaction modality have on leadership behaviours, motivational interviewing (MI) skills and behaviour change techniques (BCTs) of peer mentors. First, a scoping review was conducted in Chapter 2 to provide a comprehensive synthesis of the existent research evidence on the interaction modalities utilized in peer mentorship interventions for persons with disabilities. Thirteen articles were reviewed, findings were extracted, important issues and gaps were identified, and key recommendations for future research and community implementation were made.

Second, an environmental scan using the reach, effectiveness, adoption, implementation, maintenance (RE-AIM) framework (Glasgow et al., 1999) was conducted. Programming from nine provincial organizations were evaluated and the data were aggregated to visualize the national impact of peer mentorship in Canada. Importantly, this study extended the findings from Chapter 2 by examining delivery characteristics of real-world peer mentorship programs delivered by community organizations across Canada. In addition to documenting these delivery characteristics, this study contributed to the program evaluation literature by demonstrating a unique way to utilize the RE-AIM framework to evaluate the collective impact of multiple autonomous programs. The findings from Chapter 2 and 3 were used to inform the subsequent studies in Chapter 4 and Chapter 5.

Third, using the evidence gleaned from the above studies, peer mentor training was identified as an area that required research attention. As such, a qualitative study, informed by
the tenets of transformational leadership (TFL) theory (Bass & Riggio, 2006), was performed to examine leadership behaviours used by SCI peer mentors. Twelve mentors participated in a semi-structured interview about their experiences as a peer mentor. The study provided evidence that peer mentors make use of TFL behaviours when engaging with mentees. Importantly, a new subcomponent of TFL behaviours described as ‘active promotion of achievement’ was also identified and may be unique to the context of peer mentorship. The results from this study were used in a knowledge translation project external to this dissertation to inform the content of an online training program for peer mentors (Canadian Disability Participation Project, 2018).

Lastly, to further contribute to how peer mentorship is delivered, a controlled within-subjects experimental design was used to study the effects of interaction modality on the leadership behaviours, MI skills, and BCTs used by SCI peer mentors. Eight peer mentors engaged in two mentoring sessions with a mentee through two different interaction modalities. This study was the first to use state space grids (SSGs) to compare how conversation patterns between mentor-mentee dyads are impacted by interaction modality. Mentors were effective at forming positive, autonomy supportive relationships with mentees in telephone and face-to-face interaction conditions. Mentors also used leadership/counselling behaviours to a similar extent when interacting through these two modalities. The results of the study have the potential to impact how peer mentorship is delivered for person with SCI and provide preliminary evidence that mentorship provided through the telephone is an acceptable alternative to simulated in-person mentorship (i.e., video chat). Together, these studies have addressed gaps and limitations, and contributed valuable new knowledge to the SCI peer mentorship literature. The purpose of this final chapter is to highlight the theoretical, methodological, and practical contributions of this dissertation, along with the research limitations, and future research directions.
6.1 Theoretical Contributions

6.1.1 TFL Theory

This dissertation, particularly Chapter 4, contributed to the TFL literature in two ways. First, it extended preliminary findings from Beauchamp et al. (2016) by further demonstrating the applicability of TFL to the SCI peer mentorship context. Prior to the study presented in Chapter 4, TFL had only been investigated through a peer mentorship lens once (Beauchamp et al., 2016) and only through the perspective of the mentee. Chapter 4 provided support for these initial findings by exploring TFL behaviour use from the perspective of the mentor.

Second, by examining TFL behaviour use from the mentor’s perspective, we were able to identify a new TFL behaviour called ‘active promotion of achievement’; a subcomponent of the TFL behavioural dimension, inspirational motivation. Behaviours typically subsumed within this behaviour dimension include demonstrating optimism and enthusiasm, holding high expectations for followers, and promoting achievement. The in-depth qualitative interviews performed in Chapter 4 allowed us to discover that SCI peer mentors promote achievement in a unique way by actively accompanying/participating with mentees when attempting to accomplish a goal. Knowing how complex and difficult accomplishing goals can be, mentors seem to consider verbal encouragement to be insufficient to motivate mentees and, instead, find doing activities alongside them to be more beneficial. This finding has the potential to alter the way we evaluate leaders’ TFL behaviours by incorporating items related to “active promotion of achievement” to current measures of TFL (e.g., Multifactor Leadership Questionnaire). Future research should identify whether leaders in other contexts (e.g., business, military, sport, education) demonstrate this unique behaviour as well.
6.2 Methodological Contributions

6.2.1 Identified need for Moderation Analyses in Peer Mentorship Interventions

Chapter 2 provides a comprehensive breakdown of the various issues, considerations, and gaps with regard to designing/delivering peer mentorship interventions and highlights several methodological recommendations to inform future research. A key finding from Chapter 2 was the almost non-existent use of moderation analyses to explore the effect of interaction modality and frequency on outcomes of peer mentorship. For example, both Gassaway et al. (2017) and Houlihan et al. (2016) reported positive outcomes (e.g., increased self-efficacy) of engaging in peer mentorship, but neither explored the potential impact that modality and frequency could have had on their findings. Without testing these potential moderators, we are unable to tease out specific characteristics of peer mentorship interventions that contribute to their effectiveness. This knowledge gap creates challenges for designing future interventions. Concerted efforts to explore how modality and frequency impact peer mentorship are still needed. Future researchers should ensure they are performing moderation analyses to uncover these answers.

6.2.2 Applicability of the RE-AIM Framework

The RE-AIM framework continues to be one of the most frequently applied implementation evaluation frameworks especially in public health and health behaviour change research settings (Glasgow et al., 2019) Originally designed to encourage scientists to be more transparent during the research process, the framework has since been utilized in both research and community settings as both a planning and evaluation tool. As the application of RE-AIM has grown, so has the call to relax the criteria required to complete a full RE-AIM analysis so the framework can be used pragmatically in underfunded community settings (Glasgow & Estabrooks, 2018).
The environmental scan conducted in Chapter 3 provided an example of a pragmatic use of the RE-AIM framework and demonstrated how each of the five RE-AIM dimensions could be operationalized to evaluate Canadian SCI peer mentorship programming. Utilizing the framework to evaluate community-based SCI peer mentorship programs demonstrated how researchers can conceptualize certain RE-AIM criteria differently than how these criteria would be evaluated in a typical clinical or research setting. Furthermore, we provided an example, based on the recommendations of Holtrop and colleagues (2018), of how to incorporate qualitative methods into a RE-AIM analysis to compliment the quantitative indicators. This methodological contribution supports the call to utilize mixed-methods in future RE-AIM analyses to identify explanatory processes across dimensions (Glasgow et al., 2019).

Chapter 3 also provided recommendations on how to use the RE-AIM framework to evaluate the collective impact of multiple autonomous programs that deliver similar services. Involving stakeholders from each program, understanding the different funding models of each program, and incorporating indicators that may not apply to all programs highlight the complexity of using RE-AIM in this manner. Though challenging, the findings from Chapter 3 demonstrate that meaningful information can be obtained through this application of RE-AIM which helps extend our understanding of how to apply RE-AIM methodology beyond that of an evaluation tool for individual programs/interventions.

6.2.3 Measuring TFL Behaviours

TFL has been studied widely due to its positive association with outcomes related to individual level performance, emotional intelligence, and group cohesion. Moreover, there is growing interest in examining ways to enhance leaders’ use of TFL behaviours through leadership development programs. Concerningly, the majority of TFL training interventions
(Lawrason et al., 2021) continue to use subjective questionnaires to evaluate the TFL behaviours of leaders. Despite being psychometrically sound, questionnaires like the Multifactor Leadership Questionnaire (Bass & Avolio, 1990) are limited in that they are unable to evaluate leaders’ actual behaviours. Currently, the Coaching Leadership Assessment System (CLAS) (Turnnidge & Cote, 2019) is the only observational instrument available to assess leaders’ real-time behaviours. Chapter 5 of this dissertation helped to advance the TFL literature by demonstrating how the CLAS can be adapted and used outside of the context from which it was developed (i.e., coaching/sport). One of the underlying aims of studying mentors’ leadership behaviour is to improve the quality of mentorship, and ultimately the quality of mentees’ experiences. Therefore, by evaluating TFL behaviours using this observational instrument, we have provided a temporal measure of peer mentors’ TFL behaviour use that could inform the design, implementation and evaluation of future peer mentorship interventions and training programs. Moreover, we’ve provided preliminary evidence that TFL behaviour use can be maintained when leaders/mentors are unable to interact face-to-face with their followers/mentees.

6.2.4 Applying SSG Methodology to Understand Impact of Interaction Modality

While SSGs have been used to investigate conversation patterns between various dyads (e.g., patient-physician) and groups (e.g., sports teams), Chapter 5 was the first SSGs study to examine how interaction modality impacts conversation patterns. Using SSGs analyses this way contributes not only to the peer mentorship literature, but to any field examining characteristics of one-to-one, or group interactions (e.g., therapy, counselling, sports, medicine, education). The combination of technological advances and restricted in-person contact due to Covid-19 has led many service providers in these fields to pivot to online video platforms to deliver services to their clients (e.g., students, patients, athletes). Though fields like counselling and therapy
examine the impact of modality on their services, they continue to rely on surveys and questionnaires (Irvine et al., 2020). The methods used in Chapter 5 can be used in addition to these forms of quantitative measures to examine behavioural pattern changes that could provide explanations to reported changes in interpersonal outcomes between dyads and groups.

6.3 Practical Implications

The results from this dissertation have at least four key practical implications for SCI peer mentorship research, as well as for community-based SCI peer mentorship programming.

6.3.1. Reporting Peer Mentorship Intervention Characteristics

Without a complete published description of an intervention, other researchers cannot replicate or build on research findings from that intervention (Hoffmann et al., 2014). The scoping review in Chapter 2 found that although peer mentorship interventions are evaluating a variety of outcomes, the descriptions of interventions are remarkably inconsistent. For example, of the seven SCI peer mentorship interventions examined, only two provided descriptions of the training that peer mentors received (Martin Ginis et al., 2018; Veith et al., 2006). Moreover, only three provided complete demographic information for both mentors and mentees (Balcazar et al., 2011; Ljungberg et al., 2010; Martin Ginis et al., 2018). Given the heterogeneity of peer mentorship interventions described in Chapter 2, it is critical that researchers provide complete and detailed intervention characteristics so that findings can be fairly interpreted and compared between studies. Utilizing reporting tools like the Template for Intervention Description and Replication (Hoffmann et al., 2014) may be useful for future SCI peer mentorship research to ensure key intervention characteristics are reported.
6.3.2 Indicators to Track Impact of Peer Mentorship Services

Demonstrating the impact of a service is often crucial for an organization to secure additional or continued funding. Chapter 3 provided community organizations across Canada with a set of indicators organized within the RE-AIM framework that if monitored and tracked, could be used to demonstrate the impact of the peer mentorship services they provide. Importantly, as these indicators could be universally applied to any peer mentorship program, they provide an opportunity to examine the cumulative impact of peer mentorship across several organizations as was demonstrated in Chapter 3. Continuing to demonstrate the cumulative impact of peer mentorship programs across Canada could have implications for accessing Federal government funding that was previously unattainable due to inconsistent data tracking methods. Importantly, these indicators will also allow organizations to systematically track the impact of any changes they choose to make to their peer mentorship services.

6.3.3 Creating Evidence Informed, Theory-based Peer Mentor Training Programs

It has been suggested that peer mentorship interactions can be influenced by a variety of factors, one of which is the quality of the peer mentor. Recently, Gainforth and colleagues (2019) identified characteristics that delineate high-quality and low-quality peer mentors in both community and hospital settings. We contest that many of these characteristics (e.g., mentors who are encouraging, optimistic, and empathetic) align with TFL theory and can likely be influenced through training that prepares mentors to excel in their roles.

An example of how this information can be used is the Transformational Leadership Training Program (Canadian Disability Participation Project, 2018) that was developed using the findings from Chapter 4. This knowledge translation product was created to enhance peer mentor’s ability to understand and use TFL behaviours when engaging with mentees. The course
educates mentors about TFL and provides examples of what these behaviours look like within a peer mentorship context. Importantly, the program is free and available worldwide to improve access for community organizations. Continuing to develop evidence informed, theory-based training programs could help ensure that the delivery of peer mentorship remains consistent regardless of individual factors like years of mentoring experience, or external factors like interaction setting. Researchers should continue to examine behaviours/skills of peer mentors that could be used to inform the content of additional training programs.

6.3.4 Delivering Peer Mentorship through Different Modalities

Chapter 3 uncovered that peer mentorship services for individuals with SCI are currently being provided in both urban and rural settings across Canada. Importantly, because of the large geographic distances separating Canadian cities/towns, many mentor-mentee dyads are unable to meet in-person for mentoring sessions as was found in Chapter 2. Overcoming this barrier requires mentors and mentees to communicate using alternative forms of communication which include telephone and online video calls. The findings from Chapter 5 provide important practical implications for the community organizations that utilize both telephone and video-chat platforms as the quality of the mentor-mentee relationship appears to remain stable between these two forms of interaction modalities. This is particularly relevant given that individuals with disabilities are only half as likely as those who are non-disabled to have access to a computer and Internet in their home (Dobransky & Hargittai, 2006; Kaye, 2000; Vicente & Lopez, 2010; Victory & Cooper, 2002). Thus, accessing online video chat options that simulate face-to-face communication may not be readily available. Organizations can now feel confident that their mentors are still able to provide high quality mentoring over the phone in circumstances when interacting through video chat is unavailable.
6.4 General Strengths and Limitations

6.4.1 Strengths

A main strength of this dissertation are the rigorous, systematic methods that were used in each study. For example, the scoping review in Chapter 2 followed rigorous methodology developed by Arksey and O’Malley (2005), while the environmental scan in Chapter 3 followed the suggestions by Glasgow and Estabrooks (2018), and those by Holtrop et al., (2018) of how to use the RE-AIM framework pragmatically using mixed methods. Chapters 4 and 5 were also both theory-informed and used well-established methods that were appropriate for answering the research questions. Another strength is that the research questions in later chapters were informed by the results of previous ones. Studies built off one another in a logical, systematic manner, which allowed for specific research questions to be answered that further advanced our knowledge. Lastly, each study in this dissertation used an integrated knowledge translation process to inform the research questions, methodology, and dissemination strategies that were used. Engaging stakeholders (i.e., persons with SCI, community organizations) helped ensure that the objectives of this dissertation remained relevant and meaningful for the intended end-users of the research (i.e., researchers, community organizations, persons with SCI).

6.4.2 Limitations

Though this dissertation has provided a thorough breakdown of the delivery characteristics of existing SCI peer mentorship interventions and Canadian programs, and valuable new research on the impact of interaction modality on mentors’ behaviours/skills, a few important limitations should be acknowledged. One limitation is that the findings from this dissertation cannot be easily generalized outside of Canada as three of the four studies either recruited people living in Canada (Chapters 4 and 5) or examined exclusively Canadian peer
mentorship programming (Chapter 3). As such, it would be inappropriate to suggest strong recommendations for peer mentorship programs that originate from countries with vastly different peer mentorship delivery models.

Another limitation related to generalizability is that mentors in Chapter 4 and 5 were recruited from only two provincial SCI organizations. Given the heterogeneity of service delivery characteristics (e.g., mentor training) highlighted in Chapter 3, it is possible that mentor behaviours/skills identified in these studies are unique to mentors belonging to these two organizations. Lastly, we must acknowledge that other frameworks and theories could have been selected to examine mentor behaviours in Chapter 4. Though Chapter 4 was purposely designed to extend the findings from Beauchamp et al. (2016), it narrowed our analysis to focus exclusively on mentor behaviours that aligned with TFL.

6.5 Future Directions

SCI peer mentorship research is still in its infancy, and thus there are several avenues for future research to explore. Researchers are encouraged to extend the findings from this dissertation by continuing to examine individual delivery characteristics of peer mentorship and how they impact the quality of the service. Using tightly controlled studies, researchers should examine how other interaction modalities (e.g., face-to-face, email) impact peer mentorship quality in addition to examining how matching criteria, interaction frequency, and mentor training impact delivery. For example, findings from Chapter 2 indicate that peer mentorship interventions are being designed and delivered with various interaction frequencies between mentors and mentees. Understanding the impact of interaction frequency on interpersonal (e.g., therapeutic alliance, autonomy supportiveness) and intrapersonal outcomes is necessary to inform future intervention design. Additionally, future research interventions that implement
various interaction modalities and frequencies should attempt to perform moderation analyses, like those performed by Martin Ginis et al. (2018), to tease out how these characteristics impacted the outcomes of the intervention.

An interesting finding from Chapter 3 was that SCI peer mentorship programs across Canada operate with both volunteer and paid peer mentors. To our knowledge, no research has examined if the quality of the mentoring relationship is different between these two types of mentors. When referring to volunteer peer mentors, Gassaway et al. (2018) suggest that they do not report to work with similar intensity and commitment as an employed peer mentor yet provide no empirical evidence to support this claim. A logical first step would be to use methods described in Chapter 4 and 5 to examine leadership behaviours, MI skills, and BCTs of both paid and volunteer peer mentors. Subsequent studies could then design controlled interventions that use similar measures as those described in Chapter 5 to evaluate the quality of the relationship between paid/volunteer mentors and their mentees.

Another potential future direction is to extend the findings from Chapter 4 by identifying learnable behaviours and skills, other than TFL, that peer mentors use. These behaviours/skills could then be used to design and test the efficacy of peer mentor training programs. For example, a module that teaches peer mentors about counselling skills, like those examined in Chapter 5 (i.e., MI skills, BCTs), could be incorporated into existing mentor training programs; the efficacy of which could then be tested on mentors’ ability to use those behaviours in natural mentoring interactions. Researchers are encouraged to use qualitative methods like those in Chapter 4 to further explore behaviours used by peer mentors and examine whether these behaviours are impacted by factors like setting (i.e., hospital, community) and interaction modality.
Lastly, there is a need to examine if higher frequency/duration of TFL behaviours, MI skills, and BCTs used by peer mentors are associated with better outcomes for mentees. Chapter 5 showed that TFL behaviours, MI skills, and BCT use was unaffected by modality. Future research needs to examine if certain behaviours/skills/techniques are more influential than others within a peer mentorship context and whether using these behaviours more frequently impacts the quality of the mentoring experience. Uncovering these answers could have major implications for the design of TFL/MI/BCT informed peer mentor training programs as more attention could be directed to those behaviours determined to be most effective at eliciting positive outcomes for mentees. Continuing to quantify TFL behaviours using the CLAS and MI skills/BCTs using the coding manual developed by McKay et al. (2021) is recommended if researchers choose to undertake this avenue of research.

6.6 Conclusion

This dissertation advanced the field of SCI peer mentorship literature by deconstructing the delivery of peer mentorship to determine what characteristics are currently utilized in SCI peer mentorship research and Canadian programming and examine the impact of interaction modality on mentors’ behaviours and the quality of the mentor-mentee relationship. Important theoretical advancements were made by extending our understanding of the unique TFL behaviours that are used by SCI peer mentors and by demonstrating how to modify current measures to quantify TFL behaviour use. Methodologically, this dissertation demonstrated a unique application of the RE-AIM framework to evaluate the cumulative impact of multiple autonomous programs and how SSGs can be used to examine the impact of interaction modality on conversation patterns and mentors’ behaviours/skills. Importantly, the findings from this dissertation also provide several practical implications for researchers, community SCI
organizations, and SCI peer mentors. Several limitations in the dissertation were acknowledged and future directions for SCI peer mentorship research were provided. Overall, SCI peer mentorship is being delivered through a variety of modalities (e.g., telephone, video chat) in both research and community-based programs. During SCI peer mentorship, mentors use a range of leadership behaviours (i.e., TFL), and counselling techniques (i.e., MI skills, BCTs) but the use of these behaviours does not seem to differ between telephone and video chat interactions. While Canadian peer mentorship programs can have confidence that similar quality mentorship is being provided through telephone and video chat modalities, further research is needed to examine the impact of other interaction modalities (e.g., face-to-face, email) and delivery characteristics (e.g., matching criteria) on the quality of peer mentorship services for people with SCI.
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Appendices

Appendix A: Supplementary Material for Chapter 3
Appendix A.1. RE-AIM Questions for Organizations

RE-AIM Peer Mentoring Survey

Applying the RE-AIM framework to evaluate the impact of Canadian spinal cord injury peer mentoring programs

Instructions: This survey must be completed within the next 30 days. To save your responses and continue the survey at a later time click the "save and continue later" button located at the bottom of each survey page. Response fields are not restricted in size so please expand on your answers when necessary. We thank you again for participating in this important research study.
Participation or Withdrawal: Your organization’s participation in this study is voluntary. You may decline to answer any question and you have the right to withdraw from participation at any time. Withdrawal will not affect your relationship with the University of British Columbia or Spinal Cord Injury Canada in anyway. If you choose to not participate after volunteering for the study we ask that you email the student investigator. If you choose to withdraw from this study your completed data may still be analyzed. If you do not want to receive any more reminders, you may contact the research team at shawrb1@mail.ubc.ca or (705)-477-5205.

Contacts: If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Ethics at 604-822-8598 or if long distance e-mail RSIL@ors.ubc.ca or call toll free 1-877-822-8598.

Section 1a: Reach
The following questions will help us better understand the absolute number, proportion, and representativeness of individuals who participate in your peer mentoring programs.

1. How many registered peer mentors belong to your organization?
2. How many paid peer mentors belong to your organization?
3. How many volunteer peer mentors belong to your organization?
4. How many people with a spinal cord injury have received mentorship through your organization?

Section 1b: Reach
The following questions pertain to the demographics of the registered peer mentors in your organization

1. Age: Please provide the total # of mentors for each of the below age ranges:
2. Ethnicity: Please provide the total # of mentors who identify with each of the following ethnicities: White, Native Canadian, Black, Asian, Other
3. Gender: Please provide the total # of mentors who identify with each of the following genders: Male, Female
4. Disability type: Please provide the total # of mentors with a spinal cord injury who identify with the following injury levels: Quadriplegic/Tetraplegic (C1-C7), Paraplegic (T1-S5)

5. Disability type: Does your organization have peer mentors who identify as having a disability other than a spinal cord injury?
   If yes,
   a) How many peer mentors identify as having a disability other than a spinal cord injury?
   b) Please list the other reported types of disability (e.g., muscular sclerosis)

6. Educational Level: Please provide the total # of mentors who have completed the following levels of education: High school, college, University, Postgraduate, Other

7. Marital Status: Please provide the total # of mentors who identify with each marital status: Single, Married, Divorced, Common Law, Widowed

Section 1c: Reach
The following questions pertain to the demographics of the peer mentees who have received mentorship through your organization

1. Age: Please provide the total # of mentees for each of the below age ranges:

2. Ethnicity: Please provide the total # of mentees who identify with each of the following ethnicities: White, Black, Native Canadian, Asian, Other

3. Gender: Please provide the total # of mentees who identify with each of the following genders: Male, Female

4. Disability type: Please provide the total # of mentees with a spinal cord injury who identify with the following injury levels: Quadriplegic/Tetraplegic (C1-C7), Paraplegic (T1-S5)

5. Disability type: Does your organization have peer mentees who identify as having a disability other than a spinal cord injury?
   If yes,
   a) How many peer mentees identify as having a disability other than a spinal cord injury?
   b) Please list the other reported types of disability (e.g., muscular sclerosis)

6. Educational Level: Please provide the total # of mentees who have completed the following levels of education: High school, college, university, postgraduate, other

7. Marital Status: Please provide the total # of mentees who identify with each marital status: single, married, divorced, common law, widowed.

Section 2: Effectiveness/Efficacy
The following questions will assess the impact of your peer mentoring program at the individual level.

1. Does your organization track outcomes or outputs of peer mentoring?
   If yes,
   a) How do you track outcomes (e.g., testimonials, reports, interviews, etc)
b) What are the reported outcomes for peer mentees? (e.g., return to work, increased social participation, better self-efficacy)

c) What are the reported outcomes for peer mentors? (e.g., feeling useful, increased happiness/satisfaction, improved relatedness)

2. Does your organization track negative or unintended outcomes associated with peer mentorship for peer mentors?
   If yes,
   a) List the negative or unintended effects of peer mentorship reported by peer mentors.

3. Does your organization track negative or unintended outcomes associated with peer mentorship for peer mentees?
   If yes,
   a) List the negative or unintended effects of peer mentorship reported by peer mentees.

Section 3: Adoption
The following questions will ask about the absolute number, proportion, and representativeness of the peer mentoring programs in your organization.

1. How many offices/locations in your organization provide peer mentoring services?
2. Does your organization have a formal training program for mentors?
3. Does your organization provide peer mentoring services in or at hospitals?
   If yes,
   a) At how many hospitals do you provide peer mentoring services
4. Does your organization provide peer mentoring services in a community setting?
   If yes,
   a) In how many communities do you provide peer mentoring services?

Section 4: Implementation
The following questions will assess the cost and staff it takes to operate your peer mentoring program.

1. What is the total amount of money in your organization’s operation budget?
2. How much money is allocated for your peer mentorship programs/services?
3. How many staff belong to your organization?
4. How many staff (Full Time Equivalent) are employed for peer mentorship?
5. How many staff (Full Time Equivalent) would you like available for peer mentoring?
6. How many volunteers belong to your organization?
7. How many volunteers are dedicated to peer mentoring?
8. Does your organization track/monitor mentor-mentee interactions/relationships? (e.g., how frequently they are interacting, the topics they discuss)
   If yes,
   a) What type of information do you track/monitor?
9. Does your organization offer on-going training for peer mentors?
10. How many peer mentors have mentored someone with a spinal cord injury?
11. How many peer mentors would you like to have in your organization?
Section 5: Maintenance
The following questions will assess the degree to which your peer mentoring program has been sustained over time.

1. How long has your organization’s peer mentoring program been operating for?
2. How many peer mentors have joined the organization within the last 5 years?
3. How many peer mentors have joined the organization within the last 10 years?
4. How many people have received mentorship from your organization in the past year?
5. How many people have received mentorship from your organization in the past 5 years?

How many people have
Appendix A.2. Telephone Interview Questions

Telephone Interview Questions

RECONFIRMING CONSENT
Hello [NAME],

This is Rob, from UBC calling in regards to the SCI Peer Mentoring Study. Today you will participate in a telephone interview that will last about 15-30min.

Before we begin, I just want to confirm -that you still consent to participate?

Also please keep in mind you may withdraw from the study at any time without consequences. You may exercise the option of removing your data from the study. You may also refuse to answer any questions you don’t want to answer and still remain in the study.

The interview will be recorded so I will be putting you on speaker phone now.

Questions

1) Please discuss your experience completing the SCI peer mentoring surveying (e.g., discuss the challenges, why things were challenging, what could have made it easier)

2) After completing this study are there any changes you would like to make to your peer mentoring programming (e.g., services provided, data tracking methods, measures to track outcomes)

3) In your survey response I noted that your organization does not [ASK QUESTIONS REGARDING MISSING DATA]. Is there a reason why your organization does not collect this information (e.g., not enough resources to, unsure how to collect the data, or what data to collect)?

4) I also noted that you do not [ASK QUESTION REGARDING MISSING DATA]? Is there a reason why you do not collect this information? (e.g., not enough resources to, unsure how to collect the data,)

5) Is there anything that your organization currently does not have that would benefit your peer mentoring programming (e.g., funding, more staff, etc)

6) With regard to your peer mentoring program, are there any services that you currently do not offer that you would like to? (if yes, what is preventing you from providing these services)

7) What areas of peer mentoring do you think future research should focus on? (e.g., outcomes, cost benefit, mentor training, etc)
8) How is your organization funded? (e.g., government, private, community, private donors, etc)

Alright well that’s all the questions that I have for you today. Do you have any questions for me?

Well thank you again for participating in this research study. I will keep you updated with the analysis and provide you with a report once it has been completed.

Take care
### Appendix A.3. Comprehensive Results for Reach

<table>
<thead>
<tr>
<th>Reach</th>
<th>Original Research Question</th>
<th># of responding organizations</th>
<th>Results</th>
<th>Comments on missing data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. How many registered peer mentors belong to your organization?</td>
<td>N=9</td>
<td>Median=25; R=10-250</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. How many paid peer mentors belong to your organization?</td>
<td>N=9</td>
<td>Median=3; R=0-13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. How many volunteer peer mentors belong to your organization</td>
<td>N=8</td>
<td>Median=11; R=7-241</td>
<td>- Uncertain record keeping</td>
</tr>
<tr>
<td></td>
<td>4. Please provide the following demographic information for the registered peer mentors in your organization.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
|       | a) Age | N=7 | | | - Organizations do not collect this information  
|       |   | | Age 10-19 (2.3%) | - Only have a rough average |
|       |   | | Age 20-29 (10.2%) | |
|       |   | | Age 30-39 (15.9%) | |
|       |   | | Age 40-49 (32.9%) | |
|       |   | | Age 50-59 (20.5%) | |
|       |   | | Age 60-69 (10.2%) | |
|       |   | | Age 70+ (7.9%) | |
|       | b) Ethnicity | N=8 | | - Only have partial data (i.e., less than 40% of current membership) |
|       |   | | White (90.6%) | |
|       |   | | Native Cnd (5.4%) | |
|       |   | | Black (0.5%) | |
|       |   | | Asian (1%) | |
|       |   | | Other (2.5%) | |
|       | c) Gender | N=9 | | |
|       |   | | Male (64.8%) | |
|       |   | | Female (35.2%) | |
|       |   | | Other (0%) | |
|       | d) Disability type | N=9 | | Tetraplegic (54.7%) |
### Reach

| **e) Education Level** | N=4 | Paraplegic (45.3%)  
High School (30.4%)  
College (31.6%)  
University (25.3%)  
Post Graduate (11.4%)  
Other (12.3%)  
- Organizations do not collect this information |
|------------------------|-----|--------------------------------------------------|
| **f) Marital Status**  | N=6 | Single (34.1%)  
Married (40.5%)  
Divorced (12.7%)  
Common Law (9.5%)  
Widowed (3.2%)  
- Organizations do not collect this information |

### 5. How many people with a SCI have received mentorship through your organization?

| N=1 | Total=150  
- Uncertain record keeping (e.g., some organizations go back 71 years)  
- Provided the # of non-unique interactions  
- Question was too vague (i.e., didn’t specify the timeframe) |

### 6. How many people with a SCI have received mentorship through your organization in the past year?

| N=8 | Median=32; R=10-176  
- Provided the # of non-unique interactions (i.e., impossible to know how many unique individuals were served) |

### 7. Please provide the following demographic information for the peer mentees who have received mentorship through your organization.

| **a) Age** | N=6 | Age 10-19 (1.8%)  
Age 20-29 (14.6%)  
Age 30-39 (19.2%)  
Age 40-49 (16.6%)  
Age 50-59 (20.4%)  
Age 60-69 (16.9%)  
- Organizations do not collect this information  
- Only provided a rough average |
<table>
<thead>
<tr>
<th>Reach</th>
<th>N</th>
<th>Age 70+ (10.3%)</th>
<th>- Organizations do not collect this information</th>
</tr>
</thead>
<tbody>
<tr>
<td>b) Ethnicity</td>
<td>N=5</td>
<td>White (82.3%)</td>
<td>- Only have partial data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Native Cnd (10.4%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Black (0%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Asian (1.7%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other (5.6%)</td>
<td></td>
</tr>
<tr>
<td>c) Gender</td>
<td>N=6</td>
<td>Male (59.9%)</td>
<td>- Organizations do not collect this information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female (30.7%)</td>
<td>- Only provided rough percentages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other (9.3%)</td>
<td></td>
</tr>
<tr>
<td>d) Disability type</td>
<td>N=6</td>
<td>Tetraplegic (47.7%)</td>
<td>- Organizations do not collect this information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Paraplegic (52.3%)</td>
<td>- Only provided a rough average</td>
</tr>
<tr>
<td>e) Education Level</td>
<td>N=3</td>
<td>High School (57%)</td>
<td>- Organizations do not collect this information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>College (31.2%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University (9.9%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post Graduate (0.6%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other (1.3%)</td>
<td></td>
</tr>
<tr>
<td>f) Marital Status</td>
<td>N=6</td>
<td>Single (36.1%)</td>
<td>- Organizations do not collect this information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Married (38.4%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Divorced (12.5%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Common Law (10.1%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Widowed (2.9%)</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix A.4. Comprehensive Results for Effectiveness

<table>
<thead>
<tr>
<th>Effectiveness</th>
<th>Original Research Question</th>
<th># of responding organizations</th>
<th>Results</th>
<th>Comments on missing data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Does your organization track outcome/outputs of peer mentoring?</td>
<td>N=9</td>
<td>Yes=6, No=3</td>
<td>- do not have the means/resources to collect this data</td>
</tr>
<tr>
<td></td>
<td>a) If yes, How do you track outcomes?</td>
<td>N=6</td>
<td>Testimonials, surveys, reports, interviews</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) If yes, What are the reported outcomes for peer mentors?</td>
<td>N=6</td>
<td>Improved emotional health, improved sense of purpose, increased relatedness, improved motivation and self-confidence,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) If yes, what are the reported outcomes for peer mentees?</td>
<td>N=5</td>
<td>Sport/recreational participation, social participation, improved well-being, improved adjustment to SCI, increased confidence, improved knowledge of resources, increased relatedness, improved outlook on life, improved self-</td>
<td></td>
</tr>
<tr>
<td>Effectiveness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 2. Does your organization track negative or unintended outcomes for peer mentors?  
   a) If yes, what are the reported negative or unintended effects?  
     - N=9  
     - N=5 |
| 3. Does your organization track negative or unintended outcomes for peer mentees?  
   a) If yes, what are the reported negative or unintended effects?  
     - N=9  
     - N=5 |

|  | care, feeling supported  
|  | Yes=5, No=4  
|  | Feeling helpless, feeling tired, feelings of failure  
|  | Yes=5, No=4  
|  | Feeling not ready for mentorship |
Appendix A.5. Comprehensive Results for Adoption

<table>
<thead>
<tr>
<th>Adoption</th>
<th># of responding organizations</th>
<th>Results</th>
<th>Comments on missing data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How many offices/locations in your organization provide peer mentoring services?</td>
<td>N=9</td>
<td>Median=2; R=1-10</td>
<td></td>
</tr>
<tr>
<td>2. Does your organization provide peer mentoring services in or at hospitals? a) If yes, at how many hospitals do you provide peer mentoring services?</td>
<td>N=9</td>
<td>Yes=9, No=0</td>
<td>-The exact number of hospitals is unknown as the organization does not track their mentor-mentee interactions</td>
</tr>
<tr>
<td>3. Does your organization provide peer mentoring services in a community setting? a) If yes, in how many communities do you provide peer mentoring services?</td>
<td>N=8</td>
<td>Median=3.5, R=1-20</td>
<td>Yes=9, No=0</td>
</tr>
<tr>
<td>4. Does your organization have a formal training program for mentors?</td>
<td>N=9</td>
<td>Median=5; R=1-9</td>
<td>Yes=8, No=1</td>
</tr>
</tbody>
</table>
| | | | -Question was too vague (i.e., what constitutes a community?)
| | | | -Data tracking would be to be involved (e.g., services provided across entire provinces) |
### Appendix A.6. Comprehensive Results for Implementation

<table>
<thead>
<tr>
<th>Implementation</th>
<th>Original Research Question</th>
<th># of responding organizations</th>
<th>Results</th>
<th>Comments on missing data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. What is the total amount of money in your organization’s operation budget?</td>
<td>N=9</td>
<td>Median=$2,088,000; R=$600,000-$9,919,000</td>
<td>-Organizations were unable to provide an accurate number</td>
</tr>
<tr>
<td></td>
<td>2. How much money is allocated for your peer mentorship programs/services?</td>
<td>N=9</td>
<td>Median=$90,000; R=$0-$550,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. How many staff belong to your organization?</td>
<td>N=9</td>
<td>Median=15; R=1-156</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. How many staff (Full Time Equivalent) are employed for peer mentorship?</td>
<td>N=9</td>
<td>Median=1; R=0-8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. How many staff (Full Time Equivalent) would you like available for peer mentoring?</td>
<td>N=7</td>
<td>Median=3; R=1-20</td>
<td>-Only provided a rough number (i.e., &gt;100)</td>
</tr>
<tr>
<td></td>
<td>6. How many volunteers belong to your organization?</td>
<td>N=8</td>
<td>Median=63.5; R=18-446</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. How many volunteers are dedicated to peer mentoring?</td>
<td>N=9</td>
<td>Median=11; R=0-241</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Does your organization track/monitor mentor-mentee interactions/relationship?</td>
<td>N=9</td>
<td>Yes=5, No=4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) If yes, what type of information do you track/monitor?</td>
<td>N=5</td>
<td>number of interactions, duration of interactions,</td>
<td></td>
</tr>
<tr>
<td>Implementation</td>
<td></td>
<td>number of one-to-one matches, topics discussed, method of interaction (phone, email, in person etc), Mileage between mentor and mentee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>---</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Does your organization offer on-going training for peer mentors?</td>
<td>N=9</td>
<td>Yes=6, No=3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. How many peer mentors have mentored someone with a spinal cord injury?</td>
<td>N=9</td>
<td>Median=25; R=4-250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. How many peer mentors would you like to have in your organization?</td>
<td>N=9</td>
<td>Median=34; R=3-500</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix A.7. Comprehensive Results for Maintenance

<table>
<thead>
<tr>
<th>Maintenance</th>
<th>Original Research Question</th>
<th># of responding organizations</th>
<th>Results</th>
<th>Comments on missing data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How many years has your organization’s peer mentoring program been operating for?</td>
<td>N=9</td>
<td>Median=60; R=7-71</td>
<td>-Data tracking has been too inconsistent up until 2016 to provide an accurate number</td>
</tr>
<tr>
<td></td>
<td>How many peer mentors have joined the organization within the last 5 years?</td>
<td>N=8</td>
<td>Median=9; R=2-101</td>
<td>-Data tracking has been too inconsistent up until 2016 to provide an accurate number</td>
</tr>
<tr>
<td></td>
<td>How many peer mentors have joined the organization within the last 10 years?</td>
<td>N=7</td>
<td>Median=12, R=7-337</td>
<td>-Data was not available</td>
</tr>
<tr>
<td></td>
<td>How many people have received mentorship from your organization in the past 5 years?</td>
<td>N=6</td>
<td>Median=263; R=30-2708</td>
<td>-Uncertain record keeping</td>
</tr>
<tr>
<td></td>
<td>How many people have received mentorship from your organization in the past 10 years?</td>
<td>N=4</td>
<td>Median=409; R=60-1006</td>
<td>-Uncertain record keeping</td>
</tr>
</tbody>
</table>

- Only provided a rough number (i.e., 20+)
- Provided the # of non-unique interactions (i.e., impossible to know how many unique individuals were served)
Appendix B: Supplementary Material for Chapter 4
Appendix B.1. Mentor Interview Schedule

Interview Guide – Mentors

The following questions represent an overarching agenda for interviews with SCI mentors. The questions will be pursued flexibly and may be altered and added to over time as different themes and patterns emerge in the data.

Demographic Questions

Birth Date: ____________________  Sex: [M]  [F]

Date of SCI: _________________

Level of SCI: _________________

Do you have a complete or incomplete injury? _______________

Which of the following describes your ethnicity?

☐ White  ☐ Native Canadian  ☐ Black  ☐ Asian  Other: ___________

What is the highest level of education you have completed?

☐ Highschool  ☐ College  ☐ University  ☐ Post Graduate  Other: __________

What is your marital status?

☐ Single  ☐ Common Law  ☐ Married  ☐ Divorced  ☐ Widowed

How long have you been providing peer support? ______

Approximately how many peers have you mentored during this period? _____

Pre-amble to questions about peer-mentorship: “Peer mentors are individuals who have faced a particular experience and can provide support, guidance, and understanding to help another person through a comparable experience. Peer mentorship can be provided through both formal programs and also informally. Some organizations refer to peer mentorship by other names such as peer support or peer match.

In a moment I’ll ask you some questions about your experiences providing peer support. For the purpose of this interview, we are going to call it “peer mentorship”.

Personal background and context in which SCI mentorship is taking place:

Tell me about yourself and your background with SCI mentorship?

Tell me about your experiences with your mentee(s)? What does this mentorship involve?

To what extent do you enjoy peer mentorship?

How would you describe your attitudes and motivation toward this mentorship experience?

- To what extent has this changed over time? If so, how?
What do you consider to be the benefits of peer mentorship?
- Probe for both yourself and mentees
Can you tell me what you like most about peer mentorship?
Can you tell me what you dislike most about peer mentorship?
To what extent is peer mentorship important to you?
If there is anything that you would change about the peer mentorship experience, what would that be?

**Questions about the SCI mentor:**
Can you describe your overall mentoring philosophy? How do you see your role as a peer mentor (role model, information provider, or something else)?
Are you currently providing mentorship?
How much time do you spend with your mentee(s) and what sort of activities do you do?
What sort of activities have you done with (or currently do you do with) your mentees?
Could explain the different aspects of mentees’ lives with which you provide mentorship (e.g., employment, physical activity, education, social life activities)
Could you describe what you actually do in your mentorship role and how you mentor adults with SCI? What are the different ways that you mentor your mentees? (These are key questions and so prepare to use prompts and clarification probes to tap into the different actions/behaviors of the mentor. This question is designed to tap into ‘actual’ behaviours – see below vis a vis ideal behaviours.)
How does this way of mentoring affect/influence your mentees (with regard to social participation)?
-- Use probes to tap into those salient contexts highlighted by mentors in the question above (vis a vis employment, physical activity, education, social life activities).
-- Also use probes to tap into cognition, affect, and behavioural responses.
To what extent do you think you influence your mentees? Can you explain how?
To what extent do you see yourself as a role model with your mentee(s)?
To what extent do you think you engender the trust and respect of your mentee(s)? [If so] How do you do this?
How have you responded when your mentee has asked you for help on a specific issue?
To what extent do you let your mentee (or mentees) know that he or she is important to you?
To what extent do you convey a sense of hope or optimism to your mentees when you meet with them?
In your role as a mentor, to what extent do you think it’s important to display enthusiasm and encourage your mentee(s)? [If so] how do you go about doing this?
To what extent do you think it’s important to get your mentee(s) to see various problems/challenges in new ways? [If so] how do you go about doing this?
To what extent do you (really) know and understand your mentee(s) – what makes them tick?

Can you describe how you got into SCI mentoring? Who or what influenced you? If you received mentorship from someone else, what did you learn from that person?

Who were your own role models growing up?

Can you describe the most important characteristics of an effective SCI mentor?

Could you describe your best and worst experiences of mentoring?

- Probe to make sure both are answered (‘best’ and ‘worst’).

If you could structure, or formalize, a peer mentoring program in ANY way possible (money is no object and sky’s the limit), what would it look like? How many hours would you spend mentoring? What sort of activities would your mentees take part in? What would you see yourself doing (ideally)? What prevents you from doing this at the moment (money, time, legislation)?
Modified CLAS

The Mentorship Leadership Assessment System (MLAS) has been designed so that it can be used to code videos that have been uploaded into a computer program (e.g., Noldus Observer). When using the tool, coders review videos of mentors – pausing the video to code each mentor behaviour. This tool is intended for use with a continuous coding approach and thus every possible type of mentor behaviour must be classified into one of the categories of this instrument. Each behaviour is then coded according to the individual initiating the behaviour (e.g., mentor) and the leadership tone of the behaviour (i.e., the primary code). In addition, coders complete ratings to further describe the behaviour, and indicate the more specific content of the behaviour, as well as with the recipient (i.e., mentee) of the behaviour.

This instrument is designed to be able to capture leadership behaviours of peer mentors interacting with mentees in a variety of settings (i.e., hospital, community), and through different modes of interaction (i.e., face-to-face, telephone).

Coding sessions will involve coding the continuous behaviour of the mentor during a 15-25 minute video clip. The amount of time required to code each session in its entirety is highly variable, and may depend on factors such as the experience of the coder or the content of the particular segment.

The codes in the MLAS are based on classification of behaviours across one dimension:

Mentor Behaviour, which includes:

The initiator subject (i.e., whose behaviour is being coded)

The leadership tone of a given interactive behaviour

The content modifier of a given interactive behaviour

The recipient of a given mentor behaviour (i.e., to whom a coded behaviour is directed).

Default codes

For the coach leadership tone dimension, specific behaviour codes are to be coded by default if criteria for any other behaviour within the dimension are not met. That is, use the default codes in the absence of any other codable behaviour:

Leadership tone: 14 (Neutral)

However, priority is given to more extreme codes in the leadership tone dimension. If deciding between the default code and an active code, always select the more extreme code

E.g., if deciding between ‘neutral’ and ‘transactional’ leadership tone, code ‘transactional’
For the content modifier dimension, the default code to be used in the absence of any other codable behaviour is:

When the mentor is actively communicating with the mentee, Leadership tone + content modifier: 14 (Neutral), 3 (General Communication)

Subject – Initiator or Recipient (letters)

As there are two participants in all videos, the coder must specify which subject’s behaviour is being coded. Once assigned a subject ID, athletes must be coded as same subject for all videos. The subject codes can be used as follows:

CODE

z – Mentor

a – Mentee

Dimension – Leadership Behaviour

Overview

The leadership behaviour dimension is comprised of (a) leadership tone and (b) a class of coach behaviour content modifiers.

Each leadership behaviour code (i.e., all codes other than uncodable) is linked to the content modifier codes. For every observed leadership behaviour, a leadership tone code and a content modifier code MUST be scored. Thus, each observed behaviour is categorized by the combination of two (2) codes – a leadership tone code followed by modifier code(s) (e.g., “Discussing/modelling pro-social values or behaviours + General Communication” or “Eliciting mentee input + Instruction/Feedback, etc.)

If there is a change in any of these codes (leadership tone OR content modifier), begin a new entry and code as new independent mentor behaviour. Thus, if the mentor begins with “Discussing/modelling pro-social values or behaviours + General Communication” and moves immediately to “Discussing/modelling pro-social values or behaviours + Instruction/Feedback” in the same continuous interaction, code as two (2) separate behaviours.

Leadership tone behaviours and content modifier codes are intended to encompass BOTH verbal and non-verbal behavioural indicators. For instance, the leadership tone code “Recognizing mentee achievements/contributions” could include giving a thumbs up, etc. For non-verbal behaviours, they must be easily identifiable (i.e., there must be a definite behavioural cue).

For the leadership tone behaviour dimension, please use theoretical constructs (i.e., the 4 I’s, transactional, etc.) as a general guide for interpreting the “general message” of the behaviour. For instance, when deciding whether a mentor behaviour truly “fits” with a particular behavioural code, such as eliciting mentee input, it may be useful to assess whether this behaviour aligns with the general concept of intellectual stimulation.
LEADERSHIP TONE

Idealized Influence: Behaviours conveying the mentor as (a) a positive role model, (b) an individual of high moral/ethical standing, or (c) trustworthy and respected.

Categories:

01- Discussing/modelling pro-social values or behaviours

Prosocial values/behaviours generally refer to values/behaviours that are intended to benefit others and that are prompted by empathy, morality, or a sense of social responsibility, rather than a desire for personal gain.

Can include general social or moral topics (e.g., displaying respect, supporting others, empathy/understanding, etc.).

Can include deliberate attempts to foster pro-social attitudes or skills for the mentee.

Can include humour-based behaviours (e.g., humor as an initial ice-breaking method, a stress-relieving method, or a means of motivation, energy, or enjoyment promotion). Note: humour that is mean-spirited, sarcastic, or at the expense of the mentee should not be included here, but in modelling anti-social behaviours; self-deprecating humour should not be included here, but in showing vulnerability/humility.

E.g., “It is really important that we stay friendly and respectful on the court.”

02-Showing vulnerability/humility

Discussions where they recognize gaps in their knowledge, understanding, and may involve asking the mentee for help.

Can include admitting to, or apologizing, for mistakes.

Can include discussing personal information with mentees (e.g., telling stories where they felt discouraged, saying they’ve also had bad days, sharing that they have accidents too, etc.).

E.g., “Sorry James, I messed up and gave you the wrong resource.”

Inspirational Motivation: Behaviours through which a mentor demonstrates that they hold (a) high expectations for their mentee, or (b) a compelling vision of the future for either the individual mentee or the SCI population as a group. Also includes behaviours through which a mentor promotes positive energy, enthusiasm, and meaning/challenge.

Categories:

03-Discussing goals/expectations

Expectations can be for a problem, or as a part of a larger picture, such as general self-care.
Can include discussion of goal(s), goal setting, etc. (can be for a particular problem, or as a part of a larger picture). Can also involve asking mentees to write down or vocalize their own goals.

E.g., “For this week, I want you to record anything that could have triggered your pain.”

04-Expressing confidence in mentees potential

Talking optimistically/enthusiastically about what the mentee can achieve.

Providing challenging task(s), etc. (E.g., “I think you can handle going to the gym, so I’m going to push you to get out there and try it.”

E.g., “I know you can do this.”

05-Providing rationales/explanations

Behaviours through which the mentor highlights the value/meaning of certain activities (i.e., “Stretching is important because. . . ”).

Can include providing reasoning behind decisions (i.e., highlighting the method behind the madness).

Can include connecting activities to a larger picture (e.g., connecting particular activities to mentees goals/problems; “This could help reduce your nerve pain”).

E.g., “It’s really important that you stretch before bed because it will reduce your spasticity overnight and lead to a better sleep.”

Intellectual stimulation: Behaviours that convey a view of the mentee as capable decision makers and contributing members of the mentoring. Also includes behaviours that encourage mentees to think and act in novel and creative ways.

Categories:

06-Eliciting mentee input

Questioning. Must allow an answer reflecting mentee input. These questions should require a higher level of thinking. For instance, asking critical questions regarding self-care routine or social issues.

Can involve encouraging mentees to (a) solve problems and to look for alternative solutions, (b) have open discussions, and (c) contribute new and alternative ideas.

Note: This category relates to mentor-initiated mentee input. If the mentee offers input and the mentor listens and/or incorporates their input, this should be coded as 10-Showing interest in mentees’ feelings/needs/concerns. Questions that do not require a higher level of thinking should not be included (e.g., How many times do you cath a day?), code as 14-Neutral rather than 07-Eliciting mentee input.

E.g., “How can we use what we have learned about your daily routine to minimize bladder accidents during the day?”
Individualized consideration: Behaviours through which a mentor recognizes a mentee’s individual needs, considers their unique abilities, and displays genuine care and concern.

Categories:

07-Showing interest in mentee feelings/needs/concerns
Adapting activities to suit the needs of the mentee(s).
Listening to mentee(s) and considering/incorporating their opinions.
Can include discussing personal issues with the mentee(s).
Can include referencing to past events, interactions, etc.
E.g., “I know you weren’t feeling well yesterday, how are you today?”

08-Recognizing mentee achievements/contributions
Note: Recognition should have some level of specificity (i.e., a particular achievement) and a higher degree of enthusiasm. For example, a passive “Good job” would not fit with this category and would be coded as 14-Neutral.
E.g., “That’s excellent, Jamie! Fantastic job on securing employment!”

14-Neutral: Absence of leadership related tone.

Notes
Only code if no criteria from any other category is met.
If the behaviour seems to meet any of the other criteria, choose the more active category (i.e., categories other than neutral).

MODIFIERS

1-Instruction/Feedback: Technical/teaching instruction or feedback from mentor, directed at mentee(s). Also includes communication from mentor related to individual mental/psychological characteristics and qualities.

Notes
Includes prescriptive/corrective technical information in reference to the execution of a task (e.g., how it should be performed, what could be improved, etc.) (e.g., wheelchair skills, self-care skills, etc)
Can be directed at general psychological topics related to overcoming barriers/obstacles (e.g., confidence, resilience, mental toughness, etc.)

2-General communication: Communication from mentor not directly related to task, performance, or organization in the current team/training/performance context.
Notes

Default code if mentor is actively interacting with mentee(s) but criteria is not met for other conversational categories (i.e., Instruction/feedback or Organization codes).

E.g., joking with mentee, talking about work, etc.
### Appendix C.2. SCI Peer Mentorship Coding Manual

#### SCI Peer Mentorship MI/BCT Coding Manual

<table>
<thead>
<tr>
<th>Code #</th>
<th>Technique Label</th>
<th>Technique Definition</th>
<th>Source</th>
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</thead>
<tbody>
<tr>
<td>ADP/ADW</td>
<td>*Advice</td>
<td>The mentee or mentor gives advice, makes a suggestion, or offers a solution or possible action. These will usually contain language that indicates that advice is being given: should, why don't you, consider try, suggest, advise, you could, etc. Advice requires sub-classification for whether the advice was given with or without prior permission from the mentee or mentor. Prior permission can be in the form of a request from the counterpart or in the mentee or mentor asking the counterpart's permission to offer it. Indirect forms of permission asking may also occur, such as a statement from a mentee or mentor that gives the counterpart permission to disregard the mentee or mentor’s concern (&quot;This may or may not make sense to you&quot;). Note: Advice with permission is coded as (ADP) Advice without permission is coded as (ADW)</td>
<td>P/M MISC</td>
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</table>

Note: Advice with permission is coded as (ADP) Advice without permission is coded as (ADW)
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<tr>
<th>Code #</th>
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</table>
| AF    | *Affirm        | The mentee or mentor says something positive or complementary to the counterpart. It may be in the form of expressed appreciation, confidence or reinforcement. The mentee or mentor comments on the counterpart’s strengths or efforts. **Themes may include but are not limited to:**  
  **Appreciation.** The mentee or mentor compliments the mentee or mentor on a trait, attribute, or strength. The reference can be to a "stable, internal" characteristic of the counterpart, something positive that refers to an aspect of the counterpart that would endure across time or situations (smart, resourceful, patient, strong, etc.). It may also be for effort.  
  **Confidence.** The mentee or mentor makes a remark that bespeaks confidence in the counterpart's ability to do something, to make a change; it predicts success or otherwise supports client self-efficacy. These are related to a particular task, goal, or change.  
  **Reinforcement.** These are general encouraging or "applause" statements even if they do not directly comment on a counterpart's nature, and do not speak directly to self-efficacy. They tend to be short. | P/M MISC/I |
<p>| AG    | Agree          | The mentee or mentor makes a comment to indicate that they are in agreeance. Agreeance occurs when no new information has been provided. | M/I |
| QUC   | *Closed Question | A closed question is coded when the mentee or mentor asks a question that implies a short answer: Yes or no, a specific fact, a number, etc. The question specifies a restricted range or satisfies a questionnaire or multiple-choice format. This includes a &quot;spoiled open question&quot; where the mentee or mentor begins with an open question but ends it by asking a Closed Question. In this case, the QUO is not coded, but only QUC. Does not include rhetorical questions | P/M MISC/I |</p>
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<tr>
<th>Code #</th>
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<th>Technique Definition</th>
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<tbody>
<tr>
<td>CF</td>
<td>*Confront</td>
<td>These are the expert-like responses that have a particular negative-parent quality, an uneven power relationship accompanied by disapproval, disagreement, or negativity. There is a sense of “expert override” of what the counterpart says. The mentee or mentor directly disagrees, argues, corrects, shames, blames, seeks to persuade, criticizes, judges, labels, moralizes, ridicules, or questions the counterpart’s honesty. Included here are utterances that have the form of questions or reflections, but through their content or emphatic voice tone clearly, constitute a roadblock or confrontation. If you are in doubt as to whether a statement was a confront or some other codes do not code it as Confront. Re-emphasizing negative consequences that are already known by the mentee or mentor would constitute a Confront, except in the context of a Reflection. The Reflection restates information presented by the counterpart and is merely reflected back to the counterpart without disapproval or negativity.</td>
<td>P MISC</td>
</tr>
<tr>
<td>CT</td>
<td>Connecting</td>
<td>The mentor or mentee takes a personal interest in the counterpart (e.g. “wow I would love if you sent me a picture”) to foster a deeper sense of connection between the pair.</td>
<td>P I</td>
</tr>
<tr>
<td>DI</td>
<td>*Direct</td>
<td>The mentee or mentor gives an order, command, or direction. The language is imperative. Phrases with the effect of the imperative tone include &quot;You need to ___.&quot; “I want you to ___.” &quot;You have to ___&quot; &quot;You must ___.&quot; &quot;You can't ___.&quot;</td>
<td>P MISC</td>
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<td>Code</td>
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<tr>
<td>DG</td>
<td>Disagree</td>
<td>The mentee or mentor makes a comment to indicate that they disagree in general conversation. <strong>Themes may include but are not limited to:</strong> <strong>Blocking:</strong> The mentee or mentor denies reframing, affirmation or encouragement and reaffirms the negative nature of a thought, situation, comment or personal negative quality</td>
<td>M I</td>
</tr>
<tr>
<td>EC</td>
<td>*Emphasize Control</td>
<td>The mentee or mentor directly acknowledges, honours, or emphasizes the counterpart's freedom of choice, autonomy, personal responsibility, etc. This may also be stated in the negative, as in &quot;Nobody can make you change.&quot; There is no tone of blaming or fault-finding. Statements acknowledging the counterpart’s autonomy in an accomplishment are coded as <em>Emphasize Control</em>. <em>Emphasize Control</em> takes precedence over <em>Affirm</em> or <em>Reflect</em> when the counterpart’s response could be interpreted as both.</td>
<td>P MISC</td>
</tr>
<tr>
<td>ER</td>
<td>Equality of Roles</td>
<td>The mentee or mentor indicates that the counterpart is also helping or supporting them in some way This code indicates that the benefits of peer mentorship are being reciprocated. <strong>Example:</strong> Mentor: “In some ways, it feels like you are mentoring me”</td>
<td>P I</td>
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<tr>
<td>Code #</td>
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| FA    | Facilitate     | These are simple utterances that function as keep going acknowledgements. “Mm-Hmm.” “OK.” “Tell me more.” "I see."  
*Facilitate* responses are stand-alone utterances. They do not usually occur with other counsel or responses in the same volley. Do not code as *Facilitate* if the vocal sound is a preface to some other response like a *Question* or a *Reflect*. In these combinations, code only the second response.  
No *Facilitate* would be coded for:  
“OK, well let’s get started with this paperwork, then. (Structure)”  
Do not code as *Facilitate* if the vocal sound serves as a time holder (uh . . .) that serves to delay the mentee or mentor's response, rather than having the "go ahead" function. These are not coded at all. Instead, what follows is coded.  
A mentee or mentor may make an utterance that sounds like a *Facilitate* but has a negative or sarcastic quality.  
It must unambiguously disagree, question the mentee or mentor's honesty, express sarcasm, etc. These have a "Hah!" or “Aha!” or cynical "Yeah, right!" quality. Code as *Confront*. | P        |
| GIP   | *Giving Information - Personal | The mentee or mentor gives information to the counterpart, explains something, educates or provides feedback related to personal information. Personal information would include any demographic information, personal history or personal experiences. Includes information given about one’s pet (e.g., pet breed, demeanour, health).  
When the mentee or mentor gives an opinion but does not advise, this category would be used.  
**Themes may include but are not limited to:**  
Provide a resource: Direct email or another form of direct provision of a resource | P/M      |
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<tr>
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<th>Source</th>
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</thead>
<tbody>
<tr>
<td>GIG</td>
<td>Giving Information - General</td>
<td>The mentee or mentor gives information to the counterpart, explains something, educates or provides feedback that is not related to their own or others personal information. When the mentee or mentor gives an opinion but does not advise, this category would be used. Themes may include but are not limited to: Provide a resource: Direct email or another form of direct provision of a resource</td>
<td></td>
</tr>
<tr>
<td>GIO</td>
<td>Giving Information - Others</td>
<td>The mentee or mentor gives information to the counterpart, explains something, educates or provides feedback related to or discloses others’ personal information. Personal information would include any demographic information, personal history or personal experiences. Includes. Includes stories are experiences that the mentee or mentor was a part of but are explained in second person. Only includes discussion of a specific other. General experiences of a larger group would be coded as Giving Information General When the mentee or mentor gives an opinion but does not advise, this category would be used. Themes may include but are not limited to: Provide a resource: Direct email or another form of direct provision of a resource (e.g., “I had a friend who broke their leg.”)</td>
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</tr>
<tr>
<td>IS</td>
<td>Identify Similarity</td>
<td>Point out or suggest a similarity between the mentee and mentor (e.g., similar injury, functional outcome, life situation, demographic information). Includes visiting or having specific knowledge of the location the counterpart grew up in or lives.</td>
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</table>

(e.g., “I had a friend who broke their leg.”)
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<tbody>
<tr>
<td>QUO</td>
<td>*Open Question</td>
<td>An open question is coded when the mentee or mentor asks a question that allows a wide range of possible answers. The question may seek information, invite the counterpart’s perspective, or encourage self-exploration. The Open Question allows for the option of a surprise for the mentee or mentor. If a mentee or mentor asks an Open Question and then gives a series of “for example” questions before the counterpart answers, this is coded as one Open Question. An Open Question need not be in the form of a question. “Tell me more”, is an Open Question. Does not include rhetorical questions</td>
<td>P/M</td>
</tr>
<tr>
<td>RCS</td>
<td>*Raise Concern (Self)</td>
<td>The mentee or mentor points out a possible problem with their own goal, plan, intention or behaviour. It always contains language that marks it as their own concern (rather than fact). Does not include barriers to activities or advice. Only included if the mention of the barrier is beyond the specified activity (e.g., I’m worried about hand cycling because I have a previous shoulder injury). Typically, discussion of the challenge will move beyond the given activity (e.g., hand cycling).</td>
<td>M</td>
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<tr>
<td>Code #</td>
<td>Technique Label</td>
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<tr>
<td>RCO</td>
<td>*Raise Concern</td>
<td>The mentee or mentor points out a possible problem with the counterpart’s goal, plan, intention or behaviour. It always contains language that marks it as the mentee or mentor’s concern (rather than fact).</td>
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<tr>
<td></td>
<td>Others</td>
<td>Raise Concern always requires sub-classification as to whether the concern was raised with or without permission.</td>
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<td></td>
<td></td>
<td>Raise Concern with permission is coded as (RCP)</td>
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<tr>
<td></td>
<td></td>
<td>Raise Concern without permission is coded as (RCW)</td>
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<tr>
<td></td>
<td></td>
<td>Prior permission can be in the form of a request from the counterpart or in the mentee or mentor asking the counterpart's permission to offer it.</td>
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<td></td>
<td></td>
<td>Indirect forms of permission asking may also occur, such as a statement from a mentee or mentor that gives the counterpart permission to disregard the mentee or mentor’s concern.</td>
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<td></td>
<td></td>
<td>Raise Concern may include elements of possible negative consequences as long as these are expressed as the mentee or mentor’s own concern.</td>
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</tr>
<tr>
<td>RE</td>
<td>*Reflect</td>
<td>A reflection is a reflective listening statement made by the mentee or mentor in response to a counterpart’s statement. A reflection can reflect counterpart’s utterances from the current or previous conversation.</td>
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<tr>
<td></td>
<td></td>
<td>Reflections capture and return to the counterpart something that that person has said. Reflections can simply repeat or rephrase what the counterpart has said or may introduce new meaning or material.</td>
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<tr>
<td></td>
<td></td>
<td>Reflections can summarize part or all of a conversation.</td>
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<tr>
<td>RF</td>
<td>*Reframe</td>
<td>The mentee or mentor suggests a different meaning for an experience expressed by the counterpart, placing it in a new light. These generally have the quality of changing the emotional valence of meaning from negative to positive or from positive to negative. <em>Reframes</em> generally meet the criteria for <em>Reflect</em> but go further than adding meaning or emphasis by actually changing the valence of meaning and not just the depth. <em>Reframing</em> can involve giving the mentee or mentor new information in order to see their situation from a different perspective. In this case, the information is a vehicle for reframing, and the default is <em>Reframe</em>.</td>
<td>P MISC</td>
</tr>
<tr>
<td>SP</td>
<td>Sharing Perspective</td>
<td>The mentor or mentee expresses their personal philosophy on a situation or topic (e.g., lessons learned, feelings towards a topic, perspective of how things happened/turned out in the past. Used anytime someone says that they are “lucky”, “fortunate”, etc.</td>
<td>M I</td>
</tr>
<tr>
<td>SH</td>
<td>Showing Humility</td>
<td>The mentor or mentee show their humility and vulnerability. Includes downplaying their successes to reduce the perception of being superior or “on a pedestal”.</td>
<td>P I</td>
</tr>
<tr>
<td>SS</td>
<td>Social Smoother</td>
<td>Social pleasantry or polite conversation. E.g., “Good morning”, “Great to hear from you”, etc.</td>
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</tr>
<tr>
<td>ST</td>
<td>*Structure</td>
<td>To give information about what’s going to happen directly to the mentee or mentor throughout the course of the conversation. To make a transition from one part of a conversation to another.</td>
<td>P MISC</td>
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<tr>
<td>Code #</td>
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</table>
| SFC    | Suggest Future Contact | This is coded if the mentee or mentor suggests that they should speak again. All discussion around future contact (e.g., providing an email) is coded as Suggest Future Contact. 

*Note: If email, phone number or another form of contact information is shared, code agree following future contact. If no form of contact information is shared, code disagree* | P/M I |
| SU     | *Support* | These are generally sympathetic, compassionate, or understanding comments. They have the quality of agreeing or siding with the mentee or mentor. 

**Themes may include but are not limited to:**

*Partnership*: The mentor or mentee uses “we” language to foster a sense of partnership.

*Empathy*: The mentor or mentee provides empathetic support as it is something the mentor or mentee has personally experienced (e.g., “I understand where you are coming from, I’ve been there too.”).

*Justify feelings*: The mentor or mentee reassures the counterpart that what they are feeling is normal or okay. | P/M MISC/I |
<p>| WU     | <em>Warn</em> | The mentee or mentor provides a warning or threat, implying negative consequences unless the counterpart takes a certain action. It may be a threat that the mentee or mentor has the perceived power to carry out or simply the prediction of a bad outcome if the counterpart takes a certain course. | P MISC |
| X      | Uncodable | Discussion of technical difficulties related to the phone call (e.g., “I can’t hear you.”, “Can you hear me okay?”). Also used if a statement is cut-off and what they were attempting to say cannot be determined. | I |</p>
<table>
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</table>
| CL   | *Commitment Language | While change talk, utterances reflect motivating factors related to change, *Commitment Language* implies an agreement, intention, or obligation regarding future behaviour change or steps that have taken towards behaviour change. Commitment can be expressed directly via a committing verb, or indirectly. **Themes may include but are not limited to:**  
*Future plans or goals:* The mentor or mentee’s statements of how they will rearrange their lives in the future relating to the behaviour change  
*Steps Taken:* Concrete and specific steps the mentee or mentor has recently taken toward the behaviour change. May also include successful or unsuccessful steps that have been taken in the less recent past. | M  
MISC/I  
MISC Code ‘Taking Steps’ was integrated into this code. |
| RS   | *Reason* | Statements of *Reason* usually refer to a specific rationale, basis, incentive, justification or motive for making, or not making, a change to a target behaviour. The mentee or mentor’s discussions of health, family problems, legal difficulties or other kinds of problems that are presented as a reason for considering a change (or not changing) typically fall into the *Reason* category. *Reasons* may reflect reality or may be hypothetical. | M  
MISC  
Reason themes were removed as such specificity was not required. |
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<tbody>
<tr>
<td>FN</td>
<td>*Follow/Neutral</td>
<td>In a follow-neutral turn, there is no indication of the mentor or mentee’s inclination either toward or away from the target behaviour change. The mentee or mentor may be asking a question, reporting, making non-committal statements, saying target behaviour change-irrelevant things, or just following along with the conversation. Note that only target behaviour change-relevant change talk is coded. <strong>Example:</strong> If the target behaviour is cocaine use and the mentee or mentor says, “I want to get my children back,” it would not be coded as <em>Follow/Neutral</em> unless there is a clear link made between cocaine use and getting the children back.</td>
<td>P MISC Example will be revised to a quote relevant to mentorship</td>
</tr>
</tbody>
</table>
Appendix C.3. Standardized Patient Scripts

Jackson Struthers Script 1

Jackson Struthers, a 40-year-old from Penticton, BC. Four years ago, Jackson suffered an incomplete spinal cord injury at C6/7. He has been recovering well but has some concerns. Jackson is frustrated and disappointed, but highly motivated to find solutions.

<table>
<thead>
<tr>
<th>Case Information</th>
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<tbody>
<tr>
<td>Diagnosis</td>
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<td>Case objectives</td>
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<tr>
<th>Recruitment Information</th>
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<tbody>
<tr>
<td>Age</td>
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<td>Gender</td>
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<td>Weight</td>
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<td>Race</td>
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<td>Makeup</td>
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PATIENT PROFILE

Background

You are 40-year-old Jackson Struthers from Penticton. You are 4 years into your recovery from a spinal cord injury. You have been referred to an SCI Organization mentor to discuss some other concerns.

Opening line

Hey (insert mentors name). Thanks for taking the time to talk with me today.

Behaviour and affect

You have been open to discussing concerns and challenges with your GP, specialists and therapists. You have been referred to a mentorship program to discuss your concerns with an individual familiar with your questions.

You understand most medical terminology (from time spent in hospital) so you’ll use the occasional medical term if it comes out. Your knowledge of your condition is not in question.

Symptoms to be simulated

Your walk is unremarkable although you do have no reflex in your left knee. You shift in your chair occasionally to relieve pressure on your buttocks. (CJ to fine-tune specific physical affect)

Starting position

Seated in front of your computer waiting for the mentor to join the virtual conference room.

Costume/makeup

You are dressed in casual clothes. Nothing remarkable about wardrobe.

Relevant encounter timing

Total interview time by mentors is unknown at this point, so an assumption of a 15-20 minute mentorship session.

Case history overview

Before your injury, you worked in PR and marketing in a major Canadian city.
4 Years ago, you were vacationing at Whistler over the summer when you suffered a hard crash and a long fall off your mountain bike.

You were taken to the Whistler Health Care centre and it was determined had a severe incomplete spinal cord injury at L1/L4. You had no fractures, but there was a dislocation in your vertebrae in your lower back area. You had a lot of weakness in your legs and couldn’t move your hands. You were transferred by air ambulance to the Spinal Injury Unit at Vancouver General Hospital. It was all very confusing for you, but your wife Sandra was with you the entire time.

Shortly after arriving at VGH, you went in for emergency surgery to repair the dislocation in your spine. When you woke up, your neurological status had improved, you now had motor control in your hands. You were transferred to spinal ICU and every two hours, you needed to be turned in bed (to prevent pressure sores) and had to receive aggressive chest physiotherapy (which involved having your chest beaten and vibrated to prevent fluid buildup and pneumonia). You wanted very badly to get out of bed to walk. You told Sandra “I’m not sure what’s wrong, but in a week I’ll be out here and walking again.”

The next day, your neurologist explained the injury to you and Sandra. He told you that your spinal cord got pinched and that caused some bleeding, which was why you couldn’t move your leg. The surgery you had made some space for the spinal cord. He explained that the injury was incomplete — some of your spinal cord was spared and not injured, which meant that some recovery would be possible. You found out that your injury would affect your breathing, circulation, skin, bladder, bowels, and sexual function. Recovery would take a long time. You were completely shocked by this news, and became angry with yourself for being so careless when you were riding. You told the neurologist that you’d beat this injury and that in a few weeks you’d be back up and running, without a problem.

The paralysis of your muscles meant that you weren’t able to take a deep breath or cough and were at a high risk of pneumonia. You had a catheter because your bladder was paralyzed as well.
On your third day in the hospital, you were able to get out of bed with Sandra’s help. She pushed you around the ward in a wheelchair. You had a visit from someone from the Canadian Paraplegic Association Counselling Group, a man named Walter who had suffered a complete C7 injury fourteen years earlier from a bad dive off a riverbank. Walter told you his story — the accident and the disappointing recovery. He never regained any function after his injury. Meeting Walter made you very upset and determined.

After a week in the hospital, you were transferred to the G. F. Strong Rehabilitation Centre to start your recovery. Over the next three weeks, you underwent rehabilitation at G. F. Strong and gained strength in your legs. Your attitude shifted and you approached rehabilitation with energy and enthusiasm. Meanwhile, in Penticton, occupational therapists visited your home to assess whether it would be suitable for you after your discharge from rehabilitation. The OTs recommended significant renovations in order for the house to be wheelchair-accessible and safe. Sandra hired a contracting company to do the renovations.

You realized that you wouldn’t be able to go back to your job in PR and media management. You started looking at other options.

Eight weeks after your injury, you were discharged from G. F. Strong. You flew back home to Penticton. Over the next year, you continued going to physiotherapy. You struggled with persistent spasticity in your leg (the muscles were often flexed and tense, and sometimes spasmed), for which your family doctor prescribed Baclofen (a muscle relaxant). You are able to walk without issue and feel like you have made a great deal of recovery. You know there are going to be persistent issues, but meet them head on.

**HISTORY OF PRESENT PROBLEM**

**Onset**

You have been having bladder and bowel challenges since the injury but until recently found that you were managing these matters. You have some questions and concerns about functioning. You are also feeling guilty of the stigma of not being a recognizable SCI recipient. Your injuries were severe, but you have managed to recover more than expected and most people would not suspect any issues at all from casual observation.
Your sexual function if asked is responsive as much as possible and you are resigned if not accepting of your current state in that regard.

**Current medications**

Baclofen, Cialis

**RELEVANT PAST MEDICAL HISTORY**

**Preventative health care**

You have a GP in Penticton who is not a spinal cord expert but tries to follow guidelines regarding yearly bladder assessments and consults physiatry as required.

**RELEVANT SOCIAL HISTORY**

**Living arrangement**

You live with Sandra in Penticton in your adapted and accessible house. You are independent in most of your care.

**Relationship status**

Married to Sandra for 8 years

**Habits (drugs/alcohol/tobacco)**

You occasionally drink but not to excess and do not use recreational drugs or tobacco.

**Work**

You started your own small business and have been happy with the amount of work you have received.

**Stress level**

Stress levels are normal for the most part. Your wife is patient and extremely supportive of the challenges you are still facing. The only minor stress is the thought of not being able to get a handle on your bowel and bladder issues and how that would impact your future.
Diet
You improved your diet since the injury to try and maintain your weight and feeling of well being. You are more conscious of healthy and clean eating now.

Caffeine
You drink coffee in the morning but are not dependent on it.

Fitness
You stay in shape by working out and going for walks. Your fitness is not a major concern.

Other
You sleep well. Your finances are healthy.

PATIENT PERSPECTIVE (FIFE)

Feelings
You feel like the recent changes to your bladder and bowel function are out of your control. This has created a sense of helplessness with regards to your self care.

Ideas
So far you haven't thought of any ideas that have effectively helped the situation. Since your doctor in penticton is not a spinal cord injury expert he suggested asking peers with spinal cord.

Functioning
The bladder and bowel incontinence seems difficult to predict and therefore is starting to affect your daily decisions. You may choose not to participate in certain activities for fear of an accident and find you now are developing a heightened awareness regarding the closest restrooms. The spaticity and daily pain is also becoming a challenge and contributes negatively to your overall well-being.

Expectations
You are hoping that the peer mentor will be able to relate to your situation and provide you with some ideas of how to manage your challenges. You are not expecting them to simply tell you
what to do. You hope to have an open conversation, share experiences, and be engaged during the problem solving discussion.

**Jackson Struthers Script 2**

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<td><strong>Diagnosis</strong></td>
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Your walk is unremarkable although you do have no reflex in your left knee. You shift in your chair occasionally to relieve pressure on your buttocks. *(CJ to fine-tune specific physical affect)*

Starting position

Seated in front of your computer waiting for the mentor to join the virtual conference room.

Costume/makeup

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After a week in the hospital, you were transferred to the G. F. Strong Rehabilitation Centre to start your recovery. Over the next three weeks, you underwent rehabilitation at G. F. Strong and gained strength in your legs. Your attitude shifted and you approached rehabilitation with energy and enthusiasm. Meanwhile, in Penticton, occupational therapists visited your home to assess whether it would be suitable for you after your discharge from rehabilitation. The OTs recommended significant renovations in order for the house to be wheelchair-accessible and safe. Sandra hired a contracting company to do the renovations.

You realized that you wouldn’t be able to go back to your job in PR and media management. You started looking at other options.

Eight weeks after your injury, you were discharged from G. F. Strong. You flew back home to Penticton. Over the next year, you continued going to physiotherapy. You struggled with persistent spasticity in your leg (the muscles were often flexed and tense, and sometimes spasmed), for which your family doctor prescribed Baclofen (a muscle relaxant). You are able to walk without issue and feel like you have made a great deal of recovery. You know there are going to be persistent issues, but meet them head on.

**HISTORY OF PRESENT PROBLEM**

**Onset**

You have been struggling with spasticity, nerve pain, and musculoskeletal pain for the past two years. You are currently taking baclofen for the spasticity but nothing for the pain. You are reluctant to try pain medications because of the potential side effects and because you’d rather be on as little medication as possible. Even though you have managed to recover quite well since your injury the strain you are putting on your legs and back when you ambulate results in daily
pain. Sometimes your pain and spaticity limits your participation in activities with friends and with your wife.

Your sexual function if asked is responsive as much as possible and you are resigned if not accepting of your current state in that regard.

**Current medications**

Baclofen, Cialis

**RELEVANT PAST MEDICAL HISTORY**

**Preventative health care**

You have a GP in Penticton who is not a spinal cord expert but tries to follow guidelines regarding yearly bladder assessments and consults physiatry as required.

**RELEVANT SOCIAL HISTORY**

**Living arrangement**

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**Relationship status**

Married to Sandra for 8 years

**Habits (drugs/alcohol/tobacco)**

You occasionally drink but not to excess and do not use recreational drugs or tobacco.

**Work**

You started your own small business and have been happy with the amount of work you have received.

**Stress level**

Stress levels are normal for the most part. Your wife is patient and extremely supportive of the challenges you are still facing. The only minor stress is the thought of not being able to get a
handle on your pain and spasticity without needing more medication. You also have some minor stress about the impact that ambulating may have on your physical health in the future.

**Diet**

You improved your diet since the injury to try and maintain your weight and feeling of well being. You are more conscious of healthy and clean eating now.

**Caffeine**

You drink coffee in the morning but are not dependent on it.

**Fitness**

You stay in shape by working out and going for walks. Your fitness is not a major concern.

**Other**

You sleep well. Your finances are healthy.

**PATIENT PERSPECTIVE (FIFE)**

**Feelings**

You feel like the pain and spasticity are within your control but that the only course of action is to take more medication which you are reluctant to do. This has created a sense of helplessness with regards to your pain and spasticity management.

**Ideas**

So far you haven't thought of any ideas that have effectively helped the situation. Since your doctor in Penticton is not a spinal cord injury expert he suggested asking peers with spinal cord.

**Functioning**

The nerve pain and spasticity seem difficult to predict and therefore are starting to affect your daily decisions. You may choose not to participate in certain activities for fear of increasing the pain or spasticity. These issues, combined with your bladder and bowel concerns are contributing negatively to your overall well-being.
Expectations

You are hoping that the peer mentor will be able to relate to your situation and provide you with some ideas of how to manage your challenges. You are not expecting them to simply tell you what to do. You hope to have an open conversation, share experiences, and be engaged during the problem solving discussion.
Appendix C.4. Individual Mentor-Mentee State Space Grids

Participant 1 - Audio

![Diagram for Participant 1 - Audio]

Participant 1 - Video

![Diagram for Participant 1 - Video]
Participant 5 - Audio

Participant 5 - Video