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Examining the Relationship of Variables Associated with Pre-Service Teachers Coping During their Practicum Experience

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

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Examining the Relationship of Variables Associated with Pre-service Teachers Coping
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By

Andrew Soave

Graduate Program in Education

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

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Abstract

This study examined the relationship amongst the variables of resiliency, subjective well-being, emotional intelligence, teachers' self-efficacy and physical activity in the context of pre-service teachers' (N=17) coping before and during their teaching practicum. There were significant relationships identified amongst the variables of resiliency, subjective well-being, emotional intelligence, teachers' self-efficacy and physical activity. Pre-service teachers had significantly higher levels of resiliency in relation to sense of relatedness during the teaching practicum. The findings also suggest that higher levels of physical activity were related to lower levels of resiliency in relation to emotional reactivity during the practicum experience. The results are discussed as they relate to the relevance of the identified variables within a sample of pre-service teachers before and during their teaching practicum.

Keywords: Resiliency, Physical Activity, Subjective Well-Being, Emotional Intelligence, Teacher Self-Efficacy, Pre-Service Teachers, Practicum

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Introduction

Teaching is considered amongst the most emotionally demanding occupations. Research reflects that between five and twenty percent of all teachers suffer from burnout (Parker, Martin, Colmar, & Liem, 2012), and the attrition rate of new teachers within their first five years has been increasingly attributed to burnout (Ontario College of Teachers, 2012; Le Cornu, 2009).

Pre-service teachers are university students training to become teachers. During their pre-service education, pre-service teachers have the opportunity to develop coping skills in their practicum, the period during which they are charged with the responsibility to practice the skills of teaching in real world settings. However what constitutes coping skills amongst pre-service teachers remains largely unknown.

Research has noted the relationship amongst the variables of resiliency, subjective well-being, emotional intelligence, teacher self-efficacy and physical activity to general coping ability (Hong, 2012; Windle, Woods, & Markland, 2010; Vesely, Saklofske, & Leschied, 2013; MacFarlane, & Montgomery, 2010; Gerber et al., 2012). Understanding these variables is central to focusing on the support for developing coping skills to help preservice teachers achieve success and confidence as they enter the teaching profession (Le Cornu, 2009; Sosa & Gomez, 2012).

The following overview of relevant literature provides a context within which to appreciate the relationship amongst the variables of physical activity, resiliency, subjective well-being, emotional intelligence, and teacher self-efficacy in understanding the importance of pre-service teacher coping ability as manifested in their practicum experience.

Glossary of Terms

Emotional Intelligence: is defined as an arrangement of emotional abilities that assist with the identification, processing and regulation of emotions (Vesely et al., 2013).

Resiliency: is defined as the ability to withstand life's adversities such as occupational or personal stress, while continuing to live a positive and healthy life (Bonanno, 2012).

Subjective Well-Being: is defined as a person's happiness or satisfaction with life (Diener, 1984).

Teacher Self-Efficacy: is defined as a teacher's beliefs about themselves and how effective they can be as a teacher (Sosa & Gomez, 2012).

Literature Review

The Importance of Practicum for Pre-Service Teachers

Pre-service teaching programs include a practicum component that introduces students to their chosen profession. *Praxis shock* characterizes the challenges for pre-service teachers in approaching their practicum experience. Praxis shock refers to the psychological shock that teachers experience when there are differences in a new teacher's beliefs and expectations about teaching and the reality of actual teaching experience (Ballantyne, 2007). Since practicum represents the first time a pre-service teacher is introduced to teaching, this could result in their experience of a high level of stress due to praxis shock.

Caires, Almeida, and Martins (2010) examined the practicum experience of pre-service teachers and noted that the beginning of practicum is a highly stressful period. Chaplain (2008) examined pre-service teachers' stress levels during practicum and found that the three most stressful aspects from practicum were: managing the behaviour of disruptive students; the heavy workload; and the feeling of being unsupported. This study noted that 38% of the participants felt "very" or "extremely" stressed (Chaplain, 2008).

Fortunately for pre-service teachers, there are also benefits of participating in their practicum. Kaldi (2009) examined pre-service teachers' level of self-competence after they had completed their practicum and found that pre-service teachers reported having moderate to high levels of self-competence.

As aforementioned, practicum is a challenging and stressful experience, and completing the practicum can instill confidence in pre-service teachers reflected in increasing levels of self-efficacy. Gurvitch and Metzler (2009) examined pre-service teachers' self-efficacy in both field and laboratory settings. The results from their study

showed that pre-service teachers' self-efficacy increased as they continued to teach in their practicum regardless if they were in the field or laboratory. Research appears to suggest that pre-service teachers' self-efficacy can increase from their practicum teaching experience (Kaldi, 2009).

Teacher's Self-efficacy and Resiliency

Teacher self-efficacy relates to a teacher's beliefs about themselves and how effective they can be as a teacher (Sosa & Gomez, 2012), and teacher self-efficacy is related to a teachers' resiliency. Sosa and Gomez (2012) underscored the importance of teacher self-efficacy in their research noting that teacher self-efficacy was actually positively related to student academic resiliency. However, this study did not control for the potential confounding variables of family income, physical activity or social relationships, which could have also influenced this relationship (Sosa & Gomez, 2012).

Hong's (2012) comparison of two groups of teachers in their first five years of teaching identified that teachers who remained in the field had more positive responses related to teacher resiliency and positive self-efficacy compared to teachers who left the profession. The results of this study also suggested that higher resiliency and positive self-efficacy were more common amongst those teachers who remained in the field. Noteworthy, this study's examination of teachers in their first five years of teaching is highly relevant, as this is the period that research has suggested is most critical when teachers are most likely to leave the profession (Ontario College of Teachers, 2012).

Teachers' Self-efficacy and Subjective Well-Being

Research suggests that teachers' self-efficacy and subjective well being (SWB) are positively related. Strobel, Tumasjan, and Sporrle (2011) examined the relationship

between general self-efficacy and SWB in 180 participants consisting predominately of university students. These results suggested that general self-efficacy was significantly positive correlated with SWB.

Wei (2013) examined teachers' self-efficacy and SWB in 1,200 kindergarten teachers and found that kindergarten teachers with high levels of self-reported self-efficacy had a significant positive correlation with SWB. The results of these studies suggest that teachers' self-efficacy and SWB are positively related (Strobel, Tumasjan, & Sporrle, 2011; Wei, 2013).

Teachers' Self-efficacy and Emotional Intelligence

Teacher self-efficacy is also related to emotional intelligence (EI). Vesely, Saklofske, and Leschied (2013) suggested that teachers can draw on aspects of EI to assist them with their stressful teaching lives, and that higher EI ratings are positively related to teachers' self-efficacy beliefs.

Fabio and Palazzeschi (2008) examined the relationship between teachers' self-efficacy and EI in 169 high school teachers. The results of this study suggested that teachers' self-efficacy has a significant positive relationship with EI.

Chan (2008) also examined the relationship between teachers' self-efficacy and EI in 273 pre-service students. In this study EI was divided into two categories, intrapersonal and interpersonal EI. The results of these studies suggest that teachers' self-efficacy has a positive correlation with EI.

Physical Activity and Stress

Previous research has not addressed the potential relationship between physical activity and teachers' self-efficacy. MacFarlane and Montgomery (2010) however have suggested

that this is a relevant area of focus with teachers, as there is a general literature that does speak to the importance of physical activity as an important coping mechanism in the face of stress. The findings from the general literature suggests that physical activity and stress are negatively related; that is, the more invested an individual is in physical activity the lower their scores are on inventories related to stress (Gerber, Kellmann, Hartman, & Pushe, (2010).

Rimmele et al. (2009) studied the relationship between the level of physical activity and psychosocial stress with 18 high-level athletes, 50 amateur athletes, and 24 non-athletes. Their results suggested that stress was not negatively influencing high-level athletes when compared to both the amateur and non-athletes (Rimmele et al., 2009). This finding suggested that higher levels of physical activity can reduce some of the effects of stress. These researchers measured stress in having participants take part in a mock job interview and work through mathematics problems. This direct manipulation provided some evidence for a causal relationship between physical activity and the stress response.

Gerber, et al., (2010) examined the relationship between stress, exercise, perceived fitness and health in 533 members of both the police force and emergency responders. The results suggested that stress was related to negative health outcomes, and general fitness was negatively related to stress (Gerber et al., 2010). The study also suggested that exercise served as a protective factor with respect to stress-related hazards.

An important link for pre-service teachers is also reflected in their self-efficacy beliefs that relate to resiliency as described in Hong (2012).

Resiliency

Resiliency is defined as the ability to withstand life's adversities such as occupational or personal stress, while continuing to live a positive and healthy life (Bonanno, 2012).

While there are various models describing resiliency (Bonanno, 2012), Prince-Embury (2009) has been helpful in suggesting that there are three dimensions to personal resiliency: a sense of mastery, sense of relatedness and emotional reactivity. Each of these three dimensions represents a different but related aspect of coping with life's adversities and living a positive and healthy life. Mastery relates to an individual's perception of their skills and competence; relatedness focuses on the quality of relationships the individual has; and emotional reactivity describes how the individual views their own control over their emotions (Thorne & Kohut, 2007). Resiliency is considered an important factor for new teachers entering the field since they are often overwhelmed with the workload and the stress associated with teaching.

Tait (2008) suggested that resiliency is one of the key factors that enable new teachers to remain in the teaching field, and can serve as a protective barrier against the stresses of teaching.

Castro, Kelly, and Shih (2010) conducted a study that measured resilient coping styles with teachers. Their findings suggested that resilient teachers were able to overcome challenges within the teaching field.

Resiliency and Stress

Stress is linked to resiliency, as it is associated with the ability to withstand negative life events. Individuals who have high levels of resiliency are found to be more able to cope with their stress utilizing more positive means (Bonanno, 2012). Resiliency can be related

to teachers coping with the stressful situations involved in their profession (Beltman, Mansfield, & Price, 2011).

Pines, Rauschhuber, Norgan, Cook, Canchola, Richardson and Jones (2012) studied nursing student's resiliency, identifying students who used more resilient coping styles and who were less negatively affected by stress. Resilient coping styles were measured with a questionnaire based on an interpretation of events as negative or positive, focusing on commitment or choice, and the tendency to dismiss the role of personal abilities in successful outcomes.

Jennings, Snowberg, Coccia and Greenberg (2011) examined the influence of the *Cultivating Awareness and Resilience in Education (CARE)* program on the relationship between school problems and teacher resiliency. The *CARE* program intervention is based on emotional intelligence (EI), and the researchers were focused on emotional skills as a method of reducing stress (Jennings et al., 2011) and consists of activities to increase teachers' emotional skills with mindfulness exercises directed at reducing stress (Jennings et al., 2011). The results suggested that the *CARE* program reduced stress in the participants while increasing positive affect and well-being.

Emotional intelligence (EI) represents an individual's ability to utilize emotional information (Armstrong, Galligan, & Critchley, 2011). These researchers indirectly measured the influence of EI in increasing a teacher's resiliency.

Resiliency and Subjective Well-Being

SWB is defined as a person's happiness or satisfaction with life (Diener, 1984).

Theoretically, if an individual is able to buffer the effects of stress through having high resiliency, they may also reveal a higher level of SWB since they will perceive their life

as happier. This is important to coping since research suggests that the maintenance of well-being during an individual's life span reflects the individual's ability to adapt to changing life conditions (Windle et al., 2010).

Utsey, Hook, Fischer, and Belvet (2008) examined the relationship between ego resiliency and life satisfaction in an African-American student population. The results suggested that resiliency and life satisfaction are positively correlated.

Windle et al., (2010) examined the relationship between resiliency, SWB and ill-health. Their results suggested that resiliency and SWB were positively correlated. However, the resiliency measure used by the researchers has questionable accuracy because it measures self-esteem, and self-control, but not does not specifically measure resilience against stressful situations (Windle et al., 2010).

Resiliency and Emotional Intelligence

Resiliency also has a theoretical link with EI since individuals who understand their own emotional information can draw on this understanding to develop more adaptive coping skills.

Armstrong et al. (2011) examined the relationship between resiliency and EI in 414 participants between the ages of 24 to 58. Resiliency was measured reflecting how participants reacted to negative life events. Participants were placed into one of three groups based on a measure of high, medium, and low resiliency. The results suggested that there is a positive relationship between resiliency and EI since individuals in the higher resiliency group also reported higher levels of EI (Armstrong et al., 2011).

Liu, Wang, and Lu (2013) studied resiliency, life satisfaction, and EI in undergraduate students. The results of this study suggested that resiliency, life

satisfaction, and EI have significant positive correlations with each other.

Resiliency and Physical Activity

As aforementioned, resiliency and physical activity are both identified as possible attributes characterizing teachers who are more able to cope with stressful life events (MacFarlane, & Montgomery, 2010; Le Cornu, 2009), and research has suggested that both resiliency and physical activity are positively related.

Gerber et al. (2012) examined the relationship between physical activity and resiliency in high school participants. In this study resiliency was assessed using a measure of 'mental toughness', the results suggesting that resiliency can be related to physical activity (Gerber et al., 2012).

Monshouwer, Have, Poppel, Kemper, and Vollebergh (2012) performed a similar study examining the relationship between physical activity and resiliency controlling for the effects of social relationships, self-image, socioeconomic status, gender and age. Their results suggested that physical activity was negatively related to internalizing mental health problems, controlling for other possible competing variables (Monshouwer et al., 2012).

Physical Activity as a Coping Mechanism

There does not seem to be a literature that speaks directly to the relationship between teachers' self-efficacy and physical activity. MacFarlane and Montgomery (2010) however addressed the potential relevance regarding how physical activity could be an effective method for coping with pre-service teacher stress, and described a model suggesting that physical activity could be used to help with the interpretation of the stressful event that then provides energy to the individual involved as a source of possible

coping. MacFarlane and Montgomery's model suggests that individuals who have higher levels of physical activity would also have increased cognitive flexibility and a more positive appraisal of stressful events. MacFarlane and Montgomery (2010) also suggested that individuals, who report higher levels of physical activity, have more energy that enables them to develop coping strategies to adapt to stressful situations.

Thayer, Newman and McClain (1994) examined different strategies for changing bad mood, raising energy and reducing tension. The results of their study suggested that exercise is a useful strategy to change a bad mood, raise energy and reduce stress (Thayer et al., 1994).

Since physical activity may be an aid to pre-service teachers in their coping with stress, and physical activity shows a positive correlation with variables related to teachers' self-efficacy, the present study included an examination of the relationship between teachers' self-efficacy and physical activity.

Physical Activity and Subjective Well-Being

There is additional research that suggests physical activity has a significant positive relationship with SWB. Maher et al. (2012) examined this relationship in a sample of college students. The participants tracked their physical activity and satisfaction with life in daily journals. The results suggested that physical activity and SWB were positively related (Maher et al., 2012).

Jazaieri, Goldin, Werner, Ziv, and Gross (2012) examined the relationship between physical activity, SWB, stress, anxiety and depression in 56 participants who were assessed as having a degree of social anxiety disorder. The participants were randomly assigned to either a mindfulness stress reduction group or an aerobic exercise

group. The conclusions suggested that both the participants in the mindfulness stress reduction group and the aerobic exercise group improved on their baseline scores on the indices of well-being and coping (Jazaieri et al., 2012).

Physical Activity and Emotional Intelligence

There is also research suggesting a relationship between physical activity and EI.

Saklofske, Austin, Rohr, and Andrews (2007) examined the relationship between physical activity and EI in 497 undergraduate students. The results of this study suggested that EI and physical activity had a positive correlation with each other (Saklofske et al., 2007).

Lane and Wilson (2011) examined the relationship between physical activity and EI in 34 runners. The participants completed an EI measure prior to and following completion of six different stages of a race. The results of the study suggested that runners who had higher levels of EI revealed higher levels of positive emotions while running the race (Lane & Wilson, 2011).

Subjective Well-being and Emotional Intelligence

Research also suggests that EI and SWB are related.

Koydemir and Schutz (2012) examined the relationship between EI and SWB in European university students. The results suggested that EI and SWB had a significant positive correlation in university students.

Austin, Saklofske, and Mastoras (2010) examined EI, stress, personality, coping and SWB in Canadian university students. The results suggested that EI and SWB had a significant positive correlation in Canadian university students.

The Present Study

This study examined the potential relationships amongst the variables of resiliency, SWB, EI, teacher self-efficacy and physical activity in pre-service teacher coping ability as manifested in their practicum experience. As summarized in the literature review, each of these variables has shown in various studies a relationship to one another (Hong, 2012; Windle et al., 2010; Liu et al., 2013; Monshouwer et al., 2012; Koydemir & Schutz, 2012; Maher et al., 2012; Lane & Wilson, 2011). However, these relationships have yet to be addressed within a pre-service teacher population.

The purpose of this study then was in part to replicate the results of previous studies but within a pre-service teacher sample while they were prior to and during their practicum experience. Practicum is considered a highly stressful event, and thus the relationship amongst these variables is of particular relevance (Chaplain, 2008).

In addition, since previous research has suggested that physical activity can serve as a coping mechanism for stress reduction, there was particular interest examining the extent to which pre-service teachers draw on physical activity to mediate the stress that they experience (MacFarlane, & Montgomery, 2010). Hence, this study examined the relationship between the degree of physical activity along with the other variables during practicum to report on its potential relationship to positive coping.

Research Questions

The following research questions provided the focus for this study:

- 1.1.** Is there a relationship amongst the variables of resiliency, SWB, EI, teacher self-efficacy and physical activity;
- 1.2.** Does the pre-service teacher's practicum experience influence how the above

mentioned variables relate to each other and;

1.3. Does a preservice teacher's reported physical activity level relate in meaningful ways to the above mentioned variables.

Hypotheses

The proposed hypotheses regarding the variables of interest included:

Hypothesis 1: Resiliency in regards to a sense of mastery and sense of relatedness, SWB, EI, physical activity, and teacher self-efficacy will have a positive relationship.

Hypothesis 2: The above mentioned variables will have a negative relationship with resiliency in regards to emotional reactivity.

Hypothesis 3: Due to the stressful nature of practicum and praxis shock, teachers' self-efficacy will decrease during practicum (Caires et al., 2010; Ballantyne, 2007).

Hypothesis 4: Physical activity level will be positively related to resiliency, SWB, EI and teachers' self-efficacy during practicum.

Method

Participant Recruitment

The study took place with a faculty of education at a major university within southwest Ontario.

The participants were recruited at two different time periods; prior to their involvement in their practicum, and again at two to four weeks into their first practicum. These recruitment periods were on September 9 to September 30 (time one), and on October 14 to October 28 (time two).

Participants were informed of the study through a PowerPoint presentation regarding the study that was given in one of their university classes.

Time One Recruitment Phase. If a pre-service teacher expressed interest in participating in the research project following the in class presentation, they were requested to email the researcher their intent who then provided the participant with the web link to the Qualtrics website, a secure, internet-based, data-collection system that contained the questionnaires.

Time Two Recruitment Phase During the second recruitment time period, the participants who contacted the researcher during time one were again recruited by email.

Procedure. All participants signed a consent form as part of their participation. Participants were invited to complete a questionnaire online at each of the data collection time periods. As an incentive for participation, participants were entered into a draw using their e-mail address for one of five UWO bookstore gift certificates, and an tablet.

The participants received a letter of information prior to the completion of the questionnaires along with a debriefing form following completion. The letter of

information contained a brief description of the study, the procedure, confidentially and how to contact the researcher if the participant had concerns regarding their participation. The debriefing form thanked the participants for their time, provided information about the draw, along with suggestions for further reading. Appendix B contains the letter of information and debriefing forms.

Once the questionnaires were completed online, participants were shown a debriefing form that they were instructed to print for their own records. Participant scores were kept in confidence. Each participant's identity was replaced with a code based on the last four digits of their student number, age, and sex, so the researcher could compare the participants' results from the first recruitment time period to the second recruitment time period. Participant data was then scored and the change in scores from the first time period to the second time period was examined. The complete ethics protocol for this research procedure appears in Appendix C.

Participants

Time One Sample. There were 20 female and 5 male participants with an average age of 25.6 years recruited at time one.

Time Two Sample. During the time two period there were 24 participants, 18 females and 6 males with the average age of 26.63 years.

The difference between the number of participants at time one and time two is explained by how the participants were recruited at time two. Participants were only contacted at time two if they emailed the researcher stating they completed the study at time one. The discrepancy between the time one and time two data suggests that some participants may not have been totally forthcoming about their completion of the study at

time one.

Ultimately there were 17 participants who completed the questionnaires at both times one and two. Of these 17 participants, 14 were female and 3 male with an average age of 25.59 years. The data from these 17 participants was then used in the statistical analysis for the study since their completion of the data collection instruments at both times one and two allowed for comparisons at both time periods. Data collected at time one was considered as a baseline for the different variables while the time two data measured the different variables during the practicum experience. Table 1 provides a summary of the demographic details of the different participant groups.

Materials

Self-report questionnaires were used as the sole means of data collection.

Resiliency Scale for Young Adults (RSYA) was used to assess resiliency. The RSYA consists of 85 items (Saklofske et al., 2013) and measures resiliency based on three different subscales: a sense of mastery, a sense of relatedness, and emotional reactivity. The RSYA is based on the *Resiliency Scale for Children and Adolescents* by Prince-Embury (2009) and the RSYA is an upward extension of the normative population. Higher scores on mastery and relatedness suggest that the mastery of different tasks and the use and quality of social relationships were viewed as a resource (Thorne & Kohut, 2007). In contrast, higher scores on emotional reactivity suggests the possibility of vulnerability. This scale also reflects responses on two indices: the resource index and the vulnerability index (Thorne & Kohut, 2007). These scales can be used individually or as an aggregate score reflecting resiliency. In the present study the scales were used individually. This scale has a test re-test reliability ranging from .79 to .95, and

Table 1

Participants' Demographic Information

Time of recruitment	Time 1 (Pre-practicum)	Time 2 (Practicum)	Time 1 & Time 2
Number of Participants	25	24	17
Male	5	6	3
Female	20	18	14
Age (Range)	25.6 (21-45)	26.63 (21-45)	25.59 (21-36)
Program			
Primary to Junior	6	7	4
Junior to Intermediate	6	5	3
Intermediate to Senior	12	11	9
Technological Education	1	1	1
Prior Teaching Experience			
None	3	2	1
Less than six months	4	6	3
1 year	6	7	6
2 years	2	2	1
3 years	4	4	3
4 years	2	0	0
More than 4 years	4	3	3

Note: Time 1 (pre-practicum) is comprised of participants who completed the questionnaire in September before their practicum in October. Time 2 (practicum) is comprised of participants who completed the questionnaire during the first two to four weeks of their practicum. Time 1 & Time 2 is comprised of participants who completed the questionnaire at both Time 1 and Time 2. There were some participants who contacted the researcher at Time 1 but did not complete the questionnaire, and only completed the questionnaire at Time 2. This accounts for the differences between the Time 2 group and the Time 1 & Time 2 group.

is significantly correlated with other scales of resiliency (Thorne & Kohut, 2007; Prince-Embury, 2009).

Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) measures current life satisfaction using five items based on a seven point Likert scale. This measure has a test re-test reliability of .82, and good criterion validity with other measures of SWB (Diener et al., 1985).

Trait Emotional Intelligence Questionnaire: Short form (TEIQue-SF), is a 30 item scale developed by Petrides and Furnham (2006). This scale measures EI on four different factors of: well-being, self-control, emotionality, and sociability. Test takers respond to each item using a seven point Likert scale. When combined the scores provide a total of the individual's trait EI. Research has suggested that this scale has both good reliability with a Cronbach alpha of .88 for males, and .87 for females, and good criterion validity (Biggart, Corr, O'Brien, & Cooper, 2010; Cooper & Petrides, 2010).

The *International Physical Activity Questionnaire* (IPAQ) was used for participants to report on their activity level. This questionnaire consists of seven questions which reports on the individual's weekly physical activity based on the number of days, minutes and level of physical activity which, when taken together, provides an overall score of physical activity (Craig et al., 2003). The overall score of physical activity can also be used as a ranking in regards to three different levels of physical activity: low, moderate, and high. In the present study the overall score of physical activity was used to examine the relationship between physical activity and the other variables in this study, and to examine the influence of practicum on physical activity. Physical activity level was only used when comparing the different variables based on

physical activity. This measure has good concurrent validity and a .81 test re-test reliability (Craig et al., 2003).

Teachers' Sense of Efficacy Scale: Short form (TSES-SF), measured self-efficacy with 12 different questions (Tschannen-Moran, & Hoy, 2001) reflecting self-efficacy on three different subscales. These scales reflect self-efficacy in regards to: instructional strategies, classroom management, and student engagement. These three subscales can be combined to provide an overall score of teacher's self-efficacy. The current study used the overall score rather than the subscale scores. This scale has shown useful reliability with a coefficient alpha of .90 for each of the overall scores and is significantly correlated with other similar measures of teacher self-efficacy (Tschannen-Moran, & Hoy, 2001).

Please refer to the references for more information on each measure or contact the author(s) of the measure in question.

Statistical Analysis

The data was analyzed through a series of bivariate correlations that examined the relationship amongst the variables of resiliency, SWB, EI, teachers' self-efficacy and physical activity.

Participants' scores from the first data collection time period were compared to the participants' scores during the second data collection period. A series of Dependent samples T-tests were used to compare the means from time one with time two. An Independent samples T-test was used to examine within group pre-service teachers' physical activity level, and how these results related to resiliency, SWB, EI and pre-service teachers' self-efficacy. This analysis was done at both times one and two with data drawn from participants who completed the measures at both assessment periods.

The researcher accounted for the possibility of type one errors in the independent t-tests completed in this study by using the family wise error rate.

Ethical Considerations

Since this thesis measured the participant's levels of resiliency and teaching self-efficacy, sensitivity was shown for the potential risk that participants may feel while completing the questionnaires. In light of this potential concern, all participants were assured that they could discontinue their participation at any time without penalty. All participants were also provided with contact information for both the University's psychological services and the London Distress Center telephone number should this be necessitated.

All of the participants' identities were replaced with an alphanumeric code thereby insuring confidentiality. The participants' email addresses were stored in a password-protected folder on the researcher's computer that was separate from where the questionnaire data was stored to ensure the participant's confidentiality. Only the person charged with data collection and the research assistant had access to participant's information and this information was protected on a password locked and secured Qualtrics database. Hence the questionnaire data remains under the responsibility of the researcher and not the Qualtrics website, and Qualtrics does not have the provision to access or use the data collected from the questionnaires independent of the researcher. This data will be destroyed after completion of the thesis.

The ethics review form has been attached and appears in Appendix C.

Results

The data analysis proceeded in four steps.

The first step of the analysis generated data on the participant's sex and prior

teaching experience as these variables were explored to report on possible biases.

The second step of the analysis involved generating a series of bivariate correlations examining the relationship amongst the variables of resiliency, SWB, EI, teachers' self-efficacy and physical activity to test the first and second hypotheses.

The third step of the analysis involved generating dependent samples t-tests to examine the difference between the means of the above mentioned variables at times one and two.

The fourth step examined the potential influence of the practicum on the use of physical activity through a series of independent samples t-tests at times one and two.

Step One: Controlling for Sex and Prior Teaching Experience

Of note this sample was comprised of a surprising number participants who had been active in teaching prior to their attendance at the faculty of education. Some of this prior experience was achieved through means such as informal tutoring or teaching in informal venues that did not require a teaching degree.

Impact of Sex Differences. In an attempt to control for potential variation due to the participant's sex and their prior teaching experience a series of independent samples t-tests were generated. There were differences noted based on sex at time one, with males ($M = 72, SD = 4$) reporting significantly lower levels of teacher self-efficacy than females at the adjusted alpha level ($M = 88.43, SD = 15.05$), $t(13.47) = -3.54, p < .05, d = -2.25$.

Relevance of Teaching Experience Prior to Practicum. There were a surprising number of pre-service teachers who reported substantial teaching experience prior to their entry to the faculty. These differences were represented in their responses to a number of variables of interest. The mean number of months of teaching prior to their entry was

between 12 and 24 months, ($M = 3.82$, $SD = 1.85$) with a range of less than six months to more than 48 months (1 to 7).

Prior Experience and Resiliency. Significant differences were identified based on the length of time of participants' teaching experience prior to their entering the practicum, and their resiliency score based on the sub-scale of a sense of relatedness. This was identified for participants who taught for less than six months ($M = 91$, $SD = 6.24$) and participants who had been teaching for one year at time one at the adjusted alpha level ($M = 111$, $SD = 4.97$), $t(5.71) = -4.95$, $p < .05$, $d = -3.5$); between participants who had been teaching for less than six months ($M = 89.5$, $SD = 6.25$) and participants who had been teaching for one year at time 2 at the adjusted alpha level ($M = 111.25$, $SD = 4.57$; $t(5.5) = -6.4$, $p < .05$, $d = -4.53$); between the participants who had been teaching for at least one year ($M = 111$, $SD = 4.97$) and participants who had been teaching for three years at time one at the adjusted alpha level ($M = 82.25$, $SD = 11.5$; $t(4.08) = 4.95$, $p < .05$, $d = 3.50$); and between the participants who had been teaching for at least one year ($M = 114.25$, $SD = 4.57$) and participants who had been teaching for three years at time two at the adjusted alpha level ($M = 97$, $SD = 8.12$; $t(4.73) = 3.7$, $p < .05$, $d = 2.62$).

Prior Experience and SWB. There was also a significant difference based on prior teaching experience in regards to SWB between participants who had been teaching for less than six months ($M = 22.75$, $SD = 0.96$) and participants who had been teaching for one year at time two at the adjusted alpha level ($M = 32.5$, $SD = 2.52$, $t(3.85) = -7.24$, $p < .05$, $d = -5.12$).

Prior Experience and Physical Activity. Significant differences were also noted based on prior teaching experience in regards to average minutes spent on physical

activity between participants who had been teaching for three years ($M = 4743$, $SD = 255.24$) and participants who had been teaching for more than four years at time one at the adjusted alpha level ($M = 1519.50$, $SD = 188.8$, $t(2.865) = 17.454$, $p < .05$, $d = 7.13$). There were no other significant differences based on prior teaching experience.

Step Two: Relationships Between the Variables in Pre-Service Teachers

A series of bivariate correlations examined the relationship amongst the variables of resiliency, SWB, EI, teachers' self-efficacy and physical activity at time one.

There was a significant positive relationship between mastery and SWB, $r(15) = .61$, $p < .01$; and mastery and EI at time one, $r(15) = .58$, $p < .01$. There was a significant positive relationship between relatedness and SWB, $r(15) = .66$, $p < .01$; relatedness and EI, $r(15) = .55$, $p < .05$; relatedness and teachers' self-efficacy at time one, $r(15) = .67$, $p < .01$. There was also significant positive relationship between SWB and EI $r(15) = .61$, $p < .01$; SWB and teacher self-efficacy at time one, $r(15) = .48$, $p < .05$. There were no other significant correlations between the other variables at time one. Table 2 provides the summary data for all the correlations between each variable at time one.

A series of bivariate correlations examined the relationship amongst resiliency, SWB, EI, teachers' self-efficacy and physical activity at time 2. There were significant positive relationships between mastery and relatedness, $r(15) = .53$, $p < .05$; mastery and SWB, $r(15) = .55$, $p < .05$; mastery and EI at time two, $r(15) = .55$, $p < .05$. There were significant positive relationships between relatedness and SWB, $r(15) = .61$, $p < .01$; relatedness and EI, $r(15) = .68$, $p < .01$; relatedness and teachers' self-efficacy at time two, $r(15) = .43$, $p < .05$. There were significant negative relationships between emotional reactivity and EI, $r(15) = -.69$, $p < .01$; emotional reactivity and teachers self-efficacy at

Table 2

Correlations Between the Different Variables for Time One/Time Two

Variable	1. R MAS	2. R REL	3. R ER	4. PhA	5. SWB	6. EI	7. TS
Participants (n = 17)							
1. R MAS		.15/.53*	-.17/-.20	.40/-.01	.61**/.55*	.58**/.55*	.11/.24
2. R REL			-.16/-.10	-.13/-.18	.66**/.61**	.55*/.68**	.67**/.43**
3. R ER				-.10/-.40	-.07/-.30	-.41/-.69**	-.37/-.52*
4. PhA					-.07/-.16	.09/.06	.16/.46*
5. SWB						.61**/.45*	.48*/.20
6. EI							.61*/.48*
7. TS							

Note: * $p < .05$, ** $p < .01$. R MAS = Resiliency subscale sense of mastery; R REL = Resiliency subscale sense of relatedness; R ER = Resiliency subscale emotional reactivity, PhA = average minutes spent on low, moderate and vigorous levels of physical activity, SWB = Satisfaction with life, EI = Emotional intelligence, TS = Teachers' self-efficacy, and .15/.53* = correlation coefficient for time one/correlation coefficient for time two.

time two, $r(15) = -.52, p < .05$. There was a significant relationship between physical activity and teachers' self-efficacy at time two, $r(15) = .46, p < .05$. There was a significant positive relationship between SWB and EI at time two, $r(15) = .46, p < .05$. There was also a significant positive relationship between EI and teachers' self-efficacy at time two, $r(15) = .48, p < .05$. There were no other significant relationships between the other variables at time two. Table 2 provides the summary data for all the correlations between each variable at time two.

Step Three: The Influence of Practicum on Pre-Service Teachers

A series of dependent samples t-tests were completed to compare the difference between each variable at time one and time two. Participants had significantly higher scores on the resiliency sub-scale of a sense of relatedness at time two ($M = 99.77, SD = 12.18$) than at time one ($M = 95, SD = 12.96$), $t(16) = -2.19, p < .05, d = 0.36$. There were no significant differences between any of the other variables at time one and time two. Table 3 provides the summary information for each variable at time one and time two.

Step Four: Physical Activity as a Coping Mechanism

A series of independent samples t-tests were conducted to examine if the level of physical activity was associated with resiliency, SWB, EI, and pre-service teachers' self-efficacy at time one.

Physical activity level was defined by the IPAQ as a high level of physical activity reflecting if an individual engaged in vigorous physical activity at least three days a week, accumulating to a minimum overall total of 1500 minutes per week, or engaging in physical activity for at least seven days with a minimum total of 3000 minutes per week. Participants who met these criteria were placed in the 'high' physical

Table 3

Differences Between the Means at Time One and Time Two

Variable	Time	Mean	SD
Resiliency Mastery	Time One	86.94	10.99
	Time Two	86.00	11.44
Resiliency Relatedness	Time One	95.00*	12.96
	Time Two	99.77*	12.18
Resiliency ER	Time One	27.94	13.15
	Time Two	24.59	12.21
Physical Activity	Time One	3174.38	1993.78
	Time Two	4838.41	4925.73
Life Satisfaction	Time One	26.71	6.59
	Time Two	27.29	5.00
Emotional Intelligence	Time One	161.77	18.79
	Time Two	162.18	18.35
Teacher Self-Efficacy	Time One	85.53	15.09
	Time Two	82.35	14.44

Note: * $p < .05$. Resiliency Mastery = is a subscale of the RSYA which measures the participants' sense of mastery; Resiliency Relatedness = is a subscale of the RSYA which measures the participants' sense of relatedness; Resiliency ER = is a subscale of RSYA which measures the participants' sense of emotional reactivity; Physical Activity = average minutes spent on low, moderate, and high levels of physical activity during a week; Time One = before the pre-service teacher practicum; Time Two = during the pre-service teacher practicum.

activity group and the participants who did not meet this criterion were placed in the 'not high' physical activity group. The IPAQ calculates physical activity by multiplying the minutes per week by the level of physical activity and the number of days the person engages in physical activity. The multiplier for physical activity level is 3.3 for low, 4 for moderate, and 8 for vigorous physical activity (IPAQ Research Committee, 2005).

There were no significant differences between the participants who were in the 'high' level of physical activity ($n = 9$) and the participants who were in the 'not high' group of physical activity ($n = 8$) on any of the variables at time one. Table 4 provides the summary information for each variable by level of physical activity.

A series of independent samples t-tests examined the degree to which physical activity level was associated with resiliency, physical activity, SWB, EI, and pre-service teachers' self-efficacy at time two.

The number of participants who were in the 'high' level of physical activity ($n = 10$) and 'not high' level of physical activity ($n = 7$) changed at time two. Participants who had a higher level of physical activity ($M = 18.5$, $SD = 9.02$) had a significantly lower score of emotional reactivity than the pre-service teachers' who had did not have high levels of physical activity ($M = 33.29$, $SD = 11.2$) during the pre-service practicum at the adjusted alpha level, $t(11.16) = 3.01$, $p < .05$, $d = 1.48$. There was no significant difference based on the level of physical activity on any of the other variables. Table 5 provides the summary information for each variable by level of physical activity.

Summary of Results

Results from the independent samples t-tests suggested that there were significant differences between males and females on teachers' self-efficacy at time one. There were

Table 4

Mean and Standard Deviations for Group Type Based on Each Variable at Time One

Variable	Group type	Mean	SD
Resiliency Mastery	Not High	83.5	7.96
	High	90	12.79
Resiliency Relatedness	Not High	97.25	9.75
	High	93	15.6
Resiliency ER	Not High	29.88	9.45
	High	26.22	16.14
Life Satisfaction	Not High	27.75	4.27
	High	25.78	8.3
Emotional Intelligence	Not High	162.5	15.31
	High	161.11	22.36
Teacher Self-Efficacy	Not High	82.75	13.66
	High	88	16.66

Note: * $p < .05$. Resiliency Mastery = is a subscale of the RSYA which measures the participants' sense of mastery; Resiliency Relatedness = is a subscale of the RSYA which measures the participants' sense of relatedness; Resiliency ER = is a subscale of RSYA which measures the participants' sense of emotional reactivity; Not High = the participants engaged in moderate or low level of weekly physical activity; High = the participants engaged in a high level of weekly physical activity.

Table 5

Mean and Standard Deviations for Group Type Based on Each Variable at Time Two

Variable	Group type	Mean	SD
Resiliency Mastery	Not High	85.00	11.79
	High	86.70	11.77
Resiliency Relatedness	Not High	100.71	10.23
	High	99.10	13.88
Resiliency ER	Not High	33.29**	11.19
	High	18.50**	9.02
Life Satisfaction	Not High	27.29	4.64
	High	27.30	5.42
Emotional Intelligence	Not High	155.00	20.82
	High	167.20	15.53
Teacher Self-Efficacy	Not High	77.29	15.46
	High	85.90	13.33

Note: * $p < .05$, ** $p < .01$ Resiliency Mastery = is a sub-scale of the RSYA which measures the participants' sense of mastery; Resiliency Relatedness = is a sub-scale of the RSYA which measures the participants' sense of relatedness; Resiliency ER = is a sub-scale of RSYA which measures the participants' sense of emotional reactivity; Not High = the participants engaged in moderate or low level of weekly physical activity; High = the participants engaged in a high level of weekly physical activity.

also significant differences based on prior experience in teaching at time one and time two for relatedness; for SWB at time two; and physical activity at time one. The results of the bivariate correlations identified partial support for hypothesis 1 since mastery was related to SWB and EI at time one and time two. Mastery was related to relatedness at time two; relatedness was related to SWB, EI and teachers' self-efficacy at both times one and two; SWB was related to EI and teachers' self-efficacy at time one and EI at time two; EI was related to teachers' self-efficacy at time one and time two, and physical activity was related to teachers' self-efficacy at time two. There was partial support for hypothesis 2 since emotional reactivity was negatively related to EI and teachers' self-efficacy at time two. The dependent sample t-test did not support hypothesis 3 that pre-service teachers will have lower levels teacher self-efficacy at time two than time one. The independent t-test partially supported the hypothesis 4 that pre-service teachers' physical activity level was related to emotional reactivity at time two.

Discussion

The purpose of this study was to examine the nature and extent of association amongst the variables of resiliency, SWB, EI, teachers' self-efficacy and physical activity in a pre-service teacher sample both prior to and following their experience in practicum. Of additional interest was to examine if these relationships were associated in anyway with the stressful experience of practicum. The final purpose of the study was to examine if physical activity is related to the different variables to represent positive coping during the stressful practicum experience.

As a cautionary note, the results of this study should be considered as preliminary given the small sample size that was ultimately recruited. For the final analysis there

were 17 participants. However, within the teacher preparation field, there is considerable interest in teacher preparation due in part to the realization that despite the lack of available teaching positions for graduates, there remains a high attrition rate from the profession even with those who do obtain a teaching position. As the province of Ontario reviews their teacher preparation programs extending the degree for one to two years, there will be increasing interest regarding how to improve the programs' ability to support teacher candidates in their entrance to the profession.

Comparisons to Past Literature

Threats to Internal Validity.

Two areas were addressed in regards to potential threats to internal validity, sex of participants and differences in regards to prior teaching experience.

Differences with Respect to Sex, The current study identified that male pre-service teachers report significantly lower levels of teacher self-efficacy prior to their entry to the practicum which differs from past research that suggested there is no difference in pre-service teacher self-efficacy based on gender (Chan, 2008; Fabio & Palazzeschi, 2008). This finding however was not present during time two, when the pre-service teachers were in practicum.

Differences with Respect to Prior Experience. The current study indicated that the pre-service teachers with less than six months of experience reported less SWB than those pre-service teachers who had one year of experience at time one. This result is consistent with Wei's (2013) research that suggested increased prior teaching experience is correlated with higher levels of SWB.

Hypothesis 1

The current study found that a sense of mastery and relatedness had a significant positive relationship with both SWB and EI at both time one and two. This is similar to previous research that indicates resiliency is related to SWB and EI (Windle et al., 2010; Armstrong et al., 2011). The present findings are among the first to replicate this relationship in a pre-service teacher population. Relatedness also had a significant positive relationship with teachers' reported self-efficacy at both times one and two. This result is also similar to previous research reported by Hong (2012).

The current's study's findings supported by previous research would suggest that mastery is related to SWB and EI, and relatedness is related to SWB, EI and reported self-efficacy in pre-service teachers.

The findings of the current study suggest that SWB is positively associated with both EI and teachers self-efficacy at time one and EI at time two. These results are similar to previous research that indicates that SWB is positively related to EI and teachers self-efficacy (Austin et al., 2010; Wei, 2013). In contrast to previous research there was no significant relationship between SWB and teachers' self-efficacy during practicum. A possible explanation is that the practicum experience could have influenced this relationship. Previous research by Strobel et al, (2011) has suggested that self-efficacy could predict SWB. While it was not significantly related in the present study, the pre-service teachers' self-efficacy did decrease during practicum and this could account for the lack of relationship between SWB and teachers' self-efficacy.

EI was significantly related with teacher self-efficacy at both times one and two. This was similar to previous research that suggests EI is related to teachers' self-efficacy

in pre-service teachers (Chan, 2008).

Finally, physical activity was significantly positively related with teacher self-efficacy during practicum. This was similar to previous research by MacFarlane, and Montgomery (2010) that suggests physical activity may be considered a coping mechanism for pre-service teachers. To the author's knowledge this is one of the first studies to report a significant relationship between teachers' self-efficacy and physical activity in pre-service teachers.

These significant relationships amongst the variables mastery and relatedness, SWB, EI, teachers' self-efficacy and physical activity provide tentative, partial support for hypothesis 1.

Hypothesis 2

Resiliency in regards to emotional vulnerability was significantly negatively related with EI and teachers' self-efficacy at time two. This is similar to previous research suggesting that resiliency is related with both EI and teachers' self-efficacy (Vesely et al., 2013; Sosa & Gomez, 2012). This finding suggests that emotional vulnerability may be an important consideration for pre-service teachers during their practicum since it is related to their ability to regulate their emotions and confidence in their own teaching abilities.

Hypothesis 3

The results of this study suggest that the resiliency sub-scale regarding a sense of relatedness was higher for participants during practicum than prior to the practicum. This result differs from previous research that suggested that the beginning of practicum is considered a stressful time for pre-service teachers and this may influence their resiliency

scores (Caires et al., 2010). A possible explanation for this finding could be found in the impact of pre-service teacher's prior teaching experience in moderating the stress experienced at the beginning of the practicum.

Screening for teacher education admissions is competitive to the extent that many applicants access teacher related activities as part of their application process. This experience can range from prior tutoring to becoming a fully trained applied behaviour analyst. Indeed, only one of the seventeen participants in the present study reported they had no prior teaching experience while all of the other participants had a minimum of at least 6 months of teaching experience. Praxis shock may not have occurred for the participants since all but one reported they already had teaching experience and thus held more realistic expectations of what their expectations would be and what would be required of them during practicum (Ballantyne, 2007).

The results of this study also highlights the importance of social support during the practicum experience for teacher candidates. A higher score on the resiliency subscale of a sense of relatedness indicates that the participants valued social support as a resource (Thorne, & Kohut, 2007). Since this score was higher during the practicum experience, it could suggest that the pre-service teachers drew on social support as a resource during stressful situations. The absence of, or low levels of praxis shock could explain why the level of stress from practicum did not influence participant teacher's self-efficacy scores. Gurvitch & Metzler (2009) found that pre-service teachers increased their levels of teacher self-efficacy as they gained teaching experience. Therefore, prior teaching experience for the majority of the participants in the present study could explain why the participants' teacher self-efficacy levels did not change during practicum

Hypothesis 4

MacFarlane, and Montgomery (2010) have suggested that physical activity could be used to help pre-service teachers cope with their practicum experience. The current study found evidence to support this claim that suggests during the practicum experience participants with higher levels of physical activity reported lower levels of emotional reactivity than participants with lower levels of physical activity. As mentioned previously, participants reporting higher levels of emotional reactivity also reported a higher potential for vulnerability (Thorne, & Kohut, 2007).

The result of decreased emotional reactivity by individuals who report higher levels of physical activity is supported by previous research that suggests individuals with higher levels of physical activity are less likely to react to stress and to experience internalized mental health problems (Rimmele et al., 2009; Monshouwer et al., 2012). Since in the present study this result was only found during the practicum, it is suggested that the pre-service teachers with high levels of physical activity may draw on this resource as a means of coping to reduce their vulnerability to emotional stress. However, unlike previous studies, the current study did not find any evidence to support an association of physical activity with reported levels of either EI or SWB (Saklofske et al., 2007; Maher et al., 2012).

Relevance to Pre-Service Teacher Preparation and Counseling

This study has relevance to pre-service teacher preparation, particularly as the results relate to resiliency. Pre-service teacher programs can help prepare students for the practicum experience by recommending different methods to help them cope with the stress from the practicum experience.

The first recommendation to address their level of praxis shock is to engage in physical activity as a means to moderate their emotional vulnerability. Pre-service students who have high levels of emotional vulnerability could be at higher risk of emotional exhaustion that is one of the three symptoms of burnout (Parker et al., 2012). Being able to inform pre-service teachers regarding strategies such as the importance of physical activity could be used to decrease emotional vulnerability.

The second recommendation is to inform the pre-service teachers regarding the importance of social support in order to manage the stress that comes with the stress from practicum. A practical way to help pre-service students would be to assign them to discussion groups while they are in their pre-service practicum. Such discussion groups could allow each pre-service teacher to share their practicum experiences with other pre-service teachers thereby mitigating the potential feelings of isolation and/or the belief they are the only ones that are struggling (Ballantyne, 2007).

The results of this study, again they are preliminary given the small sample size, suggest that pre-service teachers who reported higher levels of physical activity during practicum also reported lower levels of emotional reactivity. This result is important to counsellors since it suggests that physical activity can be used as a method to help clients cope with stress when they are facing personal challenges (MacFarlane, & Montgomery, 2010). When clients are facing stressful events it is important to assist them to moderate their emotional vulnerability. Part of a treatment plan for clients experiencing stressful situations could be to increase or add physical activity to their weekly schedules. This increase in physical activity could in turn moderate the client's emotional vulnerability such that they are less likely to react negatively to stressful situations (Rimmele et al.,

2009; Monshouwer et al., 2012). As an example, a counsellor could use an activity schedule and weekly mood ratings checklist once they have assigned physical activity as homework to help track the benefits of the moderated emotional reactivity to stressful events.

Additional relevance to counseling is the finding that relatedness increased during the pre-service teacher practicum. The sense of relatedness sub-scale measures a participant's view of the quality of their social relationships as a important resource to be used to cope with stressful situations (Thorne & Kohut, 2007). Since practicum is considered a stressful event, this could indicate that when clients are experiencing a stressful life event, it may be important to focus on their relationships as a means of support (Caires et al., 2010). The counsellor could make inquiries regarding how the client views their relationships as their source of social support and how to best use this system of support to the client's advantage. For clients who do have support systems, this future planning would be critical as part of crisis planning so the client will know who in their support system they can rely on during a time of crisis. The counsellor could also help the client to develop a social network of relationships if the client is lacking these supportive relationships or finding them of questionable benefit.

Relevance to Future Research

This study represents a beginning in the examination of relevant variables to appreciate the impact of the practicum experience on pre-service teachers for their chosen profession. The results need to be considered as tentative given the modest sample size. The first goal for future research therefore is to examine the relationship amongst these variables using a larger sample size. This increased sample size would increase the

statistical power and provide a clearer indication of the relationships that occur amongst the different variables.

Future research should also consider a different method of tracking physical activity. In the current study, physical activity was tracked through the use of a self-report measure. However, it would appear from the results of the present study that some of the participants might have been confused regarding how the measure actually tracked their weekly physical activity. For example, some participants reported dimensions that did not fit the measurement criteria, stating that they walked more than the possible seven days of the week, or stated that they engaged in absolutely no physical activity in the previous week. The data from these participants were removed from the study. Future researchers could consider using step counters to help more accurately measure participant's physical activity. Researchers could also consider enrolling participants in physical activity programs at a recreational center or a gym where greater control over the nature and amount of physical activity could more closely be monitored. This would allow researchers to compare the degree and different types of physical activity. Previous studies have examined the benefits of aerobic exercises; it would be interesting to observe how more specific forms of exercise relates to the outcome variables of resiliency, EI, SWB and teacher self-efficacy (Jazaieri et al., 2012).

This study found that there were relationships amongst resiliency, SWB, EI, teachers' self-efficacy, and physical activity. The next step for future research is to examine these relationships in regards to how these variables relate to each other. Previous research has already suggested that teachers' self-efficacy is a predictor of SWB in the general population, and how EI and teachers' self-efficacy interact together to

improve pre-service coping (Strobel et al., 2011; Chan, 2008). However, this is the first study to find that physical activity is related to teacher self-efficacy. It would be interesting for future researchers to explore this relationship to determine how these variables interact with each other.

Another area for future research involves the influence of prior teaching experience on praxis shock. In the current study, all but one of the pre-service teachers had prior teaching experience. It would be of interest for researchers to measure pre-service teacher's first exposure to the teaching experience to help determine the actual impact of praxis shock. For example, interviews with pre-service teachers during or after their first exposure to teaching would be informative in regards to the impact of the first teaching exposure for those who do not report prior teaching experience. This comparison of the teaching experience of pre-service teachers who enter practicum without any prior teaching experience could prove to be an important criteria on which to base admissions. This comparison study would also help clarify the impact of praxis shock and potentially provide information regarding what factors could help pre-service teachers cope with the praxis shock (Ontario College of Teachers, 2012).

This study provides some clarification, again albeit tentative, on the relationship between physical activity and teacher self-efficacy. Previous research has established a theoretical model of how physical activity can relate to teacher self-efficacy (MacFarlane, & Montgomery, 2010). The current results suggest that physical activity was related to teacher self-efficacy at time two and provides support for this theoretical model. However, physical activity level was not significantly related to teacher self-efficacy, even though individuals who had higher levels of physical activity had higher self-

efficacy at time one and time two. This result requires further investigation. Since previous research has indicated that physical activity is related to resiliency, future research should explore this relationship to determine if resiliency can function as a mediator in the relationship between physical activity and teacher self-efficacy (Gerber et al., 2012).

Limitations

Within the challenges of doing real world research is the recruitment of participants to the study. Despite the researcher's presentations, posters and online announcements in various courses, the recruitment process yielded only 17 participants who completed the questionnaire at both times one and two. The nature of the pre-service teacher program in the particular faculty where this research was conducted, and there is nothing to suggest the faculty that hosted this research is unique, was such that students were often too busy with course work to participate. In addition, pre-service teachers were being invited to participate simultaneously in multiple research projects that also proved to be a challenge to researchers to recruit participants into their study. Ultimately the sample size of 17 in the present study reduced the statistical power and hence the meaningfulness of the results. Future research may need to look to recruit simultaneously from multiple pre-service programs to engage a meaningful size of participants.

Another limitation of the study was that all of the measures used in this study were self-report measures. Future researchers should attempt a mixed methods approach to increase the accuracy of self-reported measures like physical activity. This could be done through interviewing the participants, enrolling them in physical activity programs then taking attendance or using pedometers to increase accuracy of weekly physical

activity.

The final limitation of this study is the influence of extraneous variables at both times of data collection. The researcher attempted to address for the extraneous variables of previous teaching experience and sex in the current study. However, other variables such as socioeconomic status, age, culture, or stressful life events not reflected in the questionnaire could have influence the results of this study.

Summary of Findings

Notwithstanding the current limitations of this study, the tentative suggestions from the contributions that await replication include the following. Resiliency in regards to sense of mastery was positively related to resiliency in regards to sense of relatedness, SWB and EI before practicum and SWB and EI during practicum in pre-service teachers. Resiliency in regards to sense of relatedness was positively related to SWB, EI and teachers' self-efficacy before and during practicum in pre-service teachers. Resiliency in regards to emotional reactivity was negatively related to EI and teachers' self-efficacy during practicum in pre-service service teachers. SWB was positively related to EI and teachers' self-efficacy before practicum, and with EI during practicum in pre-service teachers. EI was positively related to teachers' self-efficacy before and during practicum in pre-service teachers and physical activity had a positive relationship with teachers' self-efficacy during practicum. Pre-service teachers drew on their social relationships to help cope with the practicum experience. In addition, pre-service teachers used physical activity as a method of reducing their emotional vulnerability to cope with the stress of the practicum experience.

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Appendix A

General Instructions

You are being asked to fill out six different surveys about resiliency, physical activity, life satisfaction, teacher self-efficacy, emotional intelligence, and stress and anxiety. Please be sure to read all of the instructions for each test. You may complete the questionnaire at your own pace, and you can quit the questionnaire at anytime. Please ensure that you put down your age, sex and the last four digits of your student number. All of the information that you provide will be kept in the strictest form of confidence. Once you are finished you will be shown a debriefing screen.

Age:

Sex:

What Program:

Primary to Junior/ Junior to Intermediate / Intermediate to Senior / Technological Education

Last four digits of your student number:

How much teaching experience you have had before entering practicum:

None/Less than 6 months/1 year/2 years/3 year/4 years/More than 4 years

Appendix B



*The Relationship of Physical Activity
and Resiliency on Pre-service Teachers*

LETTER OF INFORMATION

Introduction

My name is Andrew Soave and I am Masters student in the counselling Psychology program at the Faculty of Education at Western University. I am currently conducting research on pre-service teachers' well-being and how the practicum relates to pre-service teachers' well-being. I would like to invite you to participate in this study.

Purpose of the study

The aims of this study are to examine psychological variables that support pre-service teachers' well-being, and how the pre-service teachers' practicum relates to pre-service teachers' well-being.

If you agree to participate

If you agree to participate in this study you will be asked to fill out a survey that will take approximately 40 minutes to complete. You will be asked to complete the survey two times, once before you go on your first practicum and during the first couple weeks of your first practicum. The survey is available online, and it consists of five different measures – emotional intelligence, life satisfaction, physical activity, resiliency and subjective well-being. After you complete the survey online you will be shown a debriefing screen.

Confidentiality

The information collected will be used for research purposes only, and neither your name nor information which could identify you will be used in any publication or presentation of the study results. All information collected for the study will be kept confidential. The data collected will be put into a password locked database, and deleted after the thesis has been completed. The email addresses will be kept in a password locked folder and destroyed after the draw for the prizes has been completed. Your information will be coded using a combination of the last four digits of your student number, age and sex.

Risks & Benefits

There are no known risks to participating in this study.

Voluntary Participation

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your academic status.

In appreciation for your assistance with the study, your email address will be entered in a draw to win a tablet or one of five \$20 gift certificates for the Western Bookstore. This draw will take place in early November. However, only participants who participate in the questionnaire at both times will be entered in the draw.

Questions

If you have any questions about the conduct of this study or your rights as a research participant you may contact the Office of Research Ethics, Western University.

Completion and submission of the questionnaire indicates your consent to participate in this study.

Debriefing (Time 1)

Thank you for participating in this study on physical activity and well-being (ED9590 Masters Thesis in Counseling Psychology). You will be emailed to fill out the questionnaire again after you have started your practicum in October. The draw for the Western Book Store gift certificates and the tablet will be held in early November. Thank you and have a nice day!

For further reading:

Hong, J. (2012). Why do some beginning teachers leave the school, and others stay? Understanding teacher resilience through psychological lenses. *Teachers and Teaching: Theory and Practice*, 18, 417-440.

MacFarlane, L., & Montgomery, C. (2010). Influencing the Mind Through the Body: A Theoretical Model for Coping With Student Teacher Stress Through Physical Exercise. *Journal of Cognitive Education and Psychology*, 9, 183-197.

Debriefing (Time 2)

Thank you for participating in this study on pre-service teachers' well-being (ED9590 Masters Thesis in Counseling Psychology). This concludes your participation in this research study. You will be contacted by email if you are a winner of the draw for the tablet or the five gift certificates to the western bookstore in early November. If you have any questions about the research study, please contact the researcher using the email address provided below. Also, the contact information of both the London distress center and the Student Development Centre Psychological services has been provided below if you choose to use them. Thank you and have a nice day!

For further reading:

Hong, J. (2012). Why do some beginning teachers leave the school, and others stay? Understanding teacher resilience through psychological lenses. *Teachers and Teaching: Theory and Practice*, 18, 417-440.

MacFarlane, L., & Montgomery, C. (2010). Influencing the Mind Through the Body: A Theoretical Model for Coping With Student Teacher Stress Through Physical Exercise. *Journal of Cognitive Education and Psychology*, 9, 183-197

Appendix C

Western Education
WESTERN UNIVERSITY
FACULTY OF EDUCATION
USE OF HUMAN SUBJECTS - ETHICS APPROVAL NOTICE

Review Number: 1301-4
Principal Investigator: Alan Leschied
Student Name: Andrew Soave
Title: *The Relationship of Physical Activity and Resiliency on Pre-service Teachers*
Expiry Date: April 30, 2014
Type: M.Ed. Thesis
Ethics Approval Date: February 15, 2013
Revision #:
Documents Reviewed &
Approved: Western Protocol, Letter of Information, Advertisement Poster & PowerPoint

This is to notify you that the Faculty of Education Sub-Research Ethics Board (REB), which operates under the authority of the Western University Research Ethics Board for Non-Medical Research Involving Human Subjects, according to the Tri-Council Policy Statement and the applicable laws and regulations of Ontario has granted approval to the above named research study on the date noted above. The approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the REB's periodic requests for surveillance and monitoring information.

During the course of the research, no deviations from, or changes to, the study or information/consent documents may be initiated without prior written approval from the REB, except for minor administrative aspects. Participants must receive a copy of the signed information/consent documentation. Investigators must promptly report to the Chair of the Faculty Sub-REB any adverse or unexpected experiences or events that are both serious and unexpected, and any new information which may adversely affect the safety of the subjects or the conduct of the study. In the event that any changes require a change in the information/consent documentation and/or recruitment advertisement, newly revised documents must be submitted to the Sub-REB for approval.

2012-2013 Faculty of Education Sub-Research Ethics Board

Dr. Alan Edmunds	Faculty of Education (Chair)
Dr. John Barnett	Faculty of Education
Dr. Wayne Martino	Faculty of Education
Dr. George Gadanidis	Faculty of Education
Dr. Elizabeth Nowicki	Faculty of Education
Dr. Julie Byrd Clark	Faculty of Education
Dr. Kari Veblen	Faculty of Music
Dr. Jason Brown	Faculty of Education
Dr. Susan Rodger	Faculty of Education, Associate Dean, Research (<i>ex officio</i>)
Dr. Ruth Wright	Faculty of Music, Western Non-Medical Research Ethics Board (<i>ex officio</i>)
Dr. Kevin Watson	Faculty of Music, Western Non-Medical Research Ethics Board (<i>ex officio</i>)

Copy: Office of Research Ethics

Curriculum Vitae

Name: Andrew Soave

Post-Secondary Education and Degrees: University of Western Ontario
London, Ontario, Canada
2007-2011, B.A.

Honours and Awards: Dean's Honours list, 2008-2011.

Related Work Experience: Teacher Assistant
The University of Western Ontario
2011

Mental Health Worker
WOTCH Community Mental Health Services
2010-Present