PREDICTING THE PURSUIT OF POST-SECONDARY EDUCATION: ROLE OF TRAIT EMOTIONAL INTELLIGENCE IN A LONGITUDINAL STUDY

A Thesis Submitted to the Committee on Graduate Studies in Partial Fulfillment of the Requirements for the Degree of Master of Science in the Faculty of Arts and Science

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ABSTRACT

Predicting the Pursuit of Post-Secondary Education: Role of Trait Emotional Intelligence in a Longitudinal Study

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Trait Emotional Intelligence (EI) includes competencies and dispositions related to identifying, understanding, using and managing emotions. Higher trait EI has been implicated in post-secondary success, and better career-related decision-making. However, there is no evidence for whether it predicts the pursuit of post-secondary education (PSE) in emerging adulthood. This study investigated the role of trait EI in PSE pursuit using a large, nationally-representative sample of Canadian young adults who participated in the National Longitudinal Survey for Children and Youth (NLSCY). Participants in this dataset reported on their PSE status at three biennial waves (age 20-21, 22-23, and 24-25), and completed a four-factor self-report scale for trait EI (Emotional Quotient Inventory: Mini) at ages 20-21 and 24-25. Higher trait EI subscale scores were significantly associated with greater likelihood of PSE participation both concurrently, and at 2- and 4-year follow-ups. Overall, these associations were larger for men than women. Trait EI scores also showed moderate levels of temporal stability over four years, including full configural and at least partial metric invariance between time points. This suggests that the measure stays conceptually consistent over the four years of emerging adulthood, and that trait EI is a relatively malleable attribute, susceptible to change with interventions during this age period.

Keywords: Trait Emotional Intelligence, Longitudinal, Post-Secondary Pursuit, Emerging Adulthood
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Predicting the Pursuit of Post-Secondary Education: Role of Trait Emotional Intelligence in a Longitudinal Study

Socioemotional competencies involve core “soft skills” that are in growing demand in the modern labour force (Cunningham & Villaseñor, 2014) and they encompass abilities like empathizing with others’ emotions and recognizing and utilizing emotions to handle stressful situations and life changes. This constellation of abilities is adequately captured by a construct known as emotional intelligence (EI; Austin, Parker, Petrides, & Saklofske, 2008; Bar-On & Parker, 2000; Mayer, Roberts, & Barsade, 2008, Peña-Sarrionandia, Mikolajczak, & Gross, 2015). The terms “socioemotional competencies” and “EI” will hence be used interchangeably throughout this thesis.

There are two conceptualizations of the EI construct: Ability and Trait EI. Ability EI utilizes performance-based measures to assess cognitive-emotional abilities and emotion information processing (Mayer, Salovey & Caruso, 2008). Trait EI focusses on the inherent self-perceptions and dispositions related to socioemotional competence, hence employing self-report measures to assess the construct (Petrides & Furnham, 2001). The literature to date has shown that while ability- and trait-based measures assess the same content domain of EI, they do not associate strongly with each other, suggesting that they represent distinct constructs (Brackett & Mayer 2003; Zeidner, Shani-Zinovich, Matthews, & Roberts, 2005). However, most researchers are in accord that each type measures a unique facet of socioemotional competence and should hence be taken as complementary, rather than contradictory perspectives (Austin et al., 2008; Joseph & Newman, 2010; Palmer, Gignac, Ekermans, & Stough, 2008; Petrides, Furnham & Mavroveli, 2007).
More importantly, studies on participants using performance-based and self-report measures of EI show significant associations between each form of EI and variables like interpersonal relationship satisfaction, physical and mental health, academic performance and occupational outcomes (Austin et al., 2008; Mayer et al., 2008; Malouff et al., 2014; O’Boyle et al., 2011; Perera & DiGiacomo, 2013). A unique aspect of trait EI is that it entails subjective components of socioemotional competence such as self-awareness, perceived competence, and (more importantly) emotional disposition which reflects how a person utilises their EI-related competencies in every-day settings (Austin et al., 2008; Keefer, 2015; Mikolajczak, 2009). These emotion-related dispositions are crucial factors to assess when measuring real-life achievement outcomes, beyond just the ability to perform emotionally intelligently when instructed to do so (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003; Dweck, 1999; Mikolajczak, 2009; Valentine, DuBois, & Cooper, 2004). Self-reported EI in adults is known to predict important life outcomes beyond measures of cognitive intelligence, mood, and basic personality (Andrei, Siegling, Aloe, Baldaro, & Petrides, 2016; Petrides, Pérez-González, & Furnham, 2007; Wood, Parker, & Keefer, 2009). Self-report assessments are also easier to administer over performance-based measures in time-sensitive contexts such as population-based research. Not surprisingly, the longitudinal data-set used in the present study opted to use a trait EI measure.

Trait EI has garnered considerable research interest in educational settings (Humphrey, Curran, Morris, Farrel, & Woods, 2007; Perera & DiGiacomo, 2013). Specifically, trait EI-related competencies have been implicated in post-secondary contexts, predicting variables like academic achievement (Lanciano & Curci, 2014; Parker, Summerfeldt, Hogan & Majeski, 2004), degree completion (Keefer, Parker, & Wood, 2012), and better career-related decision-making (Brown, George-Curran, & Smith, 2003). Attaining a post-secondary education (PSE) is
essential for better vocational outcomes in the modern economy (Statistics Canada, 2017; Toutkoushian & Paulsen, 2016; Uppal, 2017). However, there is still a sizeable segment of high school graduates who do not pursue higher education (Finnie, 2012). The period between high school completion and entering university is a crucial developmental stage where one’s decisions can have substantial personal, social and economic implications for the individual (Arnett, 2000; Lüdtke, Roberts, Trautwein, & Nagy, 2011).

Considering the role of trait EI in academic success and career decision-making, it is plausible that these intra-individual socioemotional competencies may also contribute to one’s decision to pursue PSE. To date, there have been no studies examining whether trait EI predicts likelihood of an individual pursuing PSE. The present study examined the long-term influence of EI-related competencies on the likelihood of young Canadians pursuing PSE. A secondary goal was to examine stability of trait EI during the period of emerging adulthood (age 20-25). The present study used a nationally-representative dataset from the National Longitudinal Survey of Children and Youth (NLSCY) which included a measure of trait EI and educational status of this demographic (Statistics Canada, 2010a). The inclusion of multi-year trait EI data is a unique feature of the NLSCY, relative to other comparable databases such as the Canadian Youth in Transition Survey or the American National Longitudinal Survey of Youth. It is therefore the only current source of longitudinal, population-level data on trait EI.

To provide more context, the following section reviews the importance of trait EI in PSE contexts and decision-making, followed by considerations for measuring stability of the trait EI construct. Since the NLSCY used a highly abbreviated measure of trait EI, the mini version of the Emotional Quotient Inventory (EQ-i: Mini), a subsequent section examines the psychometric issues of using ultra-short self-report instruments in the context of population-based studies.
Given the repeated assessments of trait EI, it is also important to assess longitudinal measurement invariance of the EQ-i: Mini, to ensure it measures the same construct in the same way on repeated occasions, before drawing any substantive conclusions.

**Trait EI in Post-Secondary Contexts**

Attaining PSE is a catalyst for better long-term vocational outcomes. Canadians with a university degree have an employment rate of over 70%, compared to those without one (under 60%, decreasing with lower education levels; Statistics Canada, 2017). PSE completion is also linked to higher income levels in both males and females (Uppal, 2017). Attending a college or university can nonetheless be a very stressful transition, presenting an array of personal and interpersonal challenges for students (Pascarella & Terenzini, 2005), especially when having to move away from their home town (Witkow, Huynh, & Fuligni, 2015). The attrition rate for high-school graduates transitioning to PSE is approximately 50% in the United States and Canada (Ross et al., 2012; Shaineks, Gluszynski, & Bayard, 2008). This demographic, comprised mostly of young adults, leave the proximity of pre-existing relationships (like family and friends) and have to form new ones, as well as adapt to a more challenging academic load (Fussell, Gauthier, & Evans, 2007). Compounding this stress is the rising financial costs of attending colleges and universities (Finnie, 2012; Statistics Canada, 2016). This often requires students to take up part-time work, which poses an additional challenge in attempting to balance academic, social and work life (see Moulin, Doray, Laplante, & Street, 2013). Acknowledging these hurdles, the literature on predicting PSE success now includes non-cognitive factors such as emotional and interpersonal adjustment, in addition to traditional variables like high-school performance and standardized test scores (Pascarella & Terenzini, 2005; Rowan-Kenyon, Savitz-Romer, Ott, Swan & Liu, 2017).
One of the non-cognitive factors implicated in post-secondary success is trait EI (Perera & DiGiacomo, 2013; Richardson, Abraham, & Bond, 2012). An example of this line of research is the Trent Academic Success and Wellness Project (TASWP; Parker et al., 2004). One of the unique aspects of this project is its longitudinal nature, being the first to assess the long-term impact of trait EI-related competencies on post-secondary success (Parker, Saklofske, Wood, Eastabrook, & Taylor, 2005). This project was conducted at a medium-sized university in Ontario (Trent University), recruiting four successive cohorts of undergraduate students (N = 3,500) at the beginning of their first year. They were administered an array of psychological self-report instruments, including a measure for trait EI called the Emotional Quotient Inventory-Short form (EQ-i: S; Bar-On, 2002), which assesses four EI competence domains: Interpersonal, Intrapersonal, Stress Management, and Adaptability. Participants also consented to releasing their high-school grades and subsequent university records for the project. This dataset has yielded a series of investigations examining the predictive utility of trait EI in academic achievement and persistence of emerging adults transitioning to PSE.

The seminal study using the TASWP dataset utilised a sub-sample of approximately 400 full-time, first-year students that were transitioning from high-school to university (Parker et al., 2004). Participants’ EQ-i:S scores in their first month of undergraduate studies were matched with their academic record at the end of their first year of university. In order to measure academic success, the participants were processed as two groups: academically successful (those with grade-point-averages [GPAs] > 79%) and academically unsuccessful (GPA < 60% for that academic year). The “successful” criteria were generated in compliance with maintaining “Dean’s Honour Roll” standing at the institution; the “unsuccessful” group is admonished by the institution to maintain GPAs above 59% in their second year or be asked to withdraw from the
university. Both groups had similar sample sizes (64 successful and 67 unsuccessful), high school GPAs, and were balanced for age, gender, and academic course load. A gender-by-group (successful vs. unsuccessful) between-groups analysis of variance (ANOVA) revealed that successful students scored significantly higher than the unsuccessful group on total EI, as well as on the Intrapersonal, Stress management, and Adaptability skills assessed by the EQ-i:S. Discriminant Function Analysis classified students into the successful and unsuccessful groups based on their EQ-i:S scores and revealed an overall 86% correct classification rate. Compared to trait EI, high school GPA was a much weaker predictor of first-year university GPA (Parker et al., 2004). This is compelling evidence showing that socioemotional competencies are a relevant factor in PSE settings, as they incrementally predict academic success independent of a students’ previous academic record (Parker et al., 2004).

Another TASWP study conducted by Parker, Hogan, Eastabrook, Oke, and Wood (2006) examined student retention over the first year of their university studies. They were divided into two groups based on enrolment status at the end of the year: persisted (those continuing for a second year) and withdrew (those who withdrew during or after their first year). Both groups were matched for age, gender and ethnicity. Results revealed that students who persisted had significantly higher trait EI-related competencies (Interpersonal, Intrapersonal, Stress Management, and Adaptability skills) at the start of the academic year, compared to those who withdrew. This effect was significantly moderated by gender: males who withdrew scored significantly lower in interpersonal skills and total EI than both males and females who persisted, while females who withdrew had significantly lower total EI scores than males who persisted (Parker et al., 2006). These results complement previous studies that found a link between higher trait EI scores and academic performance (Parker et al., 2004; Parker, Duffy, Wood, Bond &
A 6-year follow-up latent-profile analysis of this cohort indicated that first year trait EI levels also significantly predicted degree completion: students who did not graduate had both significantly lower trait-EI levels and weaker perceived self-competencies in all of the EI domains assessed (Keefer et al., 2012).

There are several possible mechanisms by which trait EI-related competencies predict post-secondary success. One of the more proximal variables is its function as a resilience factor for post-secondary students: trait EI is linked with fewer physical fatigue symptoms (Brown & Schutte, 2006; Thompson, Waltz, Croyle, & Pepper, 2007), lower levels of social anxiety and loneliness (Summerfeldt, Kloosterman, Antony, & Parker, 2006), and use of more adaptive coping strategies in students (Saklofske, Austin, Galloway, & Davidson, 2007). The influence of trait EI on these variables in turn mediates academic adjustment and performance (Perera & DiGiacomo, 2015).

Three of the main contributing factors in the relationship between trait EI and PSE success are general interpersonal skills, motivation/optimism, and decision-making (Perera & DiGiacomo, 2015). Indeed, all theories of trait EI consider the ability to empathize with others’ feelings as one of its core components (Bar-On, 1997; Petrides & Furnham, 2000). This is an important skill for students in an environment requiring collaboration with others (Wang, MacCann, Zhuang, Liu, & Roberts, 2009). Students deficient in this competency can feel alienated from campus life – which has been implicated in student attrition (see Wilcox, Winn, & Fyvie-Gauld, 2005). Higher trait EI is also linked with a more confident and positive outlook on future outcomes (Bar-On, 2000; Petrides & Furnham, 2001). This is an ideal state of mind to persist and attain one’s academic goals (Carver & Connor-Smith, 2010; Nes & Segerstrom, 2006) and stay engaged in learning activities (Linnenbrink, 2007). The capacity to effectively
collaborate, utilize emotions resourcefully in problem-solving, and stay determined while adaptively coping with socioemotional and academic challenges is a psychological profile typically linked with post-secondary success (Credé & Niehorster, 2012).

While these results are encouraging, it is also possible that those with higher levels of socioemotional competencies are more drawn towards post-secondary education, or more likely to meet admission eligibility criteria due to better high school performance (see Perera & DiGiacomo, 2013; Petrides, Frederickson, & Furnham 2004). Studying the influence of trait EI in PSE success can limit us to an overly homogenous participant pool – one in which everyone has already made it into a PSE program. Perhaps the segment of the population with proportionately higher trait EI levels are more likely to pursue PSE in the first place. While it is true that external factors such as socioeconomic status can influence PSE pursuit, population-based evidence suggests that 43% of Canadians report no barriers in the decision to pursue PSE (irrespective of whether they pursue it or not), compared to 25% citing financial barriers (Finnie, 2012). PSE pursuit relies more on individual and sociocultural factors that influence this important life decision, compared to only economic barriers (Abada & Tenkorang, 2009; Finnie, 2012). With the growing importance of PSE in the marketplace and the demonstrated positive impact of trait EI on PSE success, it is worth investigating if trait EI in emerging adulthood is also associated with the pursuit of higher education. The following section reviews the role of trait EI in career decision-making.

**Trait EI and Career Decision-Making**

While there is no research specifically looking at the impact of trait EI in the decision to pursue PSE, trait EI has been associated with executive control and career-based decision-making. Executive control involves the ability to control impulses, comply with rules, and adapt
to changing and mentally taxing environments (Derryberry, 2002). It is a crucial variable in predicting post-secondary success (Zimmerman & Kitsantas, 2005). Research on school-aged children shows that socioemotional competency programs in schools enhance the positive influence of executive control skills on academic performance (Elias & Haynes, 2008; Rhoades, Warren, Celene, & Greenberg, 2011). These foundational skills enable students to process emotional cues from their surroundings and direct attention toward positive social interactions and academic tasks, while learning to avoid distractions better than peers with lower socioemotional competencies (Rhoades et al., 2011).

Research with older participants shows an extended benefit of trait EI skills in executive tasks such as decision-making (Avsec, 2012; Di Fabio & Kenny, 2012). Of particular interest for the emerging adult population is career-based decisions. Individuals who are better able to understand, regulate and adaptively express their emotions tend to be more certain of their career choices, as well as be more likely to evaluate, anticipate and adapt to the emotional challenges of career decisions (Emmerling & Cherniss, 2003). In today’s rather unpredictable economic times, career decisions require a firmer grasp of nuance, as well as a reasonable level of emotional awareness and stability (Krieshok, Black, & McKay, 2009). Beyond a question of the nature of any particular vocation, effective career decisions should involve a balance between one’s desires, the opportunities in the marketplace, and the potential impact of the decision on one’s interpersonal relationships (Brown et al., 2003).

According to a model by Gati, Krausz, and Osipow (1996), career decision-making challenges can be conceptualized in two stages. The first involves difficulties before actually making the decision (for example, low motivation, indecisiveness, and dysfunctional beliefs about the self or future), related to a feeling of unpreparedness to make the decision. The second
stage encompasses difficulties during the career decision-making process, such as a lack of information (for example, about available opportunities), or being overwhelmed with conflicting and/or unreliable information from multiple sources (Gati et al., 1996).

The first study to examine the relationship between trait EI and Gati et al.’s (1996) model of career decision-making challenges was Di Fabio and Palazzeschi (2008). Participants were paid professional interns who were still in a vocational transitory phase before needing to commit to a career decision. Trait EI was assessed using the EQ-i:S. Of its four factors, low Intrapersonal scores predicted all forms of career decision difficulties, while low Stress Management scores predicted decision-making difficulties due to lack of readiness, and Low Adaptability scores predicted difficulties due to a lack of and inconsistent information. Understanding and adaptively expressing one’s own emotions (Intrapersonal skills) is therefore a significant factor in effective career decisions overall, while other facets of the EQ-i:S model uniquely predict distinct forms of decision-making difficulties (Di Fabio & Palazzeschi, 2008). Follow-up incremental validity studies showed these effects to be significant even after controlling for the “Big Five” basic personality dimensions (Di Fabio & Palazzeschi, 2009), and global self-evaluations (Di Fabio, Palazzeschi, & Bar-On, 2012), both of which are also implicated in career indecision and vocational outcomes (Feldman, 2003; Judge & Bono, 2001). In addition, trait EI measures are more predictive of career decision-making difficulties than ability-based EI tests, after controlling for fluid intelligence and the Big Five (Di Fabio & Saklofske, 2014). This is compelling evidence for the unique role of trait EI-related competencies in managing career decision-making difficulties (Di Fabio et al., 2012).

Another aspect of the career decision-making process involves decision-making styles. The Melbourne Decision Making Questionnaire (Mann, Burnett, Radford, & Ford, 1977) is a
widely-known operationalization of several decisional styles: deferring responsibility to others (avoidance); systematic and adaptive decision-making (vigilance), postponing the decision-making process (procrastination) and frantic, rushed attempts to make decisions (hypervigilance). The only adaptive decisional style presented in this model is vigilance.

A study investigating the relationship between facets of this model and the EQ-i:S in Italian high school students found that Intrapersonal skills was the strongest negative predictor of the maladaptive decision-making styles (Di Fabio & Blustein, 2010). This is consistent with the evidence presented for trait EI and career indecisiveness (Di Fabio & Palazzeschi, 2008). Furthermore, the Adaptability domain (or using emotions for adaptive problem-solving) was the strongest positive predictor of the vigilance decision-making style. Among the other trait EI domains, low Interpersonal skills predicted avoidance and procrastination decisional styles (Di Fabio & Blustein, 2010). Again, similar to the literature on career indecisiveness, these effects are significant when controlling for the Big Five personality traits (Di Fabio & Palazzeschi, 2007).

Given this large body of evidence, it is safe to conclude that trait EI is a significant factor in the career decision-making process for both adolescents and young adults. Specifically, strong insight into one’s own emotions and effectively utilizing them to facilitate problem-solving can lead to less career indecision, systematic and adaptive decision-making, and better vocational outcomes (Di Fabio & Blustein, 2010; Di Fabio & Palazzeschi, 2008). Additionally, given the importance of PSE completion for vocational success (Statistics Canada, 2017), the socioemotional competencies implicated in effective career decisions could also play a significant role in the decision to pursue PSE. The NLSCY dataset provides a unique opportunity to study the prospective relationship between trait EI and PSE pursuit in a nationally-
representative population sample, as it includes repeated measures of trait EI and post-secondary status for the target emerging adult population over four years (age 20-24).

**Stability of Trait EI during Emerging Adulthood**

As aforementioned, emerging adulthood is a period of profound developmental change (Arnett, 2000). Personality research has found evidence of “maturity” during these years, resembled by increases in conscientiousness and emotional stability (Roberts, Walton, & Viechtbauer, 2006). In the case of trait EI, most of the longitudinal research in emerging adulthood to date has focussed on 1- or 2- year predictive utility. Meanwhile, longer term patterns of change in the construct are relatively unexplored (Keefer et al., 2013). In addition, the stability of construct is also important to assess as it can provide an indication of how malleable (or sensitive to interventions) it can be during this period. Two of the most common statistical techniques to assess construct stability over time in longitudinal research are rank-order stability and mean-level change (Marsh & Grayson, 1994). Rank-order stability refers to Pearson product-moment correlation coefficients of trait EI dimension scores at time 1 and time 2. This provides an estimate of the degree to which having a high trait EI score at time 1 is associated with having a high trait EI score also at time 2. This is also an indication of change in the relative placement of individuals along the measured trait in a population. In this case, high coefficients imply a very stable construct over time, while correlations closer to 0 indicate very weak or no relationship. Mean-level change refers to the extent of change in the average level of a trait in a population, measured via a repeated-measures difference test between mean scores at time 1 and time 2. The magnitude and direction of the difference in means from zero indicate the degree of group-level change in trait EI levels (Marsh & Grayson 1994; Bashkov & Finney, 2013).
It is important to note that while indices of change such as rank-order stability and mean-level change can give us an indication of the stability of the trait (Marsh & Grayson, 1994), they are independent. High rank-order stability correlations need not imply that mean levels of the construct remain unchanged over time: they are generated based on individuals’ relative scores at each time-point, which do not reflect group-level scores (Bashkov & Finney, 2013). For example, you can have a case where mean-levels of a trait do significantly increase over time but still yield a high rank-order correlation, provided that the magnitude of increase is similar across most respondents (Bashkov & Finney, 2013). Similarly, since trait EI is a measure of individual differences, mean-level change (a measure of global change within the sample) does not necessarily indicate stability of the trait at the individual level either (Bashkov & Finney, 2013). It is therefore important to report both indicators of stability to make an accurate conclusion about construct stability.

Previous NLSCY research with children and adolescents using a mini version of the EQ-i for youth (EQ-i: YV-Brief) showed moderate two-year rank-order stability coefficients for trait EI that gradually increased with age, from an average of .31 between ages 10-11 and 12-13 years, to .40 between ages 12-13 and 14-15 years, and .50 between the ages of 14-15 and 16-17 years (Keefer, Holden, & Parker, 2013). Parker et al. (2005b) found slightly higher but still moderate levels of 32-month test-retest correlations for trait EI (average $r = .55$) in an emerging adult sample, between the ages of 19 and 22 years. This indicates that trait EI is a relatively malleable construct during the formative period from childhood to young adulthood, albeit gradually becoming more stable with age. This is consistent with other personality research, which shows that general adult personality becomes even more stable in middle and old age, (increase in test-retest $r$’s from .55 to >.70 by older adulthood; Roberts & DelVecchio, 2000; see
also Donnellan, Conger & Burzette, 2007). Given that personality traits, including trait EI, are only moderately stable prior to middle adulthood, temporal stability coefficients tend to be lower at longer follow-up intervals (Keefer et al., 2013; Roberts & Delvicchio, 2000). In the present study, the EQ-i: Mini was administered four years apart, between ages 20-21 and 24-25, and therefore it was expected to show somewhat lower levels of longitudinal stability (around .40 to .50) compared to previous studies that used shorter test-retest periods.

In terms of mean-level change, Parker et al. (2005b) demonstrated moderate mean-level increases in the four trait EI dimensions, assessed with the EQ-i:S, between the period of entering university from high school and the third year of university. This is consistent with personality research showing that the period of emerging adulthood is related to increased emotional stability, conscientiousness and agreeableness (Roberts et al., 2006). A study by Donnellan et al. (2007a) using a young adult sample from age 17 to 27 indicated normative changes in functional maturity. Specifically, there was a decrease in negative emotionality (stress reaction, aggression and alienation) and increase in mean-levels of traits related to constraint (control and harm-avoidance) from age 17 to 27 (Donnellan et al., 2007a). Consistent with this evidence, I predict moderate increases in mean-levels of trait EI in the NLSCY emerging adult sample.

**Measurement Considerations in Population Research**

**Ultra-Short Scales**

One of the main concerns with population-based self-report assessments is the length of the measure (Stanton, Sinfar, & Smith, 2002; Deniz & Citak, 2010). Original versions of some of the most widely used EI measures (Bar-On, 1997; Boyatzis, Goleman, & Rhee, 2000; Petrides, 2009) consist of over 100 items, which necessitates lengthy administration. These versions have
great utility in settings where a more comprehensive and in-depth evaluation is needed. However, in contexts such as large testing surveys, they can become unnecessarily time-consuming and a potential waste of resources (Francis & Jackson, 2004).

There is also evidence that longer surveys could leave respondents feeling “over-surveyed” or experiencing “survey fatigue” (Rogelberg, O’Connor, West, Mundwiler & Fisher, 1998; as cited in Stanton et al., 2002), thereby increasing the likelihood of survey non-response, insincere responses (Deniz & Çitak, 2010), and attrition from follow-up surveys (Bergman & Brage, 2008). Additionally, participant responses tend to be quicker/shorter to questions at the end of lengthier surveys, marked by shorter recorded answering times, and a demonstrably more uniform response pattern (Galesik & Bosnjak, 2009). Lengthy surveys could further pose a significant challenge for special populations (such as individuals with disabilities), who may struggle to maintain the physical and cognitive effort needed to complete the entire scale (Curran, Andrykowski, & Studts, 1995). This has resulted in an increasing demand for shorter measurement scales in these research contexts (see Stanton et al., 2002). This is indeed the case with the NLSCY, which used a highly abbreviated version of the EQ-i:S, among other shortened measures (Statistics Canada, 2010b).

Reducing the number of items in a scale can provide tremendous utility and is often the only viable option for including the target construct in population-based research. However, there are limitations to developing shorter measures that need to be addressed. In personality, educational, and organizational behaviour research, the main concern with short-form measures is the “bandwidth-fidelity” dilemma (Cronbach & Gleser, 1965; Ones & Viswesvaran, 1996). This refers to the balance between trying to devise an instrument that is precise, and at the same time adequately samples all aspects of the target construct. “Bandwidth” in this case refers to the
breadth of content coverage, or the amount of information yielded, while “fidelity” refers to the precision of measurement or the reliability of the collected data (see Cheng, Wang, & Ho, 2009). Several short-form scales in large population surveys have been developed with the objective to cover a broad array of attributes with minimal number of items per factor (Rammstedt & Beierlein, 2014). With only few items per factor, aiming for higher bandwidth will produce a relatively heterogeneous set of items that cover most aspects of the target construct, but at the potential cost of fidelity. The following sub-section reviews this issue by considering the most commonly used indicator for reliability: Cronbach’s alpha.

**Cronbach’s Alpha.** One of the most widely reported measures for psychometric reliability (or internal consistency) of self-report scales is Cronbach’s alpha (α) coefficient (Kaplan & Saccuzzo, 2009; Neimi, Carmines, & McIver, 1986). It represents the inter-item covariance of a set of items, where higher values signify higher levels of internal consistency (Raykov & Marcoulides, 2011). For between-groups comparisons, Cronbach’s α values of .70 or greater are typically considered sufficient for good reliability (Bland & Altman, 1997).

Rammstedt and Beierlein (2014) point out that Cronbach’s alpha coefficient may not be the best indicator for reliability of ultra-short scales. They argue that it is dependent on a stringent set of assumptions that involve unidimensionality and uncorrelated errors. As short scales have very few items, it is important to avoid having significant overlap in the items to the point where content breadth (bandwidth) is compromised. It is therefore common to encounter lower Cronbach α values (especially at the factor-level) for short-form measures, as researchers strive to include relatively heterogeneous item sets in order to avoid compromising content validity. The coefficient is also directly dependent on the number of items, which necessitates revising interpretation of the values for short scales (Rammstedt & Beierlein, 2014). For
population-based research, where the goal is typically to assess group differences rather than individual differences, lower levels of Cronbach α’s are acceptable provided that alternative forms of reliabilities are considered (Nunally & Bernstein, 1994; Rammstedt & Beierlein, 2014). Even the proponent of the coefficient himself, Lee J. Cronbach, advised against using it as a sole indicator of reliability: “[The alpha coefficient] is now seen to cover only a small perspective of the range of measurement uses for which reliability information is needed. The alpha coefficient is now seen to fit within a much larger system of reliability analysis” (Cronbach, 2004, p. 416). Some alternative indicators for reliability are McDonald’s Omega (McDonald, 1999) and short-term test-retest reliability, both of which are independent of the number of items on a scale (Rammstedt & Beierlein, 2014).

Having looked at the psychometric issues with ultra-short scales in general, the following text reviews some concrete examples of the bandwidth-fidelity trade-off, as well as providing a case to illustrate solutions to this problem.

In light of the growing need for ultra-short scales, there have been several attempts to generate shorter “mini” versions of a variety of psychological self-report instruments. Rammstedt and Beierlein (2014) list several such scales, including the 12-item short form health survey (SF-12; Ware, Kosinski, & Keller, 1996). Its subscales are represented by 1-2 items each, and all have shown acceptable levels of two-week test-retest reliability correlations (between .63 and .89 for each factor), as well as strong convergence with the parent scale and predictive utility (Ware et al., 1996). Despite being (expectedly) lower than the parent scale, the test-retest correlations are strong enough to indicate excellent reliability (Ware et al., 1996; Rammstedt & Beierlein, 2014). Before reviewing the ultra-short assessments of trait EI, it is useful to consider
some examples from the broader personality literature, specifically the ultra-short measures of the Big Five personality dimensions.

**Ten-Item Personality Inventory (TIPI).** The TIPI (Gosling, Rentfrow, & Swann, 2003) was the first ultra-short measure for the Big Five personality dimensions. The “Big Five” dimensions are: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience (Gosling et al., 2003). This scale is originally adapted from some of most widely used self-report instruments: other short versions of the “Big Five” model of personality, such as the 60-item NEO Five-Factor Inventory (NEO-FFI; Costa & McRae, 1992), and the 50-item International Personality Item Pool – Five Factor Model (IPIP-FFM; Goldberg, 1999). With only 2 items per dimension or factor, the TIPI has very low factor-level Cronbach α’s (<.50 for three out of the five subscales). However, it does show strong 6-week test-retest reliability (between .62 and .77; Gosling et al., 2003). Despite this, it can be argued that scales this short lack the sufficient content and breadth (bandwidth) for a multidimensional instrument. Moreover, having only 2 items per latent factor can lead to estimation problems and model inflexibility in structural equation modelling (see Little, Lindenburger & Nesselroade, 1999; Kline, 2004).

**International Personality Item Pool: Mini (Mini-IPIP).** In light of the issues with the TIPI, the 20-item Mini-IPIP (Donnellan, Oswald, Baird, & Lucas, 2006) was constructed as another ultra-short measure of the Big Five personality traits. The scale has four items per factor, which is also the empirically recommended minimum number of indicators per latent factor for exploratory factor analysis (Farbrigar, Wegener, MacCallum, & Strahan, 1999), and allows for more flexibility in structural equation modelling. Item selection was conducted following established guidelines for short-form development (Marsh, Ellis, Parada, Richards, & Heubeck, 2005), while also striving to balance content breadth with maintaining solid reliability.
Specifically, the Mini-IPIP developers sought to have very low inter-factor correlations to create five orthogonal subscales, which would allow for better multivariate predictions (Donnellan et al., 2006). Using a large sample that completed the 50-item IPIP-FFM, they examined item-factor loadings from an exploratory factor analysis and calculated “discrimination scores” for each item. This refers to the difference between each item’s loading on its main factor from its combined average loading on the remaining factors. Items selected for each factor generally had the highest discrimination score (to create a truly multidimensional measure). To achieve a balanced measure, each of the subscales were assigned an equal number of positively-keyed and negatively-keyed items (2 of each, with the highest discrimination scores), except for the “Imagination/Intellect” (Openness) factor (as the parent scale only had 3 negatively-keyed items for this subscale; Donnellan et al., 2006). Another important consideration was to ensure that the shortened scale had levels of reliability and criterion validity similar to the parent scale (Marsh et al., 2005).

The Mini-IPIP has shown acceptable levels of internal consistency for each factor (Cronbach $\alpha$’s close to or above .70), strong convergence with its 50-item parent scale ($r$’s = .85 - .95; Donnellan et al., 2006; Milojev, Osborne, Greaves, Barlow, & Sibley, 2013), and measurement invariance between males and females in a nationally representative sample of adolescents and young adults (Beldasaro, Shanahan, & Bauer, 2013). The inter-factor correlations ranged in magnitude from .02 to .40 (consistent with the developers’ objectives) and the scale showed very strong 6- to 9-month stability (test-retest correlations between .68 and .82 for each factor; Donnellan et al., 2006). As one of the most widely used personality scales, this mini version demonstrates that it is plausible to shorten scales for population studies while
retaining adequate psychometric integrity – as long as the relevant psychometric guidelines are followed (Donnellan et al., 2006).

**Ten-item Brief Emotional Intelligence Scale (BEIS-10).** One example of an ultra-short trait EI measure is the BEIS-10 (Davies, Lane, Devonport, & Scott, 2010). This scale was adapted from the 33-item Emotional Intelligence Scale (EIS; Schutte et al., 1998), derived from Salovey and Mayer’s (1990) definition of EI. It assesses trait EI on the following five dimensions: Utilization of Emotions, Appraisal of Own Emotions, Regulation of Emotions, Regulation of Own Emotions, Appraisal of Others’ Emotions, and Regulation of Others’ Emotions. Two items represent each factor, chosen via a series of analyses. In the first analysis, 17 items were eliminated due to low content validity (or assessing more than one dimension of EI) – based on expert opinion. Second, the remaining 16 items were subjected to a confirmatory factor analysis (CFA) with the intended five-factor structure. The two items on each factor with the higher factor loading were taken to give a 10-item ultra-short scale and the model showed very good fit (CFI = .97, NNFI = .94, RMSEA = .06; Davies et al., 2010) according to the established criteria (Hu & Bentler, 1999). Another study replicated the 5-factor structure with acceptable fit, and reported relatively high factor-level Cronbach alphas (between .60 and .89; Balakrishnan & Saklofske, 2015).

Despite high structural and internal consistency, the BEIS-10 factors have shown only moderate test-retest reliabilities at two weeks (between .35 and .48; Davies et al., 2010) and even lower at one month (.19 to .46; non-significant for two out of the five factors; Balakrishnan & Saklofske, 2015). Moreover, the validity of the instrument also appeared to be compromised. Specifically, its subscales showed very low-to-moderate correlations with the Big Five personality variables, and there was no significant correlation between the Big Five and the total
BEIS score (Balakrishnan & Saklofske, 2015). This not only highlights issues with long-term temporal stability, but also the sacrifice of bandwidth in order to attain high fidelity with an ultra-short scale. This model of trait EI is also theoretically derived from an ability-based model, which may also have been a contributing factor to the low validity coefficients (Balakrishnan & Saklofske, 2015).

**Emotional Quotient Inventory – Mini (EQ-i: Mini).** Another example of an ultra-short trait EI measure is the 20-item Mini version of the 51-item EQ-i:S (Bar-On, 2002; Parker et al., 2011). The EQ-i: Mini was developed specifically for use in the NLSCY (Statistics Canada, 2010b). Both the EQ-i:S and the EQ-i: Mini are based on Bar-On’s (1997) theoretical model of trait EI, which defines it as “an array of non-cognitive capabilities, competencies, and skills that influence one’s ability to succeed in coping with environmental demands and pressures” (Bar-On, 1997, p. 14). This model of trait EI encompasses the following four domains: Interpersonal, Intrapersonal, Stress Management, and Adaptability skills. The Interpersonal domain refers to social competencies such as understanding and empathizing with others’ emotions, quality of interpersonal relationships, and general pro-social dispositions. The Intrapersonal dimension encompasses knowledge and understanding of one’s own emotional states, and being able to express these emotions constructively, and without difficulty. The third dimension, Stress Management, refers to competencies like equanimity in the face of negative emotion-inducing events, as well as impulse control. The last dimension, Adaptability, involves using one’s emotions resourcefully to facilitate reasoning and problem-solving (for example, in response to life changes). Sixteen of the 20 items in the EQ-i: Mini correspond to each of these dimensions (four items per dimension). The remaining four items are part of a qualifier “General Mood scale,” assessing the participants’ positive or negative disposition (Statistics Canada, 2010a).
Items for the EQ-i: Mini were chosen based on similar procedures for shortening the EQ-i:S from the original EQ-i (see Bar-On, 2002; Parker et al., 2011). Specifically, both forms were designed to match the higher-order measurement structure of the parent scale with four moderately correlated factors, while striving for optimal balance between bandwidth and fidelity. Accordingly, items for each factor were selected on the basis of item-total correlations (moderate to strong) and representative, non-redundant content coverage. Based on NLSCY documentation, factor-level Cronbach α’s for the EQ-i: Mini varied between .59 and .71 for the target emerging adult demographic (Statistics Canada, 2010a). Beyond these preliminary analyses, however, the psychometric properties of the EQ-i: Mini have not been systematically examined, necessitating the need to do so in the present study.

As for the EQ-i:S, its multidimensional structure has been validated in large adult samples with adequate internal consistencies at the factor level (Cronbach’s α’s > .70; Parker et al., 2011) and strong correlations with the full-length EQ-i (r’s = .73 - .93; Bar-On, 2002). The EQ-i:S has also shown incremental validity beyond the Big Five personality traits (Di Fabio & Palazzeschi, 2007; Di Fabio & Saklofske, 2014; Parker et al., 2011), and predictive utility in post-secondary settings (Parker et al., 2004, Parker, Saklofske, Wood, & Collin, 2009; Austin, Saklofske & Mastoras, 2010; Saklofske, Austin, Mastoras, Beaton & Osborne, 2012) and career decision-making (Di Fabio & Kenny, 2012; Di Fabio & Saklofske, 2014).

**Longitudinal Measurement Invariance**

An assumption of any type of longitudinal analysis involving repeated measurements is that there is no change in the fundamental nature of the construct or its measurement structure (Chan, 1998; Bashkov & Finney, 2013; Golembiewksi, Billingsley, & Yeager, 1976).
Therefore, before drawing any substantive conclusions on the longitudinal stability of trait EI (as measured in the NLSCY), or its predictive utility for PSE pursuit, it is important to establish the longitudinal measurement invariance (LMI) of the EQ-i: Mini. Specifically, whether the measure assesses the same four underlying trait EI factors from time 1 (age 20-21) to time 2 (age 24-25).

One technique to assess factorial LMI is longitudinal confirmatory factor analysis (LCFA; Chan, 1998; Vandenberg & Lance, 2000). The first step in this process is to ensure that the factor structure of the construct (in this case, trait EI) is replicated from one time point to another. This is referred to as configural invariance, a measure of how stable the number of factors and factor-loading patterns are between time-points (Chan, 1998; Byrne, 2006). Keefer et al. (2013) conducted LCFA of the NLSCY trait EI scale for a pre-adult demographic (EQ-i:YV-Brief), confirming a stable four-factor structure from late childhood to early adolescence. The same four-factor structure has been confirmed for both men and women in a young adult sample using the EQ-i:S (Parker et al., 2011). Based on this evidence, it is reasonable to expect the EQ-i: Mini to show strong configural invariance between ages 20-21 and 24-25.

The next step is to establish longitudinal metric invariance, which refers to the equivalent magnitudes of item-factor loadings across repeated administrations of the scale (Vandenberg & Lance, 2000). It is important that all items per latent factor relate to that same factor in the same way at different time points (Vandenberg & Lance, 2000). A lack of metric invariance would imply that items do not mean the same thing at different time points, hindering interpretations of the factors and their relationships over time. Support for configural and metric invariance is the minimum requirement for studying longitudinal construct stability and validity (see Keefer et al., 2013). Based on Keefer et al.’s (2013) finding of full metric invariance of the EQ-i:YV-Brief in
older adolescents (ages 14-15, and 16-17), I expect full support for metric invariance of the EQ-i: Mini. If at least 2 items per factor remain stable in this analysis, the scale can be deemed as having partial metric invariance, and the remaining item non-equivalences can be controlled for when analyzing the relationships of the factors over time (Byrne, Shavelson, & Muthén, 1989).

It should be noted that there are even stricter levels of LMI that can be considered (i.e., scalar and residual invariance), which reflect equivalent calibration and precision of measurement over repeated administrations (Vandenberg & Lance, 2000). These types of non-invariance are of greater concern for children and young adolescents, whose responses tend to be less consistent and more prone to systematic response styles, such as acquiescence and social desirability, compared to those of older adolescents and adults (de Leew, Borgers, & Smits, 2004; Keefer et al., 2013). Among adults, these issues are more common in older aged individuals (Vigil-Colet, Morales-Vives, & Lorenzo-Seva, 2013). For young and middle-aged adults, cross-sectional analyses of other trait EI measures have supported strict levels of measurement invariance (Chapman & Hayslip, 2006; Kong, 2017). Therefore, stricter levels of LMI were not considered in this study.

The Present Study

The main goals of the current study were two-fold: first, to establish the psychometric integrity and factorial LMI of the EQ-i: Mini; secondly, to examine the rank-order stability, mean-level change, and predictive utility of trait EI for PSE pursuit over a four-year period of emerging adulthood (age 20-21 to 24-25). To accomplish this, we analysed three biennial waves of nationally-representative data from the Canadian National Longitudinal Survey of Children and Youth (NLSCY; Statistics Canada, 2010a).
The NLSCY dataset includes measures of trait EI for 20-21 year-olds and 24-25 year-olds. Education data for that sample was available concurrently, and prospectively at age 22-23 and 24-25. Consistent with the research on trait EI and career decision-making (Brown et al., 2003), I expected trait EI to positively predict PSE participation in emerging adulthood. In line with previous research on trait EI in PSE contexts (e.g., Parker et al., 2004; Parker et al., 2011), gender was included as a potential moderator in these analyses.

Methods

Data Source

This study utilized a stratified, nationally representative, multi-wave dataset from Statistics Canada called the National Longitudinal Survey of Children and Youth (NLSCY). The survey was administered to children aged 0 to 11 years old at the start (in 1994), with follow-ups conducted every two years from then until 2008, producing a total of 8 cycles. The survey assessed a variety of constructs from demographic information to physical and mental health, educational and vocational outcomes, and socioemotional competencies from early childhood into young adulthood (Statistics Canada, 2010a).

The original Cycle 1 cohort included almost 23,000 children selected to represent the population of all Canadian children aged 0 to 11 years. Exclusionary criteria included children living in Northwestern territories, or having parents that are either institutionalized, living in First Nations Reserves and Crown Lands, and/or children whose parents were full-time members of the Canadian Armed Forces (representing 2% of the population). Budget restrictions and the need to reduce response burden on households with more than 2 children reduced the sample size to 16,000 in Cycle 2. Close to 10,000 of that sample participated in the final cycle of the survey (Cycle 8).
Study Sample

For this study we only used data from Cycle 6 (2004), Cycle 7 (2006) and Cycle 8 (2008) of the multi-wave study, as these were the only cycles containing our target age group (early adulthood) along with the relevant variables (trait EI and PSE pursuit). We specifically used a subsample of approximately 1400 Canadian youth (50% males) aged 20-21 who had completed the same measure of trait EI (EQ-i: Mini) at Cycle 6, and again at Cycle 8 when they were 24-25 years old. The EQ-i: Mini data was not available at any other Cycle for this cohort. PSE information for this cohort was available at Cycles 6, 7, and 8. Participants were surveyed via face-to-face or telephone interview conducted by a trained Statistics Canada interviewer using computer-assisted interviewing (Statistics Canada, 2010b). The NLSCY data User Guide contains more information on the sampling design and data collection procedure (Statistics Canada, 2010a).

Measures

Trait EI. Trait EI was assessed using a shortened, 20-item version of the EQ-i: Short (Bar-On, 2002) called the EQ-i: Mini. For the present sample, this measure was only administered to participants at Cycle 6 (age 20-21) and Cycle 8 (age 24-25). The EQ-i: Mini consists of self-referential statements rated by participants on a 5-point Likert scale (from 1 = “Very seldom true or not true” to 5 = “Very often true or true”). Higher scores imply higher levels of trait EI. Of the 20 items, 16 tap into dimensions of interest (Interpersonal, Intrapersonal, Stress Management and Adaptability) while the other 4 are screeners for participants’ General Mood. As General Mood is not part of the trait EI construct, it was not considered in the present study. The aforementioned trait EI dimensions are represented by four items each. The EQ-i: Mini items (sorted by dimension) are listed in Appendix A.
**PSE participation.** A variable in the NLSCY dataset coded participants’ self-reported educational status at each Cycle by the following categories: 01 = School leaver; 02 = In high school; 03 = Completed high school but not in post-secondary; 04 = In post-secondary; 05 = Completed post-secondary; 06-99 = Current education status unknown.

For the present study, this variable was re-coded to form a dichotomous variable with the following groups: No PSE (categories 01, 02, and 03) and Some PSE (categories 04 and 05), respective to that specific time-point. Cases with unknown education status (06 – 99) were excluded from the analyses.

To examine change in PSE status across time-points, the education variables were re-coded as a three-level variable: No PSE at all (in either time-point), New PSE (for those who had no PSE at a previous time-point but acquired some PSE by a second time-point) and Previous PSE (for those who had some PSE at a previous time-point).

**Statistical Procedures**

**LMI.** Analysis of LMI was carried out similar to the first and second stages of Keefer et al.’s (2013) analysis of the EQ-i: YV-Brief. To confirm the four-factor structure of the EQ-i: Mini, preliminary cross-sectional CFAs were conducted on the EQ-i: Mini data from Cycles 6 and 8, independently. Model fit was evaluated based on the following goodness-of-fit indices: the comparative fit index (CFI), the root-mean-square error of approximation (RMSEA), and the standardized root-mean-square residual (SRMR). Accepting the fact that there are no “objective” standards for interpreting these (Kline, 2011), the present study utilized the following “consensus-based” graded fit criteria: CFI ≥ .90, RMSEA ≤ .08, and SRMR ≤ .10 for “acceptable fit”; CFI ≥ .95, RMSEA ≤ .05, and SRMR ≤ .08 for “good fit” (Hu & Bentler, 1999; Keefer et al., 2013). In the case of model misfit, I examined standardized parameter estimates (expected
loadings $\geq .30$; Brown, 2006), standardized residuals, and modification indices obtained from the CFA analyses. If the four-factor structure showed acceptable fit in each cycle, this would also provide evidence of configural validity.

Analysis of LMI proceeded with a hierarchical series of LCFA models separately for each individual EQ-i: Mini subscale using data from both Cycles 6 and 8. Each model had 2 latent factors representing the trait EI dimensions at ages 20-21 and 24-25, indexed by 4 items belonging to the subscale. Factors were correlated for rank-order stability, and the item residuals of the same items were correlated over time to account for their dependence over repeated time points. First, a baseline LCFA model was estimated with no equality constraints on any parameter. Model fit for the baseline model was based on the same criteria as the test of the overall CFA model above. If the baseline model showed acceptable fit, a second, more restrictive, LCFA model was estimated and compared to the previous baseline model in order to assess metric invariance. In this case, same-item factor loadings were constrained to be equal between Cycles 6 and 8. The fit of the more restrictive model was assessed via change in the CFI index ($\Delta$CFI) from the baseline model to the restrictive model. Changes of greater than .01 were interpreted to be violating equivalent fit across the models (Chen, 2007; Cheung & Rensvold, 2002). Similar to the overall CFAs, if large $\Delta$CFI’s were obtained I examined standardized parameter estimates and modification indices to determine the source of non-invariance. Partial metric invariance was estimated and tested no more than 2 out of 4 parameters per factor were the source of non-invariance.

All CFA and LCFA models were tested with EQS 6.1 for Windows structural equation modeling software (Bentler, 2005; Byrne, 2006) using proportionally weighted correlation matrices as the input. Maximum-likelihood estimation procedure was utilized for all models.
**Stability and change in trait EI.** A within-subjects ANOVA was conducted for EQ-i: Mini subscale scores to assess mean-level change from age 20-21 to 24-25. Meanwhile, assessing the stability of the construct involved computing rank-order stability correlation coefficients for each subscale score, as well as deriving latent factor correlations from the LCFA analyses. The latent factor correlations are standardized autocorrelations, which exclude measurement error and provide an indication of the true relationships between latent factors (Chan, 1998). In order to evaluate whether partial metric invariance biased the rank-order stability coefficients, latent factor correlations from the partial metric models were compared those from the full metric and baseline (unconstrained) models. Similar to Keefer et al.’s (2013) rationale for determining practical significance for non-invariance, full and partial invariance models were estimated, assuming non-equivalences to be trivial.

**Trait EI and PSE pursuit.** A series of between-groups (for concurrent) and within-subjects (for prospective) Multivariate Analyses of Variance (MANOVAs) were conducted with the PSE groups (No PSE and Some PSE for PSE status; No PSE, New PSE, and Previous PSE for change in PSE status) as the grouping independent variable and the EQ-i: Mini subscales (Interpersonal, Intrapersonal, Stress Management, and Adaptability) as dependent variables. Gender was also included as a second grouping variable in the analyses to assess for potential moderating effects. These MANOVAs were conducted using the latest version of SPSS software.

**Significance criteria.** The results presented below are all weighted by longitudinal sampling weights (pre-generated by Statistics Canada), which are adjusted for longitudinal survey-wide nonresponse and post-stratified to known frequencies by age, sex, and province to reflect the original survey population (Statistics Canada, 2010a). This allows for making population-based inferences from the results. However, the weighting procedure inflates the
reported sample sizes (to the hundreds of thousands) to a point where orthodox statistical significance testing \( (p < .05) \) is not applicable\(^1\). I therefore interpreted the results based on standardized effect size measures such as the Eta statistic \( (\eta) \); converted from Partial Eta-Squared values in SPSS) for mean differences, Pearson’s correlation coefficient \( (r) \) for correlations, and Cramer’s V for cross-tabulations of frequencies. These values provide information on the magnitude of the effect, and are independent of the sample size (Ferguson, 2009; Gignac & Szodorai, 2016). There is no “objective” indicator for the extent of difference required to be deemed “non-trivial.” Therefore, I followed the guideline that effect size benchmarks for “practically significant” effects should be determined based on evidence from the specific research context (Hill, Bloom, Black, & Lipsey, 2008; Keefer et al., 2013). My interpretations relied on empirically derived benchmarks used in previous studies on socioemotional competencies (Keefer et al., 2013; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Specifically, effect sizes of \( \geq .10 \) were considered to be non-trivial, or practically significant.

\(^1\) Due to privacy restrictions from Statistics Canada on the release of weighted and unweighted sample sizes, the weighted subgroup sample sizes are not reported in the results. The unweighted total sample size is approximately \( N = 1400 \).
Results

Psychometrics of the EQ-i: Mini

Missing data. The extent of partial item non-response, where the NLSCY respondents missed one or more EQ-i: Mini items, was negligible: 1% at Cycle 6 and 2% at Cycle 8. The majority of partial non-respondents missed only 1 or 2 items (90% in Cycle 6 and 95% in Cycle 8). For these cases, the missing EQ-i: Mini item(s) were imputed using mean replacement. The small minority of cases who missed 3 or more EQ-i: Mini items were excluded from the analyses.

Of the total study sample who had valid EQ-i: Mini data at age 20-21 (Cycle 6), 71% had valid EQ-i: Mini data at age 24-25 (Cycle 8; after missing-item imputation). To explore potential biases introduced by the exclusion of respondents who had missing Cycle 8 EQ-i: Mini data, I compared them to respondents with valid EQ-i: Mini data for both cycles on Cycle 6 EQ-i: Mini subscale scores and proportions of men and women. Missingness was not significantly associated with gender (Cramer’s $V = .003$) or Cycle 6 EQ-i: Mini scores (Wilk’s lambda = .99, Eta = .08).

Cross-sectional CFAs. The four-factor structure of the EQ-i: Mini at age 20-21 showed acceptable or good fit, based on two fit indices: RMSEA (90% CI) = .062 (.056, .067) and SRMR = .053. However, the CFI value of .871 indicated marginal fit. As recommended by Brown (2006), the standardized parameter estimates for each item were ≥ .30 for every item except for ADAPT1 (item 4: “You try to see things as they are, without fantasizing or daydreaming”) in the adaptability dimension (see Table 1). Examination of modification indices revealed that the item STRMG4 (item 18: “You have strong impulses that are hard to control”) was cross-loading onto the Adaptability factor. The model specifically underestimated its
relationship with ADAPT4 (item 19: “When trying to solve a problem, you look at each possibility, and then decide on the best way”). Both of these are related to patience and self-control, either due to impulses (STRMG4) or a general problem (ADAPT4). The items are also located adjacent in the questionnaire, which can raise concerns about item-order effects (similar to those observed in Keefer et al., 2013). When viewed in combination with the poor loading of the ADAPT1 item, the results suggest partial rather than full support for configural structure of the adaptability dimension in Cycle 6.

The four-factor structure of the EQ-i: Mini at age 24-25 showed acceptable or good fit, based on all three fit indices: RMSEA (90% CI) = .055 (.049, .060), SRMR = .047 and CFI = .901. All standardized parameter estimates for factor loadings were moderate to strong, ranging from .40 to .76 (see Table 1). Examination of standardized residuals revealed no substantial sources of misfit in this model.

Internal consistency. For each dimension of the EQ-i: Mini, average item reliabilities ($R^2$) and mean inter-item correlations (MICs) across both cycles were moderate: INTER ($R^2 = .34; \text{MIC} = .34$), INTRA ($R^2 = .28; \text{MIC} = .33$), STRMG ($R^2 = .35, \text{MIC} = .33$), and ADAPT ($R^2 = .35; \text{MIC} = .31$). The EQ-i: Mini also had good Cronbach’s alpha coefficients for the total scores at each time-point (.76 at Cycle 6 and .77 at Cycle 8). However, as expected for the ultra-short scale, factor-level Cronbach’s alphas were mostly below .70 (.57 to .64 at Cycle 6, and .56 to .70 at Cycle 8).

Inter-factor correlations. Consistent with the EQ-i:S (Parker et al., 2011), the INTER, INTRA, STRMG and ADAPT dimensions on the EQ-i: Mini showed moderate inter-factor
correlations at each cycle (average $r$’s = .46 at Cycle 6 and .45 at Cycle 8). The INTER and ADAPT factors had the strongest inter-factor relationship at each cycle (.73 at Cycle 6 and .61 at Cycle 8).

**Longitudinal Measurement Invariance**

The baseline LCFA models for each EQ-i: Mini subscale indicated acceptable or good fit to the data: CFI ≥ .940, RMSEA (90% CI) ≤ .066 (.053, .080), SRMR ≤ .045. This allowed for testing of metric invariance. As demonstrated in Table 2, the Interpersonal and Stress Management subscales achieved full metric invariance across the two cycles, indicating that the weighting of their items on their respective factors remained invariant over 4 years. Full metric invariance was not supported for the Intrapersonal and Adaptability subscales, with one item on each subscale performing differentially over time. Specifically, ADAPT1 (or item 4: “You try to see things as they are, without fantasizing or daydreaming”) was more strongly related to the Adaptability dimension at age 24-25 than at age 20-21. In addition, INTRA4 (item 17: “It’s hard for you to make decisions on your own”) was more strongly related to the intrapersonal factor at age 20-21 than at age 24-25. Partial metric invariance models, allowing these two loadings to vary across different time points, achieved acceptable fit (see Table 2). The practical significance of partial non-invariance is evaluated in the next section.

**Stability and Change in Trait EI**

**Rank-order stability.** Table 3 presents the four-year temporal stability coefficients for each EQ-i: Mini subscale, including the relationships among latent factors derived from each LCFA model. All stability coefficients were moderate (.37 to .47 for subscale scores, and .46 to 60 for latent factors), suggesting that the rank-ordering of individuals on the EQ-i: Mini subscale scores changed somewhat from age 20-21 to age 24-25. The coefficients for the partially non-
invariant models were not substantially different from the full metric, or baseline models of the INTRA and ADAPT dimensions (maximum $\Delta r = .02$). The non-equivalent factor loadings observed here therefore did not bias (had a trivial impact on) the rank-order stability coefficients.

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Mean-level change. A repeated-measures (age 20-21 vs. age 24-25) ANOVA was conducted for each EQ-i: Mini subscale, with gender (men vs. women) included as the grouping factor. Eta values from these ANOVAs are presented in Table 4, and mean scores are depicted in Figure 1. Overall, mean levels of Adaptability and Interpersonal skills significantly increased from age 20-21 to 24-25, for both men and women. Women scored higher than men in Interpersonal skills at both time points, with no significant gender differences on the other three EQ-i: Mini subscales.

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Trait EI and PSE Pursuit

Concurrent associations with PSE status at age 20-21. Of the total study sample who had valid EQ-i: Mini data at Cycle 6, 66% reported at least some PSE experience at Cycle 6, 22% reported no PSE experience at Cycle 6, and the remaining 12% had unknown or missing Cycle 6 education status and were excluded from the analyses. Respondents who had unknown/missing versus valid Cycle 6 education data were compared on their Cycle 6 EQ-i: Mini subscale scores and proportions of men and women. Missingness was not significantly
associated with gender (Cramer’s V = .06) or Cycle 6 EQ-i: Mini scores (Wilk’s lambda = .99, Eta = .08).

A 2 x 2 factorial MANOVA was conducted on Cycle 6 (age 20-21) EQ-i: Mini subscale scores, using Cycle 6 PSE Status (some PSE vs. no PSE) and gender (men vs. women) as the grouping factors. There was a significant multivariate effect of PSE Status (Wilk’s lambda = .96, Eta = .19), but the moderating effect of gender was only marginal (Wilk’s lambda = .99, Eta = .09). Eta values from follow-up univariate ANOVAs are presented in Table 5. Individuals (both men and women) who had at least some PSE experience by age 20-21 had significantly higher concurrent scores on all four EQ-i: Mini subscales than individuals who had no PSE experience (see Figure 2).

Prospective two-year associations with PSE status at age 22-23. Of the total study sample who had valid EQ-i: Mini data at Cycle 6, 22% did not return for Cycle 7 (age 22-23). Of the returning Cycle 7 sample, 73% reported at least some PSE experience at Cycle 7, 14% reported no PSE experience at Cycle 7, and the remaining 13% had unknown or missing Cycle 7 education status and were excluded from the analyses. Respondents who had unknown/missing versus valid Cycle 7 education data were compared on their Cycle 6 EQ-i: Mini subscale scores, proportions of men and women, and Cycle 6 PSE Status (some vs. none). Missingness was not significantly associated with gender (Cramer’s V = .09) or Cycle 6 EQ-i: Mini scores (Wilk’s lambda = 1.0, Eta = .06). However, missingness was significantly associated with Cycle 6 PSE Status (Cramer’s V = .18); respondents who reported no PSE at Cycle 6 were three times more
likely (18%) to have missing Cycle 7 PSE data than respondents who reported some PSE at Cycle 6 (6%).

A 2 x 2 MANOVA was conducted on Cycle 6 (age 20-21) EQ-i: Mini subscale scores, using Cycle 7 (age 22-23) PSE Status (Some PSE vs. No PSE) and gender (men vs. women) as the grouping factors. There was a significant multivariate effect of PSE Status (Wilk’s lambda = .96, Eta = .19), as well as a significant moderation effect of gender (Wilk’s lambda = .97, Eta = .18). Eta values from follow-up univariate ANOVAs are presented in Table 6. Individuals (both men and women) who had at least some PSE experience at age 22-23 had significantly higher Stress Management scores at age 20-21 than individuals who had no PSE experience at age 22-23. In addition, men who had at least some PSE experience at age 22-23 had significantly higher Interpersonal, Intrapersonal, and Adaptability scores at age 20-21 than men who had no PSE experience at age 22-23; for women, these effects were non-significant.

Predicting change in PSE status from age 20-21 to 22-23. Of the respondents who had reported Cycle 7 education data, 76% reported at least some PSE experience previously in Cycle 6, 8% reported no PSE experience in either Cycle 6 or Cycle 7, and 8% reported no PSE experience at Cycle 6 but had newly acquired some PSE experience by Cycle 7.

A 3 x 2 factorial MANOVA was conducted on Cycle 6 (age 20-21) EQ-i: Mini subscale scores, using Cycle 7 (age 22-23) PSE Status Change (Previous PSE vs. New PSE vs. No PSE) and gender (men vs. women) as the grouping factors.

There was a significant multivariate effect of PSE Status Change (Wilk’s lambda = .95, Eta = .16), as well as a significant moderation effect of gender (Wilk’s lambda = .97, Eta = .13).
Eta values from follow-up univariate ANOVAs are presented in Table 7. Among those men who had no PSE experience at age 20-21, higher Interpersonal and Intrapersonal scores at age 20-21 differentiated the individuals who acquired new PSE experience by age 22-23 from individuals who did not (see Figure 4). For women, none of the EQ-i: Mini subscales at age 20-21 predicted new acquisition of PSE experience by age 22-23.

Prospective four-year associations with PSE status at age 24-25. Of the total study sample who had valid EQ-i: Mini data at Cycle 6, 29% did not return for Cycle 8. Of the returning Cycle 8 sample, 77% reported at least some PSE experience at Cycle 8, 12% reported no PSE experience at Cycle 8, and the remaining 11% had unknown or missing Cycle 8 education status and were excluded from the analyses. Respondents who had unknown/missing versus valid Cycle 8 education data were compared on their Cycle 8 EQ-i: Mini subscale scores, proportions of men and women, and Cycle 7 PSE Status (some vs. none). Missingness was not significantly associated with gender (Cramer’s V = .09) or Cycle 6 EQi-Mini scores (Wilk’s lambda = 1.0, Eta = .05). However, missingness was significantly associated with Cycle 7 PSE Status (Cramer’s V = .11); respondents who reported no PSE at Cycle 6 were three times more likely (11%) to have missing Cycle 8 PSE data than respondents who reported some PSE at Cycle 7 (4%).

A 2 x 2 factorial MANOVA was conducted on Cycle 6 (age 20-21) EQ-i: Mini subscale scores, using Cycle 8 (age 22-23) PSE Status (some vs. none) and gender (men vs. women) as the grouping factors. There was a significant multivariate effect of PSE Status (Wilk’s lambda = .95, Eta = .23), as well as a significant moderation effect of gender (Wilk’s lambda = .97, Eta =
Eta values from follow-up univariate ANOVAs are presented in Table 8. As shown in Figure 5, individuals (both men and women) who had at least some PSE experience at age 24-25 had significantly higher Adaptability scores at age 20-21 than individuals who had no PSE experience at age 24-25. In addition, men who had at least some PSE experience at age 24-25 had significantly higher Interpersonal, Intrapersonal, and Stress Management scores at age 20-21 than men who had no PSE experience at age 24-25; these effects were non-significant for women.

Predicting change in PSE status from age 22-23 to 24-25. Of the respondents who had reported Cycle 8 education data, 86% reported at least some PSE experience previously in Cycle 7, 11% reported no PSE experience in either Cycle 7 or Cycle 8, and 3% reported no PSE experience at Cycle 7 but had newly acquired some PSE experience by Cycle 8. Given the very small percentage of individuals in the last category (corresponding unweighted \( n < 30 \)), the following results should be treated as preliminary.

A 3 x 2 factorial MANOVA was conducted on Cycle 6 EQ-i: Mini subscale scores, using Cycle 8 PSE Status Change (Previous vs. New vs. None) and gender (men vs. women) as the grouping factors. This omnibus test revealed a significant multivariate effect of PSE Status Change (Wilk’s lambda = .95, Eta = .16), as well as a significant moderation effect of gender (Wilk’s lambda = .93, Eta = .19).

Eta values from follow-up univariate ANOVAs are presented in Table 9. The results differed for men and women (see Figure 6). Among those men who had no PSE experience at age 22-23, higher Intrapersonal and Stress Management scores, but lower Adaptability scores at
age 20-21 differentiated the men who acquired new PSE experience by age 24-25 from the men who did not. Among those women who had no PSE experience at age 22-23, higher Intrapersonal and Adaptability scores, but lower Stress Management scores at age 20-21 differentiated the women who acquired new PSE experience by age 24-25 from the women who did not.

Concurrent associations with PSE status at age 24-25. A 2 x 2 MANOVA was conducted on Cycle 8 (age 24-25) EQ-i: Mini subscale scores, using Cycle 8 (age 24-25) PSE Status (Some PSE vs. No PSE) and gender (men vs. women) as the grouping factors. This omnibus test revealed a significant multivariate effect of PSE Status (Wilk’s lambda = .96, Eta = .20), as well as a significant moderation effect of gender (Wilk’s lambda = .98, Eta = .13).

Eta values from follow-up univariate ANOVAs are presented in Table 10. As shown in Figure 7, individuals (both men and women) who had at least some PSE experience at age 24-25 had significantly higher concurrent Interpersonal and Stress Management scores than individuals who had no PSE experience at age 24-25. In addition, men who had at least some PSE experience at age 24-25 had significantly higher concurrent Adaptability and Intrapersonal scores than men who had no PSE experience at age 24-25; these effects were non-significant for women.
Discussion

Trait EI and PSE Pursuit

This study was the first to examine the impact of trait EI-related socioemotional competencies on PSE participation using a unique, nationally representative sample of Canadian young adults. Higher trait EI scores (as measured by the EQ-i: Mini) at age 20-21 predicted greater PSE participation both concurrently, as well as prospectively at age 22-23 and age 24-25. All four trait EI dimensions were positively associated with PSE participation for both genders concurrently at age 20-21. Longitudinally, all four trait EI dimensions (at age 20-21) were positively associated with PSE participation in men at each time point. Meanwhile, women’s PSE pursuit at age 22-23 and 24-25 was only associated with their age 20-21 Stress Management and Adaptability competencies. Concurrent PSE status at age 24-25 was positively predicted by the Interpersonal and Stress Management dimensions for both genders, while the Intrapersonal domain only predicted PSE pursuit for men. Similarly, Adaptability skills at age 24-25 only predicted PSE pursuit for women at the same age. Most importantly, trait EI at age 20-21 was associated with acquisition of new PSE over-time. Among men with no PSE at age 20-21, those with higher Interpersonal dimension scores were more likely to pursue PSE either 2 or 4 years later. Acquiring new PSE was also predicted by higher Intrapersonal and Stress Management competencies for men, and higher Intrapersonal and Adaptability scores for women. With these findings it is possible to conclude that higher trait EI levels have a non-trivial prospective utility for predicting PSE pursuit among emerging adults. It is also important to note that the rate of PSE participation in this emerging adult sample was high to begin with: over 60% of the sample reported having some PSE at age 20-21, increasing to over 70% in subsequent cycles. Although these statistics are a decade old (2004-2008), they are consistent with more recent reports, where
Canada has the highest proportion of post-secondary graduates (53%) among all OECD countries (OECD, 2016).

Although most of the reported effect sizes were relatively small, close to the .10 benchmark (Gignac & Szodorai, 2016), this is still non-trivial when viewed in light of population-based research and the practical significance of the outcome variable. For example, Mikolajczak et al. (2015) studied the influence of trait EI on physical health variables (e.g. doctor visits, days spent in hospital, and reimbursed drugs) in a nationally-representative European sample. Similar to the present study, they also found small but meaningful effects (< .20) when assessing the relationship between high EI levels and better physical health outcomes. In arguing for the practical significance of their finding, they bring up the fact that the “population with below-average socioemotional competencies cost nearly 2 billion more to the Belgian social security, than the population with above-average [trait EI]” (Mikolajczak et al., 2015; p. 12).

Another economic impact study showed that the implementation of socioemotional programs in schools estimates an economic return of $11 per dollar invested in these programs (Belfield et al., 2015). This is further supported by Durlak et al’s (2011) meta-analysis indicating that while the implementation of socioemotional learning programs had relatively small mean effect on academic performance ($r = .13$), it translated to an overall 11 percentile point increase gain in grades. Therefore, the present study’s relatively small magnitudes of effect for trait EI dimensions on PSE pursuit are hence not at all trivial and, when viewed from a population-based lens, can carry significant economic implications.

These findings also add to the body of research linking higher trait EI with success in PSE settings. Students with higher trait EI levels at the beginning of university are more likely to
persist beyond first year (Parker et al., 2006), have better GPAs (Parker et al., 2004; 2005a), suffer from less anxiety and use better coping strategies (Austin et al., 2010; Saklofske et al., 2012; Summerfeldt et al., 2006), and are more likely to graduate (Keefer et al., 2012). Trait EI therefore serves not only as a protective factor for students in PSE, but also as a moderator for deciding to pursue this important life goal in the first place.

Similarly, the literature on trait EI and career decision-making signifies the importance of these socioemotional competencies in being able to handle the overwhelming nuances of important life decisions (Avsec, 2012; Brown et al., 2003; Di Fabio & Kenny, 2012). A similar mechanism could be influencing the decision to pursue higher education. In today’s unpredictable economic times, career decisions require a firmer grasp of nuance, as well as a reasonable level of emotional awareness and stability (Krieshok, Black, & McKay, 2009). Higher levels of trait EI entail factors such as considering all possibilities before making a decision, and being aware of one’s own emotional states (Bar-On, 1997; 2002). These skills have demonstrated to be effective mediators for combatting indecisiveness, lack of information on future opportunities, and productive use of information to make a career decision (Di Fabio & Palazzeschi, 2008; 2009; Di Fabio, Palazzeschi, & Bar-On, 2012; Di Fabio & Saklofske, 2014). Trait EI is also positively associated with more adaptive decision-making styles (Di Fabio & Blustein, 2010; Di Fabio & Palazzeschi, 2008). Indeed, attaining a college or university degree is undoubtedly important for better vocational prospects (Statistics Canada, 2017; Toutkoushian & Paulsen, 2016; Uppal, 2017) and would therefore be a crucial factor in career decisions. It is therefore very plausible to hypothesize that if trait EI-related competencies influence career decision-making, they can also influence the decision to pursue PSE via a similar mechanism.
Future research on trait EI and PSE pursuit should consider including decision-making variables as mediating factors.

**Gender Differences**

At both ages 20-21 and 24-25, women scored significantly higher than men in the Interpersonal dimension. This is consistent with gender differences observed in each of the parent EQ-i scales (Bar-On, 1997; Bar-On, 2002; Parker et al., 2011) and the EQ-i: YV (Bar-On & Parker, 2000). However, there were no observed gender differences in mean levels of any other dimension for the EQ-i: Mini. This is notable and surprising for the Adaptability subscale, on which males tend to out-perform females (Bar-On, 1997; 2002; Bar-On & Parker, 2000; Keefer et al., 2013). This could be attributed to the limited number of items per factor, which likely do not capture adequate domain coverage of the Adaptability dimension.

Siegling, Saklofske, Veseley and Nordstokke (2012) investigated the nuances of gender differences in trait EI. They specifically addressed the gendered identity orientations or gender-linked personality traits. These comprise communion (referring to compassion, nurturance, or placing a strong salience on interpersonal relationships) and agency (involving assertiveness, competitiveness, and self-autonomy). Typically, agentic traits are associated with males while communal traits are associated with females (Bakan, 1966). Communal traits are also strongly associated with interpersonal competencies of trait EI (McIntyre, 2010).

In our results, the relatively gender-neutral EI traits (i.e., Intrapersonal and Stress Management) were linked to long-term PSE pursuit in both men and women. However, the Adaptability dimension (male-typed skills) consistently predicted PSE pursuit for women, while Interpersonal skills (female-typed skills) were a consistent significant predictor of PSE pursuit in men. This indicates that counter-stereotypical skills were unique predictors for the outcome
variable in each gender, suggesting the need for balance in intra-individual socioemotional competencies.

Overall, the effects of trait EI on PSE pursuit were stronger and more widespread for men than for women. This is consistent with other studies showing that trait EI matters more for men than women. For example, Karakuş (2013) investigated trait EI and negative feelings in a sample of primary school teachers. It was found that trait EI directly predicted stress and indirectly (mediated via stress) predicted anxiety levels in male teachers, but this effect was not significant for women. This is consistent with gender differences in the effects of trait EI on stress found by Petrides and Furnham (2006) in a similar workplace study. It is reasoned that males and females are exposed to different forms of stress; specifically, females face other responsibilities such as family responsibilities and the “glass ceiling effect” of progressing in the organizational hierarchy (Cotter, Hermsen, Ovadia, & Vanneman, 2001; as cited in Petrides & Furnham, 2006).

However, in the present study the proportion of women entering PSE was always higher than males (e.g. the “Some PSE” group at age 20-21 had 81% females). Future studies should examine the mediating role of such gendered responsibilities in the relationship between trait EI and PSE pursuit in young adults. Additionally, interventions aimed at enhancing socioemotional competencies should consider the different types of stressors experienced by males and females.

**Stability and Change in Trait EI**

Consistent with the hypotheses, the trait EI dimensions on the EQ-i: Mini showed moderate levels of rank-order stability (average test-retest $r = .41$) across four years. This is consistent with the results from Keefer et al. (2013) who showed similar average test-retest coefficients for trait EI in older adolescents in an NLSCY sample. In general, personality traits in emerging adulthood are less stable than in middle and older age (Roberts & DelVecchio, 2000;
Donnellan et al., 2007a; Donnellan, Trzesniewski, Conger, & Conger, 2007). The moderate temporal stability coefficients suggest that trait EI-related socioemotional competencies are still malleable at this age, and possibly responsive to social-environmental influence (see Schutte et al., 2013). This finding is particularly promising, as it affords opportunities to promote the development of these competencies through both formal education and targeted interventions. Indeed, intervention studies show that socioemotional competency programs not only enhance executive performance of school-aged children (Elias & Haynes, 2008; Rhoades et al., 2011), but they can also increase trait EI and improve academic, employment and other life outcomes in adults (Dacre Pool & Qualter, 2012; Kotsou, Nelis, Grégoire, & Mikolajczak, 2011; Nelis et al., 2011; Schutte et al., 2013).

Four-year mean-level change largely varied between the trait-EI dimensions: a moderate increase in the Adaptability dimension and very small (yet marginally significant) increases for the Interpersonal and Intrapersonal dimensions. The moderate gains in socioemotional competencies are consistent with Parker et al.’s (2005b) results showing increases in mean-levels of trait EI during the first three years of university education in emerging adults. This is consistent with the maturity principle of personality development, stating that the period of emerging adulthood is related to increased emotional stability, conscientiousness and agreeableness (Roberts et al., 2006). Parker et al. (2005b) attributed the increase in trait EI to more than just age – rather, the process of adapting to PSE-related challenges can augment socioemotional competencies in the long-run (Parker et al., 2005b). This idea has been supported by research showing increased long-term trait EI when students live in campus residences with higher combined trait EI levels (Schutte, Malouff, & Thorsteinsson, 2013). The present study’s results did not differentiate between individuals who did versus did not pursue PSE. Future
studies should compare changes in trait EI levels between those who pursue PSE and a cohort that does not.

**Methodological Considerations**

Configural and at least partial metric invariance was obtained for each of the EQ-i: Mini subscale scores. The four-factor structure of the instrument provided adequate fit at each time point, with four conceptually distinct factors (interfactor r’s = .35 to .73). This finding is consistent with similar results obtained with the EQ-i: YV – Brief, using an adolescent NLSCY sample (Keefer et al., 2013). The internal consistency of the EQ-i: Mini subscales fell below the desirable Cronbach’s alpha of .70, which is to be expected with ultra-short scales (Rammstedt & Beierlein, 2014). However, reliability coefficients that do not directly depend on the number of items were moderate for each subscale (average MICs between .31 and .34, and average item reliabilities between .28 and .35). In addition, the Adaptability subscale at age 20-21 showed limited conceptual coverage as one item did not load onto the dimension. This item (ADAPT4) represents a “reality testing” facet of Adaptability, while the other 3 Adaptability items correspond to “problem solving” (Bar-On, 2000; see Appendix A for a list of EQ-i: Mini items).

The demonstrated lack of bandwidth demonstrated here suggests that the results should be interpreted with caution. The EQ-i: Mini subscales cannot be assumed to be equivalent to the parent scale until further validity evidence is collected to confirm that they measure what they are intended to measure (see Keefer et al., 2013).

Two out of the four EQ-i: Mini subscales (Intrapersonal and Adaptability) did not attain full metric invariance. This was due to differential item functioning of one item in each subscale: the Adaptability item referring to “daydreaming” and the Intrapersonal item referring to describing feelings. However, the vast majority of items (14 out of the 16 items) retained the
same degree of relationships with their respective factors over time. Moreover, the stability coefficients for the partially non-invariant models were not substantially different from the full metric (maximum $\Delta r = .02$). Therefore, the non-equivalent factor loadings observed here did not bias the rank-order stability coefficients, and can be practically ignored (see Keefer et al., 2013; Hill et al., 2008). From a practical standpoint, the EQ-i: Mini met the minimum requirement of measurement invariance necessary for studying construct stability and relationships over time. Specifically, the same underlying constructs were being assessed over 4 years in this emerging adult sample. This indicates that the four-factor model of the EQ-i: Mini remains invariant over the ages of 20-21 and 24-25, as evidenced by our nationally representative emerging adult sample.

Another issue to consider is that the data analyzed in this study is nearly a decade old (2004-2008), which may no longer reflect the current economic trends. However, the findings are in line with more recent evidence of trait EI’s positive links to academic success (Saklofske et al., 2012) and better career-decision making (Di Fabio & Saklofske, 2014). Trait EI-related socioemotional competencies or “soft skills” are also associated with better vocational outcomes in the 21st century (Heckman & Kautz, 2012; Kyllonen, 2013).

A pertinent problem in almost all longitudinal studies, participant attrition and non-response is also a potential limitation to the generalizability of the results. The overall rate of attrition from age 20-21 to 24-25 was about 30%, which is more than that reported for other longitudinal surveys over a similar time period (e.g. Thygesen, Johansen, Keiding, Giovanucci, & Grønbæk, 2008) or longer (Donnelan et al., 2007a). Participants who dropped out of the NLSCY survey by age 22-23 and/or 24-25 had lower levels of education compared to those who stayed. This is consistent with Keefer et al.’s (2013) previous findings with the NLSCY, showing
participant attrition is linked with lower socioeconomic status indicators. This was a motivating factor in creating the “PSE change” variable to control for previous-cycle PSE status and account for potential sources of bias. Missing data analyses importantly showed that participants who dropped out showed no significant difference in trait EI dimensions or gender, compared to the sample that persisted. One precaution was that the data was weighted by the longitudinal survey weights provided by Statistics Canada, allowing retention of the original population demographics. The possible bias introduced due to participant attrition is hence mitigated.

My outcome measures did not differentiate between different types and areas of study. This could potentially moderate the extent that trait EI-related competencies predict PSE pursuit. Trait EI predicts success in various areas of study such as business (Rozell, Pettijohn, & Parker, 2002), law (Silver, 1999) and engineering (Lopes, Gerolamo, Del Prette, Musetti & Del Prette, 2015). However, socioemotional competencies have been most commonly implicated in success in PSE programs related to health care (Mintz & Stoller, 2014). Such programs have therefore adopted measurements of EI to evaluate potential candidates (Talarico et al., 2013). However, most of this research does not distinguish between ability and trait-based EI (Arora et al., 2010), making it difficult to draw conclusions about how socioemotional competencies impact this area of study. Regardless, future studies should still consider if trait EI-related competencies only predict PSE pursuit in limited areas of study.

**Potential Confounding Variables**

Despite the significant associations between Trait EI and PSE pursuit, the effect size coefficients were not large. In fact, they suggest that this relationship is relatively weak, despite being non-trivial. It is important to acknowledge that trait EI is only one of many variables in a
complex network of psychological, social, and economic factors that contribute to the decision to pursue PSE.

A comprehensive investigation of PSE pursuit in a large, Canadian sample was conducted by Finnie (2012) using data from the Canadian Youth in Transition Survey. He was specifically interested in analysing the economic and cultural factors contributing to the decision to pursue PSE in young adults. His report presents evidence of high tuition fees discouraging post-secondary pursuit, especially among Canadians from low income families. However, almost 43% of the sample indicated that they faced no barriers when deciding whether or not to pursue PSE, compared to 25% who cited mainly financial barriers (Finnie, 2012). This implies that the decision to pursue PSE hinges on more than just financial difficulty, and needs further exploration. He subsequently presents evidence showing the influence of culture and upbringing in this decision. Specifically, children whose parents have over four years of PSE experience tend to pursue PSE themselves significantly more than others whose parents have little or no PSE (relative to the effect of family income alone). In fact, parents having 4+ years of parental PSE experience contributes more to PSE pursuit (10 percentage points) compared to parental income alone (Finnie, 2012). This finding is supported by results from other population-based studies. For example, a recent Statistics Canada report shows that children whose parents invest in a Registered Education Savings Plan (RESP) are nearly 20% more likely to pursue PSE than counterparts who do not. However, these parents have (on average) higher educational attainment themselves than parents who do not invest in their children’s RESP (Frenette, 2017).

More interestingly, after controlling for the other variables, Finnie (2012) found that being a visible minority immigrant in Canada was the strongest contributor to university attendance (close to 20 percentage points more than the other variables). This is expanded on with specific
cultural/family factors such as sociocultural communication and time spent reading with the child as important contributors to eventual PSE pursuit. For Canada in particular, children of visible minority immigrants seem to have proportionately higher post-secondary pursuit rates compared to other groups.

Abada and Tenkorang (2009) empirically investigated the role of human capital versus social capital in the pursuit of PSE among children of immigrants in Canada (specifically Chinese, South Asians, and Blacks), compared to third generation Canadian youths. Among the social factors, they found that minority language retention at home contributes to PSE pursuit and is as important as learning one of the official languages (English or French). Other aspects of social capital, such as trust, are essential for some minority groups in pursuing PSE. They specifically cite close inter-generational relationships as important social capital for these youths, which requires home language retention (for communication and bonding). Stronger inter-generational relationships also allow for closer monitoring of youths’ behaviour, which (if done in moderation) can lead to less delinquent behaviour and better dedication to academic pursuit. Similarly, lack of home language retention was linked with stagnation in the PSE experience, which highlights the importance of a family’s sociocultural environment for their children’s academic success. Additionally, participation in organizations (or “outdoor” hobbies) such as sports clubs and volunteer groups contribute positively to post-secondary pursuit (or “upward mobility”) in all demographics of Canadian youth (Abada & Tenkorang, 2009).

PSE pursuit may also be related to parenting styles. Specifically, less authoritarian parenting styles are linked with higher levels of parents’ educational attainment (Argyriou, Bakoyannis, & Tantaros, 2016), which has been shown to enhance PSE pursuit in their children (Finnie, 2012). In addition, parents with higher levels of trait EI and less authoritarianism tend to
facilitate more group activities with their child, which in turn enhances the child’s trait EI (Alegre, 2012). The interaction among parenting variables such as their education and socioemotional competencies, and the resulting influence on their child’s PSE pursuit represent a good avenue for further research.

The present study did not investigate the cultural make-up of the sample, nor did I control for parental education levels. Each variable has a unique connection with the child’s upbringing, which seems to be a crucial factor in their eventual decision to pursue PSE. Future studies should test the relationship between trait EI and PSE pursuit in relation to these other variables. However, it is worth noting that the longitudinal design here allowed for assessing the influence of trait EI on PSE pursuit beyond previous levels of PSE (via the PSE change variable). This may have indirectly controlled for other variables that stall PSE pursuit at age 20-21.

Conclusions

This study was the first to investigate the role of trait EI in predicting the pursuit of post-secondary education among emerging adults, capitalizing on a unique, nationally-representative dataset. Despite the methodological issues addressed above, the prospective predictive value of trait EI-related competencies in PSE pursuit is not trivial. Individuals who had higher socioemotional competencies at the age of 20-21 were significantly more likely to enrol in a college or university both currently and at two- and four-year follow-ups.

Trait EI showed moderate temporal stability from age 20-21 to age 24-25. This suggests that trait EI-related competencies are still malleable in young adulthood, and would be responsive to interventions. Considering their lasting association with PSE pursuit, and the importance of PSE for vocational outcomes, further investment in socioemotional competencies as part of educational and human capital strategies is both feasible and warranted.
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Table 1

*Standardized Estimates of Factor Loadings and Item Reliabilities ($R^2$) From the Cross-Sectional Four-Factor CFA Models*

<table>
<thead>
<tr>
<th>Item</th>
<th>Age 20-21 (Cycle 6)</th>
<th>Age 24-25 (Cycle 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ER</td>
<td>RA</td>
</tr>
<tr>
<td>INTER1</td>
<td>.42</td>
<td>.18</td>
</tr>
<tr>
<td>INTER2</td>
<td>.59</td>
<td>.35</td>
</tr>
<tr>
<td>INTER3</td>
<td>.61</td>
<td>.37</td>
</tr>
<tr>
<td>INTER4</td>
<td>.58</td>
<td>.34</td>
</tr>
<tr>
<td>INTRA1</td>
<td>.54</td>
<td>.29</td>
</tr>
<tr>
<td>INTRA2</td>
<td>.53</td>
<td>.28</td>
</tr>
<tr>
<td>INTRA3</td>
<td>.51</td>
<td>.26</td>
</tr>
<tr>
<td>INTRA4</td>
<td>.63</td>
<td>.40</td>
</tr>
<tr>
<td>STRMG1</td>
<td>.39</td>
<td>.15</td>
</tr>
<tr>
<td>STRMG2</td>
<td>.74</td>
<td>.54</td>
</tr>
<tr>
<td>STRMG3</td>
<td>.74</td>
<td>.54</td>
</tr>
<tr>
<td>STRMG4</td>
<td>.46</td>
<td>.21</td>
</tr>
<tr>
<td>ADAPT1</td>
<td>.16</td>
<td>.03</td>
</tr>
<tr>
<td>ADAPT2</td>
<td>.60</td>
<td>.36</td>
</tr>
<tr>
<td>ADAPT3</td>
<td>.69</td>
<td>.47</td>
</tr>
<tr>
<td>ADAPT4</td>
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Correlations

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<thead>
<tr>
<th></th>
<th>INTER</th>
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<th>STRMG</th>
<th>ADAPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTER</td>
<td>-</td>
<td>.41</td>
<td>.44</td>
<td>.73</td>
</tr>
<tr>
<td>INTRA</td>
<td>.25</td>
<td>-</td>
<td>.47</td>
<td>.35</td>
</tr>
<tr>
<td>STRMG</td>
<td>.29</td>
<td>.32</td>
<td>-</td>
<td>.35</td>
</tr>
<tr>
<td>ADAPT</td>
<td>.43</td>
<td>.23</td>
<td>.26</td>
<td>-</td>
</tr>
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Internal Consistency

<table>
<thead>
<tr>
<th></th>
<th>Alpha</th>
<th>MIC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.63</td>
<td>.31</td>
</tr>
<tr>
<td></td>
<td>.64</td>
<td>.31</td>
</tr>
<tr>
<td></td>
<td>.64</td>
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</tr>
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<tr>
<td></td>
<td>.56</td>
<td>.25</td>
</tr>
<tr>
<td></td>
<td>.66</td>
<td>.33</td>
</tr>
<tr>
<td></td>
<td>.70</td>
<td>.36</td>
</tr>
</tbody>
</table>

*Note. All factor loadings and correlations are significant ($p < .05$). Correlations are among subscale scores (below diagonal) and the corresponding confirmatory factor analysis (CFA) factors (above diagonal). INTER(ER) = Interpersonal; INTRA(RA) = Intrapersonal; STRMG(SM) = Stress Management; ADAPT(AD) = Adaptability; Alpha = Cronbach’s alpha coefficient; MIC = mean inter-item correlation.*

*Non-significant correlation ($p < .05$).*
Table 2

*Model-Fit Indices and Model Comparisons from the LCFA analyses of LMI*

<table>
<thead>
<tr>
<th>Invariance Model</th>
<th>df</th>
<th>$\chi^2$</th>
<th>CFI</th>
<th>$\Delta$CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>15</td>
<td>39.11*</td>
<td>.984</td>
<td>-</td>
</tr>
<tr>
<td>Full Metric (Equal Factor Loadings)</td>
<td>18</td>
<td>39.69*</td>
<td>.985</td>
<td>.001</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>15</td>
<td>84.83*</td>
<td>.940</td>
<td>-</td>
</tr>
<tr>
<td>Full Metric (Equal Factor Loadings)</td>
<td>18</td>
<td>105.43*</td>
<td>.925</td>
<td>.015$^a$</td>
</tr>
<tr>
<td>Partial Metric (One Factor Loading Free)</td>
<td>17</td>
<td>93.13*</td>
<td>.935</td>
<td>.005</td>
</tr>
<tr>
<td>Stress Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>15</td>
<td>77.48*</td>
<td>.966</td>
<td>-</td>
</tr>
<tr>
<td>Full Metric (Equal Factor Loadings)</td>
<td>18</td>
<td>83.35*</td>
<td>.964</td>
<td>.002</td>
</tr>
<tr>
<td>Adaptability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>15</td>
<td>81.20*</td>
<td>.955</td>
<td>-</td>
</tr>
<tr>
<td>Full Metric (Equal Factor Loadings)</td>
<td>18</td>
<td>106.64*</td>
<td>.940</td>
<td>.015$^a$</td>
</tr>
<tr>
<td>Partial Metric (One Factor Loading Free)</td>
<td>17</td>
<td>89.69*</td>
<td>.951</td>
<td>.004</td>
</tr>
</tbody>
</table>

*Note.* LCFA = longitudinal confirmatory factor analysis; measurement invariance; df = degrees of freedom; $\Delta$CFI = change in comparative fit index values; $^a$Nontrivial reduction in model fit. *$p < .05$. 
Table 3

*Temporal Stability Coefficients (Autocorrelations) for the EQ-i: Mini Subscale Scores and their Corresponding LCFA Latent Factors, from age 20-21 to 24-25*

<table>
<thead>
<tr>
<th>Estimate</th>
<th>INTER</th>
<th>INTRA</th>
<th>STRMG</th>
<th>ADAPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subscale Scores</td>
<td>.46</td>
<td>.39</td>
<td>.47</td>
<td>.37</td>
</tr>
<tr>
<td>LMI Models</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>.60</td>
<td>.49</td>
<td>.59</td>
<td>.46</td>
</tr>
<tr>
<td>Full Metric</td>
<td>.60</td>
<td>.52</td>
<td>.59</td>
<td>.47</td>
</tr>
<tr>
<td>Partial Metric</td>
<td>-</td>
<td>.50</td>
<td>-</td>
<td>.46</td>
</tr>
</tbody>
</table>

*Note.* All correlations are significant ($p < .05$). INTER = Interpersonal, INTRA = Intrapersonal, STRMG = Stress Management, ADAPT = Adaptability.
Table 4

*Eta values for the four-year mean-level change in the EQ-i: Mini subscale scores from age 20-21 to 24-25*

<table>
<thead>
<tr>
<th>EQ-i: Mini</th>
<th>Change</th>
<th>Gender</th>
<th>Change by Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal</td>
<td>.14*</td>
<td>.38*</td>
<td>.03</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>.09†</td>
<td>.05</td>
<td>.00</td>
</tr>
<tr>
<td>Stress Management</td>
<td>.00</td>
<td>.00</td>
<td>.05</td>
</tr>
<tr>
<td>Adaptability</td>
<td>.24*</td>
<td>.05</td>
<td>.00</td>
</tr>
</tbody>
</table>

*Note.* *Non-trivial effect. † Marginal effect.*
Table 5

*Eta values for the concurrent associations between EQ-i: Mini subscale scores at age 20-21 and PSE Status at age 20-21*

<table>
<thead>
<tr>
<th>EQ-i: Mini @ 20-21</th>
<th>PSE Status @ 20-21</th>
<th>PSE Status by Gender @ 20-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal</td>
<td>.11*</td>
<td>.07</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>.12*</td>
<td>.03</td>
</tr>
<tr>
<td>Stress Management</td>
<td>.15*</td>
<td>.00</td>
</tr>
<tr>
<td>Adaptability</td>
<td>.14*</td>
<td>.07</td>
</tr>
</tbody>
</table>

*Note.* *Non-trivial effect.*
Table 6

*Eta values for the prospective two-year associations between EQ-i: Mini subscale scores at age 20-21 and PSE Status at age 22-23*

<table>
<thead>
<tr>
<th>EQ-i: Mini @ 20-21</th>
<th>PSE Status @ 22-23</th>
<th>PSE Status by Gender @ 22-23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal</td>
<td>.14*</td>
<td>.15*</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>.05</td>
<td>.09†</td>
</tr>
<tr>
<td>Stress Management</td>
<td>.15*</td>
<td>.06</td>
</tr>
<tr>
<td>Adaptability</td>
<td>.05</td>
<td>.13*</td>
</tr>
</tbody>
</table>

*Note. * Non-trivial effect. † Marginal effect.*
Table 7

*Eta values for the prospective two-year associations between EQ-i: Mini subscale scores at age 20-21 and change in PSE Status from age 20-21 to 22-23*

<table>
<thead>
<tr>
<th>EQ-i: Mini @ 20-21</th>
<th>PSE Status Change</th>
<th>PSE Status Change by Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>age 20-21 to 22-23</td>
<td>age 20-21 to 22-23</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>.16*</td>
<td>.15*</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>.06</td>
<td>.09†</td>
</tr>
<tr>
<td>Stress Management</td>
<td>.18*</td>
<td>.08</td>
</tr>
<tr>
<td>Adaptability</td>
<td>.09†</td>
<td>.12*</td>
</tr>
</tbody>
</table>

*Note.* *Non-trivial effect.* † Marginal effect.
Table 8

*Eta values for the prospective four-year associations between EQ-i: Mini subscale scores at age 20-21 and PSE Status at age 24-25*

<table>
<thead>
<tr>
<th>EQ-i: Mini @ 20-21</th>
<th>PSE Status @ 24-25</th>
<th>PSE Status by Gender @ 24-25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal</td>
<td>.22*</td>
<td>.16*</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>.09†</td>
<td>.10*</td>
</tr>
<tr>
<td>Stress Management</td>
<td>.11*</td>
<td>.11*</td>
</tr>
<tr>
<td>Adaptability</td>
<td>.13*</td>
<td>.003</td>
</tr>
</tbody>
</table>

*Note.* * Non-trivial effect. † Marginal effect.
Table 9

*Eta values for the prospective two-year associations between EQ-i: Mini subscale scores at age 20-21 and change in PSE Status from age 22-23 to 24-25*

<table>
<thead>
<tr>
<th>EQ-i: Mini @ 20-21</th>
<th>PSE Status Change age 22-23 to 24-25</th>
<th>PSE Status Change by Gender age 22-23 to 24-25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal</td>
<td>.21*</td>
<td>.20*</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>.08</td>
<td>.15*</td>
</tr>
<tr>
<td>Stress Management</td>
<td>.09†</td>
<td>.10*</td>
</tr>
<tr>
<td>Adaptability</td>
<td>.12*</td>
<td>.15*</td>
</tr>
</tbody>
</table>

*Note.* * Non-trivial effect. † Marginal effect.
Table 10

*Eta values for the concurrent associations between EQ-i: Mini subscale scores at age 24-25 and PSE Status at age 24-25*

<table>
<thead>
<tr>
<th>EQ-i: Mini @ 24-25</th>
<th>PSE Status @ 24-25</th>
<th>PSE Status by Gender @ 24-25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal</td>
<td>.17*</td>
<td>.06</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>.09†</td>
<td>.09†</td>
</tr>
<tr>
<td>Stress Management</td>
<td>.11*</td>
<td>.04</td>
</tr>
<tr>
<td>Adaptability</td>
<td>.15*</td>
<td>.12*</td>
</tr>
</tbody>
</table>

*Note. * Non-trivial effect. † Marginal effect.*
Figure 1. Four-year mean-level change in the EQ-i: Mini subscale scores from age 20-21 (dark bars) to 24-25 (bright bars). Mean scores on the EQ-i: Mini subscales range from 1 to 5. Significant changes in meal levels are marked with an asterisk (*).
Figure 2. Concurrent associations between socioemotional competencies and PSE status at age 20-21. Mean scores on the EQ-i: Mini subscales range from 1 to 5. PSE Status: no PSE experience (dark bars) versus some PSE experience (light bars). Significant differences between the PSE groups are marked with an asterisk (*).
Figure 3. Prospective two-year associations between socioemotional competencies at age 20-21 and PSE status at age 22-23. Mean scores on the EQ-i: Mini subscales range from 1 to 5. PSE Status: no PSE experience (dark bars) versus some PSE experience (light bars). Significant differences between the PSE groups are marked with an asterisk (*).
Figure 4. Prospective two-year associations between socioemotional competencies at age 20-21 and change in PSE status from age 20-21 to age 22-23. Mean scores on the EQi-Mini subscales range from 1 to 5. PSE Status: no PSE experience at age 22-23 (dark bars); newly acquired PSE experience since age 20-21 (bright middle bars); previous PSE experience at age 20-21 (light bars). Significant differences between the PSE groups are marked with an asterisk (*).
Figure 5. Prospective four-year associations between socioemotional competencies at age 20-21 and PSE status at age 24-25. Mean scores on the EQ-i: Mini subscales range from 1 to 5. PSE Status: no PSE experience (dark bars) versus some PSE experience (light bars). Significant differences between the PSE groups are marked with an asterisk (*).
Figure 6: Prospective two-year associations between socioemotional competencies at age 20-21 and change in PSE status from age 22-23 to age 24-25. Mean scores on the EQ-i: Mini subscales range from 1 to 5. PSE status: No PSE at age 24-25 (dark bars); newly acquired PSE experience since age 22-23 (bright middle bars); previous PSE experience at age 22-23 (light bars). Significant differences between the PSE groups are marked with an asterisk (*).
Figure 7. Concurrent associations between socioemotional competencies and PSE status at age 24-25. Mean scores on the EQ-i: Mini subscales range from 1 to 5. PSE Status: no PSE experience (dark bars) versus some PSE experience (light bars). Significant differences between the PSE groups are marked with an asterisk (*).
Appendix A

The EQ-i: Mini Items

Interviewer quote: "I will read you 20 brief statements. For each one, please choose the answer that best describes you. There are five possible answers. Choose the answer that seems the best, even if you are not sure. This is not a test; there are no 'right' or 'wrong' answers."

Before reading out each item, the interviewer reads out the following statement: “Tell me how you feel, think, or act most of the time in most situations.” At the end of each item, the interviewer reads the response categories (Likert Scale options): 1 = Very seldom true or not true; 2 = Seldom true; 3 = Sometimes true; 4 = Often true; 5 = Very often true or true.

EQ_Q01 - INTER1: You are sensitive to the feelings of others.

EQ_Q02 - INTRA1: It’s hard for you to describe your feelings (Reversed item).

EQ_Q03 - STRMG1: You’re impatient (Reversed item).

EQ_Q04 – ADAPT1: You try to see things as they really are, without fantasizing or daydreaming.

EQ_Q05 – General Mood: You’re optimistic about most things you do.

EQ_Q06 – INTER2: You’re good at understanding the way other people feel.

EQ_Q07 – INTRA2: Others think that you lack assertiveness (Reversed item).

EQ_Q08 – STRMG2: You have a bad temper (Reversed item).

EQ_Q09 – ADAPT2: When faced with a difficult situation, you like to collect all the information about it that you can.

EQ_Q10 – General Mood: You believe in your ability to handle most upsetting problems.

EQ_Q11 – INTER3: You care what happens to other people.

EQ_Q12 – INTRA3: You’re unable to express your ideas to others (Reversed item).
EQ_Q13 – STRMG3: It is a problem controlling your anger (Reversed item).

EQ_Q14 – ADAPT3: In handling situations that arise, you try to think of as many approaches as you can.

EQ_Q15 – General Mood: You can stay on top of tough situations.

EQ_Q16 – INTER4: You have good relations with others.

EQ_Q17 – INTRA4: It’s hard for you to make decisions on your own (Reversed item).

EQ_Q18 – STRMG4: You have strong impulses that are hard to control (Reversed item).

EQ_Q19 – ADAPT4: When trying to solve a problem, you look at each possibility and then decide on the best way.

EQ_Q20 – General Mood: You generally expect things will turn out alright, despite setbacks from time to time.

*Note.* General mood items (EQ_Q05, EQ_Q10, EQ_Q15, and EQ_Q20) were not incorporated into any analyses for they are no longer recognized as part of the trait EI construct.

Adapted from: Statistics Canada (2010b, pp. 356-362).