What I Do, Think, and Know about Social-Emotional Learning: Pre-Service Teachers'

Relationship Skills, Attitudes, and Perceived Knowledge

by

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A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Education

in

School and Clinical Child Psychology

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Abstract

When implemented effectively by teachers, social-emotional learning (SEL) teaches students the skills needed to recognize and regulate their emotions and behaviour, manage relationships, and make decisions that promote success. Researchers have found that teachers' relationship skills, attitudes about SEL, and perceived knowledge about SEL are related to the quality and practices with which they implement SEL. Understanding these variables and the relationships amongst them in pre-service can help teacher training programs improve the limited SEL training that pre-service teachers receive. Using a concurrent correlational design and self-report measures completed by 197 Canadian pre-service teachers, the current study aimed to describe Canadian pre-service teachers' relationship skills, attitudes about SEL, and perceived knowledge about SEL, and to examine whether their attitudes and perceived knowledge significantly predict variance in their relationship skills. Descriptive, independent t-test, correlation, and multiple regression analyses were conducted. Results indicate that the pre-service teachers report having moderately high to high levels of relationship skills, having positive attitudes about SEL, and being unknowledgeable to moderately knowledgeable about SEL. Pre-service teachers' attitudes and perceived knowledge about SEL together predict a small amount of variance in the their self-reported competency in three relationship skills: initiating new relationships, disclosing personal information, and providing emotional support. As well, their attitudes about SEL uniquely predict a small amount of variance in the latter two relationship skills. The findings from this study can be used to inform Canadian teacher education programs' SEL training, theoretical models of SEL, and future research on pre-service teachers and SEL.

Preface

This thesis is an original work by Kirsty Marie Keys. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board 2 through the Alberta Research Information Services (ARISE) online system (Project Name: "Pre-service Teachers and Social and Emotional Wellbeing", No. Pro00092922) on August 28th, 2019. The ethics on this project is currently open until August 28th, 2020.

Acknowledgements

Thank you to my supervisor, Dr. Christina Rinaldi, for the unwavering support, encouragement, and guidance you have provided me on this project and in my degree. I am fortunate to work with such an intelligent supervisor. I have learned so much from you thus far, and I am grateful to have the opportunity to continue learning from you as I continue my graduate studies. Thank you as well to the members of my committee, Dr. Jacqueline Pei and Dr. George Buck, for your time and feedback on this project.

Thank you to my cohort, who have been true friends to me from the moment we met. I am blessed to be surrounded by 10 strong, intelligent, and powerful women who are always there to help me continue to grow and learn. Thank you as well to my LEAP lab-mates, Cassandra and Vincenza, for providing me with support, care, and laughter and for helping me learn many important skills that I used to complete this project. I am also grateful to the Social Sciences and Humanities Research Council for financially supporting this research project, and to Glooscap First Nation, my band, for providing me with the means and support I needed to fully dedicate myself to this project and degree. Wela'lin.

A huge thank you to my family, who have always loved me and believed in me, even when I did not believe in myself. Mom and Dad, thank you for always pushing me to climb higher while staying right behind me to catch me if I fall. And to my partner in life, my love: thank you for always holding me up when I am weak, being proud of me when I am strong, and continually making sacrifices so I can keep chasing my dreams. Without you, I could not have faced and finished this project.

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Per legislation, Canadian youth spend an average of over 11,000 hours in school from Grade 1 through Grade 12 (Statistics Canada & Council of Ministers of Education Canada, 2019). Today, it is expected that this time is spent preparing students to become competent and successful citizens in our society. Thus, it is not sufficient for schools to only teach students skills in core content areas like math and science. Instead, the education system must also help students develop the 'soft skills' needed to live well. Indeed, these skills have become integrated into curricula across Canada's provinces (e.g., Alberta Education, 2016; Alberta Learning 2002a, 2002b; Government of British Columbia Ministry of Education, n.d.; Government of Ontario Ministry of Education, 2015, 2019). As a result, there is more attention being paid to implementing social-emotional learning (SEL) as a way to promote the development of these 'soft skills' and support positive outcomes for students.

SEL is key to teaching students the skills needed for social-emotional competence (SEC), which in turn allows youth to succeed in various aspects of life and become responsible and contributing members of society (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2019b, 2019c; Domitrovich et al., 2017; Elias et al., 1997; Frey et al., 2019; Jones & Bouffard, 2012; Taylor et al., 2017; Zins et al., 2004). In fact, researchers have found that effectively integrating SEL into education supports the development of youth's SEC and positive short- and long-term outcomes in the academic, behavioural, social, emotional, and attitudinal realms (Brackett et al., 2012b; Domitrovich et al., 2017; Durlak et al., 2011; Korpershoek et al., 2016; Sklad et al., 2012; Taylor et al., 2017). Researchers have also found that implementing SEL programs in schools is related to increased SEC and positive outcomes for teachers (Cain &

Carnellor, 2008; Collie, 2017; Domitrovich et al., 2016; Jennings & Greenberg, 2009).

Furthermore, there are long-term financial benefits for society to implementing SEL (Belfield et

al., 2015; Taylor et al., 2017). Overall, including SEL in public education is an effective and

efficient way to improve the SEC of our future citizens to the benefit of our youth, teachers, and

society.

In order for these positive outcomes to be fully realized, however, SEL must be

implemented effectively (i.e., with high quality) by teachers (Conduct Problems Prevention

Research Group, 1999; Domitrovich & Greenberg, 2000; Durlak & DuPre, 2008; Durlak et al.,

2011). One teacher factor that predicts effective SEL implementation is teachers' own SEC

(Collie, 2017; Elias et al., 1997; Goegan et al., 2017; Jennings & Greenberg, 2009; Jones &

Bouffard, 2012; Poulou et al., 2018; Schonert-Reichl, 2019). Relationship skills are a particularly

critical aspect of teachers' SEC as these skills support the formation and maintenance of positive

and meaningful student-teacher relationships (CASEL, 2019b, 2019c; Collie, 2017). Not only are

these student-teacher relationships mutually beneficial for students and teachers (Collie, 2017;

Davis, 2003; Elias et al., 1997; Jennings & Greenberg, 2009; Hamre & Pianta, 2001; Klassen et

al., 2012; Merritt et al., 2012; Payton et al., 2000), they also support students' ability to learn,

including from SEL implementation (Elias et al., 1997; Greenberg et al., 2003; Jones &

Bouffard, 2012; Schonert-Reichl, 2019; Solomon et al., 2000).

Based on existing research, it is likely that teachers' attitudes about SEL in general and

perceptions of their knowledge about SEL in general are also related to the effectiveness with

which they implement SEL. In fact, several authors have argued that teachers' attitudes and

perceived knowledge about SEL in general are likely related to their SEL buy-in, their feelings

of self-efficacy in implementing SEL, their motivation for implementing SEL, and their

behaviours and practices around SEL implementation (e.g., Elbertson, et al., 2010; Humphries et al., 2018). This postulate is supported by the fact that teachers' attitudes, understanding, and perceived knowledge about specific SEL programs and concepts are related to the implementation of SEL programs (Bowden et al., 2003; Cain & Carnellor, 2008; Datnow & Castellano, 2000; Domitrovich et al., 2008; Durlak & DuPre, 2008; Dusenbury et al., 2003; Gingiss et al., 1994; Ringwalt et al., 2003). However, it is not yet clear what mechanisms may explain the relationship between teachers' attitudes and perceived knowledge about SEL and effective SEL implementation.

One way that teachers' attitudes and perceived knowledge about SEL implementation may be related to effective SEL implementation is through their relationship with teachers' SEC. Some theorists have proposed such a relationship (e.g., Jennings & Greenberg, 2009). Furthermore, this possible relationship is supported by the finding that in-service and pre-service teachers' SEC is related to their beliefs about SEL implementation (Goegan et al., 2017). Given that these SEL beliefs are somewhat similar to attitudes and perceived knowledge about SEL, it is possible that attitudes and perceived knowledge about SEL hold the same relationship with SEC.

Determining whether there is a relationship between attitudes and perceived knowledge about SEL and SEC in pre-service teachers is particularly important. It is widely recognized that including SEL training in pre-service teacher education is critical to ensuring SEL is implemented effectively by these pre-service teachers in the future (Domitrovich et al., 2008; Jennings & Frank, 2015; Jennings & Greenberg, 2009; Jones et al., 2018; Schonert-Reichl et al., 2015). Researchers suggest that SEL training should seek to support the development of positive attitudes about SEL, knowledge acquisition around SEL implementation and student social-

emotional development, and SEC development (Collie & Perry, 2019; Elbertson et al., 2010; Jennings & Frank, 2015; Jones et al., 2018; Jones & Bouffard, 2012; Kealey et al., 2000; Payton et al., 2000; Rodriguez Alcocer, 2019; Schonert-Reichl et al., 2015). Beyond supporting their future SEL implementation, such training has the potential to improve pre-service teachers' teaching-related wellbeing (e.g., job satisfaction) through improving their SEC (Brackett et al., 2010; Collie, 2017; Collie & Perry, 2019). Unfortunately, there is a lack of time dedicated to this type of training in teacher education programs (Civic Enterprises et al., 2013; Goegan et al., 2017; Schonert-Reichl, 2019; Schonert-Reichl et al., 2015).

In order to develop and deliver such training meaningfully, those who work in teacher education programs need to understand pre-service teachers' current perceptions of their own attitudes about SEL, knowledge about SEL, and SEC, particularly relationship skills. Knowing where pre-service teachers feel that they currently sit in relation to these three factors would tell teacher education programs how much attention needs to be paid to training in each factor. Moreover, understanding the relationship between these variables will aid in the development of effective and efficient training components to add to teacher education programs by allowing the educators in higher learning to determine the best way to provide training that supports their pre-service teachers' potential to implement SEL effectively in the future. Based on the literature, it seems likely that pre-service teachers' attitudes and perceived knowledge about SEL are linked to their self-reported relationship skills. If so, it is possible that teacher education programs can target pre-service teachers' SEC, attitudes about SEL, and perceived knowledge about SEL with one approach.

Therefore, the current study has two overarching aims. First, it aims to provide information about pre-service teachers' current relationship skills, attitudes about SEL, and

perceived knowledge of SEL. Second, it aims to examine whether pre-service teachers' attitudes and perceived knowledge about SEL predict variance in their self-reported relationship skills. Thus, this study will examine the following research questions: (1) What level of competency in specific relationship skills do pre-service teachers report themselves as having?; (2) What are pre-service teachers' attitudes about SEL?; (3) What are pre-service teachers' perceptions of their current knowledge about SEL?; (4) Do pre-service teachers' self-reported attitudes and perceived knowledge about SEL together and uniquely predict a significant portion of the variance their self-reported competency in relationship skills? Specifically, do self-reported attitudes and perceived knowledge about SEL predict the variance in their self-reported competency in (a) building new relationships, (b) disclosing personal information to relational partners, (c) resisting social pressure and asserting themselves with relational partners when they are displeased, (d) providing emotional support to relational partners, and (e) managing conflict with relational partners?

Literature Review

In this section, I will provide an overview of the literature on in-service and pre-service teachers' SEC, attitudes about SEL, and perceived knowledge about SEL, including an overview of what is known about the relationships between these variables. First, I will present operational definitions of key terms and variables involved in this study. Second, I will review the two theoretical models guiding this study. Third, I will discuss the current state of the literature on (a) SEL implementation in schools; (b) in-service and pre-service teachers' relationship skills, attitudes about SEL, and perceived knowledge about SEL; (c) SEL training in relation to in-service and pre-service teachers' SEC, attitudes about SEL, and perceived knowledge about SEL; and (d) the relationship between teachers' SEC and their attitudes and perceived

knowledge about SEL. Any gaps in this literature will be identified. Finally, I will outline the current study's research questions and hypotheses.

Operational Definitions

Social-Emotional Learning

SEL is the process through which individuals learn the skills required to become competent in dealing with the social and emotional aspects of life in a way that allows them to effectively manage life tasks and problems so that they succeed in various contexts (e.g., school, relationships, the workplace, the community) and develop into responsible and caring citizens (CASEL, 2019b, 2019c; Elias, 2003; Elias et al., 1997; Frey et al., 2019; Jones & Bouffard, 2012; Payton et al., 2000; Zins et al., 2004). Teachers can implement SEL by providing explicit SEL instruction (e.g., dedicating class time to discussing how to resist social pressure), weaving it into their instructional practices (e.g., modelling appropriate emotion regulation or scaffolding conflict management), and/or integrating it into other curriculum instruction (e.g., reading books about bullying in Language Arts; CASEL, 2019a).

Social-Emotional Competence

SEC is competence in the skills learned through SEL, which allows for successful functioning in various contexts and areas of life. Although not all researchers agree completely on what skills make up SEC, most researchers list similar skills such as understanding and managing emotions; regulating behavioural and mental processes; goal-setting; responsible decision-making; seeking and offering help; effective communication; interacting with others positively and constructively; initiating and maintaining positive relationships; and acting pro-socially (CASEL, 2019b, 2019c; Denham, 2005; Domitrovich et al., 2017; Durlak et al., 2011; Elias, 2003; Elias et al., 1997; Frey et al., 2019; Humphrey et al., 2011; Jones & Bouffard, 2012;

Payton et al., 2000; Zins et al., 2004). CASEL's (2019b, 2019c) widely accepted definition of SEC groups these interrelated skills into five specific competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. However, other researchers give definitions of SEC that group the skills differently. For instance, Jones and Bouffard (2012) group the skills into three specific competencies: emotional processes, social and interpersonal skills, and cognitive regulation. Denham (2005) takes a hierarchical approach with two overarching areas of competency: emotional competence skills and relational/prosocial skills. For the purposes of this study, CASEL's (2019b, 2019c) definition of SEC will be used due to its wide recognition and more focused breakdown of skills. Specifically, given the importance of student-teacher relationships to learning and SEL, this study will be focusing on relationship skills.

Relationship Skills

Relationship skills can be defined as those skills needed to form and maintain positive relationships (CASEL, 2019b, 2019c). According to CASEL (2019b, 2019c), such skills include engaging with others socially; working cooperatively; communicating effectively; listening actively; resisting peer/social pressure; working through conflict appropriately and effectively; and offering and accepting help as needed. This set of skills has also been referred to using similar terms such as 'relationship and social skills' (Denham, 2006) or 'social interaction skills' (Payton et al., 2000).

The broader term 'interpersonal skills' often combines the specific skills that CASEL (2019b, 2019c) includes under their relationship skills competency and social awareness competency (e.g., Domitrovich et al., 2017; Jones & Bouffard, 2012). Social awareness includes the skills needed to interact effectively and appropriately with others such as perspective-taking,

respecting, and empathizing with diverse individuals; understanding norms for behaviour; and recognizing supports available from different systems such as the family or school systems (CASEL, 2019b, 2019c). Clearly, the competencies of relationship skills and social awareness skills are interrelated. For instance, in order to successfully begin a positive relationship with someone (relationship skills), one would need to understand the social norms for introducing oneself (social awareness). However, given the importance of student-teacher relationships, this study will focus on relationship skills rather than skills for interacting successfully with others more generally.

Attitudes and Perceived Knowledge About SEL

In-service and pre-service teachers' attitudes about SEL in general can be defined as their thoughts on the importance of, benefits of, and need for implementing SEL in schools (Buchanan et al., 2009; Dolzhenko, 2017). Their perceived knowledge about SEL in general to date can be defined as how much information they believe they currently hold about what SEL is, how to implement SEL, and the social-emotional development of children (Buchanan et al., 2009; Dolzhenko, 2017). Positive attitudes and high perceived knowledge about SEL are important for supporting in-service and pre-service teachers' buy-in for SEL and their effective SEL implementation (Elbertson, et al., 2010; Humphries et al., 2018). Henceforth, the terms attitudes about SEL and perceived knowledge about SEL will refer to attitudes and perceived knowledge about SEL in general rather than attitudes and perceived knowledge about specific aspects of SEL or specific SEL programs, unless otherwise stated.

Theoretical Framework

This study is guided by two theoretical models—Jennings and Greenberg's (2009) model of the prosocial classroom (Figure 1) and Jones and Bouffard's (2012) organizing framework for

SEL (Figure 2). In Jennings and Greenberg's (2009) model, there are several direct and indirect paths, involving bidirectional relationships, that link teachers' SEC and wellbeing with student outcomes in the social, emotional, and academic domains. The authors posit that teachers' SEC and wellbeing is directly related to student outcomes and that this relationship is partially mediated by four interrelated variables: (1) positive student-teacher relationships, (2) effective classroom management, (3) effective SEL implementation, and (4) healthy classroom climate (Jennings & Greenberg, 2009). In other words, teachers' SEC and wellbeing directly and indirectly impacts student outcomes. Furthermore, the authors recognize that contextual factors (e.g., school climate) can influence teachers' SEC and wellbeing, student outcomes, and the four mediating variables (Jennings & Greenberg, 2009).

Figure 1

Model of the Prosocial Classroom
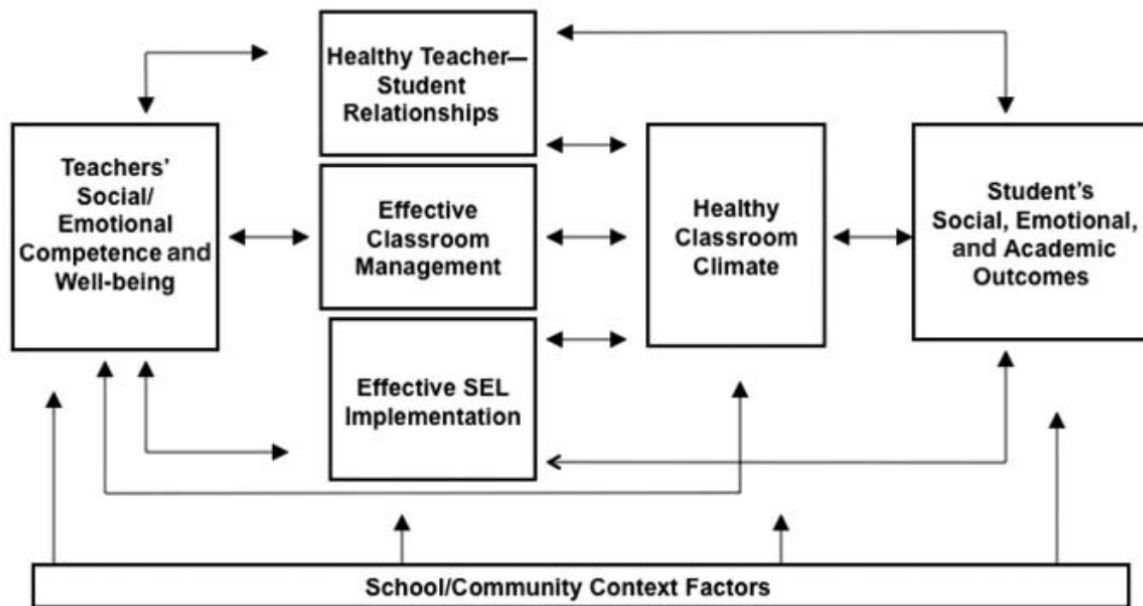
Note. From "The Prosocial Classroom: Teacher Social and Emotional Competence in Relation to Student and Classroom Outcomes," by P. A. Jennings and M. T. Greenberg, 2009, *Review of Educational Research, 79*(1), p. 494 (https://doi.org/10.3102/0034654308325693). Copyright 2009 by the American Educational Research Association.

Figure 2

Organizing Framework for SEL
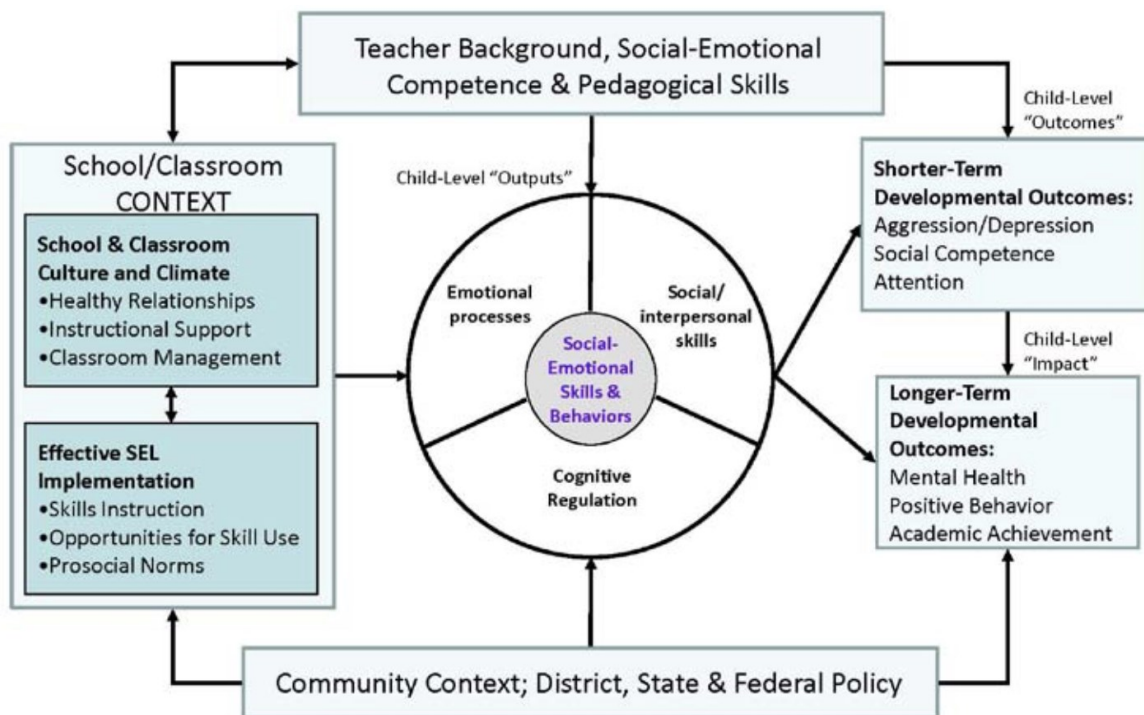
Note. From "Social and Emotional Learning in Schools: From Programs to Strategies," by S. M. Jones and S. M. Bouffard, 2012, *Social Policy Report, 26*(4), p. 5 (https://doi.org/10.1002/j.2379-3988.2012.tb00073.x). Copyright 2012 by the Society for Research in Child Development. Reprinted with permission.

Similarly, in Jones and Bouffard's (2012) framework, there are multiple direct and indirect paths linking school and classroom context to student outcomes, including some bidirectional relationships. In this framework, the school and classroom context is made up of effective SEL implementation and school and classroom climate. According to the authors, school and classroom context predicts short- and long-term developmental outcomes and this relationship is mediated by two sets of variables: (1) student SEC and (2) teacher background,

SEC, and teaching skills. Furthermore, within the framework, these teacher variables predict student SEC. Finally, similar to Jennings and Greenberg's (2009) model, Jones and Bouffard (2012) recognize that other contextual factors influence school and classroom context, student SEC, and student outcomes.

These two models inform the current study in two main ways. First, the importance of healthy student-teacher relationships in the models, particularly their tie to effective SEL implementation and positive student outcomes, signals the importance of teachers' relationship skills (a more specific aspect of their SEC) to SEL. Second, the bidirectional relationship between teachers' SEC and effective SEL implementation suggests that other factors influencing effective SEL implementation may be related to teachers' SEC, such as teachers' attitudes and perceived knowledge about SEL.

Neither model distinctly mentions teachers' attitudes and perceived knowledge about SEL, both of which are likely related to teachers' SEL implementation. As will be discussed, based on current research, it is possible that pre-service and in-service teachers' attitudes and perceived knowledge about SEL are related to the effectiveness of SEL implementation through a relationship to their SEC. Testing to see if pre-service teachers' attitudes and perceived knowledge about SEL predict variance in their self-reported SEC may provide researchers, theorists, and practitioners insight as to where attitudes and perceived knowledge about SEL might fit into these two theoretical models.

SEL Implementation in Schools

According to the models proposed by Jennings and Greenberg (2009) and Jones and Bouffard (2012), effective SEL implementation predicts SEC and related positive short- and long-term outcomes for students and teachers. In support of this proposed relationship, using

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multiple and rigorous methods (such as correlational design, randomized controlled trial design, and meta-analysis), researchers have found that effective implementation of SEL in schools is related to positive outcomes in students including increased SEC, improved academic performance, reduced drop-out, increased post-secondary attendance, improved relationships, increased prosocial behaviour, reduced internalizing problems, reduced conduct problems, reduced substance use, reduced sexually transmitted infection diagnoses, reduced pregnancies, improved income, improved socioeconomic status, and increased positive attitudes towards oneself, others, and school (Brackett et al., 2012b; Domitrovich et al., 2017; Durlak et al., 2011; Korpershoek et al., 2016; Sklad et al., 2012; Taylor et al., 2017). The effects of SEL implementation on students can persist from several months to several years following program implementation, and these effects are found with youth from diverse populations including those coming from various cultural and ethnic backgrounds, societal contexts, and age groups (Domitrovich et al., 2017; Durlak et al., 2011; Korpershoek et al., 2016; Sklad et al., 2012; Taylor et al., 2017). Furthermore, researchers have demonstrated that implementing SEL is related to increased teacher SEC, increased feelings of efficacy, increased job satisfaction, improved relationships, reduced burnout, and reduced stress (Cain & Carnellor, 2008; Collie, 2017; Domitrovich et al., 2016). Finally, implementing SEL programs in schools is related to significant, long-term financial benefits at the societal and systems levels (Belfield et al., 2015; Taylor et al., 2017). Specifically, every dollar invested in SEL in schools results in an 11 dollar return in terms of an improved labour market and reduced spending in response to disorders, bullying, substance abuse, aggression, and other delinquent and risky behaviours (Belfield et al., 2015). In terms of implementation, researchers have shown that more effective (i.e., higher-quality) implementation is related to better outcomes (Conduct Problems Prevention Research

Group, 1999; Domitrovich & Greenberg, 2000; Durlak & DuPre, 2008; Durlak et al., 2011).

Overall, the claims made by Jennings and Greenberg (2009) and Jones and Bouffard (2012) have been well-supported by researchers—effectively implementing SEL is related to improved SEC and other positive outcomes for students, teachers, and society as a whole. The question today has shifted from asking if SEL works to asking how we can support effective SEL implementation (Elbertson et al., 2010).

Teacher Relationship Skills and Attitudes and Perceived Knowledge about SEL

First, it is worth noting that there is not a lot of research aimed at describing the current levels of relationship skills of in-service and pre-service teachers. Recently, Goegan and colleagues (2017) found that, on a single-item measure, Canadian in-service and pre-service teachers rated their own overall SEC as somewhere between moderately high to high. In-service teachers rated themselves as more socially-emotionally competent than pre-service teachers (Goegan et al., 2017). Similarly, Rodriguez Alcocer (2019) found that Canadian pre-service teachers reported having moderately high SEC. Yet this research is on overall SEC—self-reported levels of relationship skills more specifically were either not measured (Goegan et al., 2017) or not reported (Rodriguez Alcocer, 2019). There is some research assessing facets of teachers' relationship skills in order to relate them to other variables (e.g., Curby et al., 2013; Elliott et al., 2011) and literature on the need to support the development of more specific subsets of relationship skills (e.g., collaborative skills; Hoaglund et al., 2014). However, there is a need for more publications reporting on in-service and pre-service teachers' current levels of relationship skills.

In terms of attitudes and perceived knowledge, generally speaking, in-service teachers have positive attitudes about SEL but a lower level of perceived knowledge about SEL. The vast

majority of teachers feel that SEL is important to students' success in school and life (Buchanan et al., 2009; Civic Enterprises et al., 2013; Douglass, 2011). Most teachers seem to have a general understanding of what SEL is, but few teachers report receiving SEL training in their pre-service education, with many educators feeling unsatisfied with their current SEL training (Buchanan et al., 2009; Civic Enterprises et al., 2013; Douglass, 2011). Teachers' feelings of confidence and preparedness in implementing SEL seems to vary (Buchanan et al., 2009; Douglass, 2011), but most teachers tend to feel that their lack of training and knowledge on SEL implementation is at least somewhat of a barrier to their SEL implementation (Buchanan et al., 2009; Civic Enterprises et al., 2013; Douglass, 2011). Taken together, it appears that in-service teachers have positive attitudes about SEL implementation but think they have lower knowledge of SEL, leaving them feeling as though they have not been adequately prepared to implement SEL, especially in their pre-service education.

A similar pattern of findings exists with pre-service teachers. Regarding attitudes, pre-service teachers tend to feel that SEL is important, is beneficial to students, and should be implemented in schools (Dolzhenko, 2017; Douglass, 2011). Pre-service teachers have reported lacking confidence and feeling unprepared regarding SEL implementation, and most report not receiving SEL training in their pre-service education thus far (Douglass, 2011). Pre-service teachers generally feel somewhere between unknowledgeable and moderately knowledgeable about SEL (Dolzhenko, 2017; Douglass, 2011). They appear to feel most knowledgeable about the definition of SEL and the least knowledgeable about how to implement SEL (Dolzhenko, 2017). Overall, based on this research, it appears that pre-service teachers have positive attitudes about SEL implementation but feel they lack knowledge in SEL (particularly in how to implement it) largely due to a lack of training in their pre-service education thus far.

It is worth noting that this research was conducted in the United States. There is less research on Canadian pre-service teachers' attitudes and perceived knowledge about SEL. Given that cultural context has implications for SEL and SEC (Hecht & Shin, 2015), Canadian-specific research is key to guiding Canadian teacher education programs in how to support pre-service teachers in developing their attitudes and perceived knowledge about SEL.

Teacher Relationship Skills in Relation to SEL Implementation

Both theoretical models guiding the current study propose that teachers' SEC has a bidirectional relationship with effective SEL implementation in the classroom (Jennings & Greenberg, 2009; Jones & Bouffard, 2012). As mentioned, researchers have found that effective SEL implementation is positively related to teachers' SEC. The other half of the bidirectional relationship suggests that teachers' SEC predicts effective SEL implementation (Jennings & Greenberg, 2009; Jones & Bouffard, 2012). This proposed relationship has been echoed by many others, who argue and that teachers' SEC is related their teaching-related practices—including their engagement and interactions with students, classroom management, modelling of SEC, and actual instruction—which in turn have the potential to impact students' SEL (Jones et al., 2013; Rimm-Kaufman & Hamre, 2010; Schonert-Reichl, 2017). Indeed, researchers have found the teachers' perceptions of their SEC predict their teaching practices, particularly those practices around social interaction and engagement with their students (Brown et al., 2010; Goegan et al., 2017). Thus, it seems that teachers' SEC, particularly their perceptions of their SEC, is related to their teaching practices around SEL implementation.

According to the relationship proposed by this study's two theoretical models, teachers' relationship skills, as a dimension of their SEC, should also be related to effective SEL implementation. Unfortunately, there is little research directly studying the links between

teachers' relationship skills, the effectiveness of SEL implementation, and outcomes of SEL implementation. One exception was a study conducted by Merritt and colleagues (2012), who found that the emotional support (a relationship skill) that Grade 1 teachers provided to their students predicted aspects of the students' later SEC, namely their aggressive behaviour and their behavioural control. However, this study did not measure SEL implementation.

Although there is little direct research on the relationship between relationship skills and effective SEL implementation, existing research on student-teacher relationships supports the proposed relationship between relationship skills and effective SEL implementation. By definition, relationship skills allow teachers to positively and supportively engage with students in order to build and maintain positive student-teacher relationships. This conclusion is also put forth by Rimm-Kaufman and Hamre (2010), who propose that teachers' relationship skills (as a facet of their personal development) impact their interactions with students which in turn impact student-teacher relationships. Researchers have shown that these positive student-teacher relationships are linked to positive behavioural, social-emotional, and academic outcomes for students and to increased engagement and enjoyment at work and reduced anxiety, anger, and emotional exhaustion for teachers (Brackett et al., 2011; Collie, 2017; Davis, 2003; Elias et al., 1997; Jennings & Greenberg, 2009; Klassen et al., 2012; Merritt et al., 2012; Payton et al., 2000). Furthermore, these positive student-teacher relationships help create warm, supportive classroom cultures (Jennings & Greenberg, 2009; Schonert-Reichl, 2017, 2019). Together, these relationships and classroom culture are positively related to students' learning, including learning from SEL implementation, suggesting that these relational factors are key to effectively implementing SEL (Collie, 2017; Elias et al., 1997; Greenberg et al., 2003; Schonert-Reichl, 2017, 2019; Solomon et al., 2000).

Unfortunately, there is a lack of research on how pre-service teachers' SEC predicts their later ability to implement SEL effectively. However, it logically makes sense to assume that beginning to develop their SEC, including their relationship skills, in their pre-service education will support teachers in implementing SEL effectively as they enter the workforce. In sum, despite a need for more specific research studying the relationship between relationship skills and SEL implementation, existing research suggests that relationship skills allow teachers to build and maintain positive student-teacher relationships that promote effective implementation of SEL.

Attitudes and Perceived Knowledge in Relation to SEL Implementation

There is little direct investigation into how teachers' attitudes and perceived knowledge about SEL is related to effective SEL implementation. However, several authors have argued that teachers' attitudes about SEL and perceptions of their knowledge about SEL are likely related to the effectiveness with which they implement SEL. They argue that teachers' attitudes and perceived knowledge about SEL are likely related to their buy-in for SEL implementation, their feelings of self-efficacy in implementing the program, their motivation for SEL implementation, and their behaviours and practices around SEL implementation (e.g., Elbertson, et al., 2010; Humphries et al., 2018). This postulate is supported by the fact that teachers' attitudes, understanding, and perceived knowledge about specific SEL programs and concepts are related to the degree and quality of their program implementation (Bowden et al., 2003; Cain & Carnellor, 2008; Datnow & Castellano, 2000; Domitrovich et al., 2008; Durlak & DuPre, 2008; Dusenbury et al., 2003; Gingiss et al., 1994; Ringwalt et al., 2003; Rohrbach et al., 1993). Thus, it is likely that teachers' attitudes and perceived knowledge about SEL in general is related to effective SEL implementation. Yet neither of the theoretical models informing this study

include teachers' attitudes and perceived knowledge about SEL, leaving no hint as to what mechanisms may explain a relationship between teachers' attitudes and perceived knowledge about SEL and effective SEL implementation.

One way that teachers' attitudes and perceived knowledge about SEL may be related to effective SEL implementation is through their relationship with teachers' SEC. This possibility is supported by research conducted by Goegan and colleagues (2017). The researchers found that teachers' perceptions about their SEC are positively related to their beliefs about SEL, meaning that the more socially-emotionally competent that teachers perceive themselves as being, the more positive beliefs they hold about implementing SEL (Goegan et al., 2017). More specifically, these beliefs were teachers' beliefs about how comfortable they were with implementing SEL, how committed they were to developing their ability to implement SEL effectively, and how much their school's culture supported SEL implementation (Brackett et al., 2012a; Goegan et al., 2017). The same relationship was found between pre-service teachers' perceptions of their current SEC and their beliefs about their future SEL implementation (Goegan et al., 2017). Given that teachers' attitudes and perceived knowledge of SEL are internal constructs similar to their SEL beliefs, it is possible that attitudes and perceived knowledge about SEL hold the same relationship with SEC as SEL beliefs. This possible relationship has also been recognized by Jennings and Greenberg (2009), who argue that "teachers' understanding and willingness to integrate SEL concepts and skills into their interactions with their students require SEC" (p. 505). Thus, it is possible that teachers' attitudes and perceived knowledge of SEL is related to effective SEL implementation through a relationship to teachers' SEC.

SEL Training

Researchers argue that training supporting the continuing development of teachers' SEC, positive attitudes about SEL, and perceived knowledge about SEL is key to effective SEL implementation (Collie & Perry, 2019; Elbertson et al., 2010; Jones et al., 2018; Jones & Bouffard, 2012; Kealey et al., 2000; National Commission on Social, Emotional, and Academic Development's Council of Distinguished Scientists et al., 2017; Payton et al., 2000; Rodriguez Alcocer, 2019; Schonert-Reichl et al., 2015). Not only will this training have the potential to increase the quality with which teachers implement SEL, it can also improve teachers' teaching-related wellbeing (e.g., job satisfaction, emotional experiences, burnout) through improving their SEC (Brackett et al., 2010; Collie, 2017; Collie & Perry, 2019; Jones et al., 2013; Schonert-Reichl, 2017). Some programs with this type of training are being created and studied (with encouraging findings) for in-service teachers (Collie, 2017; Jennings & Greenberg, 2009; Jones & Bouffard, 2012; Jones et al., 2013; Schonert-Reichl, 2019). However, there appears to be a lack of time dedicated to this type of training for pre-service teachers in teacher education programs, with some notable exceptions including the teacher education programs at San Jose State University and the University of British Columbia (Civic Enterprises et al., 2013; Goegan et al., 2017; Schonert-Reichl, 2019; Schonert-Reichl et al., 2015). There is also ongoing and encouraging development of and research on courses and workshops that could be added to pre-service teachers' education to enhance their own SEC and knowledge of SEL implementation (e.g., Heath & Development and Intrapersonal Resilience Research Team, 2020; Main, 2018; Schmoyer, 2020; Stipp, 2019). Logically, starting such training and development in pre-service education would likely allow teachers to become even better prepared to implement SEL upon entering their first teaching position. Therefore, it is important to create and implement pre-

service training that supports the development of pre-service teachers' SEC and attitudes and perceived knowledge about SEL.

Importantly, research suggests that approaches implemented by teacher education programs can lead to improvements in pre-service teachers' relationship skills, attitudes about SEL, and perceived knowledge about SEL (Dolzhenko, 2017; Elliott et al., 2011). Therefore, it seems such approaches designed for pre-service teacher education can be developed and implemented effectively. Unfortunately, as already mentioned, there is a need for more research on pre-service teachers' current levels of SEC, particularly relationship skills. As well, Canadian pre-service teachers' attitudes and perceived knowledge of SEL are not well understood. As stated previously, cultural context has implications for SEL and SEC (Hecht & Shin, 2015). Thus, Canadian-specific research leading to a deeper understanding in these areas is needed in order for administrations of Canadian teacher education programs to understand their pre-service teachers' current attitudes about SEL, perceived knowledge about SEL, and relationship skills as well as how much effort and resources need to be dedicated to training that supports these factors. Then, using their knowledge on how much improvement needs to and can be made, these administrations can start to plan on what program modifications will best support pre-service teachers.

Teacher Relationship Skills in Relation to Teacher Attitudes and Perceived Knowledge about SEL

As suggested earlier, it is possible that teachers' attitudes and perceived knowledge about SEL predict their effective SEL implementation through a relationship to teachers' SEC. In this case, teachers' attitudes and perceived knowledge about SEL would predict teachers' SEC, which would in turn predict effective SEL implementation. Speaking theoretically, teachers'

attitudes and perceived knowledge about SEL may influence their motivation to develop their own SEC, including their relationship skills, thus explaining why teachers' attitudes and perceived knowledge about SEL would predict their relationship skills.

Aside from a general understanding of pre-service teachers' SEC, attitudes about SEL, and perceived knowledge about SEL, administrators of teacher education programs will also need research on how these variables are related in order to develop meaningful and maximally efficient and effective SEL training for pre-service teachers. This research would inform teacher education program planning. In particular, as already mentioned, relationship skills appear particularly critical to SEL implementation and thus understanding if attitudes and perceived knowledge about SEL predict variance in relationship skills would be especially informative. If this relationship does exist in pre-service teachers, it would suggest the possibility that teacher education programs could, at the very least, target all three factors simultaneously and possibly (after further research) could even target pre-service teachers' attitudes and perceived knowledge of SEL and influence pre-service teachers' relationship skills as a result. Unfortunately, there is a lack of research investigating how these variables are related in pre-service teachers. As a result, current Canadian teacher education programs are missing a significant amount of important information on the current status of Canadian pre-service teachers' relationship skills, attitudes about SEL, and perceived knowledge about SEL, as well as the relationship between these variables.

Research Questions

The current study aims to start filling in some of the missing pieces in the literature by examining the current state of relationship skills, attitudes about SEL, and perceived knowledge

about SEL, and by examining how these variables are related, in a sample of Canadian pre-service teachers. Specifically, this study is guided by the following research questions:

1. What level of competency in relationship skills do pre-service teachers report having?

2. What are pre-service teachers' self-reported attitudes about SEL?

3. What are pre-service teachers' self-reported perceptions of their current knowledge about SEL?

4. Do pre-service teachers' self-reported attitudes about SEL and perceived knowledge about SEL predict a significant portion of the variance in their self-reported competency in relationship skills, both together and independently? Specifically:

   a. Do their attitudes about SEL and perceived knowledge about SEL predict variance in their self-reported competency in building new relationships?

   b. Do their attitudes about SEL and perceived knowledge about SEL predict variance in their self-reported competency in deepening existing relationships by disclosing personal information?

   c. Do their attitudes about SEL and perceived knowledge about SEL predict variance in their self-reported competency in resisting social pressure and asserting themselves with social partners when they are uncomfortable or displeased?

   d. Do their attitudes about SEL and perceived knowledge about SEL predict variance in their self-reported competency in providing emotional support through helping and actively listening?

    e.   Do their attitudes about SEL and perceived knowledge about SEL predict

        variance in their self-reported competency in managing conflict with social

        partners?

Hypotheses

    Based on the literature reviewed above, the following hypotheses were formed:

1. Pre-service teachers will report having moderately high to high levels of relationship

    skills.

2. Pre-service teachers will report positive attitudes about SEL.

3. Pre-service teachers will report being unknowledgeable to moderately knowledgeable

    about SEL.

4. Pre-service teachers' reported attitudes and perceived knowledge about SEL will together

    and independently predict a significant portion of the variance in their self-reported

    competency for all five specific relationship skills.

Methods

    This study used a concurrent correlational design to answer the above research questions. In

order to do so, data from a larger study on pre-service teachers' psychosocial functioning, social

media use, bullying attitudes, and SEL beliefs, attitudes, and knowledge was used.

Participants

    The current study used a non-random sample of 197 pre-service teachers attending the

University of Alberta. Not all participants responded to each question on the measures given;

thus, not all participants were included in all analyses. The number of participants included in

each analysis is reported in the results. In order to assess their demographic information,

participants were given self-report, researcher-constructed questions about their age, gender,

ethnicity, annual household income, years spent in their education degree thus far, plans for

future post-secondary education, and desired grades for future teaching. This data was collected

in order to understand the sample and the generalizability of the findings from this study. Results

are presented in Table 1. Participants ranged in age from 19 to 52 years old ($M = 23.37$ years, SD

$= 5.82$ years). The majority of participants reported that they are under 25 years old (74.62%);

identify as a girl or woman (66.00%); identify as Caucasian (72.08%); have an annual household

income over $100,000 (22.84%); had been studying to become a teacher for 2.5 years including

the fall semester of 2019 (29.95%); did not plan to continue post-secondary education after

receiving their education degree (51.78%); and hoped to teach high school grades (77.16%).

Table 1

Demographic Information

Variable	Frequency	
	n	%
Age		
Under 25	147	74.62
25-29	32	16.24
30-34	7	3.55
35 and over	10	5.08
No response	1	0.51
Gender		
Girl/woman	130	66.00
Boy/man	64	32.49
Androgynous	2	1.02
Non-binary	1	0.51
Ethnicity		
Caucasian	142	72.08
Asian	18	9.14
Middle Eastern	6	3.05
Métis	5	2.54
First Nations	2	1.02
African	2	1.02
African-American	1	0.51
Latino/Latina	1	0.51
Multiethnic	6	3.05
Other	14	7.11

Variable	Frequency	
	n	%
Annual household income		
$0-$10,000	28	14.21
$10,001-$20,000	30	15.23
$20,001-$30,000	10	5.08
$30,001-$40,000	7	3.55
$40,001-$50,000	7	3.55
$50,001-$60,000	9	4.57
$60,001-$70,000	12	6.09
$70,001-$80,000	11	5.58
$80,001-$90,000	15	7.61
$90,001-$100,000	17	8.63
Over $100,000	45	22.84
Not reported	6	3.05
Years of study		
0.5	34	17.26
1.0	3	1.52
1.5	7	3.55
2.0	12	6.09
2.5	59	29.95
3.0	28	14.21
3.5	21	10.66
4.0	11	5.58
4.5	6	3.05
5.0	6	3.05
5.5	1	0.51
6.0 or more	9	4.57
Continuing post-secondary		
Yes	95	48.22
No	102	51.78
Grades hoping to teach		
Elementary grades	6	3.05
Junior high grades	38	19.29
High school grades	152	77.16
Not reported	1	0.51

Note. Table displays participants' self-reported demographic information, including age; gender; ethnicity; annual household income; years spent studying to become a teacher including the fall semester of 2019; plans for continuing post-secondary education after receiving their education degree; and grades that they hope to teach in the future.

Procedures

Participants were recruited from the University of Alberta through the Department of Educational Psychology's participant pool program. Per the program, the participants completed an online survey, consisting of multiple self-report instruments, in the fall semester of 2019 (from September through November) in exchange for credit towards an undergraduate course in educational psychology. The participants had the option to complete the survey, participate in another research study, or complete an alternative assignment to earn the course credit. Survey responses were collected and managed using REDCap electronic data capture tools hosted by the Women and Children's Health Research Institute at the University of Alberta (Harris et al., 2019; Harris et al., 2009). Consent was obtained by providing participants with the information and consent forms and having them check a box signifying that they consented to the study before proceeding to fill out the measures. Participants had the option to not respond to specific questions and, if they became uncomfortable, to stop completing the survey and still receive course credit. Participants also had the option to withdraw their responses from the study up to 2 weeks after they had completed the survey. No withdrawals were requested.

Measures

Relationship Skills

The *Interpersonal Competence Questionnaire* (ICQ) was used to assess participants' relationship skills (Buhrmester et al., 1988). The ICQ is a 40-item self-report scale with five scales: Initiation, Disclosure, Negative Assertion, Emotional Support, and Conflict Management scales. The five scales measure five different relationship skills (respectively): (1) starting new relationships; (2) sharing personal information; (3) resisting social pressure and standing up for oneself by asserting oneself when displeased or uncomfortable; (4) providing emotional support

to others by giving them help and actively listening to them; and (5) effectively and constructively managing conflict. On this measure, participants were asked to rate their competence and comfort in engaging in different social acts involving these skills on a scale ranging from 1 (*I'm poor at this; I'd feel so uncomfortable and unable to handle this situation, I'd avoid it if possible*) to 5 (I*'m EXTREMELY good at this; I'd feel very comfortable and could handle this situation very well*). The raw scores for each item were then averaged to create the five scale scores as a measure of their competency in each of the five specific relationship skills.

In developing the measure, the ICQ was completed by 453 undergraduate students in an introductory psychology course (Buhrmester et al., 1988). These participants rated their own relationship skills on the ICQ. It was given as two separate measures—one rating skills in interacting with friends and one rating skills in interacting with romantic partners. Scores on these two versions of the measure were highly correlated ($r = 0.68 – 0.84$). Thus, these versions were combined into a single measure, which was used in the current study. When the two versions of the scales were combined into a single version assessing social interactions with peers more generally, Cronbach's alpha of internal reliability for the five scales ranged from good to excellent ($\alpha = 0.86 – 0.91$). As well, the test-retest reliability for the five scales over a four-week period was high ($r = 0.69 – 0.89$). Factor analysis supported the construct validity of the five-scale structure. Furthermore, the scales' construct validity was supported by significant correlations between scale scores and other measures of interpersonal competence, namely participant reports of how often they went on dates, how often they initiated dates, and how popular they were. The discriminant and concurrent validity of the ICQ was supported by correlation analyses and structural equation modelling using ICQ scores and scores on three other self-report measures of social functioning—the *Dating and Assertiveness Questionnaire*

(Levenson & Gottman, 1978), the *Social Skills Inventory* (Riggio, 1986), and the *Social Reticence Scale* (Jones & Russell, 1982).

In a second and third study, construct validity was also evident in comparisons between individual's self-report on the ICQ and ratings on the ICQ completed by their roommates, acquaintances, and friends (Buhrmester et al., 1988). More specifically, all fives scales showed significant correlations between self-report and roommate- and friend-ratings whereas only two of the five scales showed significant correlations between self-report and acquaintance-ratings, which makes sense when considering how well the different individuals knew the person they were reporting on. With the current sample, the five ICQ scales demonstrated good internal consistency, including the Initiation scale ($n = 190$, $\alpha = .88$), Disclosure scale ($n = 195$, $\alpha = .86$), Negative Assertion scale ($n = 194$, $\alpha = .89$), Emotional Support scale ($n = 193$, $\alpha = .90$), and Conflict Management scale ($n = 195$, $\alpha = .85$). Overall, there is strong evidence to support the ICQ's internal consistency, test-retest reliability, and construct validity.

Attitudes About SEL

The Social and Emotional Learning (SEL) Attitudes Scale for Pre-Service Teachers (henceforth referred to as the Attitudes Scale) was used to assess participants' attitudes about SEL (Dolzhenko, 2017). This measure was adapted for pre-service teachers by Dolzhenko (2017) from Buchanan and colleagues' (2009) version for teachers. The Attitude Scale is a five-item, self-report, unidimensional measure assessing pre-service teachers' attitudes about SEL in classrooms (Dolzhenko, 2017). On this measure, participants rated their agreement with statements about their attitudes about SEL on a Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*; Dolzhenko, 2017). The raw item scores were then averaged to form a single measure of the pre-service teachers' attitudes about SEL (Dolzhenko, 2017).

In Dolzhenko's (2017) study, the Attitudes Scale was used with 139 pre-service teachers. Cronbach's alpha of internal reliability was good ($\alpha = 0.88$ at both pre- and post-test). As well, factor analysis supported the construct validity of this unidimensional measure. With the current, sample, the Attitudes Scale demonstrated good internal consistency ($n = 196$, $\alpha = 0.87$). Overall, the Attitudes Scale demonstrates adequate internal consistency and construct validity.

Perceived Knowledge About SEL

The Social and Emotional Learning (SEL) Knowledge Scale for Pre-Service Teachers (henceforth referred to as the Knowledge Scale) was used to assess participants' perceived knowledge about SEL. This measure was adapted for pre-service teachers by Dolzhenko (2017) from Buchanan and colleagues' (2009) version for teachers. The Knowledge Scale is a three-item, self-report, unidimensional measure assessing pre-service teachers' perceived knowledge about SEL (Dolzhenko, 2017). On this measure, participants rated their knowledge about aspects of SEL on a scale ranging from 1 (*not knowledgeable*) to 5 (*very knowledgeable*; Dolzhenko, 2017). The raw item scores were then averaged to form a single measure of the pre-service teachers' perceived knowledge about SEL (Dolzhenko, 2017).

In Dolzhenko's (2017) study, the Knowledge Scale was used with 139 pre-service teachers. Cronbach's alpha of internal reliability was excellent ($\alpha = 0.91$ at both pre- and post-test). As well, factor analysis supported the construct validity of this unidimensional measure. With the current, sample, the Knowledge Scale demonstrated good internal consistency ($n = 197$, $\alpha = 0.85$). Overall, the Knowledge Scale also demonstrates adequate internal consistency and construct validity.

Statistical Analyses

Data was analyzed using IBM SPSS Statistics for Macintosh, Version 26. Research Questions 1, 2, and 3 were tested using descriptive data analyses. Specifically, these three research questions were answered by calculating the frequencies, means, standard deviations, ranges, skew, and kurtosis for scores on the five ICQ scales (i.e., the Initiation, Negative Assertion, Disclosure, Emotional Support, and Conflict Management scales), the Attitudes Scale, and the Knowledge Scale. These analyses were run for the overall sample. Then, because the sample was not equally distributed across genders, bootstrapped independent t-tests (with 1000 bootstrap samples) were run to test for significant differences between scores of women and men (the two self-reported gender categories with sample sizes that allowed for statistical comparison). Although the sample was also not equally distributed in other demographic domains, additional descriptive analyses separated out by other demographic variables were not conducted because there were smaller numbers of participants in the non-majority groups for these variables. Research Question 4 was answered using bootstrapped Pearson's correlation analyses (with 1000 bootstrap samples) and multiple regression analyses. The correlation analyses were run for initial checks of the relationship between the predictor and outcome variables in the multiple regression analyses. Each multiple regression analysis aimed to answer one of the sub-questions included in Research Question 4. In all five proposed multiple regression models, depicted in Figure 3, the predictor variables were the participants' self-reported attitudes about SEL and perceived knowledge about SEL, as measured by the Attitudes Scale and Knowledge Scale. The outcome variables were the participants' self-reported relationship skills as measured by five scales from the ICQ.

Figure 3

Multiple Regression Models
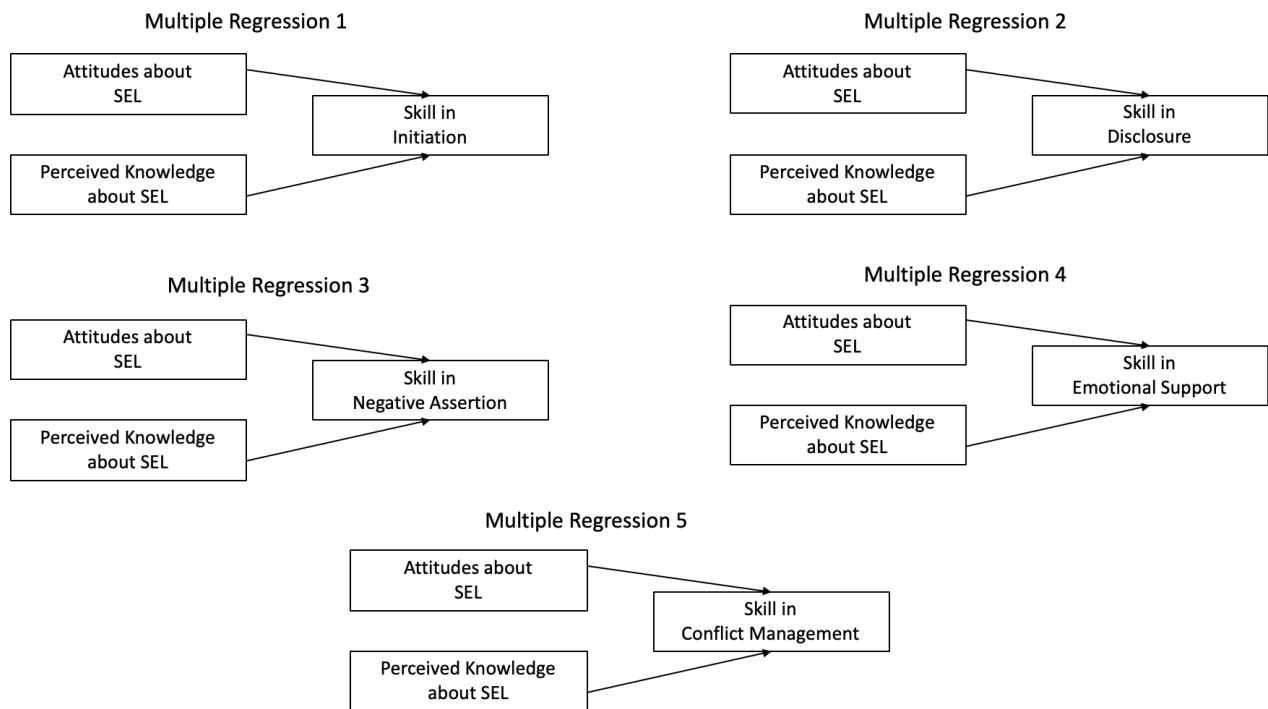
Assumptions

Prior to running the independent t-test, Pearson's correlation, and multiple regression analyses, the assumptions of these analyses were checked. For the independent t-test analyses, two participants' scores on the Emotional Support and Conflict Management scales were identified as outliers (i.e., data points lying more than 3.29 standard deviations from the mean; Field, 2018) below the mean for women. As well, one participant's score for the Attitudes Scale was an outlier below the mean for men. As a result, winsorizing was applied before conducting the independent t-test analyses such that these three data points were replaced with values that were exactly 3.29 standard deviations from the mean, rounded to the nearest hundredth. After winsorizing, for all independent t-test analyses, the assumptions of independence, homogeneity

of variance, and normality were assessed. All participants supposedly completed the measures on their own, and therefore all observations were assumed to be independent from each other. Levene's tests showed that the homogeneity of variances assumption was met for all distributions. Specifically, Levene's test was not significant for the Initiation scale ($F(1,185) = 0.44$, $p = .507$), Disclosure scale ($F(1,190) = 0.06$, $p = .807$), Negative Assertion scale ($F(1,189) = 1.33$, $p = .250$), Emotional Support scale ($F(1,188) = 1.10$, $p = .296$), Conflict Management scale ($F(1,190) = 0.03$, $p = .863$), Attitudes Scale ($F(1,191) = 0.27$, $p = .602$), and Knowledge Scale ($F(1,192) = 2.67$, $p = .104$). Histogram and normal Q-Q plots showed that the distribution of scores for women was not normal (i.e., the data did not demonstrate a reasonable fit with the normal curve on the histogram and diagonal line on the Q-Q plot) for the Disclosure scale, Emotional Support scale, Attitudes Scale, and Knowledge Scale. These graphs also showed that the distribution of scores for men were not normal for the Attitudes Scale and Knowledge Scale. To account for non-normality, all of the independent t-test analyses were conducted with 1000 bootstrap samples.

For the Pearson's bivariate correlation analyses, the same process of winsorizing the data was conducted to account for the three outliers. The assumptions of normality and linearity were also assessed. As seen above, the data were not always normal, and therefore all of the correlation analyses were conducted with 1000 bootstrap samples. Scatterplots were generated for each pairing of variables to assess the assumption of linearity. Based on these scatterplots, all variables had linear relationships with each other.

For all five proposed multiple regression analyses, there were no outliers (as assessed using residual values rather than raw data) exerting undue influence over the model. As well, for all conducted analyses, the assumptions of non-zero variance, additivity and linearity,

homoscedasticity, normally distributed errors, independent errors, and no perfect

multicollinearity were assessed. The assumptions were met for all conducted multiple regression

analyses. The predictors always had non-zero variance ($s^2 = .31 - .76$). The scatterplots of the

outcome variable versus the predictor variables and scatterplots of the standardized predicted

value versus the standardized residual value showed that the predictors had linear relationships

with the outcomes and that the predictors' combined relationship to the outcome was best

described by adding their individual relationships to the outcome together. As well, scatterplots

of the standardized predicted value versus the standardized residual value for each model showed

homoscedasticity as the residuals were evenly distributed around zero at all levels of the

standardized predicted value. Histogram and P-P plots of the residuals were generated. The

residuals had a reasonable fit with the normal curve on the histograms and the diagonal line on

the P-P plots, suggesting that the residuals were normally distributed. Durbin-Watson statistics

for all conducted multiple regression analyses ranged from 1.95 to 2.12. These values are close

to 2, indicating no significant autocorrelation in the models and suggesting the residual terms are

independent. Finally, the predictors always showed a small, significant correlation ($r = .275 -$

$.282, p < .001$), the variance inflation factor (VIF) statistics was always 1.08, and the tolerance

statistic was always .92. Altogether, these three statistics indicated low levels of collinearity for

the conducted analyses.

Results

In this section, I will present the results from the statistical analyses. First, I will

summarize the results from the descriptive and bootstrapped independent t-test analyses. Second,

I will summarize the results from the bootstrapped Pearson's correlation and multiple regression

analyses.

Descriptive and T-Test Analyses

To answer Research Questions 1, 2, and 3, the frequencies, means, standard deviations, ranges, skew, and kurtosis were calculated for participants' self-reported relationship skills, attitudes about SEL, and perceived knowledge of SEL. The frequencies of participants' scores on each scale are depicted in Figures 4 and 5. As well, the histograms for each scale's score distribution are presented in the Appendix. The statistics from the descriptive analyses for the overall sample are presented in Table 2, and because the sample was not equally distributed across different genders, the means and standard deviations for each gender are presented in Table 3. It should be noted that, based on how the scale scores measuring each variable are calculated, the minimum and maximum possible scores for each variable are 1 and 5, respectively, with continuous scores within this range.
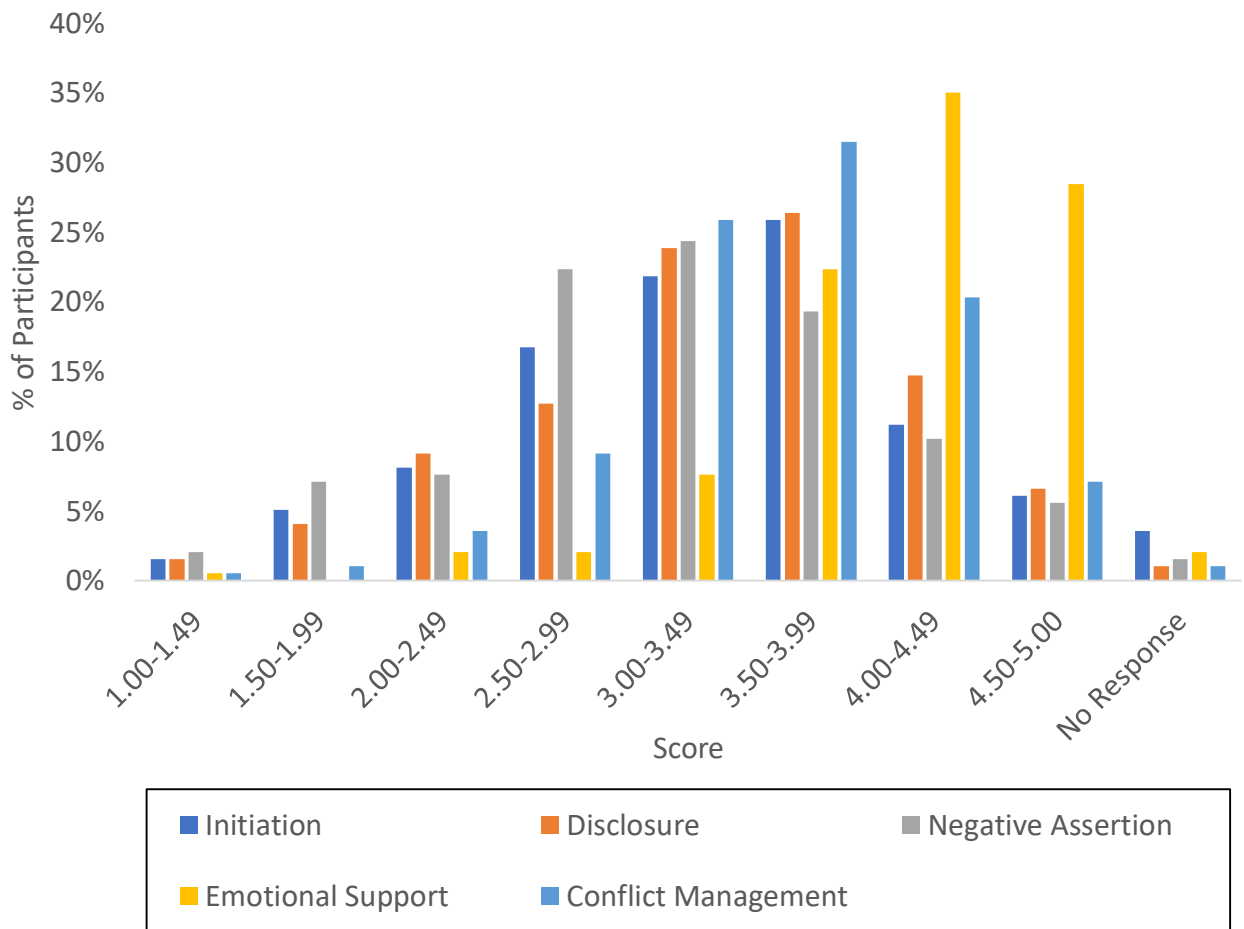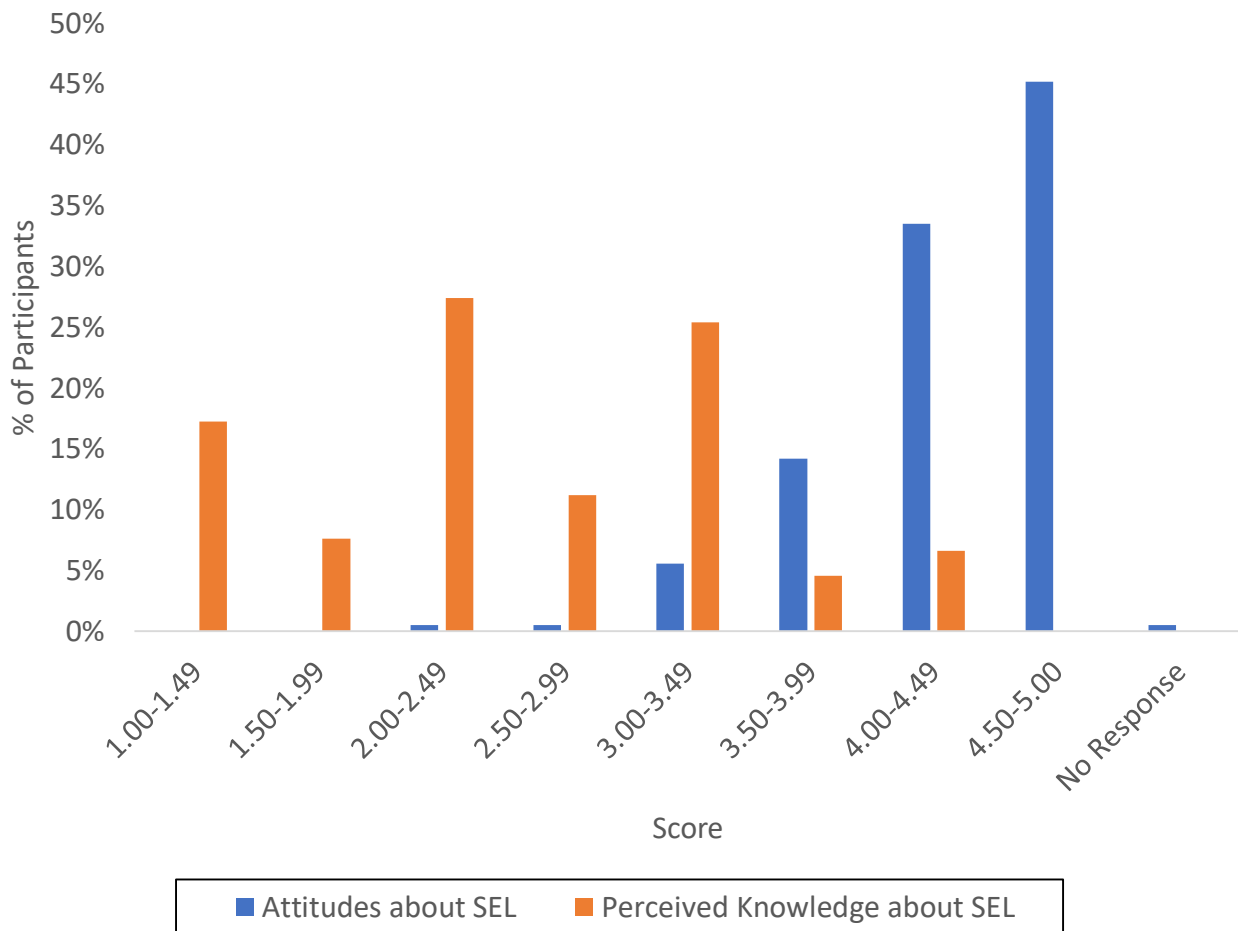
Figure 4

Frequencies for ICQ Scale Scores

Figure 5

Frequencies for Attitudes Scale and Knowledge Scale Scores

Table 2

Descriptive Statistics for Overall Sample

Variable	n	M	SD	Range	Skew	Kurtosis
Relationship skills						
Initiation	190	3.25	0.80	1.00 – 5.00	-0.29	-0.01
Disclosure	195	3.30	0.80	1.00 – 5.00	-0.47	0.08
Negative assertion	194	3.14	0.82	1.00 – 5.00	-0.19	-0.19
Emotional support	193	4.08	0.63	1.00 – 5.00	-1.12	2.73
Conflict management	195	3.56	0.66	1.00 – 5.00	-0.43	0.94
SEL perceptions						
Attitudes about SEL	196	4.33	0.56	2.00 – 5.00	-0.76	0.71
Perceived knowledge about SEL	197	2.42	0.86	1.00 – 4.33	0.05	-0.85

Table 3

Descriptive Statistics by Participant-Reported Gender

	Girls/Women			Boys/Men			Androgynous			Non-Binary	
Variable	n	M	SD	n	M	SD	n	M	SD	n	Score
Relationship skills											
Initiation	125	3.24	0.79	62	3.32	0.82	2	2.88	0.88	1	1.63
Disclosure	128	3.35	0.78	64	3.28	0.79	2	2.06	0.80	1	1.63
Negative assertion	128	3.20	0.84	63	3.04	0.76	2	2.63	1.41	1	2.13
Emotional support	126	4.14	0.62	64	3.98	0.66	2	3.81	0.27	1	3.13
Conflict management	128	3.50	0.65	64	3.69	0.67	2	3.13	0.88	1	3.00
SEL perceptions											
Attitudes about SEL	130	4.36	0.54	63	4.28	0.59	2	3.90	0.14	1	4.40
Perceived knowledge about SEL	130	2.44	0.90	64	2.40	0.79	2	2.00	1.41	1	2.00

To contextualize the average scores on each of the ICQ scales, it should be noted that on the ICQ, a response of 2 is labelled "*I'm only fair at this; I'd feel uncomfortable and would have lots of difficulty handling this situation*", a response of 3 is labelled "*I'm OK at this; I'd feel*

somewhat uncomfortable and have some difficulty handling this situation", and a response of 4 is labelled "*I'm good at this; I'd feel quite comfortable and able to handle this situation*" (Buhrmester et al., 1988). Based on the mean scores and standard deviations for each scale, it appears that the participants perceive themselves as being 'OK and somewhat uncomfortable' to 'good and quite comfortable' in dealing with relational situations that invoke these five relationship skills, with most participants rating themselves in the 'fair and uncomfortable' to 'extremely good and very comfortable' range. Frequency analyses showed that across the Initiation, Disclosure, Negative Assertion, Emotional Support, and Conflict Management scales, the majority of participants (64.98%, 59.39%, 71.58%, 93.41%, and 84.77%, respectively) had scores of at least 3 (i.e., the midpoint on these scales), thus reporting being at least 'OK' with using these skills. The participants reported being most skilled in providing emotional support to relational partners, with 63.46% of participants having scores of at least 4 (i.e., feeling 'good and quite comfortable' with using this skill). The participants reported being least skilled in asserting themselves with relational partners in negative situations, with 39.09% of participants having scores of less than 3 (i.e., feeling 'OK and somewhat uncomfortable' with using this skill).

The mean and standard deviation for the Attitudes Scale suggest that most participants agreed with the statements about the importance of SEL implementation. In fact, 78.68% of participants had a score of 4 or more, and 98.47% of participants had a score of 3 or more (i.e., a score above the midpoint assumed to indicate neutrality) on this scale. As well, according to the range, no participant strongly disagreed with these statements. In contrast, the mean and standard deviation for the Knowledge Scale indicate that participants reported being somewhat unknowledgeable about SEL, with most participants feeling unknowledgeable to moderately knowledgeable. Frequency analyses further confirmed this finding, with 63.45% of participants

having a score of 3 or less (i.e., a score below the midpoint) on this scale. No participant felt very knowledgeable about SEL, as indicated by the range.

The skew values for all five ICQ scales and the Attitudes Scale suggest that the distributions are left-skewed, as can be seen in Figures 4 and 5 and in the histograms in the Appendix. In particular, the score distribution for the Emotional Support scale was quite left-skewed. These left-skews indicate that more participants reported having relationship skills and attitudes about SEL above the mean than reported relationship skills and attitudes about SEL below the mean. In contrast, the skew value for the Knowledge Scale suggests that this distribution is slightly right-skewed but near normal, as can be seen in Figure 5 and the measure's histogram in the Appendix. This slight right-skew indicates that slightly more participants reported having below-average perceived knowledge about SEL compared to those participants reporting above-average perceived knowledge about SEL.

The kurtosis values suggest that the distributions have heavier tails for the Emotional Support, Conflict Management, and Attitudes scales; lighter tails for the Negative Assertion and Knowledge scales, and approximately normal tails for the Initiation and Disclosure scales. These distribution shapes can also be seen in the frequency distributions in Figure 4 and 5 and in the histograms in the Appendix. The distributions with heavier tails have fewer participant responses in the tails of the distribution compared to a normal distribution, indicating that responses tended to be more clustered around the mean. The distributions with lighter tails have more participant responses in the tails of the distribution compared to a normal distribution, indicating that responses tended to be more spread out around the mean. Again, compared to the other distributions, the distribution for the Emotional Support scale has particularly heavy tails.

In terms of gender-specific descriptive statistics, it should be noted that there were only three participants who did not report identifying as a woman or a man. Thus, the responses given by these participants cannot be generalized to all individuals who do not identify as a woman or a man. The larger number of participants who identified as a woman or man allowed for statistical comparisons of the means of the two groups. As discussed above, winsorizing was conducted to remove outliers from the women's scores on the Emotional Support and Conflict Management scales (resulting in new means of 4.15 and 3.51, respectively) and the men's scores on the Attitudes Scale (resulting in a new mean of 4.28). The bootstrapped independent t-tests showed that scores for women and men did not significantly differ on any of the study's scales, namely the Initiation scale ($t(185) = 0.66$, BCa 95% CI [-0.17, 0.31], $p = .513$), Disclosure scale ($t(190) = -0.55$, BCa 95% CI [-0.30, 0.16], $p = .597$), Negative Assertion scale ($t(189) = -1.30$, BCa 95% CI [-0.40, 0.09], $p = .198$), Emotional Support scale ($t(188) = -1.83$, BCa 95% CI [-0.36, 0.02], $p = .086$), Conflict Management scale ($t(190) = 1.84$, BCa 95% CI [-0.00, 0.36], $p = .067$), Attitudes Scale ($t(191) = -0.98$, BCa 95% CI [-0.26, 0.08], $p = .344$), and Knowledge Scale ($t(192) = -0.32$, BCa 95% CI [-0.27, 0.22], $p = .730$).

Multiple Regression Analyses

To answer Research Question 4, multiple regression analyses were conducted, with the proposed multiple regression models outlined in Figure 3. As an initial check, bootstrapped Pearson's correlation analyses were run to find correlations amongst the variables. Based on non-significant correlations between predictor and outcome variables for proposed multiple regression models 3 and 5, only the multiple regression analyses testing proposed multiple regression models 1, 2, and 4 were conducted. The results from the correlation analyses are presented in Table 4. The results of the multiple regression analyses are reported in Table 5.

Table 4

Intercorrelations for Study Variables

Variable	1		2		3		4		5		6	
	r	CI	*r*	CI	*r*	CI	*r*	CI	*r*	CI	*r*	CI
1. Initiation skill	-	-										
2. Disclosure skill	.62***	[.52, .70]	-	-								
3. Negative assertion skill	.47***	[.35, .59]	.50***	[.36, .63]	-	-						
4. Emotional support skill	.37***	[.21, .51]	.58***	[.45, .68]	.35***	[.18, .50]	-	-				
5. Conflict management skill	.28***	[.09, .44]	.39***	[.23, .52]	.30***	[.14, .45]	.54***	[.40, .67]	-	-		
6. Attitudes about SEL	.15*	[.02, .29]	.18*	[.03, .30]	.11	[-.02, .24]	.21**	[.04, .37]	.02	[-.13, .19]	-	-
7. Perceived knowledge about SEL	.18*	[.04, .32]	.12	[-.04, .26]	.10	[-.06, .25]	.08	[-.08, .24]	.13	[-.03, .28]	.29***	[.14, .43]

Note. Results based on 1000 bootstrap samples; CI = 95% confidence interval.

*p < .05. **p < .01. ***p < .001.

Table 5

Multiple Regression Analyses Results

Multiple regression model	*n*	*F*	R^2	*b*	95% CI for *b*	β	*p*
Multiple regression 1	189	4.09	.04				.018
Attitudes about SEL	189			0.16	[-0.06, 0.37]	.11	.145
Perceived knowledge about SEL	189			0.14	[-0.00, 0.27]	.15	.052
Multiple regression 2	194	3.69	.04				.027
Attitudes about SEL	194			0.23	[0.02, 0.44]	.16	.031
Perceived knowledge about SEL	194			0.07	[-0.07. 0.20]	.07	.335
Multiple regression 4	192	4.74	.05				.010
Attitudes about SEL	192			0.24	[0.07, 0.40]	.21	.006
Perceived knowledge about SEL	192			0.03	[-0.08, 0.13]	.03	.653

Note. CI = confidence interval.

The bootstrapped Pearson's correlation analyses showed that all five relationship skills were significantly and positively correlated with each other, with the correlations ranging from small to large. These findings make sense as these are all different types of relationship skills. As well, attitudes about SEL had a small, significant, and positive correlation with perceived knowledge about SEL. This finding is also not surprisingly given that both constructs are perceptions related to SEL. Attitudes about SEL were significantly and positively correlated with self-reported competency in the relationship skills of initiation, disclosure, and emotional support. Perceived knowledge about SEL was significantly and positively correlated with self-reported competency in initiating relationships. Self-reported competency in both negatively asserting oneself and managing conflict were weakly and not significantly correlated with either attitudes about SEL or perceived knowledge about SEL. Thus, it appeared that participants attitudes about SEL and perceived knowledge about SEL could not significantly predict variance

in participants' self-reported competency in negative assertion and conflict management. As a result, the multiple regression analyses corresponding with proposed multiple regression models 3 and 5 were not conducted. Despite the fact that perceived knowledge was not significantly associated with self-reported competency in disclosure and emotional support, it was included in these proposed multiple regression models as planned to determine if participants' attitudes about SEL could significantly and uniquely account for variance in these skills (and to assess how much variance it could account for) when controlling for perceived knowledge about SEL.

It should be noted that all three multiple regression analyses were underpowered, though they had near-sufficient power ($1-\beta$ = .68 - .80). Participants' self-reported attitudes about SEL and perceived knowledge about SEL together significantly explained 4% of the variance in participants' self-reported competency in initiating relationships, 4% of the variance in participants' self-reported competency in disclosing personal information to relational partners, and 5% of the variance in participants' self-reported competency in providing emotional support to relational partners. Furthermore, when controlling for participants' self-reported perceived knowledge about SEL, their self-reported attitudes about SEL uniquely and significantly predicted a small portion of the variance in their self-reported competency in disclosing personal information and providing emotional support to relational partners.

Discussion

In this section, I will outline the study's findings as they pertain to each of the research questions and hypotheses and in relation to the current literature as reviewed above. Then I will explore the limitations of the current study, along with potential directions for future research. Finally, I will discuss the implications of the study's findings.

Canadian Pre-Service Teachers' Relationship Skills

The results supported the hypothesis for Research Question 1. More specifically, as predicted, the pre-service teachers in the current study reported having moderate to moderately high levels of the five different relationship skills. Based on the ICQ's response scale, the pre-service teachers reportedly felt 'okay and somewhat uncomfortable' to 'good and quite comfortable' with initiating new relationships, disclosing personal information to relational partners, asserting themselves when displeased or uncomfortable with relational partners, providing emotional support to relational partners, and effectively and constructively managing conflict with relational partners. The pre-service teachers reported feeling most competent in providing emotional support and least competent in asserting themselves in negative situations. Women and men did not significantly differ in their self-reported relationship skills. These findings are consistent with previous research wherein Canadian pre-service teachers reported having moderately high overall SEC (Goegan et al., 2017; Rodriguez Alcocer, 2019). It is informative to see that pre-service teachers felt similarly about their competency in these relationship skills as they have reported feeling about their overall SEC in previous research.

Interestingly, for all five specific relationship skills, there was always a portion of the pre-service teachers who reported low levels of competency and comfort in these relationship skills (with less than 40% to less than 10% of participants reporting skill levels below the rating scale's midpoint of 3, and always at least one participant reporting a score of 1, across all five relationship skills), suggesting that some pre-service teachers do not feel competent in their relationship skills. However, there was also a tendency for the pre-service teachers to report relationship skills above the mean, suggesting more pre-service teachers feel competent in these skills compared to pre-service teachers who do not feel competent. Relationship skills are important for teachers to model for their students and to develop and maintain positive student-

teacher relationships and warm classroom cultures that promote learning from SEL implementation (Greenberg et al., 2003; Solomon et al., 2000). Thus, even though there is a tendency for pre-service teachers to report moderately high to high relationship skills, the results suggest that some pre-service teachers may have difficulty implementing SEL effectively in the future due to low relationship skills (or, at the very least, low feelings of competency in relationship skills).

Canadian Pre-Service Teachers' Attitudes and Perceived Knowledge about SEL

Regarding Research Question 2, the results again support the hypothesis: the pre-service teachers in the current study reported positive attitudes about SEL implementation in schools, as seen in their moderately high to high levels of agreement with statements about the importance of implementing SEL. In reviewing the descriptive statistics, I found that nearly all of the participants reported some degree of agreement with these statements, and none of them reported strongly disagreeing with these statements. As predicted for Research Question 3, nearly two-thirds of the pre-service teachers in this study reported being unknowledgeable to moderately knowledgeable about SEL. None of them felt very knowledgeable about SEL. Women and men did not significantly differ in their attitudes or perceived knowledge about SEL.

These findings suggest that this sample of Canadian pre-service teachers have attitudes and perceived knowledge about SEL implementation that is similar to American in-service (Buchanan et al., 2009; Civic Enterprises et al., 2013; Douglass, 2011) and pre-service teachers (Dolzhenko, 2017; Douglass 2011). Although interventions have to be aware of cultural context, the similarities shown by these exploratory findings suggest that approaches that effectively influence American pre-service teachers' attitudes and perceived knowledge about SEL (e.g.,

Dolzhenko, 2017) could possibly be adapted and, with testing, shown to be effective for Canadian pre-service teachers.

Attitudes and Perceived Knowledge Predicting Variance in Relationship Skills

The hypothesis for Research Question 4 was not supported as the pre-service teachers' attitudes and perceived knowledge about SEL did not significantly predict variance in their reported competency in all five of the relationship skills assessed. However, their attitudes and perceived knowledge about SEL did significantly and positively predict a small portion of the variance in their reported competency in three of the relationship skills. This means that the more positive attitudes and perceived knowledge about SEL that the pre-service teachers reported having, the higher their reported competency in initiating new relationships, disclosing personal information, and providing emotional support to relational partners through helping and actively listening. These findings are consistent with findings from Goegan and colleagues (2017) who found that in-service and pre-service teachers' beliefs about SEL, a construct somewhat similar to attitudes about SEL and perceived knowledge about SEL, were positively related to the teachers' self-reported overall SEC. As well, it is not surprising that pre-service teachers' attitudes and perceived knowledge about SEL are related to their reported relationship skills, an aspect of SEC, because these three variables are all related to SEL implementation in in-service teacher populations (Bowden et al., 2003; Brown et al., 2010; Cain & Carnellor, 2008; Datnow & Castellano, 2000; Domitrovich et al., 2008; Durlak & DuPre, 2008; Dusenbury et al., 2003; Gingiss et al., 1994; Goegan et al., 2017; Jones et al., 2013; Ringwalt et al., 2003; Rohrbach et al., 1993).

Although both variables were significantly and positively correlated with reported competency in initiating relationships, neither attitudes about SEL nor perceived knowledge

about SEL uniquely and significantly predicted variance in reported competency in this skill. This finding suggests that it is the shared variance between attitudes about SEL and perceived knowledge about SEL that predicts the variance in this competency. The shared variance could be described as overall or general perceptions of SEL implementation. In contrast, when controlling for perceived knowledge about SEL, attitudes about SEL significantly predicted variance in reported competency in both disclosing personal information and providing emotional support. Perceived knowledge about SEL did not significantly predict variance in these two variables when controlling for attitudes about SEL. The initial correlation results coincide with this finding—only attitudes about SEL, not perceived knowledge about SEL, was significantly correlated with reported competency in these two relationship skills. Taken together, these results suggest that the overall model predicts variance in these two variables due to variance that is unique to attitudes about SEL, possibly with some additional help from the shared variance between attitudes about SEL and perceived knowledge about SEL. Thus, it appears that attitudes about SEL are more closely related to relationship skills than perceived knowledge about SEL. This finding is interesting as previous research on teachers' attitudes about SEL, perceived knowledge about SEL, and SEC did not hint to this possible difference in relationships.

Unexpectedly, the current sample's pre-service teachers' self-reported attitudes and perceived knowledge were not significantly correlated with their self-reported competency in negative assertion or conflict management. It is possible that these two relationship skills are less important to SEL implementation than the other three relationship skills, thus explaining why attitudes and perceived knowledge about SEL were only significantly related to some relationship skills.

It is important to note that the effect sizes for the significant results were small, but this is not atypical for social science research or SEL research more generally (Jones & Bouffard, 2012; McCartney & Rosenthal, 2000). Based on cut-offs provided by Ferguson (2009), the effect sizes observed in the multiple regression analyses are considered practically significant for social science data, with the exception of the relationship between attitudes about SEL and competency in disclosing personal information. As well, almost all significant correlations are considered at least practically significant (Ferguson, 2009). Although three correlations between attitudes and perceived knowledge about SEL and relationship skills are less than .2, and thus are not considered practically significant, their relationship in the overall multiple regression models is practically significant (Ferguson, 2009). Furthermore, in social science research, including research around SEL for youth, small effects sizes can have meaningful implications, particularly as they compound in the long-term through domino effects (Jones & Bouffard, 2012; McCartney & Rosenthal, 2000). Still, the small effect size points to the fact that there are other factors aside from attitudes and perceived knowledge about SEL that can explain the variance in pre-service teachers' self-reported relationship skills, and these other factors should be investigated.

Limitations and Future Directions

The current study has limitations that should be considered when thinking about its findings. First, all of the multiple regression analyses had less than the acceptable 80% power, resulting in a higher risk of Type II error than would be desired (Field, 2018). Given that analyses such as these have not been run in previous research, there was no benchmark to determine an appropriate sample size for sufficient power. As well, the program used to recruit participants restricted the number of pre-service teachers that could register for the current study. As a result, it is possible that, for the results that were not significant (i.e., when attitudes and

perceived knowledge of SEL did not uniquely and significantly predict relationship skills), the multiple regression analyses may have missed detecting a true relationship. Future SEL-researchers studying pre-service teachers' attitudes, perceived knowledge, and relationship skills should consider the small effect sizes found in the current study in order to determine a sufficient sample size for their own study. Of note for replication, the current study would have required a sample size of at least 254 participants in each multiple regression analysis in order for all three analyses to have at least 80% power.

Second, the measures used in this study had some drawbacks. The measures used were all self-report, which may have introduced bias into the results. Self-report measures are subject to several response biases (e.g., social desirability bias) and other limitations (e.g., participants' lack of self-insight) that can introduce measurement error (Paulhus & Vazire, 2007). Additionally, using self-report measures for both the predictor and outcome variables means that all variables were assessed based on reports from a common rater, which may have inflated the observed relationships between these variables due to common method bias (Podsakoff et al., 2003). In the future, researchers could supplement self-report measures with other-report, observational, and/or performance measures to assess these variables. For example, other studies have assessed participants' knowledge of SEL with tests (e.g., Douglass, 2011). It should also be noted that the ICQ requires participants to rate their comfort and their skill in dealing with different relational situations together to assess competency more generally (Buhrmester et al., 1988), and the Attitudes Scale and Knowledge Scale are relatively new with only some research on their validity (Dolzhenko, 2017). In the future, researchers should try using other measures that assesses relationship skill and comfort in dealing with relational situations separately to see if these two constructs are differentially related to attitudes and perceived knowledge about SEL.

As well, future researchers could study the discriminant and concurrent validity of the Attitudes Scale and Knowledge Scale to further validate these measures.

Third, the current sample was lacking diversity across participants' age, gender, ethnicity, and grade-related teaching interests. Future research should include more age-, gender-, ethnically, and specialization-diverse samples of pre-service teachers in order to fully understand whether there are differences in attitudes about SEL, perceived knowledge about SEL, and relationship skills based on these demographic variables. Diverse representation in such research will result in information that supports the development and implementation of training that is inclusive, responsive, and effective for all. Despite limited diversity, the current study was able to compare the attitudes about SEL, perceived knowledge about SEL, and relationship skills of women and men. As well, the current study's sample was representative of the teacher population in Alberta (the province in which the current sample of pre-service teachers was recruited) in terms of gender and age. Specifically, the majority of employees in education in Alberta (70.7%) are women (Government of Alberta, 2018). As well, most employees in education in Alberta (70.3%) are 25 to 54 years old (Government of Alberta, 2018). Additionally, according to Statistics Canada (2019), in both Alberta and Canada more generally, the average age at which people graduate from a Bachelor's degree program is 25 years old. Thus, accounting for the fact that a Bachelor of Education degree is intended to take around 4 years to complete, the current sample is likely representative of the province's pre-service teacher population in terms of age and gender.

Finally, the current study's concurrent correlational design makes it difficult to draw definitive conclusions about the causal relationship between pre-service teachers' attitudes and perceived knowledge about SEL and their relationship skills (Field, 2018). However, the current

study does provide a base on which to build future research studies that do assess causality. For instance, knowing about the existence of relationships between pre-service teachers' attitudes, perceived knowledge, and relationship skills, future researchers can use longitudinal designs to study these relationships over time. Such studies would provide a better understanding of any causal relationships between these variables. Longitudinal research on how pre-service teachers' attitudes about SEL, perceived knowledge about SEL, and relationship skills predict the effectiveness of their later SEL implementation will further detail the importance of these variables in pre-service teachers and provide additional insight into how these variables fit into Jennings and Greenberg's (2009) and Jones and Bouffard's (2012) theoretical models. Finally, experimental research studying how different training approaches can influence Canadian pre-service teachers' attitudes and knowledge about SEL and relationship skills will inform continued SEL training development and implementation.

Implications

The current study has provided initial evidence on Canadian pre-service teachers' current attitudes about SEL, perceived knowledge about SEL, and relationship skills, as well as on the relationships between these variables. Given that these variables are all related to effective SEL implementation, the current study provides important information for teacher education programs seeking to support pre-service teachers' future ability to implement SEL effectively. Even though pre-service teachers reported positive attitudes about SEL and moderately high to high relationship skills, there were still some pre-service teachers who reported more negative attitudes and lower competency in relationship skills. As well, pre-service teachers did not see themselves as particularly knowledgeable about SEL implementation. Based on these findings, it appears that there is room for teacher education programs to support the continued development

of their pre-service teachers' positive attitudes about SEL, perceived knowledge about SEL, and relationship skills. The similarities between the current study's Canadian sample of pre-service teachers and previous research's American samples of pre-service teachers in terms of attitudes and perceived knowledge about SEL suggests that, rather than inventing new approaches to training, teacher education programs could start by adapting, closely monitoring, and studying American approaches to targeting these variables in pre-service teachers. Additionally, the link between pre-service teachers' attitudes about SEL and some of their relationship skills suggest that teacher education programs may be able to effectively target attitudes and relationship skills simultaneously with a single approach.

The findings from the current study also have implications for the theoretical models of Jennings and Greenberg (2009) and Jones and Bouffard (2012). Despite research showing the importance of attitudes and perceived knowledge about SEL to SEL implementation, neither model includes these variables. As well, there is no research to explain how attitudes and perceived knowledge are related to effective SEL implementation. The current study's results suggest that attitudes and perceived knowledge about SEL are related to some relationship skills, which are a part of overall SEC. It is possible that attitudes and perceived knowledge about SEL are related to effective SEL implementation through a relation to SEC. Regardless, it appears that, for now, attitudes and perceived knowledge could be added to the theoretical models with a relationship to teachers' SEC.

The results from the current study can also influence future research on SEL training and effective SEL implementation. For instance, future researchers investigating pre-service teachers' attitudes, perceived knowledge, and relationship skills can use the results from this study to see if Canadian pre-service teachers from different provinces feel similarly to the pre-

service teachers from Alberta. These researchers can also use the results to hypothesize and test models explaining how SEL training works to influence future SEL implementation (e.g., relationship skills may mediate the link from SEL attitudes and knowledge perceptions to effective SEL implementation). The results could also guide these researchers to pay extra attention to the three relationship skills found to be significantly related to SEL attitudes and knowledge perceptions, namely skill in initiating relationships, disclosing personal information to relational partners, and providing emotional support. Finally, researchers who wish to perform experimental and repeated-measures longitudinal research on pre-service teachers' attitudes, perceived knowledge, and relationship skills in relation to SEL training can use these results to form hypotheses about where pre-service teachers may sit on these variables before training interventions and where they could see improvement with effective training.

Conclusion

As predicted, the current study has found that a sample of pre-service teachers from a large university in Western Canada, the University of Alberta, report having moderately high to high levels of relationship skills, having positive attitudes about SEL, and being unknowledgeable to moderately knowledgeable about SEL. Unexpectedly, pre-service teachers' attitudes and perceived knowledge about SEL together predicted variance in only three of the five relationship skills assessed in this study: initiating new relationships, disclosing personal information to relational partners, and providing emotional support to relational partners. As well, pre-service teachers' attitudes about SEL uniquely predicted variance in two relationship skills: disclosing personal information and providing emotional support. With these findings, this study has begun to fill a gap in the literature by providing important information on variables in Canadian pre-service teachers that have been found to be related to effective SEL

implementation. In studying pre-service teachers' attitudes about SEL, perceived knowledge about SEL, and relationship skills, this study's results can support Canadian teacher education programs in developing and implementing effective and meaningful training approaches targeting these variables. Doing so will have the potential to set up pre-service teachers for effective SEL implementation in the future, which in turn can influence the future wellbeing and success of the pre-service teachers themselves, their future students, and society as a whole. The results can also provide a base for future researchers who are studying pre-service teachers' SEL training, who are studying relationships amongst factors related to effective SEL implementation, and who are guided by the theoretical models from Jennings and Greenberg (2009) or Jones and Bouffard (2012). Overall, with the information gained from the current study, teacher education programs and researchers can continue to work towards providing pre-service teachers with the important SEL experiences they need to support our young, developing citizens.

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Appendix

Histograms for ICQ, Attitudes, and Knowledge Scale Scores

Figure A1
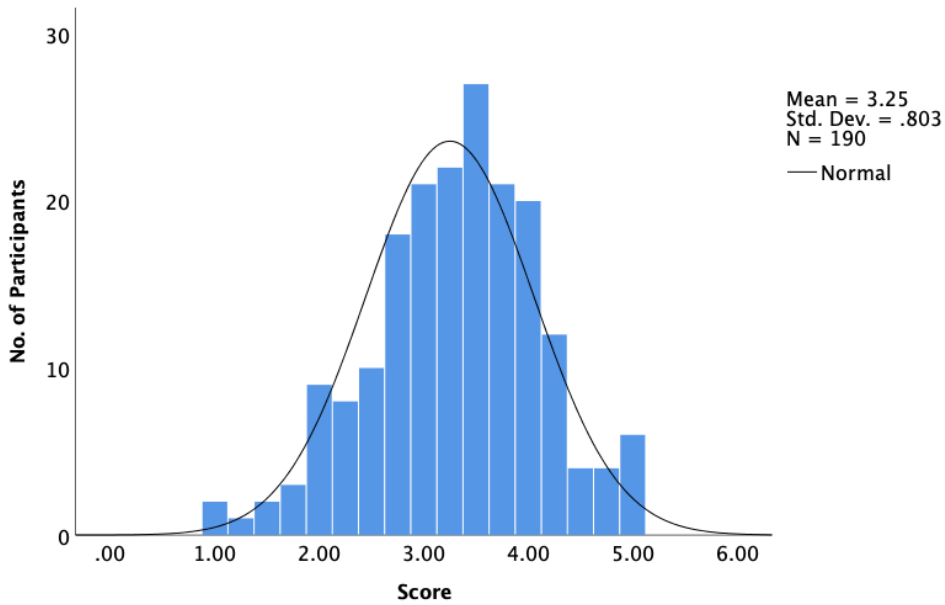
Histogram of ICQ Initiation Scale Scores

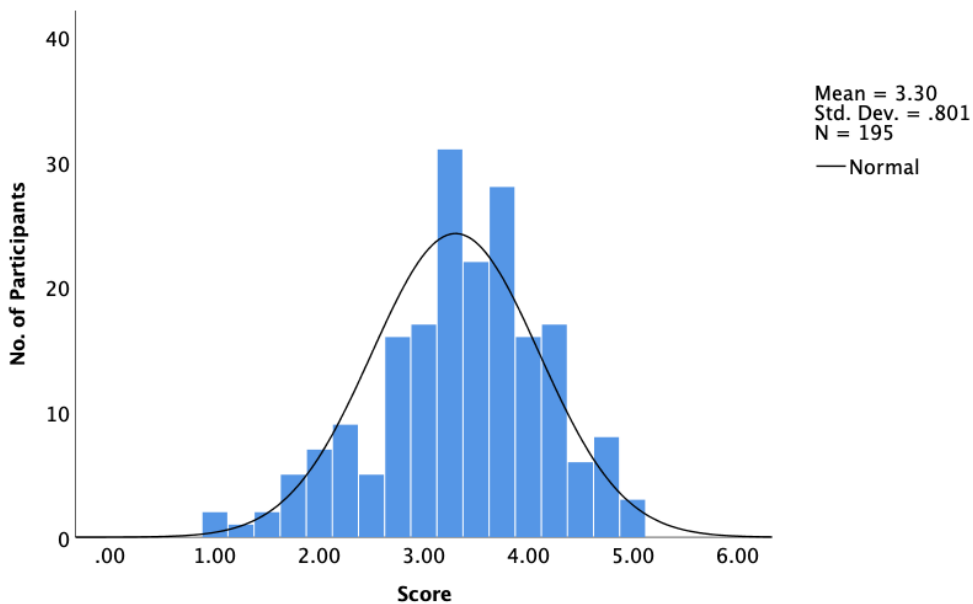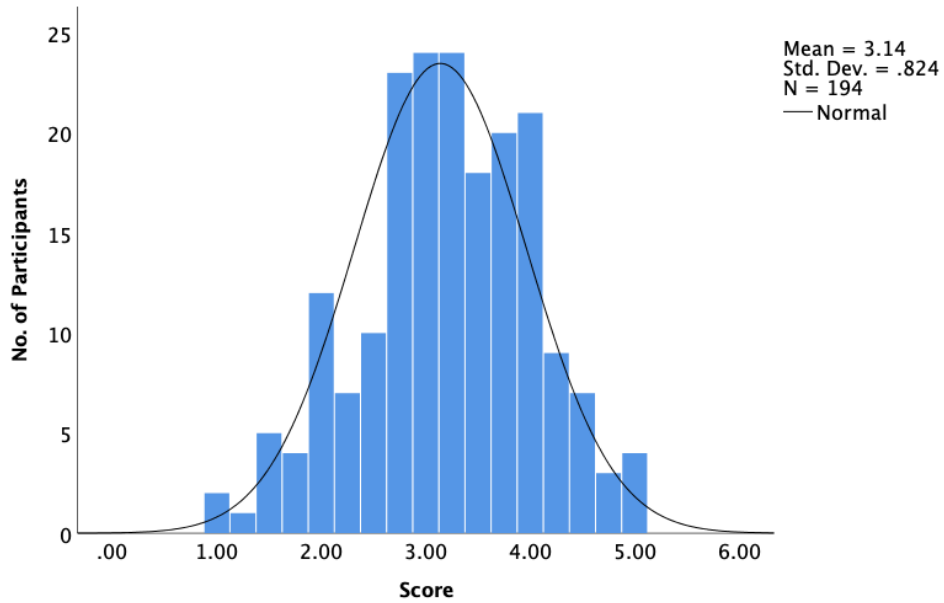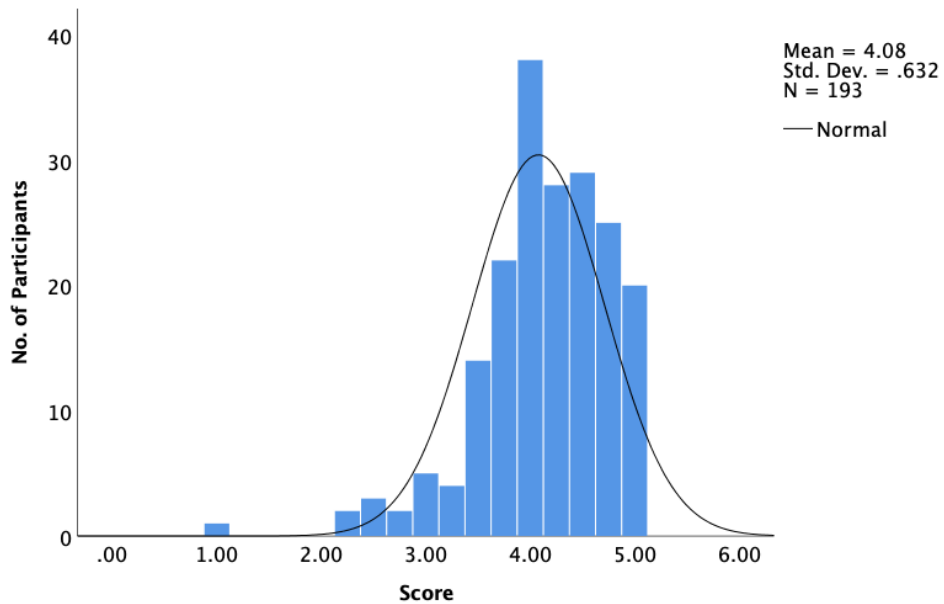**Figure A2**

Histogram of ICQ Disclosure Scale Scores

Figure A3

Histogram of ICQ Negative Assertion Scale Scores

Figure A4

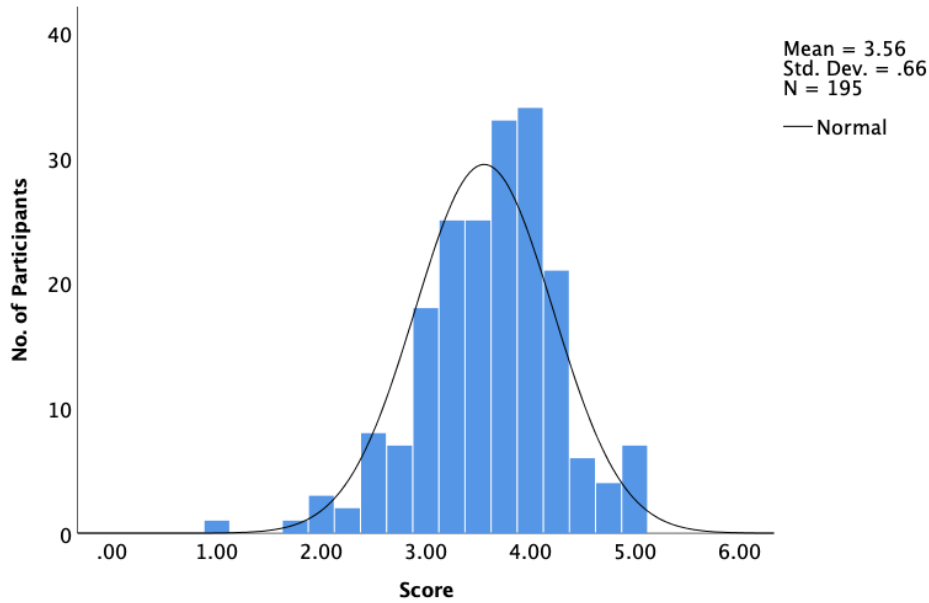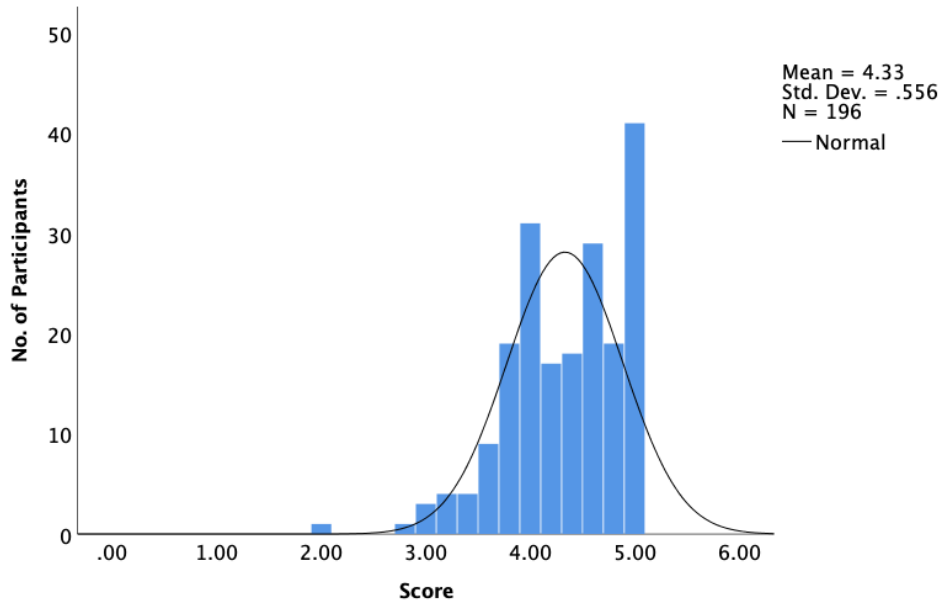*Histogram of ICQ Emotional Support Scale Scores*

Figure A5

Histogram of ICQ Conflict Management Scale Scores

Figure A6

Histogram of Attitudes Scale Scores

Figure A7

Histogram of Knowledge Scale Scores