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INDIVIDUAL DIFFERENCES

Personality and Individual Differences 39 (2005) 215–227

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## Generalizability of the emotional intelligence construct: A cross-cultural study of North American aboriginal youth

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Received 19 December 2003; received in revised form 29 November 2004; accepted 17 January 2005

Available online 11 April 2005

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### Abstract

The concept of emotional intelligence (EI) has attracted growing interest from researchers working in various fields. Because culture can influence the experience and expression of emotions, special care needs to be taken when using the EI construct in different cultures. The present study examined the generalizability of the youth form of a widely used self-report measure of EI (EQ-i:YV) in a sample of 384 aboriginal youth from several rural areas in Canada (mean age = 12.5 years). This sample was matched (by age and gender) with a second rural Canadian sample of non-aboriginal youth ( $N = 384$ ). The four-factor model for the measure (separate dimensions for interpersonal, intrapersonal, adaptability, and stress management abilities) was tested using confirmatory factor analysis with both samples. Multiple goodness-of-fit indicators revealed that the model had good fit to the data from both samples. The aboriginal respondents were found to score significantly lower on the interpersonal, adaptability and stress management dimensions compared to the non-aboriginal children. Results are discussed in the context of EI as a vulnerability factor for a number of health-related problems in children and adolescents.

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*Keywords:* Aboriginals; Cross-cultural; Emotional intelligence

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## 1. Introduction

Interest in the concept of “emotional intelligence” (EI) emerged in dramatic fashion in 1995 following the publication of Daniel Goleman’s book on the topic. One of the myths that quickly emerged from the “media fallout” around this book was the idea that EI was a “new” area of study. However, as various writers have noted (Mayer & Cobb, 2000; Mayer & Salovey, 1997; Parker, 2000; Taylor, Bagby, & Parker, 1997), the general area of emotional and social competency has a long history of theoretical and empirical work that extends back to the early 20th century. Another idea accompanying popular discussions about the “new” construct of EI was the claim that EI was an important predictor of achievement in various educational contexts (e.g., Elias, Bruene-Butler, Blum, & Schuyler, 1997; Goleman, 1995; Pasi, 1997). Many individuals were quick to develop new intervention programs for improving various aspects of EI in children and adults (e.g., Elias et al., 1997). Unfortunately, most of these new programs, as well as the initial claim of an important link between EI and achievement, were supported on the basis of very preliminary or non-existent data (Matthews, Roberts, & Zeidner, 2003; Mayer & Cobb, 2000; Zeidner, Roberts, & Matthews, 2002).

One important reason for the poor quality of early work on EI was the problematic state of assessment tools for the construct (Zeidner, Matthews, & Roberts, 2001). Intervention programs were being created, but few valid and reliable EI measures were available. Since the late 1990s, however, several new measures have appeared that have sought to correct this problem. Mayer, Caruso, and Salovey (1999) developed a performance-based measure of EI (Multi-Factor Emotional Intelligence Scale; MEIS) in which respondents are asked to solve emotion-related problems (such as recognizing facial expressions). Proponents of these types of performance-based measures contend that they are relatively objective and tap an individual’s ability to perform an emotion-related problem (Mayer, Caruso, & Salovey, 2000). The MEIS was developed following a model for EI that identifies four broad dimensions: the ability to perceive, appraise and express emotion; the ability to use emotions to facilitate thinking and behavior; the ability to understand and utilize emotional knowledge; and the ability to regulate emotions. Mayer, Salovey, and Caruso (2002) have since revised their instrument (now called the Mayer-Salovey-Caruso Emotional Intelligence Test; MSCEIT) and begun the process of adapting the tool for use with children and adolescents (Mayer, Salovey, & Caruso, in press).

Bar-On (1997, 2000) has also proposed a theoretical model for EI that includes four dimensions that overlap substantially with those proposed by Mayer et al. (2000, 2002): intrapersonal (consisting of related abilities like recognizing and labeling one’s feelings); interpersonal (consisting of related abilities like identifying emotions in others or empathy); adaptability (consisting of abilities like being able to adjust one’s emotions and behaviors to changing situations or conditions); and stress management (consisting of various affect regulating abilities). This model was used to guide the development of the BarOn Emotional Quotient Inventory (EQ-i; Bar-On, 1997), a 133-item self-report instrument that assesses all of the dimensions outlined in the model, along with several other relevant variables (e.g., general mood). More recently, the EQ-i has been adapted for use with children and adolescents (Bar-On & Parker, 2000).

As new EI measures have begun to appear, so too has empirical evidence that supports some of the initial enthusiasm directed at the construct. Petrides, Frederickson, and Furnham (2004), for example, examined the relationships among EI, cognitive ability, and academic performance in a

British sample of 650 Grade 11 students. They found that EI moderated the relationship between academic performance and cognitive ability, with academic success being operationalized as the standardized test results from the General Certificate of Secondary Education (the principal means of assessing academic achievement at the end of compulsory secondary education in the UK). These findings have since been replicated using a US sample of high school students and a different measure of emotional intelligence (Parker et al., 2004).

In a longitudinal study examining the transition from high school to university, Parker, Summerfeldt, Hogan, and Majeski (2004) also found that various EI dimensions were predictors of academic success. At the start of the academic year (September), a large sample of first-year full-time students completed the short form of the Emotional Quotient Inventory (EQ-i:Short; Bar-On, 2002). At the end of the academic year the EQ-i:Short data was matched with the students' academic records. Consistent with expectations, the successful group (first-year GPA of 80% or better) scored higher than the less-successful students (GPA of 59% or lower) on several dimensions of EI. Students with higher EI levels appear to be better able to cope with the social and emotional demands of making the transition to a post-secondary environment. These findings have since been replicated using samples from a diverse range of post-secondary institutions (Parker, Duffy, Wood, Bond, & Hogan, *in press*), as well as using different measures of emotional and social competency (Parker, Austin, Hogan, Wood, & Bond, 2005).

An important research question that has yet to be systematically examined in the EI literature is whether the construct generalizes across diverse cultural groups—a critical issue for a construct linked with basic mental abilities for processing and managing emotions (Ghorbani, Bing, Watson, Davison, & Mack, 2002; Zeidner et al., 2001). As several writers have suggested about the related construct of alexithymia (Parker, Taylor, & Bagby, 2001; Taylor et al., 1997), EI may be a culture-bound construct that reflects an emphasis among European and North American health care professionals on introspection and psychological mindedness (Kirmayer, 1987; Loissele & Cossette, 2001). There is also evidence to suggest that there may be considerable cultural variability in some of the abilities linked with the more widely used models of emotional intelligence. The ability to recognize emotions from facial expressions, for example, is included as a key component in most widely used models of emotional intelligence (e.g., Bar-On, 2000; Mayer et al., 1999, 2000). Yet there appears to be considerable cultural variability in this ability. Matsumoto (1993), for example, used American born undergraduates of Hispanic, Asian, Caucasian, and African backgrounds to identify and evaluate various emotional stimuli. Significant differences were found among the ethnic groups on emotion judgments, display rule attitudes, and self-reported emotional expressions.

North American aboriginals are another cultural group where previous writers have identified a constellation of socialization variables quite different from North American non-aboriginal culture (LaFromboise, 1992; Sutton & Nose, 1996). For example, aboriginal culture places greater emphasis than many other groups on collective behavior; the cultural ideal is to succeed in life as part of a group and family (Sutton & Nose, 1996). North American aboriginals often perceive less distinct boundaries between the self and other (Hobfoll, Jackson, Hobfoll, Pierce, & Young, 2002). To date, the generalizability of the EI construct for North American aboriginal culture has not been examined. In fact, little empirical work has addressed the psychometric equivalence of widely used personality and psychopathology measures in aboriginal and non-aboriginal populations (Allen, 1998; Beiser, Dion, & Gotowiec, 2000; Zvolensky, McNeil, Porter, & Stewart, 2001).

The lack of cross-cultural research on EI and EI-related constructs is particularly unfortunate, since North American aboriginals appear to be at greater risk than other North American groups for a cross-section of health problems linked with emotional and social competency (Cecero & Holmstrom, 1997; De Gucht & Heiser, 2003; Kauhanen, Kaplan, Cohen, Salonen, & Salonen, 1994; Lumley & Roby, 1995; Waldstein, Kauhanen, Neumann, & Katzel, 2002). For example, aboriginals living in Canada and the United States have been shown to have a greater likelihood of various chronic health problems (Johnson & Cameron, 2001). Aboriginal adults are at greater risk for diabetes and heart disease (MacMillan et al., 2003) than non-aboriginal adults. Aboriginal samples have also been found to have higher rates of drug abuse (Smye, Browne, & Annette, 2002), alcoholism (Koss et al., 2003), and pathological gambling (Wardman, el-Guebaly, & Hodgins, 2001) than their non-aboriginal counterparts.

The purpose of the present study was to investigate the generalizability of the concept of EI to North American aboriginal culture. Towards this end, we examined the replicability of the factor structure of the youth form for the EQ-i (EQi:YV; Bar-On & Parker, 2000) in a sample of aboriginal children and adolescents from several rural Canadian communities. This instrument was developed using a multidimensional model (Bar-On, 1997, 2000) that includes a cross-section of emotional and social competencies associated with most EI models (Parker et al., 2001). Since the EQ-i:YV was developed using primarily urban samples (Bar-On & Parker, 2000), the present study also examined the structure in a rural sample of non-aboriginal children and adolescents. The present study also examined mean EI levels in the aboriginal and non-aboriginal samples.

## **2. Method**

### *2.1. Participants*

The first sample consisted of 384 aboriginal children and adolescents (188 males and 196 females) residing in several small rural Canadian communities. The mean age of the sample was 12.52 (SD = 2.20) years. The majority of participants came from one of three aboriginal cultural groups with contrasting sociocultural origins. The use of exact geographic locations and formal aboriginal names has been avoided in the present study. This is consistent with a convention that has been adopted by other investigators of North American aboriginals to prevent the stigmatization of specific aboriginal communities (Robin, Greene, Albaugh, Caldwell, & Goldman, 2003; Shore, Manson, Bloom, Keepers, & Neligh, 1987).

The second sample (188 males and 196 females) was a subset of cases from a larger sample of children and adolescents ( $N = 1200$ ) collected in several small rural communities in central and eastern Ontario. Respondents who identified themselves as “white/Caucasian” were randomly matched with the aboriginal sample on the basis of age and gender.

### *2.2. Measures*

All of the participants completed the EQ-i:YV, a 60-item self-report measure of EI developed by Bar-On and Parker (2000). Children and adolescents are asked to respond to the statements which best describe the way they feel, think, or act in most situations. Responses are rated by

the participant on four-point Likert scales, ranging from 1 for “very seldom or not true of me,” to 4 for “very often true or true of me.” The instrument has 4 moderately correlated EI scales (intrapersonal, interpersonal, stress management, and adaptability), as well as a total EI scale (the sum of the four previous scales). A high score on any individual ability scale (or the total score) reflects a high level of social and emotional competency. Bar-On and Parker (2000) report that the EQ-i:YV has a replicable factor structure (developed with a normative sample of 9172 school-aged children and adolescents) of 4 oblique factors. Bar-On and Parker (2000) also report that the various scales on the EQ-i:YV have adequate internal reliabilities; three week test–retest reliabilities for the instrument vary from 0.84 for the intrapersonal scale to 0.89 for the total EI scale. They also examined the overlap between the EQ-i:YV and the five personality dimensions assessed by the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992) in a sample of adolescents. Collectively, NEO-FFI scores accounted for less than a third of the variability of any EQ-i:YV scale.

### *2.3. Procedure*

The aboriginal sample was comprised of children and adolescents attending school on several First Nations reserves. The school administration was fully cooperative and supportive of this study. On the advice of the superintendent, a letter was sent to the parent(s) of all students eligible to participate in the study requesting that their child be allowed to complete the questionnaire during regular class time. Both anonymity and confidentiality were assured. Students were further advised that it was their choice to participate and that they could also withdraw at any point during the administration of the questionnaire. Children who were not fluent in English (e.g. a specific aboriginal language was their first and dominant language whereas English reading and speaking skills were not well developed) were not included in this study. Questionnaires were completed during regular classroom periods and any assistance required by individual students in understanding items was given, as required, by one of the authors or their assistants.

The participants in the non-aboriginal sample were recruited via presentations to schools and parent groups, in several different rural communities in central and eastern Ontario. A written participant consent form, outlining the general study under investigation, was signed by both the parents and children who participated. Questionnaires were completed during regular classroom periods under the supervision of a teacher.

### *2.4. Statistical procedure*

The four-factor structure of the EQ-i:YV was tested in the two samples using confirmatory factor analysis (CFA) with Statistica Version 6 (StatSoft, 2002). CFA offers a variety of statistical tests and indices designed to assess the goodness-of-fit of data to a proposed model (Bentler, 1990; Breckler, 1990; Hu & Bentler, 1999). The goodness-of-fit of the model was evaluated using a diverse range of criteria in both samples (e.g., absolute fit indices versus noncentrality-based indices). Multiple criteria were used because each type has different strengths and weaknesses in assessing the goodness-of-fit between a hypothetical model and the actual data (Cole, 1987; Marsh, Balla, & McDonald, 1988). Specifically, for each sample, we report the following absolute fit indices: chi-square/df ratio, the goodness-of-fit index (GFI; Joreskog & Sorbom, 1986),

adjusted GFI (AGFI; Joreskog & Sorbom, 1986), and the Comparative Fit Index (CFI; Bentler, 1990). We also report the following noncentrality-based fit indices: the root mean square error of approximation index with confidence interval (RMSEA; Steiger, 1989), the population gamma index (PGI; Steiger, 1989), and the adjusted PGI (APGI; StatSoft, 2002). The following criteria were used to indicate the goodness-of-fit of the data: chi-square/df < 2.00; GFI > 0.850, AGFI > 0.800, CFI > 0.900; RMSEA < 0.10, PGI > 0.850, and APGI > 0.850.

Subsidiary multi-group CFA analysis was also conducted to compare the 4-factor structures for the aboriginal and non-aboriginal data. The goodness-of-fit indicators included the chi-square/df ratio, RMSEA, PGI, and APGI.

### 3. Results

The four-factor structure of the EQ-i:YV was found to have adequate fit to the data for the aboriginal sample: chi-square/df = 1.62, GFI = 0.901, AGFI = 0.889, CFI = 0.901; RMSEA = 0.063 (confidence interval = 0.059–0.067), PGI = 0.873, and APGI = 0.858. The data for the non-aboriginal sample also had adequate fit to the model: chi-square/df = 1.63, GFI = 0.944, AGFI = 0.937, CFI = .961; RMSEA = 0.060 (confidence interval 0.056–0.064), PGI = 0.883, and APGI = 0.870.

The item to factor parameter estimates from the CFA are presented in Table 1, separately by sample. Parameter estimates tended to be higher in the non-aboriginal sample. For example, the mean parameter estimate for items on the intrapersonal, interpersonal, adaptability, and stress management factors in the non-aboriginal sample were 0.61, 0.54, 0.62, and 0.58, respectively; for the aboriginal sample, the mean parameter estimates were 0.42, 0.50, 0.57, and 0.47, respectively. Parameter estimates among factors from the CFA are presented in Table 2, separately by sample. Although there was more variability in the parameter estimates in the aboriginal sample (estimates among factors ranged from 0.127 to 0.717 compared to 0.343–0.568 in the non-aboriginal sample), the mean inter-factor parameter estimates were quite similar for both samples (0.429 in the aboriginal sample and 0.458 in the non-aboriginal sample). Multi-group CFA also suggested that the loadings for the aboriginal and non-aboriginal samples were quite similar: chi-square/df = 1.66, RMSEA = 0.063 (confidence interval 0.061–0.066), PGI = 0.869, and APGI = 0.858.

A series of gender by age group (11 years and under versus 12 years and older) by group (aboriginal versus non-aboriginal) ANOVAs were conducted with each of the EQ-i:YV scales as a dependent variable (intrapersonal, interpersonal, adaptability, stress management, and total EI). Table 3 presents the means and standard deviations for the various EQ-i:YV scales by gender and group. The main effect for gender was significant only for the interpersonal [ $F(1, 760) = 28.90$ ,  $p < .001$ ,  $\eta^2 = 0.036$ ] and total EI scales [ $F(1, 760) = 8.40$ ,  $p = .004$ ,  $\eta^2 = 0.010$ ], with girls scoring higher than boys. The main effect for age group was significant only for the stress management scale [ $F(1, 760) = 4.00$ ,  $p < .05$ ,  $\eta^2 = 0.005$ ], with the older children scoring higher than the younger respondents.

The main effect for ethnic group was significant for the interpersonal [ $F(1, 760) = 89.52$ ,  $p < .001$ ,  $\eta^2 = 0.103$ ], adaptability [ $F(1, 760) = 17.15$ ,  $p < .001$ ,  $\eta^2 = 0.022$ ], stress management [ $F(1, 760) = 9.94$ ,  $p < .001$ ,  $\eta^2 = 0.012$ ], and total EI scales [ $F(1, 760) = 38.72$ ,  $p < .001$ ,

Table 1  
Parameter estimates from the confirmatory factor analysis of the EQ-i:YV

Item	Aboriginal	Non-Aboriginal
<i>Intrapersonal factor</i>		
7. Easy telling others	0.564	0.695
17. Talk easily about feelings	0.606	0.835
28. Hard to discuss feelings	0.167	0.259
32. Easy to describe feelings	0.512	0.753
43. Easy to tell people	0.625	0.738
53. Hard to tell others	0.068*	0.364
<i>Interpersonal factor</i>		
2. Understand feelings of others	0.536	0.582
5. Care about others	0.528	0.578
10. Know feelings of others	0.490	0.586
14. Respect others	0.586	0.625
20. Friends important	0.428	0.383
24. Not hurt feelings of others	0.516	0.598
36. Do things for others	0.585	0.682
40. Make friends easily	0.500	0.384
46. Feel bad when others hurt	0.503	0.625
50. Like friends	0.429	0.428
55. Know friend is unhappy	0.507	0.516
59. Know people are upset	0.380	0.490
<i>Adaptability factor</i>		
12. Answer hard questions	0.349	0.517
16. Understand new things	0.528	0.463
22. Understand hard questions	0.542	0.575
25. Stay with a problem	0.553	0.655
30. Think of good answers	0.638	0.672
34. Use various methods	0.618	0.648
38. Easily use different ways	0.660	0.710
44. Think of many solutions	0.609	0.709
48. Good problem solver	0.576	0.616
57. Do not give up	0.654	0.583
<i>Stress management factor</i>		
3. Stay calm	0.536	0.620
6. Hard to control anger	0.345	0.494
11. Can stay calm	0.627	0.665
15. Get upset over things	0.330	0.444
21. Fight with people	0.441	0.636
26. Have temper	0.509	0.727
35. Easily angered	0.577	0.678
39. Takes a lot to get upset	0.385	0.566
45. Stay mad at people	0.487	0.451
49. Hard to wait turn	0.377	0.484
54. Easily upset	0.616	0.569
58. Act without thinking	0.345	0.601

Note: \* $p > .05$ ;  $N$  for both samples was 384.

Table 2  
Parameter estimates among EQ-i:YV factors

	1	2	3	4
1. Intrapersonal	–	0.537*	0.612*	0.127*
2. Interpersonal	0.343*	–	0.717*	0.348*
3. Adaptability	0.523*	0.568*	–	0.232*
4. Stress Management	0.340*	0.498*	0.475*	–

Note: \* $p < .05$ ; aboriginal sample above the diagonal; non-aboriginal below the diagonal.

Table 3  
Means and standard deviations for the EQ-i:YV by group and gender

	Aboriginal						Non-Aboriginal					
	Males		Females		Total		Males		Females		Total	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Intrapersonal	2.41	0.53	2.43	0.56	2.42	0.55	2.34	0.66	2.47	0.65	2.40	0.66
Interpersonal	2.87	0.50	3.08	0.49	2.98	0.51	3.22	0.45	3.39	0.45	3.31	0.46
Adaptability	2.72	0.55	2.65	0.61	2.68	0.58	2.86	0.57	2.86	0.56	2.86	0.56
Stress Management	2.73	0.54	2.77	0.53	2.75	0.53	2.83	0.61	2.92	0.57	2.87	0.59
Total EI	2.72	0.36	2.78	0.38	2.75	0.37	2.88	0.42	2.98	0.40	2.93	0.41

Note: There were 188 males and 196 females in both groups.

$\eta^2 = 0.050$ ]. For each of these variables, the non-aboriginal group scored higher than the aboriginal group. None of the two-way interactions were significant; only the three-way interaction for the interpersonal scale was significant [ $F(1, 760) = 28.90, p < .001, \eta^2 = 0.014$ ].

#### 4. Discussion

The overall CFA results provide empirical support for the generalizability of the EQ-i:YV's four-factor structure with North American aboriginal children and adolescents (as well as with rural non-aboriginal children and adolescents). There were two items from the EQ-i:YV (item 28, "It's hard to talk about my deep feelings" and item 53, "I have trouble telling others about my feelings"), however, that produced parameter estimates lower than desirable in the aboriginal sample (0.167 and 0.068, respectively). The reasons for these low loadings are unclear, although it should be noted that both items also produced the lowest loadings on the intrapersonal factor in the non-aboriginal sample (0.259 and 0.364, respectively). It is also worth noting that in an exploratory factor analysis of the EQ-i:YV items with 9174 children and adolescents, Bar-On and Parker (2000) report that items 28 and 53 produced the lowest loadings of all intrapersonal items on this factor (0.40 and 0.43, respectively).

The magnitude of the parameter estimates for the relationships among the four EI factors provide evidence that the EQ-i:YV taps four separate, yet empirically related dimensions. Although a number of distinct and overlapping conceptual models have been proposed for EI (Bar-On, 1997, 2000; Boyatzis, Goleman, & Rhee, 2000; Mayer et al., 2000; Petrides & Furnham, 2000; Salovey &

Mayer, 1990), the four dimensions assessed by the EQ-i:YV represent core features common to most models (Parker et al., 2001; Taylor, Parker, & Bagby, 1999): the ability to accurately appraise and express emotion; the ability to appraise emotions in others; the ability to effectively regulate emotion; and the ability to use feelings to guide behavior.

The present study found consistent group differences in overall levels of EI. The aboriginal sample scored significantly lower than the non-aboriginal group on the total EI scale, as well as on the interpersonal, adaptability, and stress management scales. These differences were stable across gender and age groups (i.e., children versus adolescents). The findings are consistent with a wealth of prior research demonstrating that North American aboriginal youth are at greater risk for experiencing a variety of internalizing and externalizing behavior problems. Aboriginal youth are at greater risk for dropping out of secondary school (Hoberman, 1992), as well as developing alcohol and other substance abuse problems (Dick, Manson, & Beals, 1993; Gfeller & Hundelby, 1995). Compared to other North American groups, aboriginal youth also have higher rates of mental health problems like antisocial behavior, pathological gambling, and anxiety or mood disorders (Dick et al., 1993; Novins, Harman, Mitchell, & Manson, 1996; Walker, Lambert, Walker, & Kivlahan, 1993; Wardman et al., 2001; Westermeyer, Neider, & Westermeyer, 1993). Not surprisingly, the suicide rates for aboriginal adolescents and adults are higher than for other North American groups (Robin, Chester, Rasmussen, Jaranson, & Goldman, 1997).

A broad range of explanations have been offered for the differences in emotional and physical health found between aboriginal and non-aboriginal populations (see Schissel & Wotherspoon, 2003). Compared to other populations living in Canada and the United States, aboriginals have higher levels of under-education, unemployment, and poverty (Anderson, 1999; Smye et al., 2002). Many individuals continue to experience the direct effects of a breakdown in cultural traditions and communities. For example, many aboriginal youth today are the children, grandchildren, and close family members of individuals taken from their communities as children and placed in foster homes and/or residential schools (Schissel & Wotherspoon, 2003). Whatever the ultimate cause of the group differences found in the present study, it is important to emphasize that most theorists developing models for EI assume that these related abilities are highly malleable (Bar-On, 1997, 2000; Mayer et al., 2000; Mayer & Cobb, 2000). It is assumed that EI abilities can be developed and enhanced via appropriate interventions, although more empirical work needs to be done, using reliable and valid measures, identifying interventions that significantly improve specific abilities (Matthews et al., 2003; Zeidner et al., 2002). When working with aboriginal populations, it is also important that educators and health-care workers not assume that interventions developed using primarily non-aboriginal populations can automatically be applied to individuals from different aboriginal groups (Moran & Reaman, 2002; Thomason, 2000).

Although the results of the present study support the use of the EQ-i:YV in North American aboriginal populations, future research should examine the construct validity of the instrument using other non-Western or non-European populations. It would also be desirable to explore the generalizability of the concept of EI in a broader range of aboriginal cultures. Since individuals within various North American aboriginal populations are at risk for experiencing a variety of mental and physical health problems (Johnson & Cameron, 2001), future research is also warranted on the link between these problems and EI using different aboriginal populations.

## Acknowledgements

This study was supported by research grants to the first author from the Social Sciences and Humanities Research Council of Canada (SSHRC), the Ontario Government's Premier's Research Excellence Award program, and the Canadian Foundation for Innovation (CFI), as well as an Ontario Graduate Scholarship (OGS) to the fifth author.

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