Emotional Leadership Questionnaire

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MEASURING MULTIPLE INTELLIGENCES AND MORAL SENSITIVITIES IN EDUCATION

Measuring Multiple Intelligences and Moral Sensitivities in Education

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INTRODUCTION: HOLISTIC HUMAN DEVELOPMENT IN LIFE-LONG LEARNING

The current educational philosophy all over the world emphasizes the importance of life-long learning. Holistic approach to teaching and learning includes the whole learning profile of the learner with his or her multiple intelligences and personality. In many European countries, such as Finland, education aims to support the development of the whole person rather than merely the cognitive domain (Finnish National Board of Education, 2003). This kind of education acknowledges the importance of social and affective domains in student development, including their emotional and spiritual concerns.

The aim of education is to help the teachers and their students to grow as learners and human beings. An important part of this process is self-assessment of one's strengths and weaknesses. To help this educational goal we have made an effort to create self-assessment tools that would help all the learners to identify their strengths and weaknesses in multiple areas. The self-evaluated data would give the student an idea of "What kind of person am I and what kind of persons are those with whom I am studying?" We have adopted Gardner's view on multiple intelligences as a theory guiding our instrument building (Gardner 1993).

Intelligence is "a nightmare" as a target for self-evaluation. In addition to measurement issues related to reliability and validity, the creators need to define what they mean with the concept "intelligence". In our work, we argue that students' perceptions of and beliefs about themselves as learners, together with their intertwined affective experiences of self in relation to all areas of the seven intelligences presented in Gardner's theory, are the primary dynamical aspects in their personal learning processes. According to Malmivuori (2001), beliefs and perceptions of self constitute the most central cognitive feature or determinant behind students' personal understandings, interpretations, and self-regulation. Hence, we claim that self-evaluated intelligence, that concerns students' own perceptions of and beliefs about themselves as learners, can serve as an empowering tool in their studies. Self-evaluation is shown to be less threatening than the evaluation done by the teacher or somebody else (Tirri, 1993). Furthermore, self-evaluation is a viable starting point in the process of learning new things. Self-evaluation can be viewed as a form of evaluation that suits an autonomous, reflective student in helping him/her to continuous growth and development. It is easy to implement because it doesn't require large personnel or financial resources. In the context of virtual teaching and learning, self-assessment can provide some of the guidance and feedback that students and teachers need in the teaching-studying-learning process.

GARDNER'S THEORY OF MULTIPLE INTELLIGENCES

Gardner's theory of multiple intelligences builds on a concept of an "intelligence", which he defines as "the ability to solve problems, or to create products, that are

valued within one or more cultural settings" (Gardner, 1993, x). Considering this definition, Gardner lists seven intelligences that meet his criteria for intelligence. These intelligences are: Linguistic, logical-mathematical, musical, spatial, bodily kinesthetic, interpersonal and intrapersonal (Gardner, 1993).

In a broad sense, Gardner views his theory as a contribution to the tradition advocated by Thurstone (1960) and Guildford (1967) because all these theories argue for the existence of a number of factors, or components, of intelligence. All these theories also view intelligence as being wider and more multidimensional than a single, general capacity for conceptualization and problem solving. Gardner differs from the other pluralists in his attempt to base his MI theory upon neurological, evolutionary, and cross-cultural evidence (Gardner, 1993). In the first edition of his MI theory, almost twenty years ago, Gardner adopted a very individualistic point of view in exploring various intelligences (Gardner, 1983). In his newest edition of the MI theory, Gardner emphasizes more cultural and contextual factors in the development of the seven intelligences (Gardner, 1993). Gardner has retained the original seven intelligences presented earlier, but he acknowledges the possibility of adding new intelligences to the list. He has worked on an eighth intelligence, the intelligence of the naturalist, to be included in his list of multiple intelligences (Gardner, 1995).

Sternberg identifies Gardner's theory of multiple intelligences as a systems approach similar to his own triarchic theory. Although he likes Gardner's assessments at a theoretical level, he believes them to be a psychometric nightmare. The biggest challenge for advocates of Gardner's approach is to demonstrate the psychometric soundness of their instrument. Sternberg is calling for hard data that would show that the theory works operationally in a way that will satisfy scientists as well as teachers. Sternberg's own theory promises the broader measurement implied by the triarchic theory (Sternberg, 1985). His theory provides process scores for componential processing, coping with novelty, automatization, and practical-contextual intelligence, and content scores for the verbalization, and quantitative and figural content domains (Sternberg, 1991).

Sternberg's observations on Gardner's theory should be kept in mind in attempts to create tests based on his theory. However, in the educational setting his theory can be used as a framework in planning a program that would meet the needs of different learners (Tirri, 1997). Gardner has shown a special interest in the school's possibilities and limitations to encourage different talents in students (Gardner, 1991). Gardner's theory has been applied in educational settings and in schools (see, e.g., Armstrong, 1993). Gardner warns against using his theory as the only educational approach. There is no single way to adapt his theory, but he has given some guidelines for the possible uses of his theory in schools (Gardner, 1995).

In our instrument development work, Gardner's theory is used as a guiding theory to build tools for students' self-evaluation. Self-evaluated intelligence is closely related to a person's self-concept (SC). According to leading researchers, self-concept has a two-factor structure: general self-concept and academic self-concept (Shavelson, Hubner & Stanton, 1976). Byrne & Gavin (1996) argue that SC is a multidimensional construct, which in their study comprised the four facets of general, academic, English, and mathematics self-concepts. Self-evaluated intelligence can reflect both general and academic components of a person's self-

concept. Furthermore, self-evaluated intelligence is closely related to a person's self-esteem and self-confidence. The concept of self-efficacy needs to be acknowledged in the context of self-evaluation. According to Bandura (1978), self-efficacy is specific to a particular activity or situation, in contrast to global beliefs like self-concept. In our study, we concentrate on the self-evaluated intelligence within the Gardnerian framework. We assume that students reflect both general and academic self-concepts in their self-assessments of their strengths and weaknesses.

MORAL SENSITIVITIES

According to earlier empirical research we know that intelligence tends to correlate with high levels of moral reasoning (Narvaez, 1993; Räsänen, Tirri & Nokelainen, 2006). However, the relationship between intelligence and morality is a very complex one and needs more detailed studies (Tirri & Pehkonen, 2002; Tirri & Nokelainen, 2007; Tirri, Nokelainen & Mahkonen, 2009). According to Bebeau, Rest and Narvaez (1999), morality is built upon four basic component processes. These processes include moral sensitivity, moral judgment, moral motivation and moral character. The components of moral sensitivity, moral motivation and moral character have been less studied than the component of moral judgment.

Tirri (2011) argues that skills in moral judgment and especially in moral sensitivity are necessary in combining excellence with ethics. High ability students have shown to be superior in moral judgment when compared to average ability students. However, high academic ability does not always predict high moral judgment (Narvaez, 1993). Moreover, morality includes other components as well, such as sensitivity, motivation and character. According to Muriel Bebeau and her colleagues (1999), moral sensitivity is about the awareness of how our actions affect other people. Thus, without moral sensitivity it is difficult to see what kind of moral issues are involved in everyday life. However, to respond to a situation in a moral way, a person must be able to perceive and interpret events in a ways that leads to ethical action. Morally sensitive person notes various situational cues and is able to visualize several alternative actions in response to that situation. He or she draws on many aspects skills, techniques and components of interpersonal sensitivity. These include taking the perspective of others (role taking), cultivating empathy for a sense of connection to others, and interpreting a situation based on imagining what might happen and who might be affected. Moral sensitivity is closely related to a new suggested intelligence type, social intelligence, which can be defined as the ability to get along well with others and get them to cooperate with you (Albrecht, 2006; Goleman, 2006).

CHAPTERS OF THE BOOK

In this book, we introduce several sensitivity measures in educational contexts that can be used in research, education and self-evaluations. In Chapter 1 we discuss the framework of Gardner's theory and introduce our Multiple Intelligence Profiling Questionnaire MIPQ VII. We present the psychometrical qualities of the instrument with empirical data sets of children, youth and adults. In Chapter 2 the Spiritual Sensitivity Scale is introduced with the theoretical framework it is

connected to. The existence of spiritual intelligence has been a widely debated issue and not everybody is ready to call advanced thinking in religious or spiritual domains as intelligence. This has guided us to use the term sensitivity, which is easier to justify than intelligence in these areas of human behavior. In Chapter 3 we introduce the Environmental Sensitivity Scale, which is quite close to the possible intelligence of naturalist suggested by Gardner. In Chapter 4 Ethical Sensitivity Scale is introduced followed by Emotional Leadership Questionnaire in Chapter 5. All these scales have a solid theoretical framework and earlier empirical work to support the instrument building. Chapter 6 introduces Intercultural and Interreligious Sensitivity Scales with their theoretical frameworks and earlier empirical work.

A commentary by Dr. Seana Moran compliments the book and challenges the readers to further reflect the meaning of education in supporting holistic development of learners in their life-long journey. We have authored this book to contribute to this goal and hope it will be used in the hands of researchers, teachers and students in their mutual effort to grow and to learn new things in life.

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CHAPTER 1

MULTIPLE INTELLIGENCES PROFILING QUESTIONNAIRE

INTRODUCTION

The Multiple Intelligences Profiling Questionnaire VII (MIPQ VII, see Tirri & Komulainen, 2002; Tirri, Nokelainen & Ubani, 2006; Tirri & Nokelainen, 2007) is a five-point Likert scale (Likert, 1932) self-rating questionnaire that is based on Howard Gardner's Multiple Intelligences (MI) theory (1983, 1991, 1995, 1999, 2000, 2006). The MIPQ VII aim to assist both learners in their self-reflection and teachers to understand their students' strengths. This version of MIPQ (Tirri, K., Komulainen, Nokelainen & Tirri, H., 2002, 2003) operationalizes seven MI dimensions with 28 items: (1) Linguistic, (2) Logical-mathematical, (3) Musical, (4) Spatial, (5) Bodily-kinesthetic, (6) Interpersonal and (7) Intrapersonal intelligence. The following two chapters present MIPQ versions VIII (with spiritual dimension) and IX (with spiritual and environmental dimensions).

Sternberg (1991) identifies Gardner's MI theory as a systemic approach similar to his own triarchic theory (1985). Although he appreciates Gardner's assessments on a theoretical level, he finds them to be a psychometric nightmare (Sternberg, 1991): the greatest challenge for advocates of Gardner's approach is to demonstrate the psychometric soundness of the instrument. Sternberg call for hard data showing that the theory works operationally in a way that will satisfy researchers as well as teachers.

The main goals of this chapter are, firstly, to present the seven dimension version of the Multiple Intelligences Profiling Questionnaire (MIPQ VII) and secondly, to test the psychometric properties of the MIPQ VII with empirical samples.

The chapter is organized as follows: First, we present the theoretical structure of the MIPQ VII. Second, we test the psychometric properties of the MIPQ VII's seven dimensions with two sub-samples consisting of Finnish preadolescents and adults (N = 410). Finally, we discuss the properties and possible uses of the instrument.

THEORETICAL FRAMEWORK

Gardner's theory of multiple intelligences builds upon a concept of an "intelligence", which he defines as "the ability to solve problems, or to create products, that are valued within one or more cultural settings" (Gardner, 1993, p. x). In his latest work Howard Gardner (2006, p. 50) also views intelligences as

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"raw, biological potentials, which can be seen in pure form only in individuals who are, in the technical sense, freaks". He lists seven intelligences (IQ) that meet his criteria for intelligence. These intelligences are (1) Linguistic, (2) Logical-mathematical, (3) Musical, (4) Spatial, (5), Bodily-kinesthetic, (6) Interpersonal and (7) Intrapersonal (Gardner, 1983, p. xi). Operationalization and prevalidation of these dimensions was first carried out with an empirical sample (N = 256) of Finnish university students (Tirri et al., 2002, 2003).

Tirri and Komulainen (2002) operationalized the *Linguistic intelligence* dimension to include both verbal and written expressions. People whose intelligence profile includes a strong linguistic component would presumably give themselves high ratings on learning and entertaining themselves with words and verbal games. The factor score weights revealed that linguistic intelligence consists of two different components. The first, "Academic verbalness", measured self-perception in verbal learning ("Metaphors and vivid verbal expressions help me learn efficiently" and "At school, studies in my native language or social studies were easier for me than mathematics, physics and chemistry"). The other component of linguistic intelligence consisted of items that measured "Everyday verbalness". The highest loading variables included the following items "I am good at entertaining myself and others with wordplay and jokes" and "It is easy for me to play with word games, such as crossword puzzles"). The reliability of the scale was satisfactory (α = .64).

Logical-mathematical intelligence consisted of items that measured a person's perceptions of both their mathematical ability and logical thinking skills (Tirri & Komulainen, 2002). This intelligence also had two components. The highest loading items, "At school I was good at mathematics, physics or chemistry", "Mental arithmetic is easy for me", and "I am good at games and problem solving which require logical thinking", measured problem solving in academic contexts. The component was named "Academic problem solving". The other component, "Systematic and logical thinking", included items that measured analytical, logical and systematic thinking in general. The highest loading variables included the following items: "I tend to look for consistency, models and logical series in things", "I can easily measure, classify, analyze or calculate things", "I want to present things as logically as possible and to give reasons for them" and "I easily notice lapses of logic in other people's everyday speech or actions". The reliability of the scale was good (α = .76). (Tirri & Komulainen, 2002; Tirri et al., 2002, 2003.)

According to Tirri and her colleagues (2002, 2003), *Musical intelligence* was the most reliable and homogeneous of all the Gardnerian scales (Alpha .93). The ten items of the scale measured one's musical ability to hear and produce music. The highest loading variables were the items "When listening to music, I am able to discern instruments or recognize melodies" and "I notice immediately if a melody is out of tune".

Spatial intelligence measured a person's views of his or her abilities to visualize and work with multidimensional objects. This intelligence consisted of two components: one dealt with visual imaging and the other with spatial perception. The highest factor score weights on the component measuring visual imaging included the following items: "When I think, I can see clear visual images in my mind", "I am able to see objects or events that I would like to document on

camera or video", and "I'm good at drawing and designing various kinds of figures". The highest factor score weights measuring spatial perception included the items: "It is easy for me to conceptualize complex and multidimensional patterns", "I can easily imagine how a landscape looks from a bird's-eye view", and "At school, geometry and various kinds of assignments involving spatial perception were easier for me than solving equations". The reliability of the scale was satisfactory (α = .73). (Tirri & Komulainen, 2002.)

Bodily-kinesthetic intelligence was operationalized to include items measuring people's views of their abilities to work with hands and coordinating their bodies. This scale also consisted of two components. The "Handyman" component included the following items: "I am handy", "I was good at handicrafts at school" and "I can easily do something concrete with my hands (e.g. knitting and woodwork)". The other component was named "Body coordination", because it included items related to coordination skills. The following items had high scores on this component: "I am very good at tasks that require good coordination" and "I have good coordination". The reliability of the scale was satisfactory (α = .74). (Tirri & Komulainen, 2002.)

Interpersonal intelligence was the second most homogeneous of the Gardnerian scales (Alpha .82). The items measured a persons' perception of his or her ability in social relations. The highest factor weights were on the items "I make contact easily with other people" and "I get along easily with different types of people". (Tirri & Komulainen, 2002.)

Intrapersonal intelligence consisted of two components. The "Self-reflection" component measured people's views of their ability to reflect on important issues in life as well as deep psychological and philosophical issues. The highest scoring factor weights were on items "I regularly spend time reflecting on the important issues of life", "I like to read psychological or philosophical literature to increase my self-knowledge" and "I keep a diary or note down the events of my inner life". The other component "Self-knowledge", dealt with issues concerning individuals' ability to analyze themselves and the courage to express their own opinions. The highest scoring items were, "I am able to analyze my own motives and ways of action", "I have opinions of my own and dare to disagree with others", and "I can handle the emotions caused by serious setbacks". The reliability of the scale was satisfactory (α = .70). (Tirri & Komulainen, 2002.)

Gardner founds his MI theory upon neurological, evolutionary, and cross-cultural evidence (Gardner, 1983). In the first edition of his MI theory published nearly thirty years ago, Gardner adopted a very individualistic point of view in exploring various intelligences. In the latest edition of his MI theory, Gardner emphasizes more cultural and contextual factors in the development of the seven intelligences (Gardner, 1999). Gardner has retained the original seven intelligences presented earlier, but he acknowledges the possibility of adding new intelligences to the list. He has worked to include naturalistic, spiritual and existential intelligences in his list of multiple intelligences. The next following two chapters further discuss these additional intelligences and their operationalization into the MIPQ VIII and IX.

METHOD

Sample

The non-probability sample was collected with the 28 –item MIPQ VII in 2002-2003. The theoretical structure of the questionnaire was analyzed with a sample (*N* = 410) that consists of Finnish preadolescents (*n* = 183) and adults (*n* = 227). The youngest respondents were 183 Finnish elementary school 5th and 6th grade students. One hundred and four (56 %) were girls and 79 (44 %) were boys. Their age median was 12 years. The second group (*n* =227) represents Finnish adults, including 200 males and 24 females (gender information was missing from three respondents), with the age median of 26 years.

Multiple Intelligences Profiling Questionnaire VII (MIPQ VII)

The MIPQ VII measures seven dimensions of Gardner's MI theory: (1) Linguistic, (2) Logical-mathematical, (3) Musical, (4) Spatial, (5) Bodily-kinesthetic, (6) Interpersonal, and (7) Intrapersonal intelligence. The instrument consists of 28 items on a Likert scale from 1 (*totally disagree*) to 5 (*totally agree*). The psychometric properties of the dimensions were prevalidated in our earlier studies (Tirri & Komulainen, 2002; Tirri, K., Komulainen, Nokelainen & Tirri, H., 2002, 2003; Tirri, Nokelainen & Ubani, 2006; Tirri & Nokelainen, 2007). The total number of items was reduced from 70 to 28 items. (Table 1.)

Procedure

The sample was collected with a non-probability sampling. Each respondent was personally invited to complete a paper and pencil version of the questionnaire. Preadolescents and adults answered the questions with the same wordings. Participants were asked to use the Likert scale from 1 (*totally disagree*) to 5 (*totally agree*) to evaluate their attitude towards the statements measuring multiple intelligences.

Total population in Finland is 5.2 million. The country consists of five culturally and economically equal provinces: 1) Lapland (*N* = 187,777, 4 %), 2) Oulu (*N* = 457,345, 9 %), 3) Western Finland (*N* = 1,843,225, 35 %), 4) Eastern Finland (*N* = 584,974, 11 %) and 5) Southern Finland (*N* = 2,106,117, 41 %). The preadolescent sample (*n* = 183) was collected from two provinces, Western and Southern Finland in 2002-2003. The adult sample (*n* = 227) represented all the provinces and was collected in 2003.

Statistical Analyses

Statistical analyses were conducted in four phases. *First*, internal consistency of the MIPQ VII was tested with Cronbach's alpha (1970). In this study, we consider alpha levels of the reliability analysis against Nunnally's (1978, pp. 245-246) statement: "increasing reliabilities much beyond .80 is often wasteful of time and funds with the exception of applied settings where important decisions are made with respect to specific test scores." *Second*, correlations between the seven MIPQ

VII dimensions were analyzed with Spearman rho. The fixed level of Type I error was determined in advance to be $\alpha = .05$ in both second and third phases of the analyses. Kubinger, Rasch & Simeckova (2007) suggest that when testing a correlation coefficient's significance it is preferable to use H_0: $0 < \rho < \lambda$ instead of H_0: $\rho = 0$. In this study, we set the $\lambda = .3$. Further, according to Kubinger and his colleagues (id.), the magnitude of the dependency between two random variables can be interpreted by using the coefficient of determination (r^2), which represents "the per centage of the variance of one of two random variables which can be explained by a linear regression on the other variable" (id., p. 76). *Thirth*, the external validity of the nine MI scales was initially studied with confirmatory factor analysis for categorical indicators.

RESULTS

Reliability Analysis of the MIPQ VII

The first phase of the analysis investigates psychometric properties of the 28 - item MIPQ VII. Table 2 presents the factor structure and alpha loadings for the seven MI scales. The results were in parallel with the findings of our previous studies (Tirri & Komulainen, 2002; Tirri et al., 2002, 2003; Tirri, Nokelainen & Ubani, 2006): Musical and Interpersonal scales had the highest reliabilities ($\alpha = .88$ - .89), and Linguistic and Spatial scales had the lowest reliabilities ($\alpha = .53$ - .62). As discussed earlier, alpha depends on the dimensionality of the scale (one-dimensional vs. multidimensional); higher reliability is achieved with one-dimensional constructs. The second issue affecting reliability is that when the abstraction level of the concept increases, like with the spiritual intelligence, the invention on unambiguous propositions becomes more difficult.

Table 1. Linguistic, Logical-mathematical, Spatial, Bodily-kinesthetic, Musical, Interpersonal and Intrapersonal Intelligence Items in the MIPQ VII

		Preadol. (*n* = 183)	*Adults* (*n* = 227)
Item	*Label*	*M* (*SD*)	*M* (*SD*)
lingu_1	Writing is a natural way for me to express myself.	3.36(0.96)	2.72(1.15)
lingu_2	At school, studies in native language were easy for me.	3.10(1.23)	3.21(1.19)
lingu_3	I have recently written something that I am especially proud of, or for which I have received recognition.	2.93(1.29)	2.00(1.21)
lingu_4	Metaphors and vivid verbal expressions help me learn efficiently.	3.25(0.94)	3.52(1.01)
logic_1	At school, I was good at mathematics, physics or chemistry.	2.71(1.33)	2.72(1.13)
logic_2	I can work with and solve complex problems.	3.08(1.18)	3.54(0.89)
logic_3	Mental arithmetic is easy for me.	3.79(1.07)	3.51(1.01)
logic_4	I am good at games and problem solving, which require logical thinking.	3.43(1.19)	3.41(0.94)
spati_1	At school, geometry and various kinds of assignments involving spatial perception were easy for me.	2.88(1.13)	2.98(1.24)
spati_2	It is easy for me to conceptualize complex and multidimensional patterns.	3.28(0.98)	3.45(0.86)
spati_3	I can easily imagine how a landscape looks from a bird's-eye view.	3.50(1.04)	3.35(1.00)
spati_4	When I read, I form illustrative pictures or designs in my mind.	3.78(1.06)	3.52(1.08)
bodki_1	I am handy.	3.49(0.96)	3.92(0.93)
bodki_2	I can easily do something concrete with my hands (e.g. knitting and woodwork).	3.99(1.04)	4.03(1.04)
bodki_3	I am good at showing how to do something in practice.	3.28(0.89)	3.88(0.77)
bodki_4	I was good at handicrafts at school.	3.90(1.14)	4.04(1.00)
music_1	After hearing a tune once or twice I am able to sing or whistle it quite accurately.	3.28(1.23)	2.92(1.32)
music_2	When listening to music, I am able to discern instruments or recognize melodies.	3.34(1.15)	3.29(1.35)
music_3	I can easily keep the rhythm when drumming a melody.	3.29(1.06)	3.20(1.28)
music_4	I notice immediately if a melody is out of tune.	3.16(1.19)	3.08(1.29)
inter_1	Even in strange company, I easily find someone to talk to.	3.30(1.14)	3.84(0.89)
inter_2	I get alone easily with different types of people.	3.58(1.01)	4.26(0.75)
inter_3	I make contact easily with other people.	3.30(0.98)	3.84(0.77)
inter_4	In negotiations and group work, I am able to support the group to find a consensus.	3.26(0.85)	3.72(0.74)
intra_1	I am able to analyze my own motives and ways of action.	3.25(0.83)	3.86(0.77)
intra_2	I often think about my own feelings and sentiments and seek reasons for them.	3.39(1.10)	3.43(1.08)
intra_3	I spend time regularly reflecting on the important issues in life.	3.01(1.20)	2.88(1.12)
intra_4	I like to read psychological or philosophical literature to increase my self-knowledge.	2.23(1.11)	2.33(1.15)

Table 2. Factor Structure and Alpha Loadings of the MIPQ VII

		Preadolescents (*n* = 183)	*Adults* (*n* = 227)
Dimension	*Items*	α	α
1. Linguistic	lingu_1, lingu_2, lingu_3, lingu_4	.62	.59
2. Logical-mathematical	logic_1, logic_2, logic_3, logic_4	.76	.63
3. Musical	music_1, music_2, music_3, music_4	.83	.89
4. Spatial	spati_1, spati_2, spati_3, spati_4	.53	.54
5. Bodily-kinesthetic	bodki_1, bodki_2, bodki_3, bodki_4	.71	.84
6. Interpersonal	inter_1, inter_2, inter_3, inter_4	.81	.80
7. Intrapersonal	intra_1, intra_2, intra_3, intra_4	.72	.76

Correlational Analysis of the MIPQ VII

The second step in the analysis is to calculate Spearman non-parametric correlations between the seven MI dimensions with the preadolescent (n = 183) and adult (n = 227) samples (Table 3). The results show that Logical-mathematical intelligence is statistically related to the Spatial intelligence in both samples, $r_S(183) = .48$, $p < .01$, $r^2 = .23$ and $r_S(227) = .39$, $p < .01$, $r^2 = .15$ as both variables share 23 and 15 per cent mutual variance, respectively. Further, in both samples the Linguistic intelligence is more strongly related to Intrapersonal than Interpersonal intelligence, $r_S(183) = .49$, $p < .01$, $r^2 = .25$ and $r_S(227) = .52$, $p < .01$, $r^2 = .27$. However, both aforementioned dimensions correlate positively in both samples, $r_S(183) = .42$, $p < .01$, $r^2 = .18$ and $r_S(227) = .36$, $p < .01$, $r^2 = .13$.

We also investigated correlations between age, gender and the MI dimensions in the preadolescent sample. Results considering the MI scales showed that boys rated their Logical-mathematical intelligence higher than girls, $r_S(183) = .39$, $p < .01$, $r^2 = .15$. This result was also weakly present in our earlier study with the university students (Tirri & Komulainen, 2002), $r_S(256) = .27$, $p < .001$, $r^2 = .07$. Females tended to rate their linguistic abilities higher than the males in both current, $r_S(183) = -.18$, $p < .01$, $r^2 = .03$ and the past study (Tirri, et al., 2002), $r_S(256) = -.49$, $p < .001$, $r^2 = .25$.

Table 3. Correlations between the MIPQ VII Dimensions

Scale	*1*	*2*	*3*	*4*	*5*	*6*	*7*
Preadolescents (n = 183)							
1. Linguistic	—	.15	.39	.45	.36	.34	.49
2. Logical-mathematical		—	.12	.48	.15	.26	.31
3. Musical			—	.39	.41	.50	.36
4. Spatial				—	.32	.31	.40
5. Bodily-kinesthetic					—	.44	.16
6. Interpersonal						—	.42
7. Intrapersonal							—
Adults (n = 227)							
1. Linguistic	—	.11	.15	.22	-.03	.28	.52
2. Logical-mathematical		—	.10	.39	.19	.04	.19
3. Musical			—	.27	.11	.24	.16
4. Spatial				—	.28	.21	.31
5. Bodily-kinesthetic					—	.11	-.09
6. Interpersonal						—	.36
7. Intrapersonal							—

Our earlier study (Tirri et al., 2002) validated the MI scales with various controlling variables. The results showed that those students who had received good grades in mathematics in their matriculation examination rated their Interpersonal skills to be lower than their colleagues who had received lower grades, $r(256) = -.22$, $p < .001$, $r^2 = .05$. Results also indicated that good grades in mother tongue in the matriculation examination explain students' high ratings in the Linguistic intelligence component, $r(256) = .34$, $p < .001$, $r^2 = .12$. In addition, we found that Linguistic intelligence seems to increase with age, $r(256) = .22$, $p < .001$, $r^2 = .05$, as the older students rated this component significantly higher than their younger colleagues. Results showed that the females tended to rate themselves higher than the males in both interpersonal, $r(256) = .29$, $p < .001$, $r^2 = .08$, and intrapersonal intelligence, $r(256) = .45$, $p < .001$, $r^2 = .20$. The first finding was repeated in the current study, but with a weak correlation, $r(183) = -.18$, $p < .05$, $r^2 = .03$.

Confirmatory Factor Analysis

The last phase of the statistical analysis was to evaluate the goodness-of-fit of the MIPQ VII model with both preadolescent and adult samples (Table 4). In addition, the model fit to the combined sample was investigated. The RMSEA estimate, as well as the upper bound of 90 per cent confidence interval, were in both samples

within the fair fit level of .05 – .08 (Hair et al., 1995). Incremental fit measures (TLI and CFI) were in both samples above the recommended level of .90 (Tucker & Lewis, 1973). Results of the combined sample (N = 378) also indicated good generalizability of the model.

Table 4. Goodness-of-fit Values of the MIPQ VII

	Preadolescents (n = 183)	*Adults* (n = 227)	*Combined* (N = 410)
Absolute Fit Measures			
χ^2	636.91	721.50	990.40
Df	329	329	329
p	<.001	<.001	<.001
RMSEA	.072	.073	.070
90 per cent C.I.	.063 .080	.065 .080	.065 .075
Incremental Fit Measures			
CFI	.977	.975	.977
TLI	.972	.969	.972

Note. RMSEA= Root Mean Square Error of Approximation with 90 per cent confidence interval. *TLI* = Tucker-Lewis coefficient. *CFI* = Comparative Fit Index.

We did not do any model modifications during the analysis as, according to Hu and Bentler (1995, p. 99), "… when procedures are used that empirically modify a model to make it look as good as possible in a particular sample, all of the model fit indexes will appear unduly optimistic about the quality of the model." However, we probed the model with two simple procedures. First, we randomly assigned the 28 items to the seven MI dimensions and calculated the fit indices for the combined data (N = 410). Results showed a dramatic change in goodness-of-fit measures. For example, CFI and TLI values dropped to .452 and .358, respectively. This is a theoretically justifiable finding as all the items are allowed to interact with each other and, thus, produce a high overall correlation. Second, we inputted a random data (within the original MIPQ VII value range from 1 to 5 into the CFA model. The analysis did not converge at all as the maximum number of iterations (first n = 1000 and then n = 10000) was exceeded.

CONCLUSIONS

In this chapter, we presented the seven dimension version of the Multiple Intelligences Profiling Questionnaire (MIPQ VII) that is based on Gardner's MI theory (e.g., 2006). Operationalization of the seven MI dimensions was tested with an empirical sample of Finnish preadolescents and adults (N = 410): Firstly, internal consistency of the MIPQ VII was tested; Secondly, correlations between the seven MIPQ VII dimensions were studied; Thirdly, correlations between the seven MIPQ VII dimensions and the background variables (age, gender) were

analyzed; Fourthly, the external validity of the seven MI dimensions was studied with a confirmatory factor analysis (CFA).

Results of the internal consistency analysis showed that the seven MIPQ VII dimensions had satisfactory reliability coefficients with both sub samples. The results of CFA showed good generalizability characteristics of the MIPQ VII scales. Combined sample (N = 410) did fit to the model better than the two sub samples, indicating good generalizability of the model.

Results of the MIPQ VII inter-scale correlation analysis showed that Logical-mathematical intelligence correlated positively with Spatial intelligence in both samples and Linguistic correlated positively with Intrapersonal intelligence.

Results of the correlation analysis between the gender, age and MIPQ VII scales showed that boys in the preadolescent sample rated their Logical-mathematical intelligence higher than girls. This finding is in accord with earlier studies concerning gender differences among gifted students. A study by Siegle and Reis (1998) found that adolescent male gifted students indicated they had higher ability than females in mathematics, science, and social studies. Females tended to rate their linguistic abilities higher than the males. The similar results have been reported with our earlier studies using this instrument with gifted preadolescents (Tirri & Ubani, 2007).

Earlier research on gender differences in mathematical achievement has shown that gifted girls tend to underestimate their abilities in this area and this trend could have influenced the self-rated behavior of the girls in our sample as well. Kerr (1994) and Reis (1998) have identified external barriers to gifted women to excel as including the attitudes of parents and school, environmental options and possible discrimination or harassment at school or at work. The possible internal barriers among gifted females included self-doubt, self-criticism, and too low expectations. According to Siegle and Reis (1998), gifted girls tend to underestimate their abilities, especially in mathematics, social studies and science.

DISCUSSION

Our major motivation, when operationalizing Gardner's MI theory into the MIPQ VII, is to provide both learners and their supervisors' practical tools for meaningful self-reflection regarding each one's potentials. Perceptions of individual strengths are also connected to self-concept (e.g., Shavelson, Hubner & Stanton, 1996) and attribution theory (e.g., Heider, 1958; Weiner, 1974).

In addition, we are interested in the outcome aspect that is strongly present in the MI theory suggesting that academic intelligence alone is not enough. We need to recognize that success in life and career depends also on social, practical and emotional intelligences (Albrecht, 2006; Goleman, 2006).

Our findings give important information to teachers and educators on how gender influences the self-perception of students' abilities. The educators and counsellors should be aware of the main trends of girls to rate themselves lower in logical-mathematical dimension than in the other ones. The girls should be encouraged to see their whole potential in that dimension as well.

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Multiple Intelligences Profiling Questionnaire VII

	TOTALLY DISAGREE				TOTALLY AGREE
Writing is a natural way for me to express myself.	1	2	3	4	5
At school, studies in English or social studies were easier for me than mathematics, physics and chemistry.	1	2	3	4	5
I have recently written something that I am especially proud of, or for which I have received recognition.	1	2	3	4	5
Metaphors and vivid verbal expressions help me learn efficiently.	1	2	3	4	5
At school, I was good at mathematics, physics or chemistry.	1	2	3	4	5
I can work with and solve complex problems.	1	2	3	4	5
Mental arithmetic is easy for me.	1	2	3	4	5
I am good at games and problem solving, which require logical thinking.	1	2	3	4	5
At school, geometry and other subjects involving spatial perception were easier for me than solving equations.	1	2	3	4	5
It is easy for me to conceptualize complex and multidimensional patterns.	1	2	3	4	5
I can easily imagine how a landscape looks from a bird's-eye view.	1	2	3	4	5
When I read, I form pictures or visual images in my mind.	1	2	3	4	5
I am handy.	1	2	3	4	5
I can easily do something concrete with my hands (e.g. knitting and woodwork).	1	2	3	4	5
I am good at showing someone how to do something in practice.	1	2	3	4	5
I was good at handicrafts (e.g. woodwork; textiles) at school.	1	2	3	4	5
After hearing a tune once or twice I am able to sing or whistle it quite accurately.	1	2	3	4	5
When listening to music, I am able to pick out individual instruments and recognize melodies.	1	2	3	4	5

	TOTALLY DISAGREE				TOTALLY AGREE
I can easily keep the rhythm when drumming a melody.	1	2	3	4	5
I notice immediately if a melody is out of tune.	1	2	3	4	5
Even in strange company, I can easily find someone to talk to.	1	2	3	4	5
I get along easily with different types of people.	1	2	3	4	5
I make contact easily with other people.	1	2	3	4	5
In negotiations and group work, I am able to support the group to find a consensus.	1	2	3	4	5
I am able to analyze my own motives and ways of action.	1	2	3	4	5
I often think about my own feelings and sentiments and seek reasons for them.	1	2	3	4	5
I regularly spend time reflecting on the important issues of life.	1	2	3	4	5
I like to read psychological or philosophical literature to increase my self-knowledge.	1	2	3	4	5

SPSS Syntax to Compute MIPQ VII Factors

```
/* Variable names in this syntax refer to Table 1 in this chapter

COMPUTE MIPQVII_LINGU = MEAN(lingu_1, lingu_2, lingu_3, lingu_4).
COMPUTE MIPQVII_LOGIC = MEAN(logic_1, logic_2, logic_3, logic_4).
COMPUTE MIPQVII_MUSIC = MEAN(music_1, music_2, music_3, music_4).
COMPUTE MIPQVII_SPATI = MEAN(spati_1, spati_2, spati_3, spati_4).
COMPUTE MIPQVII_BODKI = MEAN(bodki_1, bodki_2, bodki_3, bodki_4).
COMPUTE MIPQVII_INTER = MEAN(inter_1, inter_2, inter_3, inter_4).
COMPUTE MIPQVII_INTRA = MEAN(intra_1, intra_2, intra_3, intra_4).
EXECUTE.

VARIABLE LABELS
  MIPQVII_LINGU        "1. Linguistic"
  MIPQVII_LOGIC        "2. Mathematical-logical"
  MIPQVII_MUSIC        "3. Musical"
  MIPQVII_SPATI        "4. Spatial"
  MIPQVII_BODKI        "5. Bodily-Kinesthetic"
  MIPQVII_INTER        "6. Interpersonal"
  MIPQVII_INTRA        "7. Intrapersonal".
```

CHAPTER 2

SPIRITUAL SENSITIVITY SCALE

INTRODUCTION

In the previous chapter, we operationalized Howard Gardner's theory of Multiple Intelligences (1983, 1991, 1995, 1999) into the MIPQ VII. This basic version of the instrument contains the following seven intelligences: (1) Linguistic, (2) Logical-mathematical, (3) Musical, (4) Spatial, (5) Bodily-kinesthetic, (6) Interpersonal, and (7) Intrapersonal intelligence. In this chapter, we present an instrument to measure spiritual sensitivity and extend the Multiple Intelligences Profiling Questionnaire VII (MIPQ VII) to include the spiritual intelligence dimension (MIPQ VIII).

The eighth dimension in the MIPQ VIII, *spiritual intelligence*, is based on Hay's (1998) and Bradford's (1995) definitions of spirituality. This spiritual dimension is based on the Spiritual Sensitivity Scale (SSS), which consists of the following four dimensions: (1) Awareness sensing, (2) Mystery sensing, (3) Value sensing and (4) Community sensing.

Sternberg (1991) identifies Gardner's MI theory as a systems approach similar to his own triarchic theory (Sternberg, 1985). Although he appreciates Gardner's assessments on a theoretical level, he finds them to be a psychometric nightmare (Sternberg, 1991). The greatest challenge for advocates of Gardner's approach is to demonstrate the psychometric soundness of the instrument. Sternberg calls for hard data demonstrating that the theory works operationally in a way that will satisfy scientists as well as teachers. The psychometric properties of the MIPQ VII have been presented in the previous chapter.

In this chapter, we use an empirical sample of Finnish preadolescents, adolescents and adults (N = 496) to evaluate whether the operationalization of the spiritual dimension reflects the categories of spiritual sensitivity based on the empirical studies of Hay (1998) and Bradford (1995). In addition, we reduce the number of items measuring spiritual sensitivity from twenty to four, in order to construct the Spiritual intelligence dimension (SpI) of the MIPQ VIII.

THEORETICAL FRAMEWORK

Religion and Spirituality

The meanings given to the concepts of religion and spirituality have evolved over the centuries. William James (1902, p. 32) defined religion as "the feelings, acts and experiences of individual men in their solitude". Since the time of James, few psychologists have seriously looked at religious institutions and the roles they play

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in shaping character. Today, the terms 'religion' and 'spirituality' are applied interchangeably to add linguistic variety to the terminology. However, many researchers define spirituality in contrast to religion. These definitions usually define religion as the organizational, the ritual, and the ideological. The spiritual then refers to the personal, the affective, the experiential, and the thoughtful. The idea that an individual can be spiritual without being religious or religious without being spiritual, has become a standard part of many papers on spirituality (Pargament, 1999). Clearly then, spirituality ought to be seen as a wider concept than religion. Such an understanding of these concepts indicates that religion and spirituality not only share some common areas but also have their own areas of interests (Stifoss-Hanssen, 1999).

Emotional and Spiritual Intelligence

More recent concepts that merit discussion in the context of multiple intelligences include emotional and spiritual intelligence. Daniel Goleman (1995) has suggested that emotional intelligence (EQ) gives us awareness of our own and other people's feelings. EQ provides us with empathy, compassion, motivation and the ability to respond appropriately to pain or pleasure. Goleman has pointed out that EQ is a basic requirement for the effective use of IQ. If the brain areas with which we feel are damaged, we think less effectively (Goleman, 1995).

Zohar and Marshall (2000) have applied the concept of spiritual intelligence (SQ) to the discussion concerning IQ and EQ. According to them, SQ helps us to assess the most meaningful course of action. With SQ, we address and solve problems of meaning and value. The authors claim that SQ is the necessary foundation for the effective functioning of both IQ and EQ. SQ is our ultimate intelligence (Zohar & Marshall, 2000). The difference between EQ and SQ deals with the concrete situation in which they are used. Emotional intelligence allows us to judge what situation we are in and then to behave appropriately within it. This entails working within the boundaries of a given situation, allowing the situation to guide us. Spiritual intelligence allows us to ask whether we want to be in this particular situation in the first place. Would we rather change the situation and create a better one? This involves working with the boundaries of our situation and allowing us to guide the situation. Similarly, Robert Emmons (1999, p. 176), who has also studied the idea of spiritual intelligence, describes spiritual intelligence as "the adaptive use of spiritual information to facilitate everyday problem solving and goal attainment".

Gardner (1999, pp. 54-58) has identified three domains of spiritual intelligence. First, he attributes "concern with cosmic or existential issues" to the sphere of spiritual intelligence. In fact, Gardner has pondered whether it would be more appropriate to consider spiritual intelligence as a form of existential intelligence. Second, he emphasizes the "spiritual as achievement of a state of being" which represents the psychological states and phenomenal experiences that we call spiritual. The third domain is the "spiritual as an effect on others", a social aspect which also coincides with the term charisma and is vital in conveying other people towards the fulfillment of the first two domains in their lives.

Measuring Spiritual Intelligence

Spiritual intelligence and its measurability have been a widely debated topic (see Emmons, 2000; Gardner, 2000; Mayer, 2000). Empirical studies on spirituality by Hay (1998) and Bradford (1995) have guided the development work of the Spiritual sensitivity scale represented in this article. The Spiritual sensitivity scale consists of the following four dimensions: (1) Awareness sensing, (2) Mystery sensing, (3) Value sensing and (4) Community sensing.

Hay (1998) has identified three dimensions of spiritual sensitivity. *Awareness sensing* refers to an experience on a deeper level of consciousness when we choose to be aware by "paying attention" to what is happening around us. This category coincides with Gardner's (1999) notion of the "spiritual as achievement of a state of being". According to Hay (1998, p. 60) this kind of awareness refers to a reflexive process of being attentive towards one's attention or "being aware of one's awareness".

The second dimension of spiritual sensitivity is *mystery sensing* which is connected to our capacity to transcend everyday experience and to use our imagination. For instance, appreciating the beauty and wonder of sunrise and sunset involves a sense of mystery, even after scientific explanations are presented. Imagination is essential to religious activity through the metaphors, symbols, stories and liturgies which respond to the otherwise unrepresentable experience of the sacred. This category relates to both Gardner's (1999) understanding of spiritual intelligence as the "achievement of a state of being" and the "concern with cosmic or existential issues", while emphasizing the mysterious nature of such experiences.

The third dimension of spiritual sensitivity is *value sensing*. This category emphasizes the importance of feelings as a measure of what we value. Among such things are the issues that touch our existential questions and desire for meaning. (Hay, 1998.) This category resembles Gardner's (1999) definition of spiritual intelligence as "concern with cosmic or existential issues".

In this study, we added a social dimension to Hay's three categories of spiritual sensitivity. Gardner (1999) has also proposed a social aspect of spirituality. The fourth dimension of spiritual sensitivity is called *community sensing* and is based on the work of Bradford (1995). Bradford has identified three types of spirituality. *Human spirituality* refers to the human need for care, love, security and responsibility which we all seek to fulfill. *Devotional spirituality* builds upon this human spirituality and is expressed within a certain religious tradition, culture and language. The third type of spirituality is *practical spirituality* in which both other types of spiritualities merge. Practical spirituality infuses our everyday lives providing us direction and influencing our social responsibilities and concerns (Bradford, 1995). Bradford's definitions represent the social aspect of the domains of spiritual intelligence (Gardner, 1999) and include the practical problem solving applications suggested by Zohar and Marshall (2000) and Emmons (1999).

METHOD

Sample

The data was collected with the 28 –item MIPQ VII and 20 –item SSS in 2003. The theoretical structure of the questionnaire was analyzed with a sample (N = 496) that consists of following three sub groups: (1) preadolescents (n = 183), (2) adolescents (n = 86) and (3) adults (n = 227). The youngest respondents were 183 Finnish elementary school 5th and 6th grade students. One-hundred and four (56 %) were girls and 79 (44 %) were boys. Their age median was 12 years. The second group consists of Finnish university students (n = 86) who represent adolescents in this study. Sixty-five (76 %) of the adolescents were females and twenty-one (24 %) were males. Their age median was 25 years. The third group (n =227) represents Finnish adults, including 200 males and 24 females (gender information was missing from three respondents), with the age median of 26 years.

Multiple Intelligences Profiling Questionnaire and SSS

As presented in the first chapter of this book, the MIPQ VII measures the seven dimensions of Gardner's MI theory: (1) Linguistic, (2) Logical-mathematical, (3) Musical, (4) Spatial, (5) Bodily-kinesthetic, (6) Interpersonal and (7) Intrapersonal. The instrument consists of 28 items on a Likert scale from 1 (*totally disagree*) to 5 (*totally agree*). The psychometric properties of the seven dimensions are discussed in the preceding chapter. The Spiritual Sensitivity Scale (SSS) can be used as a self-assessment tool to evaluate one's spiritual sensitivity. The twenty items of the Spiritual sensitivity scale are presented in Table 1.

The Spiritual sensitivity scale items were designed in the way that they apply to people from different religious backgrounds and cultures. This allows us to use the instrument in a multicultural society and in cross-cultural studies. The statements described the issues and values that the respondent finds important for him or her. They were operationalized from the three categories of spiritual sensitivity identified by Hay (1998). Every category was presented in the questionnaire with five statements. For example, the category of awareness sensing was measured by the statement: sp1_5 "I try to listen to my body when I study and work." An example item measuring mystery sensing was: sp2_10 "The use of imagination makes life more enjoyable." The category of value sensing was measured, for example, with the statement: sp3_15 "I am searching for goodness in life." The categories of spiritual sensitivity by Hay do not explicitly express the aspects of social dimension. Hence we added some statements measuring the social dimension of spirituality identified by Bradford (1995) and named the fourth dimension as Community sensing. These statements included items such as sp4_20 "I want to find a community where I can grow spiritually." (Table 1.)

Procedure

The sample was collected with non-probability sampling. Each respondent was personally invited to complete a paper and pencil version of the questionnaire. The children, adolescents and adults answered the questions with the same wordings.

Participants were asked to use the Likert scale from 1 (*totally disagree*) to 5 (*totally agree*) to evaluate their attitude towards the statements measuring multiple intelligences.

Total population in Finland is 5.2 million. The country consists of five culturally and economically equal provinces: 1) Lapland (N = 187,777, 4 %), 2) Oulu (N = 457,345, 9 %), 3) Western Finland (N = 1,843,225, 35 %), 4) Eastern Finland (N = 584,974, 11 %) and 5) Southern Finland (N = 2,106,117, 41 %). The preadolescent sample (n = 183) was collected from two provinces, Western and Southern Finland in 2002-2003. The adolescent sample (n = 86) was collected from one province, Southern Finland in 2003. The adult sample (n = 227) represented all the provinces and was collected in 2003.

Statistical Analyses

Statistical analyses were conducted in three phases. First, we analyzed twenty items of the Spiritual sensitivity scale and reduced the total number of items from 20 to 11. Second, we created, on the basis of the results of the first phase, the eighth four item dimension measuring spiritual intelligence (SpI) for the MIPQ VIII. Third, we validated the two scales developed in this study.

Phase one started with the investigation of non-parametric inter-item correlations (Spearman rho) between twenty Spiritual intelligence items. Second, the structure of the items was analyzed with exploratory factor analysis (EFA). A parametric method was applied on ordinal data as the critical assumptions underlying EFA are more conceptual than statistical by nature. The departures from normality, homoscedasticity, and linearity apply only to the extent that they diminish the observed correlations (Hair et al., 1995). Third, the reliability of the indicators for the Spiritual sensitivity scale was analyzed with Cronbach's alpha (1970, 160-161). Fourth, the dimensionality of the Spiritual sensitivity scale was investigated with principal component analysis (PCA). The last stage in phase one was the correlational analysis of the Spiritual sensitivity scales derived from the earlier stages.

The second phase started with reliability analysis and continued with correlational analysis of the MI dimensions. The last stage was the investigation of the correlations between age, gender and the MI dimensions. In the third phase, we performed confirmatory factor analysis to the Spiritual sensitivity scale and to the MIPQ VIII.

Table 1. The Spiritual Sensitivity Scale

Item	*Label*	*Preadol.* (*n* = 188) *M*(*SD*)	*Adol.* (*n* = 86) *M*(*SD*)	*Adults* (*n* = 227) *M*(*SD*)
Awareness sensing				
sp1_1	In midst of busy everyday life I find it important to contemplate.	3.13(1.07)	4.41(0.74)	3.50(1.15)
sp1_5	I try to listen to my body when I study and work.	2.88(1.00)	3.67(0.98)	3.12(0.96)
sp1_13	*When I concentrate on some activity with all my heart, I may forget the things around me.*	3.62(1.02)	3.70(1.03)	3.66(1.02)
sp1_17	*When I look at a painting I have seen before, I might see it in a different way.*	3.17(1.10)	3.81(0.87)	2.99(1.26)
sp1_9	*I believe that different kinds of meditation help us to know ourselves.*	2.32(1.12)	2.77(1.07)	2.78(1.21)
Mystery sensing				
sp2_2	*I admire the beauty of nature, for example, the sunset.*	3.83(0.99)	4.52(0.64)	4.27(0.82)
sp2_6	*Science cannot explain all the phenomena in the world.*	4.02(1.12)	4.64(0.73)	3.91(1.25)
sp2_10	The use of imagination makes life more enjoyable.	4.22(0.86)	4.71(0.50)	4.39(0.78)
sp2_14	Narratives and symbols are important things for me in life.	3.12(1.10)	3.95(0.85)	3.16(1.12)
sp2_18	Even ordinary every-day life is full of miraculous things.	3.91(1.07)	4.38(0.78)	3.76(0.99)
Value sensing				
sp3_3	I often reflect on the meaning of life.	3.17(1.23)	4.17(0.85)	3.13(1.16)
sp3_7	It is important to me to find my own mission in the world.	3.47(1.07)	4.43(0.74)	3.65(1.03)
sp3_11	*I feel anxious about the evil things in the world.*	2.78(1.15)	3.03(1.04)	2.27(1.07)
sp3_15	I am searching for goodness in life.	3.34(1.05)	4.09(0.84)	3.54(0.89)
sp3_19	*I endeavor to rejoice in the beauty of life wherever possible.*	3.48(1.05)	4.31(0.69)	3.89(0.92)
Community sensing				
sp4_4	It is important to me to find a community where to belong.	3.52(1.03)	4.10(0.86)	3.52(1.00)
sp4_8	*I want to advance peace with my own actions.*	3.32(0.98)	4.23(0.73)	4.06(0.85)
sp4_12	*I want to help those people who are in the need.*	3.48(0.95)	4.20(0.79)	3.72(0.84)
sp4_16	It is important to me to share a quiet moment with others.	2.41(1.02)	3.02(1.27)	2.29(1.08)
sp4_20	I want to find a community where I can grow spiritually.	2.88(0.99)	3.26(1.28)	2.59(1.08)

Note. Items in italics were not accepted for the final model.

RESULTS

Correlation Analysis of the Spiritual Sensitivity Scale

The first phase of the analysis aims to investigate psychometric properties of the Spiritual sensitivity scale items. Inter-item correlations between the 20 items measuring spiritual intelligence were investigated for three samples with the nonparametric correlation coefficient (Spearman rho). The four dimensions are measured by 20 items producing 190 inter-item correlations when diagonal and double-presentations are omitted ($N_{i\text{-}i\ corr} = (N_{items} \times (N_{items} - 1)) / 2$).

The correlations in the preadolescent sample (n = 183) range from .09 to .54 (M = .32, SD = .10). Five correlations were above |.50| and thus considered large according to Cohen (1988). They share over 25 per cent of their variance ($.5^2$ = .25). On the average items share 10 per cent of their variance with other items ($.32^2$ = .10).

The correlations in the adolescent sample (n = 86) range from -.15 to .58 (M = .18, SD = .13). Four correlations were above |.50| sharing over 25 per cent of their variance. On the average items share only 3 per cent of their variance with other items ($.18^2$ = .03).

The correlations in the adult sample (n = 227) range from .02 to .57 (M = .31, SD = .11). Nine correlations were above |.50| sharing over 25 per cent of their variance. On the average items share 10 per cent of their variance with other items ($.31^2$ = .10).

The result of inter-item correlation analysis shows that the items measuring spiritual intelligence share enough common variance in the preadolescent and adult samples to proceed to exploratory factor analysis.

Factor Structure and Reliabilities of the Spiritual Sensitivity Scale

The 20 items of the Spiritual Sensitivity Scale were subject to exploratory factor analysis (EFA) using Maximum likelihood extraction with Varimax rotation. Prior to performing EFA the suitability of data for factor analysis was assessed. The measurement scale applied in this study is nonmetric (ordinal) as opposite to metric that is required by EFA. However, we will proceed to the exploratory factor analysis as the underlying phenomena, multiple intelligences, are continuous by nature (Marini, Li & Fan, 1996). Johnson and Creech (1983) have studied with simulation studies the categorization error that occurs when continuous variables are measured by indicators with only a few categories. The results indicated that while categorization error does produce distortions in multiple indicator models, under most conditions explored the bias was not sufficient to alter substantive interpretations. However, authors warranted caution in the use of two-, three- or four-category ordinal indicators, particularly when the sample size is small.

As depicted in detail in the previous section, the inspection of the correlation matrices for all three samples revealed that most of the coefficients were .30 and above indicating that factor analysis was appropriate method.

The Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy approaches 1, if partial correlations are small, that is a desirable feature (Kaiser, 1974). According to Tabachnick and Fidell (2001, p. 589), values .60 and above are

required for good EFA. All the KMO values exceeded the recommended value of .60: the preadolescent sample KMO = .89, the adolescent sample KMO = .65, and the adult sample KMO = .89.

In the preadolescent sample EFA revealed the presence of three factors with Eigenvalues exceeding 1, explaining 36.7 per cent, 6.9 per cent and 5.6 per cent of the variance respectively. Initial communalities varied between .266 and .549. Two items with the lowest communalities were: sp1_9 "I believe that different kinds of meditation and joga practices help us to know ourselves." and sp2_6 "Science cannot explain all the phenomena in the world." Varimax rotated solution revealed the presence of four factor solution explaining 45.5 per cent of the variance. The result of the analysis supports the use of items measuring Awareness sensing, Mystery sensing, Value sensing and Community sensing in separate dimensions. Factor structure and alpha loadings for the Spiritual sensitivity scale are presented in Table 2. The reliabilities ranged from .55 to .76 in the preadolescent sample.

In the adolescent sample, EFA revealed the presence of seven factors with Eigenvalues exceeding 1, explaining 23.3 per cent, 11.8 per cent, 7.4 per cent, 6.5 per cent, 6.1 per cent, 5.5 per cent and 5.3 per cent of the variance respectively. Initial communalities varied between .223 and .673. Two items with the lowest communalities were: sp1_13 "When I concentrate on some activity with all my heart I may forget the things around me." and sp1_17 "When I listen to familiar music or look at a painting I have seen before I might hear or see them in a different way." Varimax rotated solution revealed the presence of four factor solution explaining only 37.2 per cent of the variance. Although the variance explained was low, we retained to the four factor solution depicted earlier, as the small sample size was obviously biasing the results. The reliabilities ranged from .40 to .68 in the adolescent sample. (Table 2.)

In the adult sample EFA revealed the presence of five factors with Eigenvalues exceeding 1, explaining 35.5 per cent, 8.4 per cent, 6.0 per cent, 5.6 per cent and 5.2 per cent of the variance respectively. Initial communalities varied between .278 and .574. Two items with the lowest communalities were: sp2_6 "Science cannot explain all the phenomena in the world." and sp3_11 "I feel anxious about the evil things in the world." Varimax rotated solution revealed the presence of four factor solution explaining 45.8 per cent of the variance. The result of the analysis support the use of items measuring Awareness sensing, Mystery sensing, Value sensing and Community sensing as separate dimensions. The reliabilities ranged from .58 to .73 in the adult sample. (Table 2.)

Table 2. Factor Structure and Alpha Loadings of the Spiritual Sensitivity Scale

		Preadol. (*n* = 188)	*Adol.* (*n* = 86)	*Adults* (*n* = 227)
Dimension	*Items*	α	α	α
Awareness sensing	*sp1_1*, sp1_5	.55	.40	.60
Mystery sensing	*sp2_18*, sp2_10, sp2_14	.61	.48	.58
Value sensing	*sp3_3*, sp3_7, sp3_15	.76	.45	.73
Community sensing	*sp4_16*, sp4_4, sp4_20	.63	.68	.71

Note. Italicized items were selected to represent spiritual intelligence dimension in the MIPQ VIII.

Dimensionality of the Spiritual Sensitivity Scale

The correlational analysis showed that all the four Spiritual sensitivity dimensions are strongly correlated. However, at this point we do not know whether they are one-dimensional or multidimensional structures. Unfortunately, Cronbach's alpha does not ensure unidimensionality, but assumes it exists (Hair et al., 1995). Next we conduct principal component analysis (PCA) for each spiritual sensitivity dimension. We plot the regression scores of the first two components for each dimension to visually study the dimensionalities. Results presented in Figure 1 show that all the dimensions except Community sensing are one-dimensional as only one out of five variables is on the second component. In Community sensing dimension two items, sp4_8 and sp4_12, measure concrete actions to help other people and are located on the second component axis. The other three items, namely sp4_4, sp4_16 and sp4_20, are more related to community sensing and are located on the first component axis.

On the basis of exploratory factor analysis and visual examination of component plots, we selected 11 items out of 20 to represent the Spiritual Sensitivity Scale. The items are presented in Table 2. Further, we selected four items to represent spiritual intelligence dimension in the MIPQ VIII (see Table 3).

Correlational Analysis of the Spiritual Sensitivity Scale

Intercorrelations between the four Spiritual sensitivity scales were investigated for three samples with Pearson product-moment correlation coefficient. The results are presented in Table 3. As expected, the correlations were the strongest among preadolescents, $r_S(183) = .46 – .63$ ($M_r = .54$, $SD_r = .07$) and adults $r_S(227) = .35 – .67$ ($M_r = .55$, $SD_r = .12$). All the correlations in two samples were statistically significant ($p < .001$, two-tailed), but the result is strongly influenced by the sample size that leads to increased statistical power (Hair et al., 1995, 22). The adolescent sample showed strong correlations among the Spiritual sensitivity scales $r(86) = .33 – .53$ ($M_r = .40$, $SD_r = .08$).

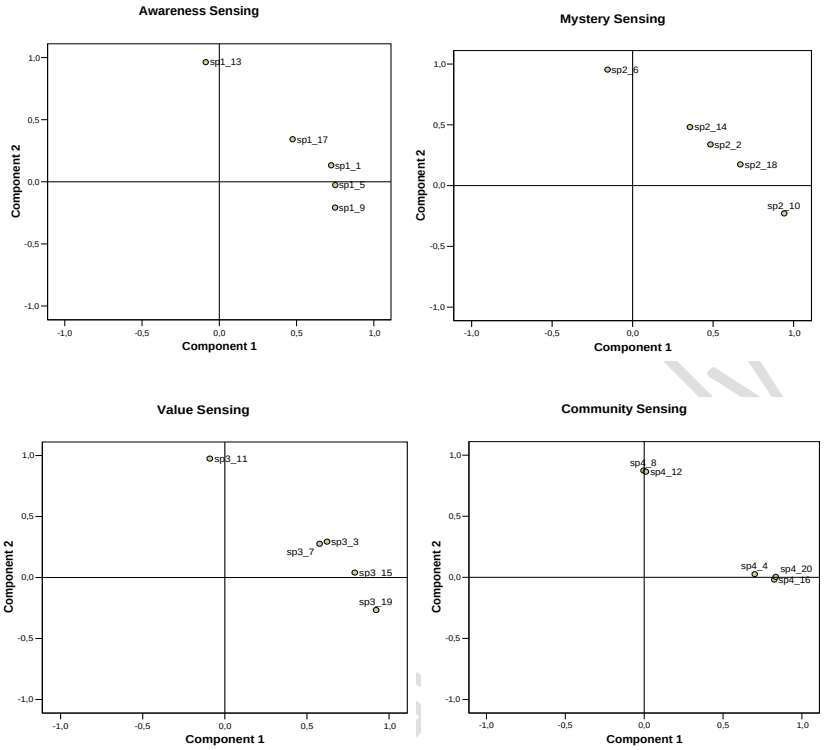

Figure 1. Dimensionality of the Spiritual Sensitivity Scales Represented with Component Plots.

The strongest statistical dependency in both the preadolescent, $r_S(183) = .63$, $p < .001$, and adult, $r_S(227) = .67$, $p < .001$, sample was between Value sensing and Community sensing. This result has scientific significance as two dimensions have 40 per cent shared variance. The finding is theoretically plausible as value sensing is based on self-reflection of important issues (sp3_3) that are naturally shared with a community of congenial souls (sp4_20) or kept inside in a quiet moment with other people (sp4_16). Awareness sensing was strongly correlated in all the three samples to Community sensing [preadolescents, $r_S(183) = .58$, $p < .001$; adolescents, $r_S(86) = .53$, $p < .001$; adults, $r_S(227) = .59$, $p < .001$], as in this instrument both are more or less related to self-reflection and contemplating.

Table 3. Correlations between the Spiritual Sensitivity Dimensions

Dimension	*8.1*	*8.2*	*8.3*	*8.4*
	Preadolescents (*n* = 183)			
8.1 Awareness sensing	—	.46	.50	.58
8.2 Mystery sensing		—	.59	.46
8.3 Value sensing			—	.63
8.4 Community sensing				—
	Adolescents (*n* = 86)			
8.1 Awareness sensing	—	.33	.35	.53
8.2 Mystery sensing		—	.36	.47
8.3 Value sensing			—	.36
8.4 Community sensing				—
	Adults (*n* = 227)			
8.1 Awareness sensing	—	.49	.66	.59
8.2 Mystery sensing		—	.53	.35
8.3 Value sensing			—	.67
8.4 Community sensing				—

Reliability Analysis of the MIPQ VIII

The second phase of the analysis aims to investigate psychometric properties of the MIPQ VIII items. All the dimensions in the instrument are operationalized with four items, making the total number of items to 28 (7×4). In order to add equally balanced dimension to represent spiritual intelligence, a new composite variable was computed as an average of the four strongest loading variables (see italicized items in Table 2). Table 4 presents the factor structure and alpha loadings for the eight MIPQ VIII scales. Reliability values of the first seven MI scales are not calculated for the adolescents, as their questionnaire contained only items measuring spiritual intelligence.

The results were in parallel with our earlier findings (Tirri et al., 2002): Musical and Interpersonal scales had the highest reliabilities (α = .80 - .89) while Linguistic and Spatial scales had the lowest reliabilities (α = .53 - .62). The reliability estimates for the Spiritual intelligence four item composite variable ranged from .64 to .76.

As discussed earlier, internal consistency index alpha depends on the dimensionality of the scale (one-dimensional vs. multidimensional). Higher reliability is achieved with one-dimensional constructs. The second issue affecting reliability is that an intelligence that is at a high level of abstraction, such as spiritual, is difficult to operationalize into intuitive items.

Table 4. Factor Structure and Alpha Loadings of the MIPQ VIII

Scale	Items	*Preadol.* (*n* = 188) α	*Adol.*[a] (*n* = 86) α	*Adults* (*n* = 227) α
1. Linguistic	lingu_1, lingu_2, lingu_3, lingu_4	.62	—	.59
2. Logical-mathematical	logic_1, logic_2, logic_3, logic_4	.76	—	.63
3. Musical	music_1, music_2, music_3, music_4	.83	—	.89
4. Spatial	spati_1, spati_2, spati_3, spati_4	.53	—	.54
5. Bodily-kinesthetic	bodki_1, bodki_2, bodki_3, bodki_4	.71	—	.84
6. Interpersonal	inter_1, inter_2, inter_3, inter_4	.80	—	.80
7. Intrapersonal	intra_1, intra_2, intra_3, intra_4	.72	—	.76
8. Spiritual	sp1_1, sp2_18, sp3_3, sp4_16	.70	.64	.76

[a]Adolescents, *n* = 86, did not respond to the first seven scales of the MIPQ VIII.

Correlational Analysis of the MIPQ VIII

The next step in the analysis was to calculate Pearson product-moment correlations between the spiritual and other seven dimensions with preadolescent (n = 183) and adult (n = 227) samples (Table 5). The results show that in both samples Linguistic, $r_S(183) = .48$, $p < .001$ and $r_S(227) = .34$, $p < .001$, and Intrapersonal, $r_S(183) = .59$, $p < .001$ and $r_S(227) = .61$, $p < .001$, scales are strongly related to the Spiritual scale. We reanalyzed the dependency between intrapersonal and spiritual intelligences by controlling for Linguistic intelligence. The result of partial correlation with preadolescent sample show that Intrapersonal and Spiritual scales have 22 per cent shared variance, $r_S(183) = .47$, $p < .001$. The result of partial correlation with the adult sample show that Intrapersonal and Spiritual scales have 29 per cent shared variance, $r_S(227) = .54$, $p < .001$. Logical-mathematical, Bodily-kinesthetic and Interpersonal scales had the weakest correlations with the Spiritual scale in both samples. The weak connection between mathematics and spirituality is perhaps related to the fact that spiritual issues are usually not easily explained out with scientific reasoning. Like item sp2_6 says: "Science cannot explain all the phenomena in the world."

Table 5. Correlations between the MIPQ VIII Dimensions

Scale	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
				Preadolescents (*n* = 183)				
1. Linguistic	—	.15	.39	.45	.36	.34	.49	.48
2. Logical-mathematical		—	.12	.48	.15	.26	.31	.27
3. Musical			—	.39	.41	.50	.36	.32
4. Spatial				—	.32	.31	.40	.39
5. Bodily-kinesthetic					—	.44	.16	.29
6. Interpersonal						—	.42	.28
7. Intrapersonal							—	.59
8. Spiritual								—
				Adults (*n* = 227)				
1. Linguistic	—	.11	.15	.22	-.03	.28	.52	.34
2. Logical-mathematical		—	.10	.39	.19	.04	.19	.22
3. Musical			—	.27	.11	.24	.16	.26
4. Spatial				—	.28	.21	.31	.20
5. Bodily-kinesthetic					—	.11	-.09	.10
6. Interpersonal						—	.36	.23
7. Intrapersonal							—	.61
8. Spiritual								—

Note. Adolescents, *n* = 86, did not respond to the first seven scales of the MIPQ VIII.

Correlations between the Background Variables and the MIPQ VIII

We investigated correlations between age, gender and the MIPQ VIII (Table 6). Unfortunately age and gender information were present only in the preadolescent sample for all the MI dimensions. Results considering the first seven MI dimensions are discussed in the previous chapter. Analysis of the Spiritual intelligence scale showed negative correlation with the adolescent and positive correlation with adult participants concerning gender.

Table 6. Correlations between Gender, Age and the MIPQ VIII Spiritual Intelligence Dimension

	Preadolescents (*n* = 188)		*Adolescents* (*n* = 86)		*Adults*[a] (*n* = 32)	
Scale	*Gender*	*Age*	*Gender*	*Age*	*Gender*	*Age*
8. Spiritual	-.04	.06	-.27	.11	.30	.19

[a]Only part of the adult sample was available.

Confirmatory Factor Analysis

The final phase of statistical analyses was to validate the two models developed in this study. First, we performed confirmatory factor analysis to the Spiritual sensitivity scale separately for each sample. The results are presented in Table 7.

First section in the table presents measures of absolute fit that determine the degree to which the model predicts the observed correlation matrix (Hair et al., 1995). The root mean square error of approximation (RMSEA) is designed to evaluate the approximate fit of the model in the population (Kaplan, 2000). The estimate was in all three samples slightly above the fair fit level of .05 – .08 (Hair et al., 1995), indicating mediocre fit (Browne & Cudeck, 1993). Unfortunately, the upper limit of the 90 per cent confidence interval was above the cut off value in all three samples. The standardized root mean square residuals (SRMR) help the investigator to examine how well the aspects of the data are captured by the model (Loehlin, 2004). SRMRs were in all three samples below a cut-off value of .08 (Hu & Bentler, 1999).

Table 7. Goodness-of-fit Values of the Spiritual Sensitivity Scale

	Preadol. (*n* = 188)	*Adol.* (*n* = 86)	*Adults* (*n* = 227)	*Combined* (*N* = 496)
Absolute Fit Measures				
χ^2	96.16	63.52	106.89	17.73
Df	38	38	38	38
χ^2 / *df*	2.53	1.67	2.81	4.49
p	.000	.000	.000	.000
RMSEA	.093	.089	.090	.085
90 per cent C.I.	.070 .117	.048 .126	.070 .110	.072 .098
SRMR	.059	.080	.066	.049
Incremental Fit Measures				
CFI	.901	.864	.914	.926
TLI	.857	.803	.876	.892

Note. RMSEA = Root Mean Square Error of Approximation with 90 per cent confidence interval. *SRMR* = Standardized Root Mean Square Residual. *TLI* = Tucker-Lewis coefficient. *CFI* = Comparative Fit Index.

Second section in the Table 7 presents incremental fit measures that compare the proposed model to a baseline model that all other models should be expected to exceed (Hair et al., 1995). The Tucker-Lewis index (TLI), a.k.a. the Nonnormed Fit Index (NNFI), was slightly below the recommended level of .90 (Tucker & Lewis, 1973) in all three samples. However, a similar measure, the comparative fit index (CFI) was slightly above the level in preadolescent and adult samples. Combined sample (N = 496) did fit to the Spiritual sensitivity model better than three sub samples, which is good news when we think about the generalizability of the model. A reader should notice that this result is to some extent due to increased sample size.

CONCLUSIONS

In this chapter, we studied the theoretical dimensions of Howard Gardner's Multiple Intelligences theory (1999) with empirical samples. We presented the theoretical structure of the spiritual intelligence dimension and analyzed it with an empirical sample (N = 496) of preadolescent, adolescent and adult respondents.

The result of inter-item correlation analysis showed that the items measuring spiritual intelligence shared enough common variance in the preadolescent and adult samples to proceed to exploratory factor analysis. The visual inspection of the regression scores of the first two components for each dimension revealed that all the scales except Community sensing were one-dimensional.

On the basis of exploratory factor analysis and visual examination of component plots, 11 items out of 20 were selected for the Spiritual sensitivity scale. Further, four items were selected to represent spiritual intelligence dimension in the MIPQ VIII.

Intercorrelations between the four Spiritual sensitivity scales showed that the strongest statistical dependency in both the preadolescent and adult sample was between Value sensing and Community sensing. This is natural, as value sensing is based on the self-reflection of important issues that are naturally shared with a community of congenial souls or kept inside in a quiet moment with other people. Awareness sensing was strongly correlated in all three samples to Community sensing as in the MIPQ VIII both are more or less related to self-reflection and contemplating.

The result of reliability analysis was in parallel with the findings of our previous study (Tirri et al., 2002): Musical and Interpersonal scales had the highest reliabilities while Linguistic and Spatial scales had the lowest. The reliability estimates for the Spiritual intelligence four item composite variable for all three samples ranged from .64 to .76.

The result of partial correlation showed that Intrapersonal and Spiritual scales have 22 per cent shared variance. Logical-mathematical, Bodily-kinesthetic and Interpersonal scales had the weakest correlations with the Spiritual scale. The weak connection between mathematical and spiritual scales is perhaps related to the fact that spiritual issues are usually not easily explained out with scientific reasoning.

In the next stage we to investigated correlations between age, gender and the MIPQ dimensions. Analysis of the Spiritual intelligence scale showed negative correlation with adolescent and positive correlation with adult participants. Although neither of the correlations reached statistical significance, this result is

logical if we believe that younger people are more critical toward spirituality than older ones.

Finally, we validated the generalizability of the two models, the Spiritual sensitivity and MIPQ scale, with confirmatory factor analysis. The results showed that the Spiritual sensitivity scale fits to all three data fairly well. We also analyzed goodness-of-fit of the non-optimized 20-item version of the scale. The results were found to be similar enough to those of the 11-item optimized model indicating success of the optimization process. Fit index analysis of the combined sample showed that it fitted to the model better than three sub samples. This finding may indicate good generalizability value of the Spiritual sensitivity scales. Model fit indices for the MIPQ VIII indicated good fit to both preadolescent and adult data. Also in this case the combined sample fitted to the model better that the two sub samples suggesting good generalizability characteristics of the model.

To conclude, the analysis confirmed that the Spiritual sensitivity scale, based on Hay's (1998) and Bradford's (1995) definitions of spirituality, consisted of following four dimensions in all three samples: (1) Awareness sensing, (2) Mystery sensing, (3) Value sensing and (4) Community sensing. The results of reliability analysis showed that an 11-item solution was adequate to describe the Spiritual sensitivity scale. Low reliability (.40 - .68) with the adolescent sample was partly due to small sample size (n = 86). When all three samples were combined (N = 496), the reliabilities range from .62 to .75.

DISCUSSION

In the Finnish Academy research project "Actualizing Finnish giftedness", spiritual intelligence was studied empirically with numerous samples (Tirri, 2004). Although some researchers criticize Gardner's theory, for example, for the lack of sociohistorical perspective (Kincheloe, 2004), the theory still has many practical application areas. However, one should note that non-diverse populations, such as Finnish population, set a way lower requirements for the flexibility of the educational system than, for example, in the United States. Second difference between the these school systems is the ratio of public and private schools: in Finland there are very few private schools as the educational standards of the public schools are perceived to be high enough. Third issue is the fact that education at all levels is free in Finland, enabling low-income families to educate their children up to their capabilities. In this respect, Howard Gardner's MI theory has an interesting monetary aspect as it is free, unlike most of intelligence measures. Further, Kornhaber, Fierros and Veenema (2004, 208-209) argue that U.S. national standard test scores do not yield marked increases in students' academic or real-world functioning. For these reasons, researchers all over the world have developed freely available instruments that operationalize the theory (e.g., Kornhaber, Fierros & Veenema, 2004; Shearer, 2004, 2005; Tirri et al., 2002, 2003).

Outcome aspect that is also strongly present in MI theory suggests that academic intelligence alone is not enough. We need to recognize that success in life and career depends also on social, practical and spiritual intelligence, that is, it is in a way a hidden curriculum of how to make the best out of one's abilities. One

of our major motivations to develop the self-rating instrument for the Spiritual sensitivity scale was to address such injustice.

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Multiple Intelligences Profiling Questionnaire VIII

	TOTALLY DISAGREE				TOTALLY AGREE
Writing is a natural way for me to express myself.	1	2	3	4	5
At school, studies in English or social studies were easier for me than mathematics, physics and chemistry.	1	2	3	4	5
I have recently written something that I am especially proud of, or for which I have received recognition.	1	2	3	4	5
Metaphors and vivid verbal expressions help me learn efficiently.	1	2	3	4	5
At school, I was good at mathematics, physics or chemistry.	1	2	3	4	5
I can work with and solve complex problems.	1	2	3	4	5
Mental arithmetic is easy for me.	1	2	3	4	5
I am good at games and problem solving, which require logical thinking.	1	2	3	4	5
At school, geometry and other subjects involving spatial perception were easier for me than solving equations.	1	2	3	4	5
It is easy for me to conceptualize complex and multidimensional patterns.	1	2	3	4	5
I can easily imagine how a landscape looks from a bird's-eye view.	1	2	3	4	5
When I read, I form pictures or visual images in my mind.	1	2	3	4	5
I am handy.	1	2	3	4	5
I can easily do something concrete with my hands (e.g. knitting and woodwork).	1	2	3	4	5
I am good at showing someone how to do something in practice.	1	2	3	4	5
I was good at handicrafts (e.g. woodwork; textiles) at school.	1	2	3	4	5
After hearing a tune once or twice I am able to sing or whistle it quite accurately.	1	2	3	4	5
When listening to music, I am able to pick out individual instruments and recognize melodies.	1	2	3	4	5

SPIRITUAL SENSITIVITY SCALE

	TOTALLY DISAGREE				TOTALLY AGREE
I can easily keep the rhythm when drumming a melody.	1	2	3	4	5
I notice immediately if a melody is out of tune.	1	2	3	4	5
Even in strange company, I can easily find someone to talk to.	1	2	3	4	5
I get along easily with different types of people.	1	2	3	4	5
I make contact easily with other people.	1	2	3	4	5
In negotiations and group work, I am able to support the group to find a consensus.	1	2	3	4	5
I am able to analyze my own motives and ways of action.	1	2	3	4	5
I often think about my own feelings and sentiments and seek reasons for them.	1	2	3	4	5
I regularly spend time reflecting on the important issues of life.	1	2	3	4	5
I like to read psychological or philosophical literature to increase my self-knowledge.	1	2	3	4	5
In midst of busy everyday life I find it important to contemplate.	1	2	3	4	5
Even ordinary every-day life is full of amazing things.	1	2	3	4	5
I often reflect on the meaning of life.	1	2	3	4	5
It is important to me to share a quiet moment with others.	1	2	3	4	5

Spiritual Sensitivity Scale

	TOTALLY DISAGREE				TOTALLY AGREE
In midst of busy everyday life I find it important to contemplate.	1	2	3	4	5
I try to listen to my body when I study and work.	1	2	3	4	5
The use of imagination makes life more enjoyable.	1	2	3	4	5
Narratives and symbols are important things for me in life.	1	2	3	4	5
Even ordinary every-day life is full of miraculous things.	1	2	3	4	5
I often reflect on the meaning of life.	1	2	3	4	5
It is important to me to find my own mission in the world.	1	2	3	4	5
I am searching for goodness in life.	1	2	3	4	5
It is important to me to find a community where to belong.	1	2	3	4	5
It is important to me to share a quiet moment with others.	1	2	3	4	5
I want to find a community where I can grow spiritually.	1	2	3	4	5

SPSS Syntax to Compute MIPQ VIII Factors

```
/* Variable names in this syntax refer to Table 4 in this chapter

COMPUTE MIPQVIII_LINGU = MEAN(lingu_1, lingu_2, lingu_3, lingu_4).
COMPUTE MIPQVIII_LOGIC = MEAN(logic_1, logic_2, logic_3, logic_4).
COMPUTE MIPQVIII_MUSIC = MEAN(music_1, music_2, music_3, music_4).
COMPUTE MIPQVIII_SPATI = MEAN(spati_1, spati_2, spati_3, spati_4).
COMPUTE MIPQVIII_BODKI = MEAN(bodki_1, bodki_2, bodki_3, bodki_4).
COMPUTE MIPQVIII_INTER = MEAN(inter_1, inter_2, inter_3, inter_4).
COMPUTE MIPQVIII_INTRA = MEAN(intra_1, intra_2, intra_3, intra_4).
COMPUTE MIPQVIII_SP = MEAN(sp1_1, sp2_18, sp3_3, sp4_16).
EXECUTE.

VARIABLE LABELS
  MIPQVIII_LINGU        "1. Linguistic"
  MIPQVIII_LOGIC        "2. Mathematical-logical"
  MIPQVIII_MUSIC        "3. Musical"
  MIPQVIII_SPATI        "4. Spatial"
  MIPQVIII_BODKI        "5. Bodily-Kinesthetic"
  MIPQVIII_INTER        "6. Interpersonal"
  MIPQVIII_INTRA        "7. Intrapersonal"
  MIPQVIII_SP           "8. Spiritual".
```

SPSS Syntax to Compute Spiritual Sensitivity Scale Factors

```
/* Variable names in this syntax refer to Table 1 in this chapter

COMPUTE SP1_M = MEAN(sp1_1, sp1_5).
COMPUTE SP2_M = MEAN(sp2_2, sp2_14, sp2_18).
COMPUTE SP3_M = MEAN(sp3_3, sp3_15, sp3_19).
COMPUTE SP4_M = MEAN(sp4_8, sp4_12, sp4_16, sp4_20).
EXECUTE .

VARIABLE LABELS
  SP1_M        "1. Awareness sensing"
  SP2_M        "2. Mystery sensing"
  SP3_M        "3. Value sensing"
  SP4_M        "4. Community sensing".
```

CHAPTER 3

ENVIRONMENTAL SENSITIVITY SCALE

INTRODUCTION

The Multiple Intelligences Profiling Questionnaire is a five-point Likert scale self-rating questionnaire that is based on Howard Gardner's theory of Multiple Intelligences (1983, 1991, 1995, 1999, 2000, 2006). The MIPQ aim to help both learners, in their self-reflection, and teachers to understand their students' strengths. The basic version of the instrument, MIPQ VII (see Chapter 1) operationalizes seven MI dimensions with 28 items: (1) Linguistic, (2) Logical-mathematical, (3) Musical, (4) Spatial, (5) Bodily-kinesthetic, (6) Interpersonal and (7) Intrapersonal intelligence. The eighth dimension, spiritual intelligence, was added to the 32-item version of the instrument, MIPQ VIII (see Chapter 2). Spiritual intelligence dimension was based on the Spiritual Sensitivity Scale (SSS), which was influenced by Hay's (1998) and Bradford's (1995) definitions of spirituality.

This chapter presents both the nine-item Environmental Sensitivity Scale (EnSS) and the 35 -item MIPQ IX that contains the ninth dimension, Environmental Intelligence (EnI). The psychometric properties of both instruments were tested with empirical samples.

This chapter is organized as follows: First, we present a theoretical structure of MIPQ IX and EnSS. Second, we test the psychometric properties of EnSS (9 items) with an empirical sample (N = 496) containing preadolescents (n = 183), adolescents (n = 86) and adults (n = 227). We select the best items to represent EnI in the EnSS model. Thirdly, we select the best three EnSS items to represent EnI in the MIPQ. Fourth, the psychometric properties of the MIPQ's nine dimensions were tested with two sub-samples consisting of preadolescents and adults (N = 378). Next, we will briefly introduce the central concepts of the MI theory, link them to the evolution of the MIPQ and justify the present operationalization of environmental intelligence.

THEORETICAL FRAMEWORK

Gardner has retained the original seven intelligences, presented in the first chapter of this book, but he acknowledges the possibility of adding new intelligences to the list. He has worked on naturalistic, spiritual and existential intelligences to be included in his list of multiple intelligences. In the previous chapter, we presented the MIPQ VIII that included spiritual intelligence as its eighth dimension.

According to Gardner (1999), naturalistic intelligence in particular merits addition to the original list of seven intelligences. He relates this intelligence to the

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ability to understand and work effectively in the natural world — just as biologists, ornithologists, farmers and even chefs do. Naturalistic intelligence deals with sensing patterns in and making connections with elements in nature (Wilson, 1998). Naturally intelligent people (or, as Gardner says, "nature smarts") seem to be aware of their surroundings and even of small changes in their environment.

Since the announcement of this intelligence, both public and other researchers have identified many problems with Gardner's definition of naturalistic intelligence. Wilson (1998) asks two questions: First, since most of us are more urban than rural beings, what are our chances — and does it even matter anymore — of being 'intelligent' on that specific scale? Second, how does naturalistic intelligence differ from a more expansive intelligence such as cosmic intelligence or awareness? Morris (2004) carries the second issue further by noting that if intelligence and ethics are strongly related, naturalists may not always exhibit intelligence. Her thought is more subtle if we imagine a talented ornithologist instantly classifying numerous rare species, but the unharmonic relationship between intelligence and naturalism in the Gardnerian form becomes more evident in the context of agriculture (animal rights), cooking (animal rights, environmentally friendly consumption) or hunting sports (animal rights).

According to Morris (2004, p. 163), "the naturalist is intelligent if and only if he or she is engaged in nature … in a way that does not perpetuate oppression." She sees that ecological sensibility should be a crucial part of natural intelligence as it springs from a sensitive, ethical and holistic understanding of where we humans stand in the ecosphere. With those issues in mind, we call the version of naturalistic intelligence presented here "environmental sensitivity" and operationalize it into the Environmental Sensitivity Scale (EnSS), which we later elaborate in detail.

In this chapter, we use an empirical sample of Finnish preadolescents, adolescents and adults (N = 496) to evaluate whether the items operationalizing the EnSS reflect the three dimensions of environmental sensitivity: 1) Love for nature, 2) Nature conservation, and 3) Environment-friendly consumer habits. In addition, we reduce the number of items measuring environmental sensitivity to three, in order to build an Environmental Intelligence (EnI) dimension into the MIPQ IX.

METHOD

Sample

The sample was collected with the 32 –item MIPQ VIII and 9 –item EnSS in 2003. The theoretical structure of the questionnaire was analyzed with a sample (N = 496) that consists of following three sub groups: (1) preadolescents (n = 183), (2) adolescents (n = 86) and (3) adults (n = 227). The youngest respondents were 183 Finnish elementary school 5th and 6th grade students. One-hundred and four (56 %) were girls and 79 (44 %) were boys. Their age median was 12 years. The second group consists of Finnish university students (n = 86) who represent adolescents in this study. Sixty-five (76 %) of the adolescents were females and twenty-one (24 %) were males. Their age median was 25 years. The third group (n = 227) represents Finnish adults, including 200 males and 24 females (gender information was missing from three respondents), with the age median of 26 years.

Measures

Multiple Intelligences Profiling Questionnaire IX (MIPQ IX). The MIPQ IX measures the nine dimensions of Gardner's MI theory: (1) Linguistic, (2) Logical-mathematical, (3) Musical, (4) Spatial, (5) Bodily-kinesthetic, (6) Interpersonal, (7) Intrapersonal, (8) Spiritual, and (9) Environmental. The instrument consists of 35 items on a Likert scale from 1 (*totally disagree*) to 5 (*totally agree*). The psychometric properties of the first eight dimensions are presented in the preceding chapter. (Table 1.)

Table 1. Linguistic, Logical-mathematical, Musical, Spatial, Bodily-kinesthetic, Interpersonal, Intrapersonal, Spiritual and Environmental Intelligence Items in the MIPQ IX[a]

		Preadol. (*n* = 183)	*Adults* (*n* = 227)
Item	*Label*	*M* (*SD*)	*M* (*SD*)
lingu_1	Writing is a natural way for me to express myself.	3.36 (0.96)	2.72 (1.15)
lingu_2	At school studies in native language or social studies were easier for me than mathematics, physics and chemistry.	3.10 (1.23)	3.21 (1.19)
lingu_3	I have recently written something that I am especially proud of, or for which I have received recognition.	2.93 (1.29)	2.00 (1.21)
lingu_4	Metaphors and vivid verbal expressions help me learn efficiently.	3.25 (0.94)	3.52 (1.01)
logic_1	At school I was good at mathematics, physics or chemistry.	2.71 (1.33)	2.72 (1.13)
logic_2	I can work with and solve complex problems.	3.08 (1.18)	3.54 (0.89)
logic_3	Mental arithmetic is easy for me.	3.79 (1.07)	3.51 (1.01)
logic_4	I am good at games and problem solving, which require logical thinking.	3.43 (1.19)	3.41 (0.94)
music_1	After hearing a tune once or twice I am able to sing or whistle it quite accurately.	3.28 (1.23)	2.92 (1.32)
music_2	When listening to music, I am able to discern instruments or recognize melodies.	3.34 (1.15)	3.29 (1.35)
music_3	I can easily keep the rhythm when drumming a melody.	3.29 (1.06)	3.20 (1.28)
music_4	I notice immediately if a melody is out of tune.	3.16 (1.19)	3.08 (1.29)
spati_1	At school, geometry and various kinds of assignments involving spatial perception were easier for me than solving equations.	2.88 (1.13)	2.98 (1.24)
spati_2	It is easy for me to conceptualize complex and multidimensional patterns.	3.28 (0.98)	3.45 (0.86)
spati_3	I can easily imagine how a landscape looks from a bird's-eye view.	3.50 (1.04)	3.35 (1.00)
spati_4	When I read, I form illustrative pictures or designs in my mind.	3.78 (1.06)	3.52 (1.08)
bodki_1	I am handy.	3.49 (0.96)	3.92 (0.93)
bodki_2	I can easily do something concrete with my hands (e.g. knitting and woodwork).	3.99 (1.04)	4.03 (1.04)
bodki_3	I am good at showing how to do something in practice.	3.28 (0.89)	3.88 (0.77)
bodki_4	I was good at handicrafts at school.	3.90 (1.14)	4.04 (1.00)

[a]Adolescents, *n* = 86, did not respond to the first seven scales of MIPQ IX.

Table 1. Linguistic, Logical-mathematical, Musical, Spatial, Bodily-kinesthetic, Interpersonal, Intrapersonal, Spiritual and Environmental Intelligence Items in the MIPQ IX[a](continued)

		Preadol. (*n* = 183)	*Adults* (*n* = 227)
Item	*Label*	*M* (*SD*)	*M* (*SD*)
inter_1	Even in strange company, I easily find someone to talk to.	3.30 (1.14)	3.84 (0.89)
inter_2	I get alone easily with different types of people.	3.58 (1.01)	4.26 (0.75)
inter_3	I make contact easily with other people.	3.30 (0.98)	3.84 (0.77)
inter_4	In negotiations and group work, I am able to support the group to find a consensus.	3.26 (0.85)	3.72 (0.74)
intra_1	I am able to analyze my own motives and ways of action.	3.25 (0.83)	3.86 (0.77)
intra_2	I often think about my own feelings and sentiments and seek reasons for them.	3.39 (1.10)	3.43 (1.08)
intra_3	I spend time regularly reflecting on the important issues in life.	3.01 (1.20)	2.88 (1.12)
intra_4	I like to read psychological or philosophical literature to increase my self-knowledge.	2.23 (1.11)	2.33 (1.15)
sp1_1	In midst of busy everyday life I find it important to contemplate.	3.13 (1.07)	3.50 (1.15)
sp2_18	Even ordinary every-day life is full of miraculous things.	3.91 (1.07)	3.76 (0.99)
sp3_3	I often reflect on the meaning of life.	3.17 (1.23)	3.13 (1.16)
sp4_16	It is important to me to share a quiet moment with others.	2.41 (1.02)	2.29 (1.08)
en1_36	I enjoy the beauty and experiences related to nature.	3.98 (1.08)	4.37 (.80)
en3_33	Protecting the nature is important to me.	2.81 (1.12)	2.20 (1.06)
en4_23	I pay attention to my consumption habits in order to protect environment.	2.59 (1.08)	2.73 (1.14)

[a]Adolescents, *n* = 86, did not respond to the first seven scales of MIPQ IX.

Environmental Sensitivity Scale (EnSS). The EnSS has following three dimensions: 1) Love for nature; 2) Nature conservation; 3) Environment-friendly consumer habits (Table 2).

First category, ”Love for nature”, aims to capture our appreciation of being in the nature, even just like sitting quietly and noticing the subtle differences in the world of nature, and making observations about natural changes, interconnections and patterns (Wilson, 1998). It is operationalized with two items: en1_31 ”I enjoy walking in the nature” and en1_36 ” I enjoy the beauty and experiences related to nature.”

Second category, ”Protection of animal rights and nature”, aims to capture our love for the animals and passion to know and remember things about them. This

category is operationalized with three items: en2_21 ”Animal rights are important to me”, en3_22 ” I take part in projects and events related to protection of environment”, and en3_33 “Protecting the nature is important to me.”

Third category, ”Environment friendly consumption”, aims to capture our talent for ecological sensibility, i.e. understanding the fact that “human beings and all the other creatures are interconnected within a complex ecosphere” (Morris, 2004, p. 164). Third category is operationalized with four items: en4_23 ”I pay attention to my consumption habits in order to protect environment”, en4_28 ”I am ready to pay more for the products that are environmental friendly than for normal products”, en6_25 ”I am active in recycling”, and en6_30 ”I sort different trash at home appropriately.”

Table 2. The Environmental Sensitivity Scale

		Preadol. (*n* = 183)	*Adol.* (*n* = 86)	*Adults* (*n* = 227)
Item	*Label*	*M*(*SD*)	*M*(*SD*)	*M*(*SD*)
Love for nature				
en1_31	I enjoy walking in the nature.	4.07(1.03)	4.69(0.62)	4.52(0.77)
en1_36	I enjoy the beauty and experiences related to nature.	3.98(1.08)	4.56(0.68)	4.37(0.80)
Nature conservation				
en2_21	Animal rights are important to me.	3.86(1.11)	3.27(1.13)	3.08(1.10)
en3_22	I take part in projects and events related to protection of environment.	2.81(1.12)	2.30(1.02)	2.20(1.06)
en3_33	Protecting the nature is important to me.	3.08(1.16)	3.44(0.98)	3.34(1.09)
Environment-friendly consumer habits				
en4_23	I pay attention to my consumption habits in order to protect environment.	2.99(1.10)	3.72(1.11)	3.06(1.13)
en4_28	I am ready to pay more for the products that are environmental friendly than for normal products.	2.65(1.21)	3.69(1.02)	2.88(1.22)
en6_25	I am active in recycling.	2.59(1.08)	3.48(1.21)	2.73(1.13)
en6_30	I sort different trash at home appropriately.	2.90(1.38)	3.88(1.31)	3.28(1.47)

Procedure

The sample was collected with a non-probability sampling. Each respondent was personally invited to complete a paper and pencil version of the questionnaire. The children, adolescents and adults answered the questions with the same wordings. Participants were asked to use the Likert scale from 1 (*totally disagree*) to 5 (*totally agree*) to evaluate their attitude towards the statements measuring multiple intelligences and environmental sensitivity.

Total population in Finland is 5.2 million. The country consists of five culturally and economically equal provinces: 1) Lapland (*N* = 187,777, 4 %), 2) Oulu (*N* = 457,345, 9 %), 3) Western Finland (*N* = 1,843,225, 35 %), 4) Eastern

Finland (*N* = 584,974, 11 %) and 5) Southern Finland (*N* = 2,106,117, 41 %). The preadolescent sample (*n* = 183) was collected from two provinces, Western and Southern Finland in 2002-2003. The adolescent sample (*n* = 86) was collected from one province, Southern Finland in 2003. The adult sample (*n* = 227) represented all the provinces and was collected in 2003.

Statistical Analyses

Statistical analyses were conducted in eight phases. *First*, we analyzed the psychometric properties of the nine EnSS items with correlation (Spearman rho) and reliability analysis (Cronbach, 1970). *Second*, variable structure of the scale was examined with the exploratory factor analysis (EFA). A three-item environmental intelligence (EnI) sub scale was created for the MIPQ IX on the basis of EFA. *Third*, we investigated the dimensionality of the EnSS with principal component analysis (PCA). *Fourth*, inter-item correlations between the three EnSS dimensions were investigated with Spearman rho. *Fifth*, internal consistency of the MIPQ IX was tested with Cronbach's alpha. *Sixth*, correlations between the nine MIPQ IX scales were analyzed with Spearman rho. *Seventh*, correlations between the nine MIPQ IX scales and the background variables (age, gender) were analyzed with Spearman rho. *Eighth*, we validated the EnSS and EnI scales with confirmatory factor analysis for categorical indicators.

RESULTS

Correlation Analysis of the Environmental Sensitivity Scale

The first phase of the analysis investigated psychometric properties of the EnSS items. Inter-item correlations between the nine items measuring environmental sensitivity were calculated for three samples with the non-parametric correlation coefficient (Spearman rho). The three EnSS dimensions are measured by nine items producing 36 inter-item correlations when diagonal and double-presentations are omitted ($N_{i\text{-}i\ corr} = (N_{items} \times (N_{items} - 1)) / 2$).

The correlations in the preadolescent sample (*n* = 183) ranged from .15 to .70 (*M* = .41, *SD* = .13). Seven correlations were above |.50| and thus considered large according to Cohen (1988). They share over 25 per cent of their variance ($.5^2$ = .25). On the average, however, items share 17 per cent of their variance with other items ($.41^2$ = .17).

The correlations in the adolescent sample (*n* = 86) ranged from .07 to .70 (*M* = .39, *SD* = .18). Eleven correlations were above |.50| sharing over 25 per cent of their variance. On the average, items share 15 per cent of their variance with other items ($.39^2$ = .15).

The correlations in the adult sample (*n* = 227) ranged from .13 to .57 (*M* = .37, *SD* = .14). Six correlations were above |.50| sharing over 25 per cent of their variance. On the average, items share 14 per cent of their variance with other items ($.37^2$ = .14).

To summarize, the results of inter-item correlation analysis show that the items measuring environmental sensitivity share enough common variance in all the samples to proceed to EFA.

Factor Structure and Internal Consistency of the Environmental Sensitivity Scale

The nine items of the EnSS were subject to exploratory factor analysis (EFA) using Maximum likelihood extraction with Varimax rotation. Prior to performing EFA, the suitability of data for factor analysis was assessed. The measurement scale applied in this study is nonmetric (ordinal) as opposite to metric (continuous) that is required by EFA. However, we will proceed to the exploratory factor analysis as the underlying phenomena, multiple intelligences, are continuous by nature (Marini, Li & Fan, 1996). Johnson and Creech (1983) have studied with simulation studies the categorization error that occurs when continuous variables are measured by indicators with only a few categories. The results indicated that while categorization error does produce distortions in multiple indicator models, under most conditions explored the bias was not sufficient to alter substantive interpretations. However, authors warranted caution in the use of two-, three- or four-category ordinal indicators, particularly when the sample size is small (according to them, less than 500 observations).

As depicted earlier, the inspection of the correlation matrices for all three samples revealed that most of the coefficients were .30 and above indicating that factor analysis is appropriate.

The Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy approaches 1, if partial correlations are small, that is a desirable feature (Kaiser, 1974). According to Tabachnick and Fidell (2001, p. 589), values .60 and above are required for good EFA. All the KMO values exceeded the recommended value of .60: the preadolescent sample KMO = .81, the adolescent sample KMO = .83, and the adult sample KMO = .84.

In the preadolescent sample (n = 183), EFA revealed the presence of three factors, explaining 62.4 per cent of the variance respectively. Initial communalities varied between .386 and .551. Varimax rotated solution revealed the presence of a three factor solution explaining 62.4 per cent of the variance. The reliabilities ranged from .77 to .80 in the preadolescent sample.

In the adolescent sample (n = 86), EFA revealed the presence of three factors, explaining 77.8 per cent of the variance respectively. Initial communalities varied between .442 and .622. Varimax rotated solution revealed the presence of a three factor solution explaining 66.2 per cent of the variance. The reliabilities ranged from .80 to .86 in the adolescent sample. (Table 3.)

In the adult sample (n = 227), EFA revealed the presence of three factors, explaining 70.5 per cent of the variance respectively. Initial communalities varied between .215 and .576. Varimax rotated solution revealed the presence of a three factor solution explaining 53.1 per cent of the variance. The reliabilities ranged from .67 to .76 in the adult sample. (Table 3.)

According to Nunnally (1978), .80 represents reasonably good alpha index. As seven out of nine reliability indices in the EnSS scales for all three samples are close to, or above, the .80 level, we are satisfied with the results. To summarize, the results of EFA support the use of the nine items measuring 1) Love for nature, 2) Nature conservation and 3) Environment-friendly consumer habits as separate environmental sensitivity scales. Factor structure and alpha loadings for the EnSS are presented in Table 3.

Table 3. Factor Structure and Alpha Loadings of the Environmental Sensitivity Scale

		Preadol. (*n* = 183)	*Adol.* (*n* = 86)	*Adults* (*n* = 227)
Sub scale	*Items*	α	α	α
Love for nature	en1_31, *en1_36*	.80	.86	.67
Nature conservation	en2_21, en3_22, *en3_33*	.77	.80	.69
Environment-friendly consumer habits	*en4_23*, en4_28, en6_25, en6_30	.78	.86	.76

Note. Italicized items were selected to represent environmental intelligence dimension in the MIPQ IX.

Dimensionality of the Environmental Sensitivity Scale

The correlational analysis showed that all the three EnSS sub scales are strongly correlated. However, at this point we need to examine whether they are unidimensional or multidimensional structures. Unfortunately, Cronbach's alpha does not ensure unidimensionality, but assumes that it exists (Hair et al., 1995). Next, we conduct the principal component analysis (PCA) to investigate the dimensionality of EnSS. Figure 1 shows that all three scales are located in different positions on the three component axes. This finding is in parallel with our theoretical model of environmental sensitivity.

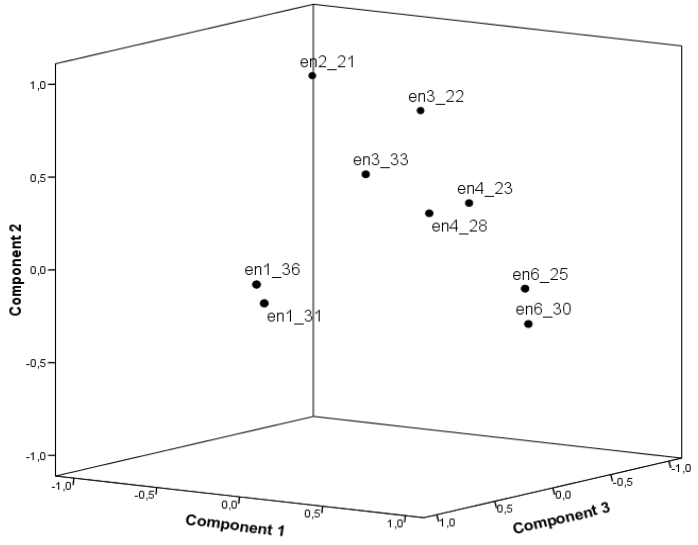

Figure 1. Dimensionality of the Environmental Sensitivity Scale.

Correlational Analysis of the Environmental Sensitivity Scale

Inter-item correlations between the three EnSS dimensions were investigated for the three samples with Spearman non-parametric correlations. The results are presented in Table 4. Correlation coefficients ranged in the samples as follows: 1) Preadolescents, $r_S(183) = .37 – .62$ ($M_r = .49$, $SD_r = .13$); 2) Adolescents, $r_S(86) = .31 – .66$ ($M_r = .44$, $SD_r = .19$); 3) Adults $r_S(227) = .32 – .62$ ($M_r = .45$, $SD_r = .16$). The strongest statistical dependency in all three samples was between nature conservation and environment-friendly consumer habits ($r_S = .62$ - .66). The finding is theoretically plausible as the consumer habits are at least indirect way to preserve nature. As expected, all the other correlations were positive, too, and statistically significant ($p < .01$, two-tailed).

Reliability Analysis of the MIPQ IX

The fifth phase of the analysis investigates psychometric properties of the 35 -item MIPQ IX. In order to add equally balanced EnI scale to the instrument, a new composite variable was computed from the three strongest loading EnSS items (see italicized items in Table 3). Table 5 presents the factor structure and alpha loadings for the nine MI scales. Reliability values of the first seven MI scales are not calculated for the adolescents, as their questionnaire contained only items measuring spiritual and environmental intelligence. The results were in parallel with the findings of our previous studies (Tirri & Komulainen, 2002; Tirri, et al., 2002, 2003; Tirri, Nokelainen & Ubani, 2006): Musical and Interpersonal scales had the highest reliabilities ($\alpha = .88$ - .89), and Linguistic and Spatial scales had the lowest reliabilities ($\alpha = .53$ - .62). The reliability estimates for the EnI three-item composite variable ranged from .67 to .79. As discussed earlier, alpha depends on the dimensionality of the scale (unidimensional vs. multidimensional); higher reliability is achieved with unidimensional constructs. The second issue affecting reliability is that when the abstraction level of the concept increases, like with the spiritual intelligence, the invention on unambiguous propositions becomes more difficult.

Table 4. Correlations between the Environmental Sensitivity Dimensions

EnSS scale	*9.1*	*9.2*	*9.3*
	Preadolescents (n = 183)		
9.1 Love for nature	—	.47	.37
9.2 Nature conservation		—	.62
9.3 Environment-friendly consumer habits			—
	Adolescents (n = 86)		
9.1 Love for nature	—	.31	.34
9.2 Nature conservation		—	.66
9.3 Environment-friendly consumer habits			—
	Adults (n = 227)		
9.1 Love for nature	—	.40	.32
9.2 Nature conservation		—	.62
9.3 Environment-friendly consumer habits			—

Correlational Analysis of the MIPQ IX

The next step in the analysis was to calculate Spearman non-parametric correlations between the environmental and other eight MI dimensions with the preadolescent (n = 183) and adult (n = 227) samples (Table 6). Linguistic, $r_S(183) = .38$, $p < .01$ and $r_S(227) = .32$, $p < .01$, Intrapersonal, $r_S(183) = .38$, $p < .01$ and $r_S(227) = .30$, $p < .01$ and Spiritual $r_S(183) = .45$, $p < .01$ and $r_S(227) = .50$, $p < .01$, scales shared the strongest (and positive) correlations with the environmental intelligence scale. However, as their respective determination coefficients show ($r^2 = .14$, $r^2 = .10$, $r^2 = .14$, $r^2 = .09$), statistical dependencies were quite weak.

We reanalyzed the aforementioned dependencies with partial correlation by controlling the gender. These analyses were conducted only with one sub sample, the preadolescents (n = 183), as the gender information for the other sample was not available. The results of the partial correlation with preadolescent sample showed that gender had a clear non-direct effect on only one dependency: Correlation between intrapersonal and environmental intelligence decreased from .38 to .21.

Table 5. Factor Structure and Alpha Loadings of the MIPQ IX

Scale	*Items*	*Preadol.* (*n* = 183) α	*Adol.*[a] (*n* = 86) α	*Adults* (*n* = 227) α
1. Linguistic	lingu_1, lingu_2, lingu_3, lingu_4	.62	—	.59
2. Logical-mathematical	logic_1, logic_2, logic_3, logic_4	.76	—	.63
3. Musical	music_1, music_2, music_3, music_4	.83	—	.89
4. Spatial	spati_1, spati_2, spati_3, spati_4	.53	—	.54
5. Bodily-kinesthetic	bodki_1, bodki_2, bodki_3, bodki_4	.71	—	.84
6. Interpersonal	inter_1, inter_2, inter_3, inter_4	.81	—	.80
7. Intrapersonal	intra_1, intra_2, intra_3, intra_4	.72	—	.76
8. Spiritual	sp1_1, sp2_18, sp3_3, sp4_16	.70	.64	.76
9. Environmental	en1_36, en3_33, en4_23	.67	70	.79

[a]Adolescents, *n* = 86, did not respond to the first seven scales of the MIPQ IX.

Logical-mathematical and interpersonal scales had the weakest correlations with the environmental scale in both samples. We found earlier that these two dimensions are not statistically related to the spiritual intelligence (Tirri et al., 2006). We concluded that the weak connection between mathematics and spirituality was related to the fact that spiritual issues are usually not easily addressed with scientific reasoning. Perhaps the same conclusion is valid with environmental issues that are also strongly based on values and beliefs?

Table 6. Correlations between the MIPQ IX Dimensions

Scale	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
	Preadolescents (n = 183)								
1. Linguistic	—	.15	.39	.45	.36	.34	.49	.48	.38
2. Logical- mathematical		—	.12	.48	.15	.26	.31	.27	.18
3. Musical			—	.39	.41	.50	.36	.32	.32
4. Spatial				—	.32	.31	.40	.39	.34
5. Bodily-kinesthetic					—	.44	.16	.29	.36
6. Interpersonal						—	.42	.28	.24
7. Intrapersonal							—	.59	.38
8. Spiritual								—	.45
9. Environmental									—
	Adults (n = 227)								
1. Linguistic	—	.11	.15	.22	-.03	.28	.52	.34	.32
2. Logical- mathematical		—	.10	.39	.19	.04	.19	.22	.19
3. Musical			—	.27	.11	.24	.16	.26	.14
4. Spatial				—	.28	.21	.31	.20	.26
5. Bodily-kinesthetic					—	.11	-.09	.10	.10
6. Interpersonal						—	.36	.23	.17
7. Intrapersonal							—	.61	.30
8. Spiritual								—	.50
9. Environmental									—

Note. Adolescents (n = 86) did not respond to the first seven scales of the MIPQ IX.

Correlations between the Background Variables and the MIPQ IX and EnSS

We investigated correlations between age, gender and the MIPQ scales (Table 7). Unfortunately, age and gender information were present only in the preadolescent sample for all the nine MI scales. Results considering the first seven MI scales showed that boys in the preadolescent sample rated their Logical-mathematical intelligence higher than girls, $r(183) = .39$, $p < .001$. This result was also present in our earlier study with the university students (Tirri & Komulainen, 2002). Results also indicated that the girls tended to be slightly more environmentally oriented than boys, $r(183) = -.26$, $p < .05$.

Analysis of the environmental intelligence scale with all three sub samples showed that female participants tended to be more environmentally oriented than

males: Preadolescents: $r(183) = -.26$, $p < .05$; Adolescents: $r(86) = -.23$, $p < .05$; Adults: $r(227) = -.30$, *n.s.*

Table 7. Correlations between Gender, Age and the MIPQ IX Dimensions

	Preadolescents (*n* = 183)		*Adolescents* (*n* = 86)		*Adults*[a] (*n* = 32)	
Scale	Gender	Age	Gender	Age	Gender	Age
1. Linguistic	-.18	-.04	—	—	—	—
2. Logical-mathematical	.39	-.16	—	—	—	—
3. Musical	-.15	-.04	—	—	—	—
4. Spatial	.16	-.08	—	—	—	—
5. Bodily-kinesthetic	-.14	-.04	—	—	—	—
6. Interpersonal	-.18	.08	—	—	—	—
7. Intrapersonal	.00	.02	—	—	—	—
8. Spiritual	-.04	.06	-.27	.11	.30	.19
9. Environmental	-.26	-.08	-.23	.16	-.30	-.04

[a]Only part of the adult sample was available.

Confirmatory Factor Analysis

The last phase of the statistical analysis was to validate the two environmental scales presented in this study. First, we performed a CFA separately for each sub sample to test EnSS's generalizability. First section of the Table 8 presents measures of absolute fit that determine the degree to which the model predicts the observed correlation matrix (Hair et al., 1995). The root mean square error of approximation (RMSEA) is designed to evaluate the approximate fit of the model in the population (Kaplan, 2000). The estimate was in all three samples slightly above the fair fit level of .05 – .08 (Hair et al., 1995), indicating mediocre fit (Browne & Cudeck, 1993). The upper limit of the 90 per cent confidence interval was also above the cut off value in all three samples. The standardized root mean square residuals (SRMR) help the researcher to examine how well the aspects of the data are captured by the model (Loehlin, 2004). SRMR's were in all three samples well below the cut-off value of .08 (Hu & Bentler, 1999).

Table 8. Goodness-of-fit Values of the Environmental Sensitivity Scale

	Preadol. (*n* = 183)	*Adolescents* (*n* = 86)	*Adults* (*n* = 227)	*Combined* (*N* = 496)
Absolute Fit Measures				
χ^2	80.09	41.93	84.09	178.29
Df	24	24	24	24
p	<.001	.013	<.001	<.001
RMSEA	.114	.093	.106	.114
90 per cent C.I.	.087 .142	.043 .139	.082 .131	.099 .130
SRMR	.068	.058	.060	.061
Incremental Fit Measures				
CFI	.907	.955	.909	.906
TLI	.861	.933	.863	.859

Note. RMSEA= Root Mean Square Error of Approximation with 90 per cent confidence interval. SRMR = Standardized Root Mean Square Residual. TLI = Tucker-Lewis coefficient. CFI = Comparative Fit Index.

Incremental fit measures compare the proposed model to a baseline model that all the other models should be able to exceed (Hair et al., 1995). The Tucker-Lewis index (TLI), a.k.a. the Nonnormed Fit Index (NNFI), was slightly below the recommended level of .90 (Tucker & Lewis, 1973) in all but one sample ($TLI_{adolescents}$ = .933). However, a similar measure, the comparative fit index (CFI) was slightly above the recommended level in all three samples. Also the combined sample (*N* = 496) did fit to the environmental sensitivity model well enough to allow us to conclude that the generalizability of the model is satisfactory.

CFA was also performed to evaluate the goodness-of-fit of the MIPQ IX model with both preadolescent and adult samples. In addition, the model fit to the combined sample was investigated. The RMSEA estimate, as well as the upper bound of 90 per cent confidence interval, were in both samples below the fair fit level of .05 – .08. Residuals exceeded slightly the cut-off value of .08 in all samples. Incremental fit measures were in both samples below the recommended level of .90. Results of the combined sample (*N* = 378) indicated also satisfactory generalizability of the model.

Table 9. Goodness-of-fit Values of the MIPQ IX

	Preadolescents (*n* = 183)	*Adults*[a] (*n* = 195)	*Combined* (*N* = 378)
Absolute Fit Measures			
χ^2	964.25	998.34	1355.00
Df	524	524	524
P	<.001	<.001	<.001
RMSEA	.071	.068	.066
90 per cent C.I.	.064 .078	.062 .075	.062 .071
SRMR	.088	.087	.081
Incremental Fit Measures			
CFI	.772	.817	.807
TLI	.741	.793	.781

Note. RMSEA= Root Mean Square Error of Approximation with 90 per cent confidence interval. SRMR = Standardized Root Mean Square Residual. TLI = Tucker-Lewis coefficient. CFI = Comparative Fit Index.
[a]Adult responses to all nine MI dimensions.

We did not do any model modifications during the analysis to avoid over fitting of the model to the data (for discussion, see Hu and Bentler, 1995).

CONCLUSIONS

In this chapter, we extended the Multiple Intelligences Profiling Questionnaire VIII (MIPQ VIII) based on Gardner's (1983, 1991, 1995, 1999, 2000, 2006) MI theory with an Environmental Intelligence (EnI) dimension that is based on the Environmental Sensitivity Scale (EnSS). The operationalization of both scales was tested with an empirical sample of Finnish preadolescents, adolescents and adults (*N* = 496).

First, we studied with an exploratory factor analysis (EFA) if the EnSS items reflect the three categories of environmental sensitivity: (1) Love for nature, (2) Nature conservation and (3) Environment-friendly consumer habits. Second, we reduced the number of EnSS items from nine to three to create the EnI component for the MIPQ IX. Third, both EnSS and EnI models were validated with the confirmatory factor analysis (CFA).

Results of the reliability analysis showed that the nine item solution operationalized the EnSS adequately. Results of EFA confirmed that the EnSS consisted of suggested three dimensions in all three sub samples. Both MIPQ IX and EnI had satisfactory reliability coefficients with all three sub samples. The results of CFA showed that the both scales, EnSS and EnI, fitted the data satisfactorily.

DISCUSSION

When discussing the usefulness of the two scales presented here, EnSS and MIPQ IX, we need to address the endless debate about the use of self-report measures in scientific studies. Campbell (1982, p. 692) stated many years ago that " .. one possible exception [to exercise a professional bias] pertains to the use of a self-report questionnaire to measure *all* the variables in a study."

According to Crampton and Wagner (1994), various studies have been conducted to test the hypothesis that self-report questionnaires, if used as the only data collection methods, artificially elevate measures of covariation, producing percept-percept inflation in published correlations. However, when they conducted a large scale meta-analytic research involving 42,934 correlations published in 581 scientific articles, findings challenged the validity of general condemnations of self-report methods showing that percept-percept inflation did not had the broad, comprehensive effects envisioned by critics.

The best way to conduct scientifically valid research with self-report measures is to collect data with empirically tested instruments that are based on solid theoretical research, and explicitly report all the study phases.

Our major motivation, when operationalizing Gardner's MI theory into the MIPQ IX, was to provide both learners and their supervisors' practical tools for meaningful self-reflection regarding each one's potentials. Perceptions of individual strengths are also connected to self-concept and attribution theory.

In addition, we are interested in the outcome aspect that is strongly present in the MI theory suggesting that academic intelligence alone is not enough. We need to recognize that success in life and career depends also on social, practical and environmental intelligence. To make the best out of one's abilities is to be in the right place at the right time.

Lastly, we need to understand that the world does not revolve around human beings. We are not here alone but one of many and, thus, environmental sensitivity is needed. Our wish is that this study will help to promote discussion around above-mentioned topics.

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Multiple Intelligences Profiling Questionnaire IX

	TOTALLY DISAGREE				TOTALLY AGREE
Writing is a natural way for me to express myself.	1	2	3	4	5
At school, studies in English or social studies were easier for me than mathematics, physics and chemistry.	1	2	3	4	5
I have recently written something that I am especially proud of, or for which I have received recognition.	1	2	3	4	5
Metaphors and vivid verbal expressions help me learn efficiently.	1	2	3	4	5
At school, I was good at mathematics, physics or chemistry.	1	2	3	4	5
I can work with and solve complex problems.	1	2	3	4	5
Mental arithmetic is easy for me.	1	2	3	4	5
I am good at games and problem solving, which require logical thinking.	1	2	3	4	5
At school, geometry and other subjects involving spatial perception were easier for me than solving equations.	1	2	3	4	5
It is easy for me to conceptualize complex and multidimensional patterns.	1	2	3	4	5
I can easily imagine how a landscape looks from a bird's-eye view.	1	2	3	4	5
When I read, I form pictures or visual images in my mind.	1	2	3	4	5
I am handy.	1	2	3	4	5
I can easily do something concrete with my hands (e.g. knitting and woodwork).	1	2	3	4	5
I am good at showing someone how to do something in practice.	1	2	3	4	5
I was good at handicrafts (e.g. woodwork; textiles) at school.	1	2	3	4	5
After hearing a tune once or twice I am able to sing or whistle it quite accurately.	1	2	3	4	5
When listening to music, I am able to pick out individual instruments and recognize melodies.	1	2	3	4	5

	TOTALLY DISAGREE				TOTALLY AGREE
I can easily keep the rhythm when drumming a melody.	1	2	3	4	5
I notice immediately if a melody is out of tune.	1	2	3	4	5
Even in strange company, I can easily find someone to talk to.	1	2	3	4	5
I get along easily with different types of people.	1	2	3	4	5
I make contact easily with other people.	1	2	3	4	5
In negotiations and group work, I am able to support the group to find a consensus.	1	2	3	4	5
I am able to analyze my own motives and ways of action.	1	2	3	4	5
I often think about my own feelings and sentiments and seek reasons for them.	1	2	3	4	5
I regularly spend time reflecting on the important issues of life.	1	2	3	4	5
I like to read psychological or philosophical literature to increase my self-knowledge.	1	2	3	4	5
In my busy everyday life I find it important to take time to think and reflect.	1	2	3	4	5
Even ordinary every-day life is full of amazing things.	1	2	3	4	5
I often reflect on the meaning of life.	1	2	3	4	5
It is important to me to share a quiet moment with others.	1	2	3	4	5
I enjoy the beauty and experiences related to nature.	1	2	3	4	5
Protecting the environment is important to me.	1	2	3	4	5
I pay attention to what I consume in order to protect the environment.	1	2	3	4	5

Environmental Sensitivity Scale

	TOTALLY DISAGREE				TOTALLY AGREE
I enjoy walking in the nature.	1	2	3	4	5
I enjoy the beauty and experiences related to nature.	1	2	3	4	5
Animal rights are important to me.	1	2	3	4	5
I take part in projects and events related to protection of environment.	1	2	3	4	5
Protecting the nature is important to me.	1	2	3	4	5
I pay attention to my consumption habits in order to protect environment.	1	2	3	4	5
I am ready to pay more for the products that are environmental friendly than for normal products.	1	2	3	4	5
I am active in recycling.	1	2	3	4	5
I sort different trash at home appropriately.	1	2	3	4	5

SPSS Syntax to Compute MIPQ IX Factors

```
/* Variable names in this syntax refer to Table 1 in this chapter

COMPUTE MIPQIX_LINGU = MEAN(lingu_1, lingu_2, lingu_3, lingu_4).
COMPUTE MIPQIX_LOGIC = MEAN(logic_1, logic_2, logic_3, logic_4).
COMPUTE MIPQIX_MUSIC = MEAN(music_1, music_2, music_3, music_4).
COMPUTE MIPQIX_SPATI = MEAN(spati_1, spati_2, spati_3, spati_4).
COMPUTE MIPQIX_BODKI = MEAN(bodki_1, bodki_2, bodki_3, bodki_4).
COMPUTE MIPQIX_INTER = MEAN(inter_1, inter_2, inter_3, inter_4).
COMPUTE MIPQIX_INTRA = MEAN(intra_1, intra_2, intra_3, intra_4).
COMPUTE MIPQIX_SP = MEAN(sp1_1, sp2_18, sp3_3, sp4_16).
COMPUTE MIPQIX_EN = MEAN(en1_36, en3_33, en4_23).
EXECUTE.

VARIABLE LABELS
  MIPQIX_LINGU        "1. Linguistic"
  MIPQIX_LOGIC        "2. Mathematical-logical"
  MIPQIX_MUSIC        "3. Musical"
  MIPQIX_SPATI        "4. Spatial"
  MIPQIX_BODKI        "5. Bodily-Kinesthetic"
  MIPQIX_INTER        "6. Interpersonal"
  MIPQIX_INTRA        "7. Intrapersonal"
  MIPQIX_SP           "8. Spiritual"
  MIPQIX_EN           "9. Environmental".
```

SPSS Syntax to Compute Environmental Sensitivity Scale Factors

```
/* Variable names in this syntax refer to Table 2 in this chapter

COMPUTE EN1_M = MEAN(en1_31, en1_36).
COMPUTE EN2_M = MEAN(en2_21, en3_22, en3_33).
COMPUTE EN3_M = MEAN(en4_23, en4_28, en6_25, en6_30).
EXECUTE .

VARIABLE LABELS
  EN1_M       "1. Love for nature"
  EN2_M       "2. Protection of animal rights and nature"
  EN3_M       "3. Environment friendly consumption".
```

CHAPTER 4

ETHICAL SENSITIVITY SCALE

INTRODUCTION

According to Muriel Bebeau and her colleagues (1999), *moral sensitivity* is about the awareness of how our actions affect other people. Thus, without moral sensitivity it is difficult to see what kind of moral issues are involved in everyday life. However, to respond to a situation in a *moral way*, a person must be able to perceive and interpret events in a ways that leads to *ethical action*. Ethically sensitive person notes various situational cues and is able to visualize several alternative actions in response to that situation. He or she draws on many aspects skills, techniques and components of interpersonal sensitivity. These include taking the perspective of others (role taking), cultivating empathy for a sense of connection to others, and interpreting a situation based on imagining what might happen and who might be affected.

Numerous tests of ethical sensitivity have been developed over the years, but most of them are very context-specific, for example, relating to medicine and dental education (Bebeau, Rest & Yamoor, 1985) or to the racial and gender intolerance (Brabeck et al., 2000).

Darcia Narvaez (2001; Narvaez, Endicott & Bock, 2002) has operationalized ethical sensitivity to include seven sets of skills that operate in more general level: (1) Reading and expressing emotions, (2) Taking the perspectives of others, (3) Caring by connecting to others, (4) Working with interpersonal and group differences, (5) Preventing social bias, (6) Generating interpretations and options, and (7) Identifying the consequences of actions and options. Those ethical skills guided development work of Ethical Sensitivity Scale (ESS) that is presented in this chapter.

THEORETICAL FRAMEWORK

According to Bebeau, Rest and Narvaez (1999), morality is built upon four basic component processes. These processes include moral sensitivity, moral judgment, moral motivation and moral character. The components of moral sensitivity, moral motivation and moral character have been studied less than the component of moral judgment.

Most of the studies in the area of moral development have based their theory on the cognitive-developmental theory of Lawrence Kohlberg (e.g., 1969). The Defining Issues Test (DIT) is a well-documented measure of moral judgment that has been used all over the world (Rest, 1986). The index most frequently used is the "P score", which reflects the principled reasoning (Stages 5 and 6 in

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Kohlberg's theory) of a person. Kohlberg's procedures have been criticized for lack of diversity in the moral dilemmas that have been used in the interviews (Yussen, 1977). The hypothetical dilemmas can also be seen as being too abstract and removed from the daily experiences of most people (Straughan, 1975). Recognition of these aspects of hypothetical dilemmas has led educational researchers to study real-life moral problems identified by people (Walker, de Vries & Trevethan, 1987). The research conducted in this area shows that the adolescents formulate dilemmas, which are very different from the hypothetical dilemmas used by Kohlberg and his colleagues to assess moral reasoning (Yussen, 1977; Binfet, 1995). Most of the dilemmas formulated by Kohlberg focus on issues of ownership, public welfare and life-and-death. In Yussen's (1977) study, the moral dilemma themes, formulated by adolescents, focused most frequently on interpersonal relations. Colangelo (1982) and Tirri (1996) found the same tendency with gifted adolescents.

Andreani and Pagnin provided a comprehensive review of the literature in their article (1993). According to these authors, the gifted students are presumed to have a privileged position in the maturation of moral thinking because of their precocious intellectual growth. Terman's (1925) sample of gifted children showed superior maturity in moral development in choosing socially constructive activities and in rating misbehaviour.

Karnes and Brown (1981) have made an initial investigation on the relationship between moral development and giftedness using Rest's DIT. Their sample included 233 gifted students (9-15 years of age) who were selected for a gifted programme. The results of the DIT were compared to the students' results in a test that measured their intellectual ability (WISC-R). The empirical results of the study showed positive correlation between the two tests. According to the researchers, intellectually gifted children appear to reach a relatively high stage of moral reasoning earlier than their chronological peers. (Karnes & Brown, 1981.)

Ikonen-Varila (2000) reported DIT P indexes of Finnish 9th graders (N = 1631). According to her, the proportion of post-conventional moral reasoning was 22.6 per cent. Ikonen-Varila found a positive connection between academic competence and moral reasoning. The school success classified into three groups (satisfactory, moderate, and excellent) produced the average DIT P indexes of 15.4, 24.2 and 29.7, respectively. She concluded that because cognitive factors regulate moral reasoning in childhood and adolescence, it is natural that school success is one of the main background factors explaining moral reasoning abilities. Her results support the connection between giftedness and moral reasoning: the more gifted, the more capable of doing principled moral reasoning.

Tirri and Pehkonen (2002) explored the moral reasoning and scientific argumentation of Finnish adolescents who are gifted in science. These 16 girls and 15 boys (14 – 15 years of age) participated in a gifted program at the University of Helsinki. The design contained the following research instruments and procedures: (1) Raven's Standard Progressive Matrix (SPM) was used to provide a test for comparing students' capacities for observation and clear thinking; (2) the moral reasoning was measured with DIT; (3) students were asked to write essays on scientific moral dilemmas; (4) researchers interviewed the students. The results show that the average DIT *P* index was 41, representing the average score for a heterogeneous group of 18-year-olds. Scores ranged from 7 to 78, indicating quite

high variance (*SD* = 15.8); some students really represented post conventional moral reasoning, some did not at all. An interesting finding was that the correlation between DIT and SPM was near zero. (Tirri & Pehkonen, 2002.)

Other studies of moral judgment using DIT scores have shown that gifted adolescents scored higher than their peers as a group (Tan-Willman & Gutteridge, 1981; Janos & Robinson, 1985; Narvaez, 1993). However, the data with high-achieving adolescents has indicated that the relationship between apparent academic talent and moral judgment scores is more complex. According to Narvaez's study, high academic competence is necessary for an unusually high *P* score, but it does not necessarily predict it. The high achievers may have average to high moral judgment scores, whereas low achievers cannot be high scorers in moral judgment (Narvaez, 1993).

Morality includes other components besides moral judgment, as measured by DIT scores. Real-life moral dilemmas also require moral sensitivity and moral motivation (Narvaez, 1993). Before an individual can make responsible moral judgments, he or she needs to identify real-life moral dilemmas in different contexts. A broad conception of morality requires more than just skill in abstract reasoning. Affective and social factors play a vital role in moral conduct.

The few empirical studies available have contradictory results on the relationships between general intelligence, social competence, and altruism (Abroms, 1985). Earlier studies on deviant behaviour and crime among the gifted have also shown that there is no necessary relationship between morality and intelligence (Brooks, 1985; Gath, Tennenth & Pidduck, 1970). Furthermore, earlier studies show that there are qualitative differences in the moral reasoning of gifted adolescents (Tirri & Pehkonen, 2002).

According to Muriel Bebeau and her colleagues (1999, p. 22), moral sensitivity

> ...is the awareness of how our actions affect other people. It involves being aware of the different possible lines of action and how each line of action could affect the parties involved (including oneself). Moral sensitivity involves imaginatively constructing possible scenarios (often from limited cues and partial information), knowing cause-consequent chains of events in the real world, and having empathy and role taking skills. Moral sensitivity is necessary to become aware that a moral issue is involved in a situation.

Like we said earlier in this chapter, to respond to a situation in a moral way, a person must be able to perceive and interpret events in ways that lead to ethical action. The person must be sensitive to situational cues and must be able to visualize various alternative actions in response to that situation. Ethical sensitivity is closely related to a new suggested intelligence type, social intelligence, which can be defined as the ability to get along well with others and get them to cooperate with you (Albrecht, 2006; Goleman, 2006).

We acknowledge that numerous tests of ethical sensitivity exist, but most of them are very context-specific, for example, relating to medicine and dental education (Bebeau, Rest & Yamoor, 1985) or to racial and gender intolerance (Brabeck et al., 2000). Narvaez's (2001) seven sets of ethical sensitivity skills operate on a more general level: Reading and expressing emotions, taking the perspectives of others, caring by connecting to others, working with interpersonal and group differences, preventing social bias, generating interpretations and options, and identifying the consequences of actions and options. Those ethical

skills have guided our Ethical Sensitivity Scale (ESS) instrument development work.

In this chapter, we present the Ethical Sensitivity Scale (ESS) and probe it with the following three questions: Are there any differences in the self-reported ethical sensitivity between (1) Lutheran non-confirmed and confirmed students; (2) female and male students; and (3) academically average and above average students?

METHOD

Sample

The non-probability sample (N = 249) was collected with the Ethical Sensitivity Scale (ESS) during the autumn semester 2006, from two secondary schools in Finland. One of the schools was located in Helsinki (Southern Finland, capital of Finland with about 560,000 inhabitants) and the other one was located in Jyväskylä (Central Finland, about 165,000 inhabitants). Each respondent was personally invited to complete a paper and pencil version of the questionnaire. Participants were asked to evaluate their attitude towards the statements measuring ethical sensitivity.

The sample consists of seventh (n = 85, 34%), eighth (n = 81, 33%) and ninth (n = 82, 33%) grade students of which 132 (53 %) are females and 116 (47 %) are males. The age median in the sample is 14 years. The ninth-grade students in the sample had been confirmed in the Lutheran Church. The students were further classified into two groups: Academically (1) average (n = 114, 46.7 %, self-reported grade point average $6.4 < GPA < 8.5$) and (2) above average (n = 130, 53.3 %, $8.5 \leq GPA \leq 10.0$) students.

Ethical Sensitivity Scale

The Ethical Sensitivity Scale (ESS) is based on Narvaez's operationalization of ethical sensitivity (2001). Its main purpose is to scale the pupils' orientations on ethical issues. The ESS measures the following seven dimensions of ethical sensitivity: (1) Reading and expressing emotions, (2) taking the perspectives of others, (3) caring by connecting to others, (4) working with interpersonal and group differences, (5) preventing social bias, (6) generating interpretations and options and (7) identifying the consequences of actions and options. The instrument consists of 28 items on a Likert scale from 1 (*totally disagree*) to 5 (*totally agree*) (Table 1.).

Table 1. Factor Structure and Alpha Loadings of the Ethical Sensitivity Scale

Dimension	*Factor*	*Items*	*M (SD)*	α
1 Reading and expressing emotions	ESS_1	es1_1, es1_2, es1_3, es1_4	3.9 (0.6)	.54
2 Taking the perspectives of others	ESS_2	es2_5, es2_6, es2_7, es2_8	3.9 (0.7)	.78
3 Caring by connecting to others	ESS_3	es3_9, es3_10, es3_11, es3_12	3.7 (0.7)	.71
4 Working with interpersonal and group differences	ESS_4	es4_13, es4_14, es4_15, es4_16	3.4 (0.7)	.75
5 Preventing social bias	ESS_5	es5_17, es5_18, es5_19, es5_20	3.5 (0.5)	.50
6 Generating interpretations and options	ESS_6	es6_21, es6_22, es6_23, es6_24	3.6 (0.6)	.69
7 Identifying the consequences of actions and options	ESS_7	es7_25, es7_26, es7_27, es7_28	3.3 (0.6)	.65

The ESS items were designed to apply to people from different backgrounds and cultures. This allows us to use the instrument in a multicultural society and in cross-cultural studies. The statements described the issues and values that the respondent considered important for him or her. Each of the seven dimensions was operationalized in the questionnaire with four statements. For example, the first category, Reading and expressing emotions, was measured with the item ess1_1 "In conflict situations, I am able to identify other persons' feelings." All the items, with means and standard deviations, are listed in Table 2.

Statistical Analyses

The first stage of the analysis describes the psychometric properties of the seven dimensions of the ESS. The analysis techniques we apply here are non-parametric Spearman rank order correlations to study statistical dependencies between the indicators and parametric Cronbach's alpha values that estimate how well the items co-operate within each dimension.

The second stage of the analysis answers the three research questions with a nonparametric Mann-Whitney *U*–test. The first research question, "Are there any differences in the ethical sensitivity between Lutheran non-confirmed and confirmed students?", was addressed with the confirmation status (confirmed/non-confirmed) as a grouping variable. The second research question, "Are there any

differences in the ethical sensitivity between female and male students?", was addressed with gender (male/female) as a grouping variable. The third research question, "Are there any differences in the ethical sensitivity between academically average and above average students?", was addressed with average school grade (average school success: 6.5 - 8.4; and above average school success: 8.5 – 10.0) as a grouping variable.

RESULTS

Psychometric Properties of the ESS

The first task of the statistical analysis was to investigate the psychometric properties of the Ethical Sensitivity Scale items. Inter-item correlations between the items were investigated for the sample with the nonparametric correlation coefficient (Spearman rho). The seven dimensions are measured by 28 items, producing 378 inter-item correlations when diagonal and double-presentations are omitted ($N_{i\text{-}i\ corr} = (N_{items} \times (N_{items} - 1)) / 2$). The absolute value correlations in the sample (n = 249) range from .001 to .55 (M = .22, SD = .10). Three correlations were above |.50| and thus considered large, according to Cohen (1988), as they share more than 25 per cent of their variance ($.5^2 = .25$). On the average, the items share only five per cent of their variance with other items ($.22^2 = .05$). The result of an inter-item correlation analysis shows that the items measuring ethical sensitivity do not share enough common variance in the sample to proceed to an exploratory factor analysis.

Psychometric properties of the ESS items were further studied with reliability analysis (Cronbach, 1970). The results are presented in Table 1. "2 Taking the perspectives of others" and "4 Working with interpersonal and group differences" scales had the highest reliabilities (α = .78; α = .75) while "1 Reading and expressing emotions" and "5 Preventing social bias" scales had the lowest reliabilities (α = .54; α = .50). Alpha values depend heavily on the dimensionality of the scale. Higher inter-item reliability is achieved with one-dimensional constructs. The second issue affecting reliability negatively is the fact that high abstraction level concepts are more difficult to operationalize into intuitive items.

Table 2. The Ethical Sensitivity Scale

Item	*Label*	*M (SD)*
1 Reading and expressing emotions		
es1_1	In conflict situations, I am able to identify other persons' feelings.	3.8 (0.7)
es1_2	I am able to express my different feelings to other people.	3.9 (0.9)
es1_3	I notice if someone working with me is offended by me.	4.0 (0.9)
es1_4	I am able to express to other people if I am offended or hurt because of them.	3.7 (1.0)
2 Taking the perspectives of others		
es2_5	I am able to cooperate with people who do not share my opinions on what is right and what is wrong.	3.8 (0.9)
es2_6	I tolerate different ethical views in my surroundings.	3.9 (0.9)
es2_7	I think it is good that my closest friends think in different ways.	4.1 (0.9)
es2_8	I also get along with people who do not agree with me.	3.9 (0.8)
3 Caring by connecting to others		
es3_9	I am concerned about the wellbeing of my partners.	3.3 (0.9)
es3_10	I take care of the wellbeing of others and try to improve it.	3.7 (0.9)
es3_11	In conflict situations, I do my best to take actions that aim at maintaining good personal relationships.	3.9 (0.9)
es3_12	I try to have good contact with all the people I am working with.	4.0 (0.9)
4 Working with interpersonal and group differences		
es4_13	I take other peoples' points of view into account before making any important decisions in my life.	3.5 (1.0)
es4_14	I try to consider another person's position when I face a conflict situation.	3.2 (1.0)
es4_15	When I am working on ethical problems, I consider the impact of my decisions on other people.	3.3 (0.9)
es4_16	I try to consider other peoples' needs, even in situations concerning my own benefits.	3.5 (0.9)

Table 2. The Ethical Sensitivity Scale (continued)

Item	*Label*	*M (SD)*
5 Preventing social bias		
es5_17	I recognize my own bias when I take a stand on ethical issues.	3.3 (0.8)
es5_18	I realize that I am tied to certain prejudices when I assess ethical issues.	3.6 (0.9)
es5_19	I try to control my own prejudices when making ethical evaluations.	3.7 (0.9)
es5_20	When I am resolving ethical problems, I try to take a position evolving out of my own social status.	3.2 (0.8)
6 Generating interpretations and options		
es6_21	I contemplate on the consequences of my actions when making ethical decisions.	3.6 (0.9)
es6_22	I ponder on different alternatives when aiming at the best possible solution to an ethically problematic situation.	3.6 (0.9)
es6_23	I am able to create many alternative ways to act when I face ethical problems in my life.	3.5 (0.8)
es6_24	I believe there are several right solutions to ethical problems.	3.8 (0.9)
7 Identifying the consequences of actions and options		
es7_25	I notice that there are ethical issues involved in human interaction.	3.6 (0.9)
es7_26	I see a lot of ethical problems around me.	3.3 (1.0)
es7_27	I am aware of the ethical issues I face at school.	3.6 (0.9)
es7_28	I am better than other people in recognizing new and current ethical problems.	2.9 (0.9)

Ethical Sensitivity Related Differences between Lutheran Non-confirmed and Confirmed Students

First we wanted to probe the instrument by analyzing if students' responses to the ESS items are statistically dependent on their Lutheran confirmation experience. We used a dichotomous variable "confirmation" with values (1 = confirmed, 2 = non-confirmed) as the grouping variable in a non-parametric group mean rank difference test (Mann-Whitney *U*). The first group members, non-confirmed students, came from classes seven and eight (n = 166). The second group includes ninth-grade students (n = 82) who have been confirmed in the Lutheran church. Group differences are comparable, as both females and males were equally represented in the two sub groups. Using confirmation, as a grouping factor is as equal as using a 15-year-old cut-off point (Finnish church law defines 15 years as the earliest age for confirmation).

According to the first research question, we aim to explain the differences between the two groups, with religious teaching available for those who are confirmed. However, we fully acknowledge that some error enters into the analysis, as the highly abstract ESS items are more demanding for the younger students. We have analyzed this error source by comparing the standard deviations

of all three age groups' answers to single items. Results did not show any significant differences between the younger and older students' response tendencies to 28 ESS items. Figure 1 show firstly that the unanimity in response tendency is not related to the grade, as all three lines are close to each other in most items. Secondly, items related to the fifth (Preventing social bias) dimension of the ESS have the lowest standard deviations, indicating the smallest disagreement among the students.

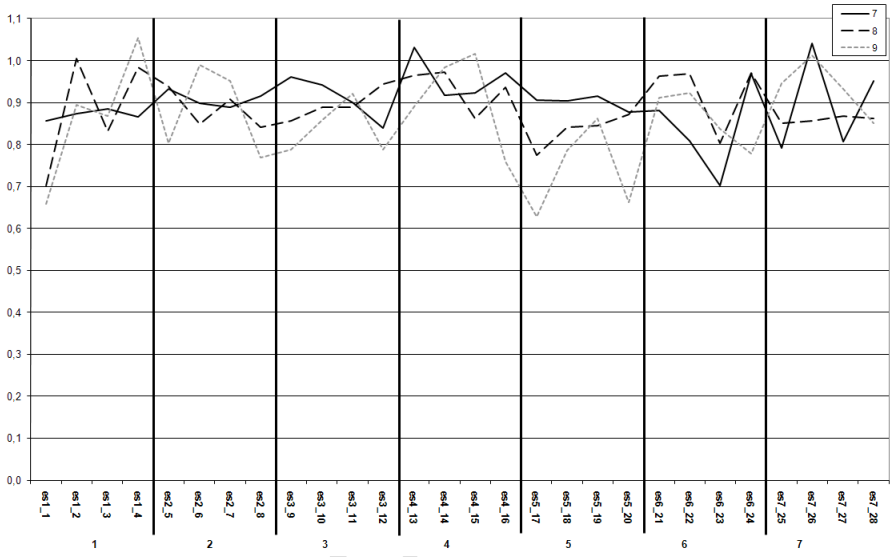

Figure 1. Comparison of Disagreement (measured with SD, values close to zero indicate smaller disagreement) between the Three Age Groups on the ESS dimensions.

Overall results presented in Table 3 show that those students who have had more religious education at school, and also were confirmed in the Lutheran church, self-reported higher ethical skills than their younger and non-confirmed peers. On a more detailed level, we see that confirmed students (M = 3.9, SD = 0.6) report statistically significantly higher skills on caring by connecting to others than non-confirmed students (M = 3.7, SD = 0.7), $Z(1, n = 248) = -2.382$, $p = .017$. For the other six scales, the group mean ranks do not differ statistically significantly, indicating that there is at least a 5 per cent or higher possibility to have similar or larger difference between the two groups' responses, if we assume that they come from the same population (i.e., null hypothesis is true).

However, when we examine the results presented in Table 3 on a more detailed level, we learn that in six scales out of seven those students who have confirmed in the Lutheran church have higher self-reported ethical skills than their non-confirmed peers.

Table 3. Comparison of Non-confirmed and Confirmed Students' Responses to the ESS

Scale	*Confirmed* (*n* = 82) *M* (*SD*)	*Non-confirmed* (*n* = 166) *M* (*SD*)	*Z* (*p*)
1 Reading and expressing emotions	3.9 (0.6)	3.8 (0.6)	-1.622 (.105)
2 Taking the perspectives of others	4.0 (0.7)	3.9 (0.7)	-0.756 (.450)
3 Caring by connecting to others	3.9 (0.6)	3.7 (0.7)	-2.382 (.017)
4 Working with interpersonal and group differences	3.5 (0.7)	3.3 (0.7)	-1.931 (.053)
5 Preventing social bias	3.5 (0.4)	3.4 (0.6)	-1.500 (.134)
6 Generating interpretations and options	3.7 (0.6)	3.6 (0.6)	-1.857 (.063)
7 Identifying the consequences of actions and options	3.3 (0.7)	3.3 (0.6)	-0.294 (.769)

Gender Related Differences in Ethical Sensitivity

To answer the second research question, we compared female and male students' self-reported ethical sensitivity skills. A non-parametric group mean rank difference test (Mann-Whitney *U*) was applied to a dichotomous grouping variable, "gender" (1 = female, 2 = male). Group differences are comparable, as both genders were equally represented in the sample (female $n = 132$, 53.2 % and male $n = 116$, 46.8 %) (Table 4).

Overall results show clearly that on all but one dimension ("Identifying the consequences of actions and options") female participants estimated their ethical skills higher than males. Female students were more likely to read and express emotions ($M = 4.0$, $SD = 0.5$) than their male peers ($M = 3.7$, $SD = 0.6$), $Z(1, n = 248) = -3.138$, $p = .002$. Female students were more likely to take the perspectives of others ($M = 4.1$, $SD = 0.6$) than male students ($M = 3.7$, $SD = 0.7$), $Z(1, n = 248) = -4.270$, $p < .001$. Female students were also more caring, by connecting to others ($M = 3.9$, $SD = 0.6$), than male students ($M = 3.5$, $SD = 0.6$), $Z(1, n = 248) = -4.514$, $p < .001$. Females in this sample self-reported themselves as more effective workers with interpersonal and group differences ($M = 3.5$, $SD = 0.6$) than males ($M = 3.2$, $SD = 0.7$), $Z(1, n = 248) = -4.348$, $p < .001$. Table 4 shows that the difference between female and male respondents was smallest in dimensions five (Preventing social bias) and seven (Identifying the consequences of actions and options).

Table 4. Gender-related Differences in Students' Responses to ESS

	Female (*n* = 132)	*Male* (*n* = 116)	
Scale	*M* (*SD*)	*M* (*SD*)	*Z* (*p*)
1 Reading and expressing emotions	4.0 (0.5)	3.7 (0.6)	-3.138 (.002)
2 Taking the perspectives of others	4.1 (0.6)	3.7 (0.7)	-4.270 (<.001)
3 Caring by connecting to others	3.9 (0.6)	3.5 (0.6)	-4.514 (<.001)
4 Working with interpersonal and group differences	3.5 (0.7)	3.2 (0.7)	-4.348 (<.001)
5 Preventing social bias	3.5 (0.6)	3.4 (0.5)	-2.115 (.034)
6 Generating interpretations and options	3.7 (0.6)	3.5 (0.7)	-2.683 (.007)
7 Identifying the consequences of actions and options	3.3 (0.6)	3.3 (0.7)	-0.125 (.900)

Academic Giftedness Related Differences in Ethical Sensitivity

The last research task was to compare academically average and above average students' responses to ethical sensitivity scales. Respondents were asked to report their grade point average (GPA) on the following six point scale: (1) = 4.0 – 5.4 (*n* = 1, .4 %); (2) = 5.5 – 6.4 (*n* = 3, 1.2 %); (3) = 6.5 – 7.4 (*n* = 23, 9.3 %); (4) = 7.5 – 8.4 (*n* = 91, 36.7 %); (5) = 8.5 – 9.4 (*n* = 119, 48.0 %); (6) = 9.5 – 10.0 (*n* = 11, 4.4 %). As the research task was to analyze differences between average and above average students, we recoded a new two-class variable with a cut-off point of 8.5, and left out the analysis the two lowest GPA classes 1 and 2 (containing only four students, 1.6 % of all responses). The new "GPA2class" variable (1 "averageGPA" = 6.4 < GPA < 8.5, *n* = 114, 46.7 %; 2 "highGPA" = 8.5 ≤ GPA ≤ 10.0, *n* = 130, 53.3 %) was the grouping variable in a non-parametric group mean rank difference test (Mann-Whitney *U*). Group differences were related to gender to some extent as female students were slightly over represented in the "highGPA" group (n_{female_total} = 132, 53.2%; $n_{female\_highGPA}$ = 72, 64.3%) and male students were over represented in the "averageGPA" group (n_{male_total} = 116, 46.8 %; $n_{male\_averageGPA}$ = 90, 68.2 %). However, the bias is not too large (about ten per cent) to prevent further comparison of the two groups. (Table 5.)

Table 5. Academic Achievement (GPA) Related Differences in Students' Responses to ESS

	Average academic achievement (n = 114)	*Above average academic achievement* (n = 130)	
Scale	*M* (*SD*)	*M* (*SD*)	*Z* (*p*)
1 Reading and expressing emotions	3.9 (0.5)	3.9 (0.6)	-0.397 (.691)
2 Taking the perspectives of others	3.9 (0.7)	4.0 (0.7)	-1.994 (.046)
3 Caring by connecting to others	3.6 (0.6)	3.9 (0.6)	-3.715 (<.001)
4 Working with interpersonal and group differences	3.3 (0.6)	3.4 (0.8)	-0.953 (.341)
5 Preventing social bias	3.4 (0.5)	3.5 (0.6)	-1.429 (.153)
6 Generating interpretations and options	3.5 (0.6)	3.8 (0.6)	-3.668 (<.001)
7 Identifying the consequences of actions and options	3.3 (0.6)	3.4 (0.7)	-1.290 (.197)

Overall results regarding the third question showed that more academically gifted students estimated their ethical skills higher than average ability students. Those students who reported high GPA (M = 3.9, SD = 0.6) were clearly more likely to be caring by connecting to others than average GPA students (M = 3.6, SD = 0.6). This result was statistically significant, $Z(1, n = 244) = -3.715$, $p < .001$. High GPA students also felt that they were more skilful in generating interpretations and options (M = 3.8, SD = 0.6) than their average GPA peers (M = 3.5, SD = 0.6), $Z(1, n = 244) = -3.668$, $p < .001$. Average GPA students self-reported slightly weaker skills in taking the perspectives of others (M = 3.9, SD = 0.7) than their above average GPA peers (M = 4.0, SD = 0.7). The difference was statistically small, but significant, $Z(1, n = 244) = -1.994$, $p = .046$.

CONCLUSIONS

In this chapter, we presented a 28 –item Ethical Sensitivity Scale (ESS) and tested its psychometric properties with a sample consisting of 249 Finnish Lutheran urban schools' 7th - 9th grade students. We discussed theoretical issues related to ethical sensitivity as an important component in morality and presented a definition and operationalization of the ethical sensitivity.

The ESS is based on the work of Narvaez (2001) and its main purpose is to scale the pupils' orientations on ethical issues. The ESS measures the following

seven dimensions of ethical sensitivity: (1) Reading and expressing emotions, (2) considering the perspectives of others, (3) caring by connecting to others, (4) working with interpersonal and group differences, (5) preventing social bias, (6) generating interpretations and options, and (7) identifying the consequences of actions and options.

We probed the instrument with three research questions: Are there any differences in the self-reported ethical sensitivity between (1) Lutheran non-confirmed and confirmed students; (2) female and male students; and (3) academically average and above average students?

Results regarding the first question showed that those students who have had more religious education at school and also were confirmed in the Lutheran church, self-reported higher ethical skills than their younger and non-confirmed peers. This finding supports our initial hypothesis that ninth graders, who have had more religious education at school and also were confirmed, assess themselves more as ethically sensitive than their younger and less educated peers.

Results regarding the second question showed clearly that female students estimated their ethical skills higher than their male peers. This tendency can be explained by the types of items measuring ethical sensitivity skills. The majority of them measure caring ethics with emotional and social intelligence. In earlier Finnish studies, both 6^{th} and 9^{th} grade girls were shown to be more care-oriented in their moral orientation than their same age male peers who were clearly justice-oriented (Tirri, 2003).

Results regarding the third question showed that more academically gifted students estimated their ethical skills as higher than the opinions of average ability students. This finding supports other researchers' notion that gifted students have a privileged position in the maturation of moral thinking because of their precocious intellectual growth (Andreani & Pagnin, 1993; Karnes & Brown, 1981; Terman, 1925).

Results regarding the psychometric properties of the ESS showed that it is a promising ethical sensitivity measurement instrument that can be applied to various learning contexts both in traditional face-to-face and online learning environments. It can also be used together with previously presented Spiritual Sensitivity Scale (SSS, see Chapter 4).

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Ethical Sensitivity Scale

	TOTALLY DISAGREE				TOTALLY AGREE
In conflict situations, I am able to identify other persons' feelings.	1	2	3	4	5
I am able to express my different feelings to other people.	1	2	3	4	5
I notice if someone working with me is offended by me.	1	2	3	4	5
I am able to express to other people if I am offended or hurt because of them.	1	2	3	4	5
I am able to cooperate with people who do not share my opinions on what is right and what is wrong.	1	2	3	4	5
I tolerate different ethical views in my surroundings.	1	2	3	4	5
I think it is good that my closest friends think in different ways.	1	2	3	4	5
I also get along with people who do not agree with me.	1	2	3	4	5
I am concerned about the wellbeing of my partners.	1	2	3	4	5
I take care of the wellbeing of others and try to improve it.	1	2	3	4	5
In conflict situations, I do my best to take actions that aim at maintaining good personal relationships.	1	2	3	4	5
I try to have good contact with all the people I am working with.	1	2	3	4	5
I take other peoples' points of view into account before making any important decisions in my life.	1	2	3	4	5
I try to consider another person's position when I face a conflict situation.	1	2	3	4	5
When I am working on ethical problems, I consider the impact of my decisions on other people.	1	2	3	4	5
I try to consider other peoples' needs, even in situations concerning my own benefits.	1	2	3	4	5
I recognize my own bias when I take a stand on ethical issues.	1	2	3	4	5
I realize that I am tied to certain prejudices when I assess ethical issues.	1	2	3	4	5

ETHICAL SENSITIVITY SCALE

	TOTALLY DISAGREE				TOTALLY AGREE
I try to control my own prejudices when making ethical evaluations.	1	2	3	4	5
When I am resolving ethical problems, I try to take a position evolving out of my own social status.	1	2	3	4	5
I contemplate on the consequences of my actions when making ethical decisions.	1	2	3	4	5
I ponder on different alternatives when aiming at the best possible solution to an ethically problematic situation.	1	2	3	4	5
I am able to create many alternative ways to act when I face ethical problems in my life.	1	2	3	4	5
I believe there are several right solutions to ethical problems.	1	2	3	4	5
I notice that there are ethical issues involved in human interaction.	1	2	3	4	5
I see a lot of ethical problems around me.	1	2	3	4	5
I am aware of the ethical issues I face at school.	1	2	3	4	5
I am better than other people in recognizing new and current ethical problems.	1	2	3	4	5

SPSS Syntax to Compute Ethical Sensitivity Scale Factors

```
/* Variable names in this syntax refer to Table 2 in this chapter


COMPUTE ES1_M = MEAN(es1_1,es1_2,es1_3,es1_4).
COMPUTE ES2_M = MEAN(es2_5,es2_6,es2_7,es2_8).
COMPUTE ES3_M = MEAN(es3_9,es3_10,es3_11,es3_12).
COMPUTE ES4_M = MEAN(es4_13,es4_14,es4_15,es4_16).
COMPUTE ES5_M = MEAN(es5_17,es5_18,es5_19,es5_20).
COMPUTE ES6_M = MEAN(es6_21,es6_22,es6_23,es6_24).
COMPUTE ES7_M = MEAN(es7_25,es7_26,es7_27,es7_28).
EXECUTE.

VARIABLE LABELS
  ES1_M  "1. Reading and expressing emotions"
  ES2_M  "2. Taking the perspectives of others"
  ES3_M  "3. Caring by connecting to others"
  ES4_M  "4. Working with interpersonal and group differences"
  ES5_M  "5. Preventing social bias"
  ES6_M  "6. Generating interpretations and options"
  ES7_M  "7. Identifying the consequences of actions and options".
```

CHAPTER 5

EMOTIONAL LEADERSHIP QUESTIONNAIRE

INTRODUCTION

For decades, school leadership has been and remains one of the most widely studied and published topics (see, e.g., Day, 2004; Leithwood, 2003). However, leadership as a social process affecting both end products and personal emotions has seldom been studied (Nokelainen & Ruohotie, 2006). In this sense, one interesting topic for examination is the research in Emotional Intelligence (EI), which has in recent years become one of the most important constructs in modern psychological research. EI refers to one's competence to identify, express and understand emotions, to assimilate emotions into thought, and to regulate both positive and negative emotions in oneself and others (Matthews, Zeidner & Roberts, 2002).

In this chapter, we use the term Emotional Leadership (EL) to describe leaders' EI capabilities. We study an empirical sample (N = 806) to show how Finnish adult workers evaluate their leaders' EL competencies. The sample consists of elementary and upper secondary school teachers, teachers in vocational institutions and polytechnic institutions of higher education, and public administration and industrial automation workers.

The chapter is organised as follows: First, we discuss the central concepts of the body of EI research. Second, we present the Emotional Leadership Questionnaire (ELQ), a self-reported instrument that operationalizes the four domains of EI (Goleman, Boyazis & McKee, 2002). Third, we use an empirical sample (N = 806) to study the construct validity of the ELQ with the following three stages: 1) comparison of the mean values and standard deviations of the ELQ items measuring employees' evaluations of their leaders' EL competencies, 2) examination of the variable structure of ELQ to test it against the theoretical EI model, and 3) reliability analysis of the eighteen EL characteristics. Finally, we conclude the results, discuss the limitations of this study, and suggest guidelines for future study.

THEORETICAL FRAMEWORK

Emotional Intelligence

Howard Gardner's theory of multiple intelligences (MI) builds on a concept of 'intelligence', which he defines as "the ability to solve problems or to create products that are valued within one or more cultural settings" (Gardner, 1983, p. x). He lists seven intelligences that meet these criteria: (1) Linguistic, (2) Logical-

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mathematical, (3) Musical, (4) Spatial, (5) Bodily kinaesthetic, (6) Interpersonal and (7) Intrapersonal (Gardner, 1983, p. xi). In the newest edition of his MI theory, Gardner emphasizes more cultural and contextual factors in the development of these seven intelligences (Gardner, 1999).

In 1998, Reuven Bar-On developed the concept of emotional quotient (EQ) to evaluate a person's emotional intelligence (EI). According to Bar-On (EQ Symposium, 2004), EI is "an array of noncognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures". He created the Emotional Quotient Inventory (EQ-i), which was the first test of emotional intelligence to be published by a psychological test publisher (1996). The EQ-i has five domains: (1) Itrapersonal, (2) Interpersonal, (3) Adaptability, (4) Stress management and (5) General mood (Bar-On, 1996; Bar-On, Tranel, Denburg & Bechara, 2003).

Peter Salovey and John Mayer (1990; Mayer, Salovey & Caruso, 2000) suggested that a new kind of intelligence – 'emotional intelligence' (EI) – provides us awareness of our own and other people's feelings. According to them (1990), emotional intelligence is "a form of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and action". Their EI model has five domains: (1) Slf-awareness, (2) Self-management, (3) Motivation, (4) Empathy and (5) Social skills (Salovey & Mayer, 1990).

Daniel Goleman popularised the term emotional intelligence and claimed that EI was "as powerful and at times more powerful than IQ" in predicting life success (1995, 34). He aimed to show in his studies that emotional and social factors are important (1995; 1998a), but his "views on EI often went far beyond the evidence available" (Brackett, Lopes, Ivcevic, Pizarro, Mayer & Salovey, 2004). A recent study showed that most popular EI and ability measures are related only at $r < 0.22$ (i.e., about 5% of common variance) (Brackett & Mayer, 2003).

Goleman (1995) first agreed with Salovey and Mayer's (1990) five domains of emotional intelligence, but since then his thinking about the dimensions of emotional intelligence, and their accompanying characteristics, has evolved and coalesced into four domains with eighteen characteristics. In his four-domain model, motivation blends with four other domains (Goleman, Boyatzis & McKee, 2002, p. 253-256).

The theory, as formulated by Salovey and Mayer (1990; Mayer & Salovey, 1997), framed EI within a model of intelligence. Goleman's model formulates EI in terms of a theory of performance (1998b). Goleman argues (2001) that an EI-based theory of performance is directly applicable to the domain of work and organizational effectiveness, particularly in predicting excellence in jobs of all kinds, from sales to leadership. Goleman, Boyatzis and McKee further state (2002, p. 38) that EI characteristics are not innate talents, but learned abilities. According to them (2002, p. 5), the emotional task of the leader is primal (i.e., both the original and the most important act of leadership). The true power of emotional leadership lies in the fact that people rely on connections with other people (an open limbic system) for their emotional stability; thus, a leader has the power to sway them towards resonance (to bring out everyone's best) or dissonance (to drive emotions negatively).

When we compare the Goleman et al. (2002) model with Bar-On's (1996) model, we see that self-awareness is related to intrapersonal awareness and that social awareness is related to interpersonal awareness. The major difference is that Goleman et al. (2002) have merged Bar-On's "adaptability" and "general mood" into a single dimension, namely "self-management". On the other hand, Bar-On's model has no equivalent to the Goleman et al. (2002) model's "relationship management" domain.

Measuring Emotional Intelligence

Gerald Matthews, Moshe Zeidner and Richard Roberts (2002) classify EI measurement instruments into two main categories: performance-based and self-reported tests. John Mayer, Peter Salovey, and colleagues (MEIS and MSCEIT, see e.g., Mayer, Salovey & Caruso, 2000) develop the most prominent performance-based tests. However, as this chapter aims to present the ELQ instrument, we focus instead on the self-reported measures of EI.

Matthews and his colleagues (2002) have carried out a seminal review of both performance-based and self-reported EI instruments. They state that self-report measures of EI are abundant, but only a few, including Reuven Bar-On's EQ-i, are built on published empirical studies. However, when a factor analysis was carried out on the basis of the normative correlations provided by Bar-On (1996), Matthews and his colleagues noticed that the reliable variance of the EQ-i can be attributed only to three (instead of ten or fifteen) constructs: self-esteem, empathy and impulse control. They concluded that "the close relationships between EQ and various measures of personality and psychopathology suggest that EI, as assessed by the EQ-i, has actually been under investigation for decades" (2002, p. 213). Further, referring to the work of Newsome, Day and Catano (2000), Matthews and his colleagues stated that since neither EQ-i total score nor factor scores predicted academic achievement or cognitive ability, the evidence is insufficient to justify it as a valid instrument for personnel selection. Kerr and his colleagues also found in a recent study (2006, pp. 273-274) that "the level of supervisory emotional understanding ... has little bearing on employee perceptions of supervisor effectiveness." For example, they found a small negative correlation (r = -0.12) between supervisor ratings and managing emotions (MSCEIT score).

According to Matthews and his colleagues (2002), the lack of research evidence is also a problem with another popular EI paradigm, the Emotional Competence Inventory (ECI), developed by Daniel Goleman (see, e.g., Goleman, 1995, 1998a). They evaluated the ECI model at the conceptual level, as no factor or cluster analysis supported the derivation of factors cited in the scientific literature. They concluded that "the ECI is likely ... (to) have some utility" (Matthews et al., 2002, 218). They summarised that self-reported EI measures assess emotional competence rather than intelligence, as these measures relate to a person's experience of emotion and behaviour in emotionally challenging circumstances.

According to Ellström (1994), competence is the potential capacity of an individual to successfully complete a certain task according to certain criteria set by someone else. Next, we more closely examine the concept of 'competence' to understand why self-reported EI inventories, such as the Emotional Leadership

Questionnaire (ELQ) presented in this chapter, actually measure competence rather than intelligence.

Self-regulation as a System Concept Managing Emotional Leadership Competencies

Barry Zimmerman and Magda Campillo (2003, p. 238) characterise self-regulation as "self-generated thoughts, feelings, and actions that are planned and cyclically adapted for the attainment of personal goals". According to Pekka Ruohotie (2000), self-regulation (or conative constructs) mediates between a person's cognitive and affective attributes. He suggests that conative constructs are further divided into motivation and volition. Sub-components of motivation include achievement orientations (ego-orientation, task-orientation and the need for achievement) and self-directed orientations (self-efficacy beliefs, control beliefs, and self-esteem). Sub-components of volition include activity-related control strategies (metacognitive skills, critical thinking and the management of resources) and orientation to others (social ability, empathy and persuasibility).

Gregory Schraw (1998) points out that an interesting activity-related control strategy, metacognition (referred in the previous paragraph as 'metacognitive skills'), has two components: the knowledge of cognition and the regulation of cognition. The knowledge of cognition is about one's own knowledge and reasoning ability ('metaknowledge'). The regulation of cognition is to understand the possibilities and limits of one's competencies in specific situations ('metacompetence'). Components of metacognition interact with both motivation and emotion (Ruohotie, 2004). Margarita Limón Luque (2003) uses the terms 'meta-motivation' and 'meta-emotion' to refer to the knowledge and regulation of one's own motivation and emotions.

Marja-Liisa Malmivuori states that within self-system processes, emotions activate various self-regulatory processes at different levels of self-awareness, including self-reflection (2006). She contrasts automatic affective regulation (a low level of control) to active regulation of affective responses (a high level of control). Both features of affect in the self-regulation process are visible to leaders' subordinates as his or her EL competency.

According to Matthews and his colleagues (2002, p. 171), "emotion may be seen as both a universal human quality and as an attribute of the individual person, operationalized through validated self-report measures." Thus, two different research strands argue whether emotion is essentialist or evaluative in nature. In this chapter, we view EL dimensions as constructs in their own right which are identified with subjective feelings.

Marc Brackett and his colleagues (2004) characterize general approaches to EI in the literature as ability models and mixed models. Ability models view EI as a standard intelligence and argue that EI meets traditional criteria for intelligence. Mixed models combine the ability concept of EI with numerous self-reported attributes such as optimism, self-awareness and self-actualisation. (Brackett et al., 2004) The Emotional Leadership Questionnaire (ELQ) was developed to measure a leader's EI as perceived by his or her subordinates. On the conceptual level, ELQ measures a leader's competencies instead of his or her 'intelligences' or 'abilities', as subordinates are expected to be well aware only of their leader's explicit,

procedural abilities (metacompetence), and less so of their declarative knowledge (metaknowledge).

The theoretical framework is summarized in Figure 1. The figure represents self-regulation (Zimmerman, 1998, 2000) as a system concept (Boekaerts & Niemivirta, 2000) that managesleadership behaviour through interactive processes between motivation, volition, emotion, attention, metacognition and action control systems. As Markku Hannula (2006) points out, self-regulation should be considered much more than mere metacognition.

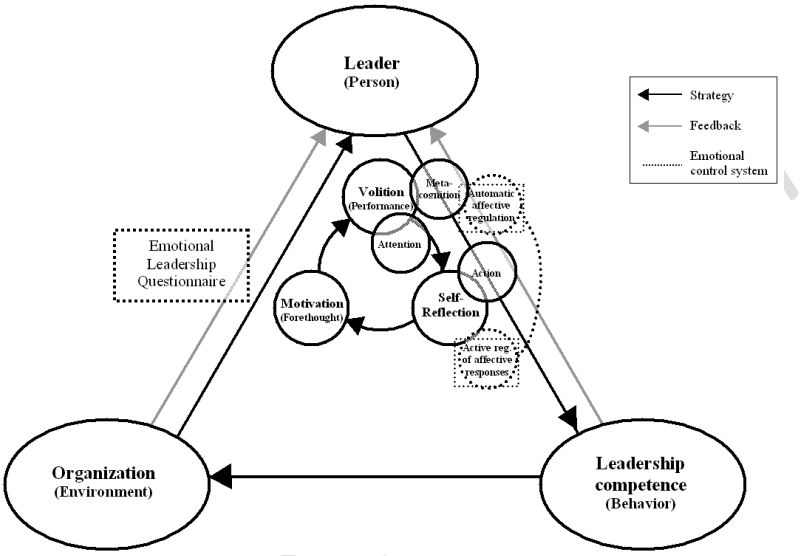

Figure 1. Self-regulation as a System Concept Managing Leadership Competence through Interactive Processes between Different Control Systems. (Adapted from Zimmerman, 2000, pp. 15-16.)

METHOD

Sample

The total number of participants in this study is 806. The first part of the non-probability sample consists of 682 adult employees of Finnish companies, vocational institution, polytechnic institute of higher education and public administration. The sample was collected from the Southern Finland in 2003 – 2005. Respondents' age mean was 40.5 years (*SD* = 11.7). Three hundred and twenty-four of the respondents were males (47.5%) and 358 were females (52.5%). Respondents' education level was distributed as follows: "Academic degree" (*n* = 261, 38.3%), "non-academic degree" (*n* = 382, 56.0%), and "no degree" (*n* = 39, 5.7%). Average working experience in the current job was 5.0 years (*SD* = 5.4). Total work experience was 13.5 years (*SD* = 11.2).

The second non-probability sample consists of 124 Finnish teachers from four comprehensive (n = 84) and two upper secondary (n = 40) schools. The sample was collected in 2006. All the schools were located in Helsinki, capital of Finland (about 560 000 inhabitants, 9.3 % of the total population of 5 223 442). The respondents' age was classified into four categories: (1) 21 to 30 years old (n = 18, 14.5%); (2) 31 to 40 years old (n = 25, 20.2%); (3) 41 to 50 years old (n = 34, 27.4%); (4) over 50 years old (n = 39, 31.5%). Seventy per cent of the respondents were females (n = 87, 70.2%), the rest were males (n = 29, 23.4%).

All the respondents in both samples were personally invited to complete a paper and pencil version of the ELQ. The first sample answered the first version of the ELQ containing 18 items, and the second sample answered the current version of the ELQ containing 51 items. Participants were asked to evaluate their attitude towards the statements measuring their leaders' emotional leadership.

Emotional Leadership Questionnaire

ELQ operationalizes Goleman and his colleagues (2002) four domains of emotional intelligence characteristics: (1) self-awareness, (2) self-management, (3) social awareness and (4) relationship management. The first version that was presented to the Finnish industrial and public sector workers contained 18 items, one item measuring each 18 characteristics. The second version of the ELQ that was presented to the Finnish schoolteachers contained 51 items (see Appendix for the item level details).

Respondents' task was to assess their superior's EL characteristics on four domains of the ELQ: (1) self-awareness (3 or 8 items), (2) self-management (6 or 20 items), (3) social awareness (3 or 7 items) and (4) relationship management (6 or 16 items). First two dimensions measure how subordinates rank their superior's personal characteristics (i.e., self-management capabilities). Two remaining dimensions measure leader's social skills (i.e., how they manage interpersonal relationships). Fifty-one ELQ items were evaluated with a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Table 1 shows the four EL domains and the eighteen associated characteristics.

Table 1. Emotional Leadership Domains and Associated Characteristics (Goleman, Boyatzis & McKee, 2002, p. 39)

	Sample 1[a]		*Sample 2*[b]	
Domains and characteristics	*M* (*SD*)	α[c]	*M* (*SD*)	α
I Self-awareness				
1. Emotional Self-Awareness	3.2 (0.9)	—	3.8 (1.0)	.88
2. Accurate Self-Assessment	3.3 (1.0)	—	3.7 (0.9)	.87
3. Self-Confidence	3.7 (0.8)	—	3.8 (0.8)	.61
II Self-management				
4. Emotional Self-Control	3.4 (1.0)	—	4.1 (0.9)	.88
5. Transparency	3.2 (1.0)	—	3.6 (0.9)	.62
6. Adaptability	3.5 (0.8)	—	3.9 (0.8)	.88
7. Achievement	3.3 (0.8)	—	3.5 (0.7)	.78
8. Initiative	3.5 (0.9)	—	3.8 (0.8)	.78
9. Optimism	3.5 (0.9)	—	3.9 (0.6)	.76
III Social awareness				
10. Empathy	3.1 (1.0)	—	3.8 (1.1)	.92
11. Organizational Awareness	3.6 (0.9)	—	3.7 (0.9)	.79
12. Service	3.6 (0.9)	—	3.5 (0.8)	.80
IV Relationship management				
13. Inspirational Leadership	3.2 (1.1)	—	3.4 (1.0)	.88
14. Influence	3.4 (0.9)	—	3.8 (0.8)	.83
15. Developing Others	3.1 (1.0)	—	3.7 (1.0)	.90
16. Change Catalyst	3.3 (1.0)	—	3.7 (0.8)	.68
17. Conflict Management	3.0 (1.0)	—	3.5 (1.1)	.90
18. Teamwork and Collaboration	3.2 (1.1)	—	3.4 (1.0)	.86

Note. [a] Sample 1 = 682 adult employees of Finnish companies, vocational institution, polytechnic institute of higher education and public administration. [b] Sample 2 = 124 Finnish teachers from comprehensive and upper secondary schools. [c] Alpha values were not calculated for the 18 –item tentative version of the ELQ.

Statistical Analyses

The statistical analyses contained three stages. *First*, both the 18 and 51 item versions of the ELQ (see Table 1) measuring employees' evaluations on their leader's EL are analysed by mean values and standard deviations. Our motivation is to compare how subordinates assess their leaders' competence on the four

different EL domains. *Second*, the variable structure of both models is examined with Bayesian Dependency Modeling (BDM, Myllymäki et al., 2002) to see if the ELQ is able to reproduce the theoretical EI model with both empirical samples. *Third*, parametric Cronbach's alpha values are calculated to estimate how well the ELQ items co-operate within each dimension.

RESULTS

Employees' Evaluations on their Leaders Emotional Leadership Competencies

According to Kerlinger (1986), intrinsic defect of rating scales is their proneness to constant error. He lists four main sources: Halo effect, error of severity (to rate all items too low), error of leniency (to rate all items too high) and error of central tendency (to avoid all extreme judgments). To examine intrinsic defect we analysed the overall response tendency.

Results regarding the first sample, 682 adult employees of Finnish companies, vocational institutions, universities of applied science, and public administration, show that the respondents used the whole scale from 1 (*totally disagree*) to 5 (*totally agree*) for all 18 items. Mode frequencies that sum up to the number of items in the questionnaire were as follows: (1) $n = 0$, (2) $n = 0$, (3) $n = 10$, (4) $n = 8$, (5) $n = 0$. This result shows that overall distribution of the modes on a five-point summative rating scale is unimodal and slightly biased towards positive values. The average mean for the eighteen EL characteristics was 3.4 ($SD = 1.0$).

Results regarding the second sample, 124 Finnish school teacher, show that the respondents used the whole scale from 1 (*totally disagree*) to 5 (*totally agree*) for 48 items. The scale for three remaining items, namely 25, 28 and 47, ranged from 2 to 5 (see Appendix for the item wordings). Mode frequencies that sum up to the number of items in the questionnaire were as follows: (1) $n = 0$, (2) $n = 0$, (3) $n = 8$, (4) $n = 42$, (5) $n = 1$. This result shows that overall distribution of the modes on a five-point summative rating scale is unimodal and biased towards positive values. The average mean for the eighteen EL characteristics was 3.7 ($SD = 0.9$).

These results show that respondents had a clear tendency to select high response values, thus, being prone to error of leniency. Nunnally (1978) notes that people sometimes reach the erroneous conclusion that reliable test tend to have smaller standard deviations than unreliable tests when just the reverse is true. We are happy with the two standard deviations ($SD = 1.0$ and $SD = 0.9$) as they are not approaching the zero value. Further, when calculating the standard error of the mean for both samples with the formula (1),

$$\sigma_n = \frac{\sigma}{\sqrt{n}} \tag{1}$$

we notice that both estimates of the mean are accurate in the samples ($SE_{sample\_1} = .04$, thus, $M = 3.4 \pm .04$; $SE_{sample\_2} = .08$, thus, $M = 3.7 \pm .08$).

Next, we examine with descriptive statistics how subordinates' evaluated their superior's emotional leadership. Table 1 shows that the industrial and vocational institute or high school leaders in the first sample had strong self-confidence ($M = 3.7$, $SD = 0.8$), but weak emotional and accurate self-awareness ($M = 3.2$ - 3.3, $SD = 0.8 – 1.0$). On the other hand, the school principals were reported to have quite

strong self-awareness (*M* = 3.7 - 3.8, *SD* = 0.8 – 1.0). These findings are natural, as especially self-confidence is an important characteristic of a good leader. On the other hand, we suspect that this result is partly a self-fulfilling prophecy as the informants of the study expect to see atypical Finnish mentality characteristics, such as showing emotions publicly, strongly present in their leaders.

According to results, leaders in both samples were self-confident (3. Self-Confidence, *M* = 3.7 / 3.8, *SD* = 0.8), able to adapt to new challenges (6. Adaptability, *M* = 3.5 / 3.9, *SD* = 0.8), had sense of efficacy (8. Initiative, *M* = 3.5 / 3.8, *SD* = 0.9 / 0.8) and could see the upside in the events (9. Optimism, *M* = 3.5 / 3.9, *SD* = 0.9 / 0.6).

In the first sample, Finnish workers from various fields recognized two major qualities in their leaders: High competency in organizational awareness, that is, ability to detect crucial social networks and read key power relationships (11. Organizational Awareness, *M* = 3.6, *SD* = 0.9) and in customer or client satisfaction (12. Service, *M* = 3.6, *SD* = 0.9).

In the second sample, teachers evaluated that their principals were successful at keeping their disruptive emotions and impulses under control (4. Emotional self-Control, *M* = 4.1, *SD* = 0.9). The result of high emotional self-control was expected, as it is a highly respected leader ability in Finnish work culture. Comprehensive and upper secondary school principals were reported to have higher level of empathy (*M* = 3.8, *SD* = 1.1) than the other leaders in the first sample (*M* = 3.1, *SD* = 1.0).

Table 1 shows that adult employees in the first sample were the most unsatisfied with their leaders' ability to 1) control their emotions (1. Emotional Self-Awareness, *M* = 3.2, *SD* = 0.9), 2) openly admit mistakes or faults, and confront unethical behaviour in others (5. Transparency, *M* = 3.2, *SD* = 1.0), 3) attune to a wide range of both visible and hidden emotional signals (10. Empathy, *M* = 3.1, *SD* = 1.0), 4) articulate a shared mission in a way that inspires others to follow (13. Inspirational Leadership, *M* = 3.2, *SD* = 1.1), 5) cultivate other people's abilities (15. Developing Others, *M* = 3.1, *SD* = 1.0), 6) resolve disagreements (17. Conflict management, *M* = 3.0, *SD* = 1.0), and 7) generate an atmosphere of friendly collegiality (18. Teamwork and Collaboration, *M* = 3.2, *SD* = 1.1).

Teachers in the second sample were the most unsatisfied with their principal's lack of 1) high personal standards that would drive them to constantly seek improvements in performance (7. Achievement, *M* = 3.5, *SD* = 0.7), 2) ability to monitor parents and students satisfaction carefully to ensure they are getting what they need (12. Service, *M* = 3.5, *SD* = 0.8), 3) skills to resolve disagreements (17. Conflict management, *M* = 3.5, *SD* = 1.1), and 4) ability to generate an atmosphere of friendly collegiality (18. Teamwork and Collaboration, *M* = 3.4, *SD* = 1.0).

Variable Structure of the Emotional Leadership Scale

Bayesian Dependency Modeling (BDM) allows the analysis of ordinal indicators, and is able to detect both linear and nonlinear dependencies (Congdon, 2001; Nokelainen & Tirri, 2004). BDM produces a Bayesian Network (BN, see e.g., Heckerman, Geiger & Chickering, 1995; Myllymäki et al., 2002) that is a representation of a probability distribution over the ELQ items.

BN consists of a directed acyclic graph (DAG), where the nodes correspond to ELQ items, and the arcs define a set of independence assumptions that allow the joint probability distribution for a data vector to be factorised as a product of simple conditional probabilities. The joint probability distribution of two discrete random variables X and Y is a function whose domain is the set of ordered pairs (x, y), where x and y are possible values for X and Y, respectively, and whose range is the set of probability values corresponding to the ordered pairs in its domain (Sloman, 2005). A DAG contains two components: (1) observed variables visualized as ellipses and (2) dependences visualized as lines between nodes. Variable is considered as independent of all other variables if there is no line attached to it. Ruohotie and Nokelainen (2000) have shown in the research field of vocational education that Bayesian networks are useful for the analysis of statistical dependencies and predictive relationships between observed indicators.

The results of BDM show that the model derived from the first sample (n = 682) is homogeneous, as all the eighteen EL characteristics are selected for the most probable model (Figure 2). This finding indicates that the theoretical structure of EI is present in this empirical domain. Further, the strengths of dependencies between the characteristics were mostly found to be equally strong (dark colour of the arch), indicating a strong and equally important contribution to the model.

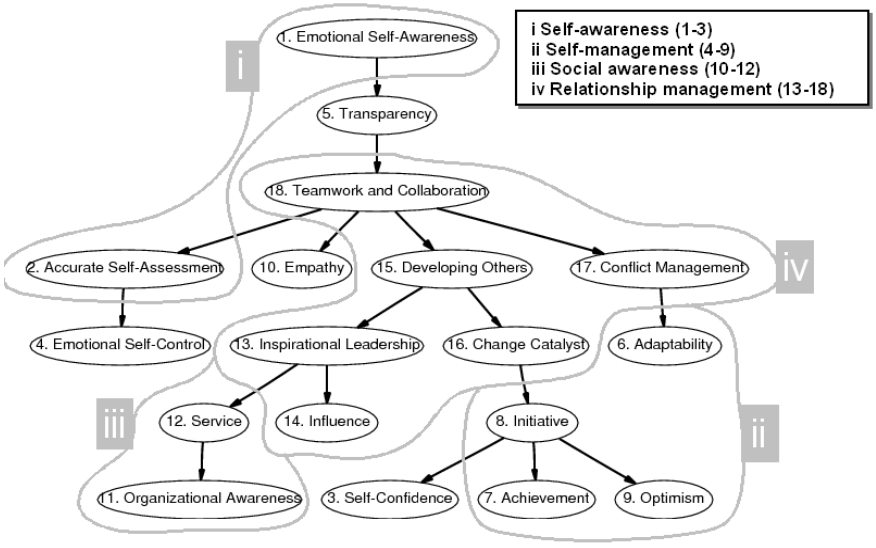

Figure 2. Bayesian Network of Finnish Industrial and Vocational High school Leaders Emotional Leadership Competencies.

The clustering of eighteen EL characteristics was further studied to see if the theoretical model of four EI domains (Goleman et al., 2002) is present in this sample. The visual inspection of the Bayesian network shows that both models are one-dimensional, as all four EI domains are connected to each other in the model. (Figures 2 and 3.)

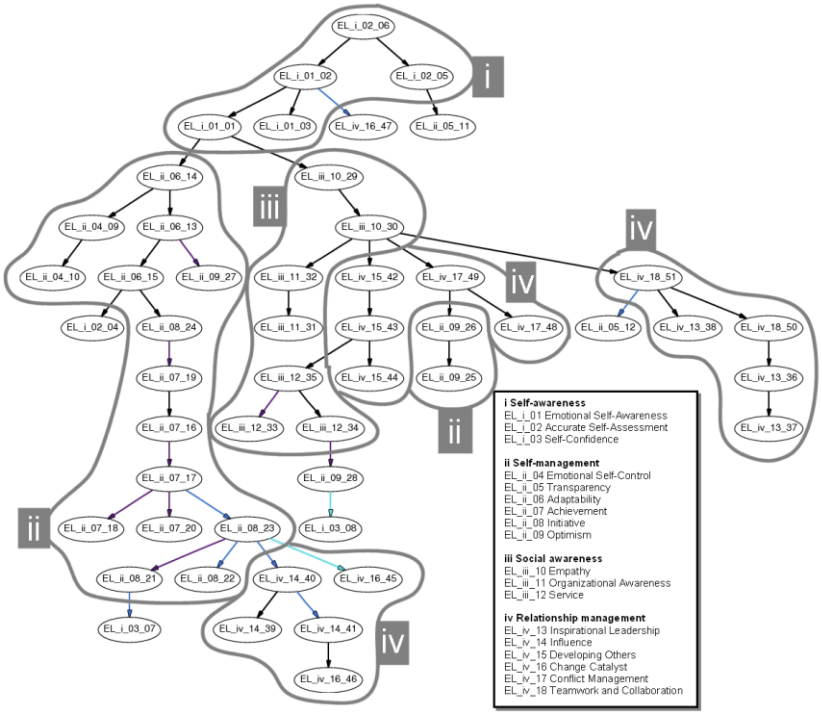

Figure 3. Bayesian Network of Finnish School Principals Emotional Leadership Competencies.

Figure 3 show that clustering of the EI domains follows the theoretical assumption in both samples. For example, in the second sample, the first cluster depicting leaders' self-awareness (i) leads to two other clusters of self-management (ii) and social awareness (iii). Fourth domain, relationship management (iv) is related to both second and third domains as follows. The predictive model shows that principal who is able to cut through red tape or even bend the rules (EL_ii_08_23) is experienced by his or her subordinates as an influential person (EL_iv_14_40 "My superior knows how to create a network of support for a new initiative.") who is able to overcome barriers to change (EL_iv_16_45 "My superior is a strong advocate for change even in the face of opposition."). Investigation of predictive dependencies shows that empathetic leader with high intercultural abilities (EL_iii_10_30 "My superior is able to get along with people of diverse backgrounds or from other cultures.") is able to promote teamwork and collaboration (EL_iv_18_51 "My superior draws others into active, enthusiastic commitment to the collective effort."), manage conflict situations effectively (EL_iv_17_49 "In conflict situations, my superior is able to draw out all parties and understand the differing perspectives."), and develop others (EL_iv_15_42 "My superior shows a genuine interest in helping his or her subordinates.").

Where domain boundaries are not following the theoretical model, closer examination reveals theoretically justifiable item-level dependencies in both

models (see Figures 2 and 3). For example, predictive model in Figure 3 shows that principals conflict management competency (item EL_iv_17_49 "In conflict situations, my superior is able to draw out all parties and understand the differing perspectives.") is positively connected with his or her level of optimism (items EL_ii_09_25 "My superior has an optimistic "glass half full" outlook." and EL_ii_09_26 "My superior sees other people in positive rather than in negative light."). It is clear, that successful conflict management benefits from leaders' ability to see all parties in positive light.

Reliability Analysis of the Emotional Leadership Scale

Table 1 presents the alpha loadings (Cronbach, 1970) for the eighteen EL characteristics for the second sample. Reliability estimates vary from .61 (3. Self-Confidence) to .92 (10. Empathy). Jim Nunnally states in his seminal work (1978, pp. 245-246) that "increasing reliabilities much beyond .80 is often wasteful of time and funds with the exception of applied settings where important decisions are made with respect to specific test scores." As the average reliability for the ELQ scales is .81, we are satisfied with the results. This reliability level is not justified by claiming that our research is not 'applied' or 'important', but we argue against 'specific test scores'. ELQ as a self-rating instrument is not an IQ test that selects students to gifted class or an entrance examination that tells who is being allowed to start university studies.

One possible reason behind the low reliability values of "3. Self-Confidence" (.61) and "5. Transparency" (.62) is that they contain only two items. According to Carmines and Zeller, "…as the average correlation among items increases and as the number of items increases, the value of alpha increases" (1979, p. 45). Formula 2 shows that alpha values tend to get higher as the number of items increases.

$$\alpha = \frac{k\bar{r}}{1 + \bar{r}(k-1)} \quad (2)$$

Further, alpha depends on the dimensionality of the scale (one-dimensional vs. multidimensional). Thus, higher reliability is achieved with one-dimensional constructs. The third issue affecting reliability is that a concept of a high level of abstraction, such as emotional competency, is difficult to operationalize into intuitive items.

CONCLUSIONS

In this chapter, we studied with two separate empirical samples the construct validity of the Emotional Leadership Questionnaire (ELQ) that operationalizes Goleman's et al. (2002) four domains of emotional intelligence. Two non-probability samples represented 682 Finnish workers on various fields (industry, public service, vocational institution and high school) and 124 Finnish schoolteachers from six different urban capital area schools. Each participant in the first sample was presented an 18 –item version (Nokelainen & Ruohotie, 2005, 2006, 2007), and in the second sample, a 51 –item version (Nokelainen, Ruohotie & Tirri, 2007) of the ELQ.

The construct validity of the ELQ was tested with the following three stages: 1) Comparison of the mean values and standard deviations of the eighteen ELQ characteristics measuring employee groups' evaluations on their superiors EL competencies; 2) Examination of the variable structure of the ELQ to test it against the theoretical EI –model; 3) Reliability analysis of the eighteen EL characteristics.

Results showed that leaders in both samples were 1) self-confident, 2) able to adapt to new challenges, 3) had a sense of efficacy and 4) able see the upside in the events.

Finnish workers from various fields reported two major qualities in their leaders: High competency in detecting crucial social networks and reading key power relationships, and in customer satisfaction. Especially last finding is explicit as client satisfaction is one of the most crucial components of successful business leadership.

Finnish teachers reported that their principals were successful at keeping their disruptive emotions and impulses under control. The result of high emotional self-control was expected, as it is a highly respected leader ability in Finnish work culture.

Workers in the first sample were the most unsatisfied with their leaders ability to 1) control their emotions, 2) openly admit mistakes or faults and confront unethical behaviour in others, 3) attune to a wide range of both visible and hidden emotional signals, 4) articulate a shared mission in a way that inspires others to follow, 5) cultivate other people's abilities, 6) resolve disagreements and 7) generate an atmosphere of friendly collegiality.

Teachers in the second sample were the most unsatisfied with their principals lack of 1) high personal standards that would drive them to constantly seek improvements in performance, 2) ability to monitor parents and students satisfaction carefully to ensure they are getting what they need, 3) skills to resolve disagreements, and 4) ability to generate an atmosphere of friendly collegiality. Dissatisfaction with their leaders' low ability to resolve disagreements and generate good working atmosphere unites the adult workers of both samples.

The results of BDM showed that in both 18 and 51 item ELQ versions, all the items measuring the eighteen EL characteristics were selected for the most probable model. This finding indicates that the theoretical structure of EI is present in these empirical domains.

The alpha loadings for the eighteen EL characteristics were found to range in the second sample between .61 and .92, the average reliability estimate was .81. The results of reliability analysis showed that a 51-item solution was adequate to describe the four Emotional Leadership domains.

DISCUSSION

According to Mayer (1999), there is a gap between the popular and scientific concepts of emotional intelligence. As we discussed earlier, most of the correlations between EI and leadership outcomes have been modest at best. For example, Palmer and his colleagues (2001) found that neither total transformational (tt) nor total transactional (ttr) leadership ratings demonstrated significant correlations with either the emotional monitoring ($r_{tt \times em}$ = 0.26; $r_{ttr \times em}$ = -0.07) or emotional management ($r_{tt \times ema}$ = 0.13; $r_{ttr \times ema}$ = -0.13) scales of the modified

TMMS (Salovey et al., 1995). Mayer states (1999, p. 50), however, that such modest findings do not necessarily represent end of the world to the EI researchers "as emotional intelligence may well predict specific, important life outcomes at about the level of other important personality variables (e.g., 2 per cent to 25 per cent of variance explained)". In the scientific study of EI, such predictions might be both useful in practice and impressive in theory. However, the popular approach to EI claiming "that highly emotionally intelligent people possess an unqualified advantage in life appears overly enthusiastic at present and unsubstantiated by reasonable scientific standards" (p. 50).

Matthews, Zeidner and Roberts state that before evaluating distinctiveness of any EI instrument, researcher needs to ascertain the statistical dependency between the instrument and existing measures of intelligence, as well as established personality dimensions, for example, those of the Five Factor Model: neuroticism, extroversion, openness, agreeableness and conscientiousness (2002). We asked teacher's to evaluate their superiors according to our fixed, person-related questions. To address this issue in the future, we will add an additional scale measuring the importance of each question in a five-point Likert scale. This allows us to compare personal level EL factors to other measures, for example, to the Multiple Intelligences Profiling Questionnaire (MIPQ IX), an operationalization of Howard Gardner's' MI theory, (Tirri, K., Komulainen, Nokelainen & Tirri, H., 2002). Comparison between EI and MI models makes sense as "emotional intelligence — if substantiated — broadens our understanding of what it means to be smart" (Mayer, 1999, p. 50).

Another relevant issue addressed by Hunter, Bedell-Avers and Mumford (2007, p. 443) is that ".. a survey-based study that does not include manipulations or examination of longitudinal effects may result in misattributions of causality." Quite obviously our cross-sectional study setting does not allow any causal interpretations (for further discussion, see Pearl, 2000), only interpretation of statistical dependencies. However, our use of Bayesian methods (e.g., Bernardo & Smith, 2000) at least allow examination of both linear and non-linear dependencies (for further discussion, see Nokelainen, Silander, Ruohotie & Tirri, 2007).

In addition to longitudinal versus cross-sectional debate, there is a more general discussion going on about the use of self-report measures in scientific studies. For example, Campbell (1982, p. 692) states that " .. one possible exception [to exercise a professional bias] pertains to the use of a self-report questionnaire to measure *all* the variables in a study." According to Crampton and Wagner (1994), various studies have been conducted to test the hypothesis that self-report questionnaires, if used as the only data collection methods, artificially elevate measures of covariation, producing percept-percept inflation in published correlations. However, when they conducted a large scale meta-analytic research involving 42,934 correlations published in 581 scientific articles, findings challenged the validity of general condemnations of self-report methods showing that percept-percept inflation did not had the broad, comprehensive effects envisioned by critics.

Nokelainen and Ruohotie (2006) analysed with the previous version of ELQ (containing 18 statements instead of 51) 312 adult employees of a Finnish medium size industrial automation company. They also found that all four EI dimensions were present in the model. However, the model included a fifth dimension that was

a mixture of self-awareness (self-confidence) and self-management (achievement and initiative) domains. This same relation between self-confidence and initiative is partly present in the current study in both samples. In the first sample, the same three characteristics are located close to each other (Figure 2). In the second sample, the items EL_ii_08_21 ("My superior seizes opportunities rather than simply waits for them to come") and EL_i_03_07 ("My superior welcomes difficult assignments knowing that he or she is able to meet the expectations") are found to be statistically dependent, but outside the boundaries of the expected model (Figure 3). This finding is a demonstration of Goleman's EI models generalizability over different domains, at least in Finnish organizational culture.

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APPENDIX

Emotional Leadership Questionnaire

EL domains and characteristics	*M (SD)*[a]
I Self-awareness	
1. Emotional Self-Awareness	
el1_1 My superior respects work community's commonly accepted values.	4.2 (1.0)
el1_2 My superior is able to see the big picture in a complex situation and knows the best ways to react.	3.5 (1.1)
el1_3 My superior is candid and authentic being able to speak openly about his or her visions and emotions.	3.7 (1.1)
2. Accurate Self-Assessment	
el2_4 My superior is open to learn new things all the time.	4.1 (0.9)
el2_5 My superior welcomes constructive criticism and feedback.	3.5 (1.1)
el2_6 My superior's good self-knowledge helps him/her to recognize when it is time to ask for help.	3.4 (1.1)
3. Self-Confidence	
el3_7 My superior welcomes difficult assignments knowing that he or she is able to meet the expectations.	4.1 (0.8)
el3_8 My superior has a self-assurance that lets him/her stand out in a group.	3.5 (1.0)
II Self-management	
4. Emotional Self-Control	
el4_9 My superior stays calm and clearheaded under high stress or during a crisis.	4.0 (1.0)
el4_10 My superior remains unflappable when confronted by a trying situation.	4.1 (0.9)
5. Transparency	
el5_11 My superior openly admits his or her mistakes or faults.	3.6 (1.0)
el5_12 My superior confronts unethical behaviour in others rather than turn a blind eye.	3.6 (1.1)
6. Adaptability	
el6_13 My superior is flexible in adapting to new challenges in working life.	3.8 (0.9)
el6_14 My superior is able to juggle demanding situations without losing his or her focus or energy.	4.0 (1.0)
el6_15 My superior updates him/herself according to the changing demands in working life.	3.8 (0.9)

Emotional Leadership Questionnaire (continued)

EL domains and characteristics	*M (SD)*[a]
7. Achievement	
el7_16 My superior sets measurable but challenging goals to him/herself.	3.5 (0.9)
el7_17 My superior sets measurable but challenging goals to his or her employees.	3.3 (1.0)
el7_18 My superior is able to take calculate risks.	3.1 (1.0)
el7_19 My superior has high standards for him/herself.	3.8 (1.0)
el7_20 My superior has high standards for his or her employees.	3.6 (0.8)
8. Initiative	
el8_21 My superior seizes opportunities rather than simply waits for them to come.	3.9 (0.9)
el8_22 My superior creates actively future work possibilities.	3.7 (1.1)
el8_23 My superior does not hesitate to cut through bureaucratic obstacles.	3.6 (0.9)
el8_24 My superior takes responsibility to create work possibilities for the future.	3.8 (1.2)
9. Optimism	
el9_25 My superior has an optimistic "glass half full" outlook.	3.8 (0.7)
el9_26 My superior sees other people in positive rather than in negative light.	3.8 (1.0)
el9_27 My superior expects the best performance of his or her subordinates.	3.9 (0.8)
el9_28 My superior sees an opportunity rather than a threat in a setback.	3.9 (0.8)
III Social awareness	
10. Empathy	
el10_29 My superior listens attentively and can grasp the other person's perspective.	3.7 (1.2)
el10_30 My superior is able to get along with people of diverse backgrounds or from other cultures.	3.8 (1.1)
11. Organizational Awareness	
el11_31 My superior can understand the political forces at work in his or her organization.	3.6 (1.0)
el11_32 My superior is able to understand the guiding values and unspoken rules that operate among the workers in his or her organization.	3.8 (1.0)
12. Service	
el12_33 My superior sees that people directly in touch with the customer or client (students, parents) will keep the relationship on the right track.	3.7 (1.0)
el12_34 My superior monitors customer or client (students, parents) satisfaction carefully.	3.4 (0.9)
el12_35 My superior ensures that customers or clients (students, parents) are getting what they need.	3.3 (0.9)

Emotional Leadership Questionnaire (continued)

EL domains and characteristics	*M (SD)*[a]
IV Relationship management	
13. Inspirational Leadership	
el13_36 My superior offers a sense of common purpose beyond the day-to-day tasks, making work exciting.	3.2 (1.0)
el13_37 My superior is able to embody what he or she asks of his or her subordinates.	3.3 (1.1)
el13_38 My superior is able to articulate a shared mission in a way that inspires his or her subordinates to follow.	3.6 (1.1)
14. Influence	
el14_39 My superior finds just the right appeal for a given listener.	3.7 (1.0)
el14_40 My superior knows how to create a network of support for a new initiative.	3.7 (0.9)
el14_41 My superior is able to speak persuasively for the things he or she sees important.	3.9 (1.0)
15. Developing Others	
el15_42 My superior shows a genuine interest in helping his or her subordinates.	3.9 (1.0)
el15_43 My superior understands his or her subordinates goals, strengths, and weaknesses.	3.8 (1.1)
el15_44 My superior is willing to give timely and constructive feedback.	3.3 (1.1)
16. Change Catalyst	
el16_45 My superior is a strong advocate for change even in the face of opposition.	3.5 (1.1)
el16_46 My superior is capable of arguing compellingly for the things he or she sees important.	3.8 (1.0)
el16_47 My superior is able to find practical ways to overcome barriers to change.	3.8 (0.8)
17. Conflict Management	
el17_48 My superior is able to solve conflicts between his or her subordinates.	3.4 (1.2)
el17_49 In conflict situations, my superior is able to draw out all parties and understand the differing perspectives.	3.6 (1.1)
18. Teamwork and Collaboration	
el18_50 My superior is a team player.	3.4 (1.0)
el18_51 My superior draws others into active, enthusiastic commitment to the collective effort.	3.4 (1.2)

[a]The second sample of 124 Finnish schoolteachers

Emotional Leadership Questionnaire

	TOTALLY DISAGREE				TOTALLY AGREE
My superior has a self-assurance that lets him/her stand out in a group.	1	2	3	4	5
My superior stays calm and clearheaded under high stress or during a crisis.	1	2	3	4	5
My superior remains unflappable when confronted by a trying situation.	1	2	3	4	5
My superior openly admits his or her mistakes or faults.	1	2	3	4	5
My superior confronts unethical behaviour in others rather than turn a blind eye.	1	2	3	4	5
My superior is flexible in adapting to new challenges in working life.	1	2	3	4	5
My superior is able to juggle demanding situations without losing his or her focus or energy.	1	2	3	4	5
My superior updates him/herself according to the changing demands in working life.	1	2	3	4	5
My superior sets measurable but challenging goals to him/herself.	1	2	3	4	5
My superior sets measurable but challenging goals to his or her employees.	1	2	3	4	5
My superior is able to take calculate risks.	1	2	3	4	5
My superior has high standards for him/herself.	1	2	3	4	5
My superior has high standards for his or her employees.	1	2	3	4	5
My superior seizes opportunities rather than simply waits for them to come.	1	2	3	4	5
My superior creates actively future work possibilities.	1	2	3	4	5
My superior does not hesitate to cut through bureaucratic obstacles.	1	2	3	4	5
My superior takes responsibility to create work possibilities for the future.	1	2	3	4	5
My superior has an optimistic "glass half full" outlook.	1	2	3	4	5

EMOTIONAL LEADERSHIP QUESTIONNAIRE

	TOTALLY DISAGREE				TOTALLY AGREE
My superior respects work community's commonly accepted values.	1	2	3	4	5
My superior is able to see the big picture in a complex situation and knows the best ways to react.	1	2	3	4	5
My superior is candid and authentic being able to speak openly about his or her visions and emotions.	1	2	3	4	5
My superior is open to learn new things all the time.	1	2	3	4	5
My superior welcomes constructive criticism and feedback.	1	2	3	4	5
My superior's good self-knowledge helps him/her to recognize when it is time to ask for help.	1	2	3	4	5
My superior welcomes difficult assignments knowing that he or she is able to meet the expectations.	1	2	3	4	5
My superior sees other people in positive rather than in negative light.	1	2	3	4	5
My superior expects the best performance of his or her subordinates.	1	2	3	4	5
My superior sees an opportunity rather than a threat in a setback.	1	2	3	4	5
My superior listens attentively and can grasp the other person's perspective.	1	2	3	4	5
My superior is able to get along with people of diverse backgrounds or from other cultures.	1	2	3	4	5
My superior can understand the political forces at work in his or her organization.	1	2	3	4	5
My superior is able to understand the guiding values and unspoken rules that operate among the workers in his or her organization.	1	2	3	4	5
My superior sees that people directly in touch with the customer or client (students, parents) will keep the relationship on the right track.	1	2	3	4	5
My superior monitors customer or client (students, parents) satisfaction carefully.	1	2	3	4	5
My superior ensures that customers or clients (students, parents) are getting what they need.	1	2	3	4	5
My superior offers a sense of common purpose beyond the day-to-day tasks, making work exciting.	1	2	3	4	5

EMOTIONAL LEADERSHIP QUESTIONNAIRE

	TOTALLY DISAGREE				TOTALLY AGREE
My superior is able to embody what he or she asks of his or her subordinates.	1	2	3	4	5
My superior is able to articulate a shared mission in a way that inspires his or her subordinates to follow.	1	2	3	4	5
My superior finds just the right appeal for a given listener.	1	2	3	4	5
My superior knows how to create a network of support for a new initiative.	1	2	3	4	5
My superior is able to speak persuasively for the things he or she sees important.	1	2	3	4	5
My superior shows a genuine interest in helping his or her subordinates.	1	2	3	4	5
My superior understands his or her subordinates goals, strengths, and weaknesses.	1	2	3	4	5
My superior is willing to give timely and constructive feedback.	1	2	3	4	5
My superior is a strong advocate for change even in the face of opposition.	1	2	3	4	5
My superior is capable of arguing compellingly for the things he or she sees important.	1	2	3	4	5
My superior is able to find practical ways to overcome barriers to change.	1	2	3	4	5
My superior is able to solve conflicts between his or her subordinates.	1	2	3	4	5
In conflict situations, my superior is able to draw out all parties and understand the differing perspectives.	1	2	3	4	5
My superior is a team player.	1	2	3	4	5
My superior draws others into active, enthusiastic commitment to the collective effort.	1	2	3	4	5

SPSS Syntax to Compute Emotional Leadership Questionnaire Factors

```
/* Variable names in this syntax refer to the table
/* presented in the Appendix of this chapter

COMPUTE EL1_M = MEAN(el1_1, el1_2, el1_3).
COMPUTE EL2_M = MEAN(el2_4, el2_5, el2_6).
COMPUTE EL3_M = MEAN(el3_7, el3_8).
COMPUTE EL4_M = MEAN(el4_9, el4_10).
COMPUTE EL5_M = MEAN(el5_11, el5_12).
COMPUTE EL6_M = MEAN(el6_13, el6_14, el6_15).
COMPUTE EL7_M = MEAN(el7_16, el7_17, el7_18, el7_19, el7_20).
COMPUTE EL8_M = MEAN(el8_21, el8_22, el8_23, el8_24).
COMPUTE EL9_M = MEAN(el9_25, el9_26, el9_27, el9_28).
COMPUTE EL10_M = MEAN(el10_29, el10_30).
COMPUTE EL11_M = MEAN(el11_31, el11_32).
COMPUTE EL12_M = MEAN(el12_33, el12_34, el12_35).
COMPUTE EL13_M = MEAN(el13_36, el13_37, el13_38).
COMPUTE EL14_M = MEAN(el14_39, el14_40, el14_41).
COMPUTE EL15_M = MEAN(el15_42, el15_43, el15_44).
COMPUTE EL16_M = MEAN(el16_45, el16_46, el16_47).
COMPUTE EL17_M = MEAN(el17_48, el17_49).
COMPUTE EL18_M = MEAN(el18_50, el18_51).
EXECUTE.

VARIABLE LABELS
  EL1_M   "1. Emotional Self-Awareness"
  EL2_M   "2. Accurate Self-Assessment"
  EL3_M   "3. Self-Confidence"
  EL4_M   "4. Emotional Self-Control"
  EL5_M   "5. Transparency"
  EL6_M   "6. Adaptability"
  EL7_M   "7. Achievement"
  EL8_M   "8. Initiative"
  EL9_M   "9. Optimism"
  EL10_M  "10. Empathy"
  EL11_M  "11. Organizational Awareness"
  EL12_M  "12. Service"
  EL13_M  "13. Inspirational Leadership"
  EL14_M  "14. Influence"
  EL15_M  "15. Developing Others"
  EL16_M  "16. Change Catalyst"
  EL17_M  "17. Conflict Management"
  EL18_M  "18. Teamwork and Collaboration".
```

CHAPTER 6

INTERCULTURAL AND INTERRELIGIOUS SENSITIVITY SCALES

Kristiina Holm, Petri Nokelainen and Kirsi Tirri

INTRODUCTION

The ideal of cosmopolitan citizen with global awareness has been discussed in the context of citizenship education (Osler & Starkey, 2005; Noddings, 2005). Cosmopolitanism as a philosophy developed during the Enlightenment, most notably by Immanuel Kant. Nowadays, the ethics of the world citizen can be seen as one possible implementation of Kant's categorical imperative (Sihvola, 2004). Osler and Starkey (2005) identify a cosmopolitan citizenship informed by human rights as a goal of citizenship education. This kind of citizenship is a worldview that celebrates human diversity. Cosmopolitan citizens are able to act locally, nationally and globally. They are aware of a shared responsibility for humanity's common future. Peace is a precondition of global citizenship and that is why peace education should play a vital role in supporting global citizenship (Noddings, 2005). Furthermore, economic and social justice should be fundamental concerns of good citizens.

Global citizenship cannot be defined from a single point of view. Instead, a linkage between different perspectives is needed. (Noddings, 2005.) In the US many scholars argue in favour of teaching of religious pluralism in public schools as an important part of citizenship education (Nash, 2005; Noddings, 1993, 2005). Habermas (2001) has introduced the concept of post secular religion that meets three criteria: (1) the acceptance of pluralism, (2) communicating by reasoning, and (3) the acknowledgement of fundamental rights. In religious education plurality in beliefs and values should be acknowledged and approved with an emphasis on finding common values and principles among different world views. Intercultural and interreligious sensitivities reflect many skills of an ideal global citizen.

The Developmental Model of Intercultural Sensitivity (DMIS), created and developed by Milton Bennett (1986, 1993), is a model that incorporates six orientations towards cultural difference: (1) Denial, (2) Defense, (3) Minimization, (4) Acceptance, (5) Adaptation, and (6) Integration. Intercultural Development Inventory (IDI) operationalizes the DMIS (Hammer, Bennett & Wiseman, 2003) with 52 items and has been carefully developed to measure late adolescents and adults. Although the instrument is based on thorough psychometrical validation and international representative samples, a more compact self-measurement test is

Kirsi Tirri & Petri Nokelainen. Measuring Multiple Intelligences and Moral Sensitivities in Education,

needed to measure adolescents' intercultural sensitivity. In our development work we have created and tested an instrument to study intercultural sensitivity of adolescents and explored the influence of academic achievement to their level of intercultural sensitivity (Holm, Nokelainen & Tirri, 2009). We found that high academic achievement was positively correlated with intercultural sensitivity among adolescence.

Intercultural research and training often neglect religion and the interreligious settings of cultural identity (Abu-Nimer, 2001). In our previous study (Holm, Nokelainen & Tirri, 2009), we included the religious dimension into the context of intercultural sensitivity. We aimed to measure secondary school students' intercultural and religious sensitivity with an instrument called the Intercultural and Religious Sensitivity Scale (IRSS). The first five DMIS orientations were operationalized into 29 items, but the sixth orientation, Integration, was omitted from the instrument as it could not be measured in compliance of the model. The items aimed to measure adolescents' (N = 249) orientations in both intercultural and religious sensitivity.

However, psychometric testing of the instrument (IRSS) showed that the religiocentric and the religiorelative responses differed from the ethnocentric and ethnorelative responses. According to Abu-Nimer (2001), religious identity may be threatened much more easily than cultural identity. The interreligious settings seem to challenge empathy, moral values, and faith more strongly than do the intercultural settings. As an outcome, the items of the Intercultural and Religious Sensitivity Scale Questionnaire (IRSSQ) were separated and revised in order to develop the two different self-rating instruments presented in this chapter: the Intercultural Sensitivity Scale (ICSS) and the Interreligious Sensitivity Scale (IRRSS). The ICSS is based on Bennet's DMIS (1986, 1993), and the IRRSS is based on the Developmental Model of Interreligious Sensitivity (Abu-Nimer, 2001), founded on the DMIS.

This chapter presents the revised versions of the Intercultural and Interreligious Sensitivity Scales (ICSS and IRRSS), and tests their psychometric properties with an empirical sample of 549 Finnish adolescents.

THEORETICAL FRAMEWORK

Developmental Model of Intercultural Sensitivity

Intercultural sensitivity is not inborn. Ethnocentrism is natural to human beings since everybody looks at the world from her or his cultural point of view. Ethnocentrism is a tendency to value one's own culture more than others, but does not necessarily lead to a negative attitude towards otherness. One may simply not notice cultural difference. However, overemphasizing one's ethnic identity leads to biased views of the behaviour, manners, beliefs, and values of other cultures. (Bennett, 1993; 1998.) In contrast, an ethnorelative worldview perceives all behaviour in its own cultural context, accepting and valuing other cultures. (Bennett, 1993.)

Fortunately, intercultural sensitivity can be learnt, through teaching, one can improve the skills required in intercultural relations. The Developmental Model of Intercultural Sensitivity (DMIS) by Bennett (1986, 1993) has successfully served

in intercultural education and training programmes for nearly the past three decades. Intercultural sensitivity is a conceptual tool for explaining changes in the structure of an individual's worldview. Certain cognitive and behavioural reactions to cultural difference indicate the state of one's worldview. (Bennett, 1993; Bennett & Bennett, 2004.) Intercultural sensitivity means one's ability to notice and experience cultural differences. Intercultural competence refers to the cognitive and behavioural skills used when dealing with cultural differences. The DMIS is a theoretical framework for conceptualizing both intercultural sensitivity and intercultural competence. The model includes six orientations towards cultural difference, three of which are ethnocentric and three are ethnorelative. (Hammer et al., 2003.) The central assumption of the DMIS is that intercultural competence increases simultaneously with one's experiences of cultural difference. Movement between orientations is not static; rather it requires a change in one's patterns of thought as well as more complex intercultural experiences. However, such movement is often considered unidirectional, meaning that people seldom regress in the process. (Hammer et al., 2003.)

The six stages, or orientations as Bennett calls them in his latter studies (see e.g. Hammer, Bennett & Wiseman, 2003), show a progression that an individual may go through in developing intercultural sensitivity. The orientations are Denial, Defense, Minimization, Acceptance, Adaptation, and Integration (Bennett, 1993).

Table 1. Developmental Model of Intercultural Sensitivity, DMIS (Bennett, 1993.)

Ethnocentric orientations			*Ethnorelative orientations*		
Denial	Defense	Minimization	Acceptance	Adaptation	Integration

Denial is an orientation in which one is unable to distinguish between cultures, or views the rest of the world as "foreigners". Different ways of behaving are considered as confusing. In **Defense**, other cultures are perceived as a threat or as undeveloped. A person may employ various defence mechanisms, such as denigration and aggressive behaviour. In **Minimization**, differences between cultures are recognized, but are ignored since they are considered less deep and significant, or rather superficial. A person in minimization views other cultures as fundamentally similar to her or his own. (Bennett, 1993.)

The shift from ethnocentric intercultural sensitivity to ethnorelative intercultural sensitivity is paradigmatic because it requires a change in one's patterns of thought. In **Acceptance**, people from other cultures are considered different, but equal. A person has a tolerant attitude, although no different behaviour is necessarily adopted. **Adaptation** occurs when a person has the ability to view things through someone else's eyes. Adaptation enables one to incorporate different cultural worldviews into one's own. Adaptation also requires well developed intercultural and empathy skills, or the ability to think and act in culturally appropriate ways. The last orientation of intercultural sensitivity is called **Integration**. Integration entails the integration of the concept of different cultures into a definition of one's identity. Such integration refers not to a social integration

but rather to becoming bi- or multicultural. Integration is sometimes described as "style switching" or becoming a "world citizen".

Developmental Model of Interreligious Sensitivity

Intercultural studies and training, as well as research in conflict and conflict resolution, often exclude the role of religion. Abu-Nimer (2001, 2004) has criticized the lack of a religious dimension in intercultural settings. He has studied interfaith dialogue in the Middle East and especially in the Palestinian-Israeli conflict. According to Abu-Nimer (2004), religious factors emerge in conflicts in both formal and informal ways, although formal discussions and attempts toward peace often neglect them. One should view the role of religion as constructive and not as negative, and eschew religiocentric worldviews; and groups that engage in interfaith dialogue should aim for political change. According to Abu-Nimer (2004), one should not view religious identity as a destructive force, but as a source of cooperation.

Abu-Nimer (2001, 2003) presents the Developmental Model of Interreligious Sensitivity, which is based on Bennet's Developmental Model of Intercultural Sensitivity. The data and analysis are grounded on a series of workshops and interviews with participants from diverse religious backgrounds. The model has served in, for example, interreligious peace building and conflict resolution training.

Table 2. Developmental Model of Interreligious Sensitivity (Abu-Nimer, 2001.)

Religiocentric orientations			*Religiorelative orientations*	
Denial	Defense	Minimization	Acceptance	Adaptation

The Developmental Model of Interreligious Sensitivity explains different kinds of reactions to other religions. The religiocentric person is unable to recognize other religions or to respect and accept that the beliefs of other religions are true to believers. This leads to discriminative and even violent actions towards other religious groups. (Abu-Nimer, 2004.) In contrast, the religiorelative person is able to accept the existence of other religions, beliefs and norms. The religiorelative person is not prone to dehumanize other religious groups or individuals, and is able to act peacefully with others. (Abu-Nimer, 2004.) The model includes five orientations that implicate reactions to religious differences. A religiocentric framework includes Denial, Defense and Minimization, whereas a religiorelative framework includes Acceptance and Adaptation.

Denial of other religions is a typical mechanism for people who are physically or socially separated from other religions. According to Abu-Nimer (2004, p. 498), isolation from others can "push groups and individuals to attempt violent elimination of the other religions" because they tend to refuse to see and value the differences that exist in religions, such as beliefs, norms, rituals and practices. **Defense** is a reaction in which one considers his or her own faith superior and the other, inferior. For example, in the Palestinian-Israeli conflict, only one's own

religion is the one that deserves the Holy Land, and the other religions have no right to these religious sites. People in denial and defense do not accept different ways of believing. (Abu-Nimer, 2004.) **Minimization** of religious differences means that a person notices the differences between religions and contradictions in beliefs, rituals and practices, but ignores them. Minimization is a phase in which the similarities of religions are emphasized in order to avoid confrontations. (Abu-Nimer, 2004.)

Moving from a religiocentric to a religiorelative perspective requires a change in patterns of thought. **Acceptance** of other religions is the first type of religiorelativism. In this phase, a person accepts that religious beliefs are valid for its holders and refrains from making negative judgements of people who do not believe in the same way. (Abu-Nimer, 2004.) Religious **Adaptation** is the second type of religiorelativism. It appears in three modes: empathy, pluralism and integration. According to Abu-Nimer (2004, p. 502), religious empathy "occurs when the believer is actually ready to experience (temporarily, for an hour, a day, or a month) another spiritual path and to be able to understand (for a brief period) the other's religious meaning, context, and points of reference". Empathetic practices may be very difficult or even impossible; interfaith dialoguers have pointed out that one cannot experience certain specific areas without violating one's own faith, such as a Jew violating kashrut in order to experience Christian dietary freedoms (e.g., eating pork) (Abu-Nimer, 2004). However, empathy is possible in many other areas and leads to a "deeper recognition and appreciation of the other's faith" (Abu-Nimer, 2004, p. 503). Religious pluralism is the second mode of adaptation. A pluralist has two religious contexts in which he or she can operate and experience spirituality. Such a person is also able to criticize both religions in a constructive manner. For example, a religious pluralist can be a person with a Catholic religious identity, but who has grown up among Muslims. Such a person is engaged in both the Catholic Church and Islam. However, many interfaith dialogue groups view this kind of religious pluralism as the loss of one's authentic religious identity. (Abu-Nimer, 2004.) The last mode of Adaptation is integration, in which a spiritual person has no affiliation with any specific religion or faith. She or he accomodates to various rituals and beliefs from different religions. (Abu-Nimer, 2004.)

METHOD

Sample

The non-probability sample (N = 549) was collected in autumn 2007 from two Finnish secondary schools. One of the schools is located in the capital of Finland, Helsinki, with about 570,000 inhabitants and the other in Central Finland in the town of Jyväskylä with about 130,000 inhabitants.

The adolescent sample consisted of the secondary school students from seventh (n = 173, 31.5 %), eighth (n = 176, 32.1 %) and ninth (n = 197, 35.9 %) grade. Grade level information was missing from three participants (0.5 %). Participants age range was from 12 to 16 years (M = 14.0, SD = .997). Of the sample, 260 (47.4 %) were girls and 281 (51.2 %) were boys. The gender information was missing from eight participants (1.5 %).

The participants completed a paper and pencil versions of the Intercultural Sensitivity Scale (ICSS) and Interreligious Scale (IRRSS) during a lesson. They were asked to assess their attitude towards the statements measuring the ethnocentric and ethnorelative orientations as well as religiocentric and religiorelative orientations. The instruments were designed for students with different ethnic and religious backgrounds. Eighty-six per cent of the participants came from diverse religions and 14 per cent of them did not belong to any religious group.

Intercultural Sensitivity Scale (ICSS) and Interreligious Sensitivity Scale (IRRSS)

ICSS consists of 23 items on a Likert scale from 1 (*totally disagree*) to 5 (*totally agree*). The instrument measures six orientations towards cultural difference: (1) Denial, (2) Defense, (2r) Reversal, (3) Minimization, (4) Acceptance, and (5) Adaptation.

IRRSS consists of 15 items on a Likert scale from 1 (*totally disagree*) to 5 (*totally agree*). It measures responses to religious differences on five categories: (1) Denial, (2) Defense, (3) Minimization, (4) Acceptance, and (5) Adaptation.

Procedure

The non-probability sample was collected from two secondary schools which are located in urban contexts in two Finnish cities: (1) Helsinki and (2) Jyväskylä. The data was collected with ICSS and IRRSS with the help of teachers during the lessons. The students were invited to complete a paper and pencil versions of the two questionnaires. Participants were asked to assess their attitude towards the statements measuring intercultural sensitivity and interreligious sensitivity.

Statistical Analyses

Statistical analyses were carried out in four phases. First, the psychometric properties of the ICSS and IRRSS were investigated. Second, the Cronbach's alpha (1970) was used to test the internal consistency of the ICSS and IRRSS. Third, the correlations between the items of each dimension and the background variables (age, gender, school success) were analyzed with Spearman rho. Fourth, the confirmatory factor analysis was conducted.

RESULTS: INTERCULTURAL SENSITIVITY SCALE

Psychometric Properties of ICSS

ICSS items and their descriptive statistics are presented in the Table 3. When the means of ethnocentric orientations were compared to each other, it was found that the items measuring Denial and Reversal had the lowest means. The means of Defense were a bit higher than those of Denial and Reversal. Yet, the standard deviations of the statements were quite high indicating wide range of opinions. The items measuring Minimization had the highest means of all the ethnocentric

orientations. The students may emphasize the similarity of human beings in which different people are seen essentially the same as oneself.

Of the ethnorelative orientations, the items measuring Acceptance had higher means than those of Adaptation. Further, the standard deviations of the items in Acceptance were the lowest ones.

Table 3. Intercultural Sensitivity Scale (ICSS) Items and Descriptive Statistics

Item	*M (SD)*
1 Denial	
ic1_1 People of my own culture behave in the only way that makes sense.	2.20 (1.25)
ic1_7 When I am travelling I often feel that people are rude to me.	2.40 (1.07)
ic1_13 I do not need to care about what happens in other parts of the world.	2.00 (1.20)
ic1_19 Travelling abroad makes me feel uncomfortable.	1.90 (1.15)
2 Defense	
ic2_2 There are lots of people representing other cultures who are arrogant.	2.70 (1.14)
ic2_8 I divide the students of my school into "our people" and "other people".	2.50 (1.26)
ic2_14 I hate people who represent certain culture or ethnic group.	2.50 (1.34)
ic2_20 When I am travelling, there are many things about the local people that irritate me.	2.80 (1.09)
2r Reversal	
ic2r_3 I am ashamed of my fellow nationals when I am abroad.	2.10 (1.15)
ic2r_9 I would definitely emigrate in some other country.	2.60 (1.38)
ic2r_15 I do not value the culture of my native country.	1.90 (1.16)
3 Minimization	
ic3_4 People all around the world need and want approximately the same things.	3.30 (1.09)
ic3_10 All people act almost in the same way when they face ethically problematic situations.	3.10 (0.84)
ic3_16 Conflicts between different nations can be solved by obeying the same ethical principles (e.g. the Golden Rule).	3.50 (1.08)
ic3_21 There may be some differences between the customs of different cultures, but deep down all the people are just like me.	3.20 (1.19)

Table 3. Intercultural Sensitivity Scale (ICSS) Items and Descriptive Statistics (continued)

Item	*M (SD)*
4 Acceptance	
ic4_5 It may cause misunderstandings that people representing different cultures express their feelings in various ways.	3.80 (0.94)
ic4_11 Different behaviors make me see things in a new way.	3.60 (0.97)
ic4_17 Cultures are different because different things are considered important and valuable.	4.00 (0.88)
ic4_22 The more I know about various cultures, the better I recognize the differences between them.	3.90 (0.93)
5 Adaptation	
ic5_6 I am able to put myself in the position of a person from another culture.	3.00 (1.03)
ic5_12 Many of the immigrants living in our country try their hardest to adjust to our life style, and that is why I also want to understand their way of living.	3.30 (1.14)
ic5_18 It is only a good thing that people are different.	3.80 (1.06)
ic5_23 I am able to behave in culturally appropriate ways but still adhere to my own values.	4.00 (0.95)

Reliability Analyses of the ICSS

The second phase was to test the internal consistency of the ICSS with Cronbach's alpha (1970). The results are presented in Table 4. The second (Defense) and sixth (Adaptation) dimensions had the highest reliabilities (α = .74 and α = .68, respectively), while the third (Reversal) and fifth (Acceptance) had the lowest ones (α = .60 and α = .61, respectively).

These results may be regarded as satisfactory as alpha values above .60 are usually considered moderate and values above .80 are considered good. According to Nunnally (1978, pp. 245–246), "increasing reliabilities much beyond .80 is often wasteful of time and funds with the exception of applied settings where important decisions are made with respect to specific test scores." One possible reason for the moderate alpha values is that they depend on the number of items per dimension. The alpha value tends to increase together with the number of items.

Our goal was to produce a compact measurement instrument with a minimum number of statements, and thus, the number of statements per dimension was kept small, at only three to four statements. The alpha value also depends heavily on the dimensionality of the scale: higher inter-item reliability is achieved with strictly one-dimensional constructs.

Correlational Analyses of the ICSS

The correlation matrix between the six ICSS dimensions showed theoretically plausible results: Denial and Defense correlated positively with each other (r_S = .63) and negatively with Acceptance (r_S = -.33) and Adaptation (r_S = -.43). Minimization correlated positively with Acceptance (r_S =.31) and Adaptation (r_S = .42). Minimization can be seen as a transitional stage between ethnocentric and ethnorelative orientations. A person in Minimization can have positive attitudes to cultural difference which may explain the positive correlations with ethnorelative orientations. However, the tolerant attitudes are based on expecting similarities (Bennett, 1993). Further, Acceptance and Adaptation correlated strongly positively with each other (r_S = .47). Reversal remained the only problematic dimension since it showed zero or only small correlations with other dimensions (r_S = .01 to .13). According to Bennett's theory (1993), Reversal is a form of Denial in which one's own culture becomes the target of criticism and denigration meanwhile another culture is idealized. It seems that this kind of tendency to consider another culture as superior as one's own was not presented in this sample.

Table 4. Factor Structure and Alpha Loadings of the ICSS

Dimension	*Items*	*M (SD)*	α
1 Denial	ic1_1, ic1_7, ic1_13, ic1_19	2.20 (0.89)	.61
2 Defense	ic2_2, ic2_8, ic2_14, ic2_20	2.50 (0.85)	.74
2r Reversal	ic2r_3, ic2r_9, ic2r_15	2.20 (0.92)	.60
3 Minimization	ic3_4, ic3_10, ic3_16, ic3_21	3.30 (0.73)	.62
4 Acceptance	ic4_5, ic4_11, ic4_17, ic4_22	3.80 (0.63)	.61
5 Adaptation	ic5_6, ic5_12, ic5_18, ic5_23	3.50 (0.75)	.68

Correlations between the Background Variables and the ICSS

Results of correlational analyses between the six ICSS dimensions, age and school success are presented in Table 5. In order to investigate the relations between the ICSS and school success, students' GPA and the average grades in mathematics, native language and religious education or ethics were asked. Religious education is a compulsory school subject in Finland. The name of the subject in the curriculum is 'Religion'. The subject for the students who do not attend religious education in school is called 'Ethics'. (Finnish National Board of Education, 2004.) Ethics education is an alternative subject for religious education which is given for the students who are not registered members of any denomination.

The respondents' age was not statistically related to any of the six ICSS dimensions. The age span is only three to four years which explains the result. GPA correlated negatively with the two lowest dimensions (r_S = -.26 to -.37) and

positively with the two highest dimensions (r_S = .26 to .31). Further, average grades in mathematics, native language and religion or ethics correlated negatively with Denial and Defense (r_S = -.27 to -.37). On the other hand, the average grades in above mentioned subjects correlated positively with Acceptance and Adaptation (r_S = .23 to .31). These findings suggest that the students' academic achievement is related to their self-reported intercultural sensitivity.

Table 5. Inter-item Correlations between the ICSS Dimensions and Background Variables

	Gender	Age	GPA	Math	Nat. lang.	Relig. / Ethics	1	2	2r	3	4	5
Gender	1.00											
Age	-.09	1.00										
GPA	-.17	-.13	1.00									
Math	-.05	-.10	.71	1.00								
Nat. lang.	-.33	-.10	.70	.57	1.00							
Relig. / Ethics	-.21	.08	.65	.52	.61	1.00						
1 Denial	.26	.01	-.37	-.29	-.37	-.42	1.00					
2 Defense	.26	.09	-.26	-.18	-.27	-.27	.63	1.00				
2r Reversal	-.01	.05	.00	.03	.00	.03	.07	.09	1.00			
3 Minimization	-.14	-.10	.13	.06	.13	.13	-.14	-.19	.05	1.00		
4 Acceptance	-.22	.01	.31	.19	.31	.28	-.33	-.18	.01	.31	1.00	
5 Adaptation	-.25	-.08	.26	.12	.23	.23	-.43	-.44	.13	.42	.47	1.00

Note. The sample consists of 549 Finnish 12 to 16 years old 7th to 9th grade students. GPA = Grade Point Average from 4 - 10, Math = Average mathematics grade from 4 - 10, Nat. lang. = Average native language grade from 4 - 10, Relig. / Ethics = Average religion or ethics grade from 4 - 10.

Confirmatory Factor Analysis

Confirmatory factor analysis was conducted to analyze how the ICSS model fits to the data. First section of Table 6 presents measures of absolute fit that determine the degree to which the model predicts the observed correlation matrix (Hair et al., 1995). The root mean square error of approximation (*RMSEA*) is designed to evaluate the approximate fit of the model in the population (Kaplan, 2000). The estimate of .056 was clearly within the fair fit level of .05 - .08 (Hair et al., 1995), indicating moderate fit (Browne & Cudeck, 1993). Both 90 per cent confidence intervals were also clearly below .08 level.

Incremental fit measures are presented in the second section of Table 6. They compare the proposed model to a baseline model that all the other models should be able to exceed (Hair et al., 1995). The Tucker-Lewis index (*TLI*), a.k.a. the Nonnormed Fit Index (*NNFI*), was slightly below the recommended level of .90 (Tucker & Lewis, 1973), as well as the comparative fit index (*CFI*). Overall, these results indicate satisfactory generalizability of the model.

Table 6. Goodness-of-fit Values of the ICSS

	Preadolescents (*N* = 549)
Absolute Fit Measures	
χ^2	579.999
Df	215
p	<.001
RMSEA	.056
90 per cent C.I.	.050 .061
Incremental Fit Measures	
CFI	.872
TLI	.850

Note. RMSEA= Root Mean Square Error of Approximation with 90 per cent confidence interval. *TLI* = Tucker-Lewis coefficient. *CFI* = Comparative Fit Index.

RESULTS: INTERRELIGIOUS SENSITIVITY SCALE

Psychometric Properties of IRRSS

IRRSS items and their descriptive statistics are presented in the Table 7. Defense had the lowest means in all five dimensions meanwhile Acceptance had the highest means. However, the other ethnorelative dimension, Adaptation, did not have as high means as Acceptance. Further, the standard deviations in all dimensions were relatively high which indicates wide range of opinions.

Table 7. Interreligious Sensitivity Scale (IRRSS) Items and Descriptive Statistics

Item	*M (SD)*
1 Denial	
ir1_4 I do not need information about other religions.	2.59 (1.26)
ir1_11 It is nice to meet with new people as long as they are not members of different religious groups.	2.39 (1.20)
ir1_12 I have never had contacts with the people of other faiths because I do not find it important.	2.31 (1.14)
2 Defense	
ir2_5 I consider people from other religions as a threat.	1.83 (1.14)
ir2_6 God will punish the people from other religions after they are dead.	1.94 (1.20)
ir2_13 I think that people of certain religions are so stupid that they could figuratively "blow themselves up" with their stupidity.	2.54 (1.33)
3 Minimization	
ir3_2 All people are created by the same god even so they are religious or irreligious.	3.27 (1.34)
ir3_7 All people believe in the faith.	2.17 (1.26)
ir3_10 All people pray.	2.20 (1.25)
4 Acceptance	
ir4_1 It is only a good thing that there are students from different religious groups in the school.	3.54 (1.17)
ir4_8 People of different faiths have a right to practice their own religion also in our country.	3.93 (1.12)
ir4_14 I learn best about the manners and views of different religions from the believers of those religions.	3.51 (0.97)
5 Adaptation	
ir5_3 I can pray with a person of another religion if she or he asks me to.	2.85 (1.22)
ir5_9 I could participate in the service of no matter religion with a believer of that religion.	2.79 (1.11)
ir5_15 If I lived abroad I could easily see myself practicing the religious manners of that country (such as fasting or wearing religious clothing) and it would not detract my own world view.	2.68 (1.15)

Reliability Analyses of the IRRSS

Internal consistency of the IRRSS was analyzed with Cronbach's alpha (1970), see Table 8. All but one dimension (Denial, α = .56) had reliabilities higher than .60. Although the values are moderate, they indicate satisfactory reliability for the measurement instrument.

Table 8. Factor Structure and Alpha Loadings of the IRRSS

Dimension	*Items*	*M (SD)*	α
1 Denial	ir1_4, ir1_11, ir1_12	2.43 (.88)	.56
2 Defense	ir2_5, ir2_6, ir2_13	2.10 (.95)	.69
3 Minimization	ir3_2, ir3_7, ir3_10	2.54 (.98)	.64
4 Acceptance	ir4_1, ir4_8, ir4_14	3.66 (.87)	.70
5 Adaptation	ir5_3, ir5_9, ir5_15	2.78 (.89)	.64

Correlational Analyses of the IRRSS

Analysis of the inter-item correlations were, in parallel with the theory, positive and quite strong (r_S ranged from .26 to .51) within the five IRRSS dimensions. Correlations between the five dimensions (see Table 9) showed also theoretically plausible results: Denial and Defense correlated positively with each other (r = .57) and negatively with Acceptance and Adaptation (r_S ranged from -.17 to -.58). Acceptance and Adaptation correlated positively with each other (r_S = .34). Minimization had only small positive correlations with other dimensions, r_S ranged from .01 to .28.

Correlations between the Background Variables and the IRRSS

Results of correlational analyses between the five IRRSS dimensions, age and school success (GPA and mathematics, native language and religion or ethics grades) are presented in the following Table 9. The respondents' age did not correlate to any of the five IRRSS dimensions. As explained earlier, the result is theoretically plausible since the age span of the sample was merely four years.

GPA correlated negatively with Denial (r_S = -.37) and Defense (r_S = -.26) and positively with Acceptance (r_S = .31) and Adaptation (r_S = .26). Further, the average grades in mathematics and native language correlated negatively with Denial (r_S = -.29 to -.37). The strongest negative correlation was between Denial and the average grade in religion or ethics (r_S = -.42). There were positive correlations between the average grades in native language and religion or ethics and Acceptance (r_S = .28 to .31). These results pointed out the relation between students' academic achievement and their self reported interreligious sensitivity.

Table 9. Inter-item Correlations between the IRRSS Dimensions and Background Variables

	Gender	Age	GPA	Math	Nat. lang.	Relig. / Ethics	1	2	3	4	5
Gender	1.00										
Age	-.09	1.00									
GPA	-.17	-.13	1.00								
Math	-.05	-.10	.71	1.00							
Nat. lang.	-.33	-.10	.70	.57	1.00						
Relig. / Ethics	-.21	.08	.65	.52	.61	1.00					
1 Denial	.25	.00	-.30	-.28	-.32	-.34	1.00				
2 Defense	.34	-.02	-.29	-.18	-.35	-.32	.57	1.00			
3 Minimization	.10	.01	-.07	-.12	-.13	-.06	.18	.17	1.00		
4 Acceptance	-.28	.01	.33	.21	.30	.37	-.50	-.58	.01	1.00	
5 Adaptation	-.08	-.04	.05	.03	-.03	.06	-.17	-.17	.28	.34	1.00

Note. The sample consists of 549 Finnish 12 to 16 years old 7th to 9th grade students. GPA = Grade Point Average from 4 - 10, Math = Average mathematics grade from 4 - 10, Nat. lang. = Average native language grade from 4 - 10, Relig. / Ethics = Average religion or ethics grade from 4 - 10.

Confirmatory Factor Analysis

We also performed a CFA to the IRRSS dimensions (Table 10). The RMSEA estimate of .063 was within the fair fit level of .05 - .08, indicating moderate fit. Both 90 per cent confidence intervals were also clearly below the .08 level. Incremental fit measures showed that the proposed model exceeds the baseline model (*TLI* = .882 and *CFI* = .910). These results indicate satisfactory generalizability of the model.

Table 10. Goodness-of-fit Values of the IRRSS

	Preadolescents (*N* = 549)
Absolute Fit Measures	
χ^2	254.356
Df	80
p	<.001
RMSEA	.063
90 per cent C.I.	.054 .072
Incremental Fit Measures	
CFI	.910
TLI	.882

Note. RMSEA= Root Mean Square Error of Approximation with 90 per cent confidence interval. TLI = Tucker-Lewis coefficient. CFI = Comparative Fit Index.

CONCLUSIONS

In this chapter, the revised versions of the Intercultural Sensitivity Scale (ICSS) and the Interreligious Sensitivity Scale (IRRSS) were presented. ICSS is based on Bennett's (1986, 1993) Developmental Model of Intercultural Sensitivity (DMIS), and IRRSS is based on Abu-Nimer's (2001) Developmental Model of Interreligious Sensitivity, also founded on Bennett's DMIS.

Statistical analyses were carried out in four phases. First, the psychometric properties of the ICSS and IRRSS were investigated. Second, the Cronbach's alpha (1970) was used to test the internal consistency of the ICSS and IRRSS. Internal consistency of the ICSS and IRRSS was analyzed with Cronbach's alpha (1970). The values indicated satisfactory reliability for the measurement instrument. Third, the correlations between the items of each dimension and the background variables (age, gender, and school success) were analyzed with Spearman rho. There were neither relations between the students' age and the ICSS or IRRSS dimensions. However, this result is theoretically plausible since the age span of the sample was only three to four years. Yet, respondents' GPA and the average grades in maths, native language and religion or ethics correlated with both the ICSS and IRRSS dimensions showing the relation between students' academic achievement and their self evaluated intercultural and interreligious sensitivity. Fourth, the confirmatory factor analysis was conducted. The results indicated satisfactory generalizability of the models.

The Intercultural Sensitivity Scale (ICSS) and the Interreligious Sensitivity Scale (IRRSS) are instruments which can be used to explore adolescents' self-evaluated orientations for cultural and religious differences. Both intercultural and interreligious skills are important in the global world where one meets and

cooperates with people from different cultures or religions. The value basis of intercultural education consists of human dignity, human rights, dialogue between cultures, learning from each other, non-violence, and justice (Räsänen, 2002).

Intercultural and interreligious skills are crucial for a world citizen, especially in conflict resolution and peace building, whether the conflict is intercultural or interreligious. The results drawn from the ICSS and IRRSS instruments can serve for intercultural and religious education as well as for citizenship education in school.

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Intercultural Sensitivity Scale

	TOTALLY DISAGREE				TOTALLY AGREE
People of my own culture behave in the only way that makes sense.	1	2	3	4	5
When I am travelling I often feel that people are rude to me.	1	2	3	4	5
I do not need to care about what happens in other parts of the world.	1	2	3	4	5
Travelling abroad makes me feel uncomfortable.	1	2	3	4	5
There are lots of people representing other cultures who are arrogant.	1	2	3	4	5
I divide the students of my school into "our people" and "other people".	1	2	3	4	5
I hate people who represent certain culture or ethnic group.	1	2	3	4	5
When I am travelling, there are many things about the local people that irritate me.	1	2	3	4	5
I am ashamed of my fellow nationals when I am abroad.	1	2	3	4	5
I would definitely emigrate in some other country.	1	2	3	4	5
I do not value the culture of my native country.	1	2	3	4	5
People all around the world need and want approximately the same things.	1	2	3	4	5
All people act almost in the same way when they face ethically problematic situations.	1	2	3	4	5
Conflicts between different nations can be solved by obeying the same ethical principles (e.g., the Golden Rule).	1	2	3	4	5
There may be some differences between the customs of different cultures, but deep down all the people are just like me.	1	2	3	4	5

	TOTALLY DISAGREE				TOTALLY AGREE
It may cause misunderstandings that people representing different cultures express their feelings in various ways.	1	2	3	4	5
Different behaviors make me see things in a new way.	1	2	3	4	5
Cultures are different because different things are considered important and valuable.	1	2	3	4	5
The more I know about various cultures, the better I recognize the differences between them.	1	2	3	4	5
I am able to put myself in the position of a person from another culture.	1	2	3	4	5
Many of the immigrants living in our country try their hardest to adjust to our life style, and that is why I also want to understand their way of living.	1	2	3	4	5
It is only a good thing that people are different.	1	2	3	4	5
I am able to behave in culturally appropriate ways but still adhere to my own values.	1	2	3	4	5

SPSS Syntax to Compute Intercultural Sensitivity Scale Factors

```
/* Variable names in this syntax refer to the Table 3 in this chapter

COMPUTE ICSS1_M = MEAN(ic1_1, ic1_7, ic1_13, ic1_19).
COMPUTE ICSS2_M = MEAN(ic2_2, ic2_8, ic2_14, ic2_20).
COMPUTE ICSS2r_M = MEAN(ic2r_3, ic2r_9, ic2r_15).
COMPUTE ICSS3_M = MEAN(ic3_4, ic3_10, ic3_16, ic3_21).
COMPUTE ICSS4_M = MEAN(ic4_5, ic4_11, ic4_17, ic4_22).
COMPUTE ICSS5_M = MEAN(ic5_6, ic5_12, ic5_18, ic5_23).
EXECUTE.

VARIABLE LABELS
  ICSS1_M   "1. Denial"
  ICSS2_M   "2. Defence"
  ICSS2r_M  "2r. Reversal"
  ICSS3_M   "3. Minimization"
  ICSS4_M   "4. Acceptance"
  ICSS5_M   "5. Adaptation".
```

Interreligious Sensitivity Scale

	TOTALLY DISAGREE				TOTALLY AGREE
I do not need information about other religions.	1	2	3	4	5
It is nice to meet with new people as long as they are not members of different religious groups.	1	2	3	4	5
I have never had contacts with the people of other faiths because I do not find it important.	1	2	3	4	5
I consider people from other religions as a threat.	1	2	3	4	5
God will punish the people from other religions after they are dead.	1	2	3	4	5
I think that people of certain religions are so stupid that they could figuratively "blow themselves up" with their stupidity.	1	2	3	4	5
All people are created by the same god even so they are religious or irreligious.	1	2	3	4	5
All people believe in the faith.	1	2	3	4	5
All people pray.	1	2	3	4	5
It is only a good thing that there are students from different religious groups in the school.	1	2	3	4	5
People of different faiths have a right to practice their own religion also in our country.	1	2	3	4	5
I learn best about the manners and views of different religions from the believers of those religions.	1	2	3	4	5
I can pray with a person of another religion if she or he asks me to.	1	2	3	4	5
I could participate in the service of no matter religion with a believer of that religion.	1	2	3	4	5
If I lived abroad I could easily see myself practicing the religious manners of that country (such as fasting or wearing religious clothing) and it would not detract my own world view.	1	2	3	4	5

SPSS Syntax to Compute Interreligious Sensitivity Scale Factors

```
/* Variable names in this syntax refer to the Table 7 in this chapter

COMPUTE IRRSS1_M = MEAN(ir1_4, ir1_11, ir1_12).
COMPUTE IRRSS2_M = MEAN(ir2_5, ir2_6, ir2_13).
COMPUTE IRRSS3_M = MEAN(ir3_2, ir3_7, ir3_10).
COMPUTE IRRSS4_M = MEAN(ir4_1, ir4_8, ir4_14).
COMPUTE IRRSS5_M = MEAN(ir5_3, ir5_9, ir5_15).
EXECUTE.

VARIABLE LABELS
  IRRSS1_M   "1. Denial"
  IRRSS2_M   "2. Defence"
  IRRSS3_M   "3. Minimization"
  IRRSS4_M   "4. Acceptance"
  IRRSS5_M   "5. Adaptation".
```

ASSESSING AND DEVELOPING MULTIPLE INTELLIGENCES PURPOSEFULLY

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The prevailing belief today is that if young people can accumulate enough "points" in the "game of school"—test scores, grade point averages, number of Advanced Placement or honors classes, number of extracurricular activities—then they "win." Many people emphasize numbers without interpretation. But what do the numbers *mean*? What are they *for*? With all this emphasis on academic achievement for its own sake, have we lost sight of *why* children should develop these intellectual capacities? What's the use of these scores in the broader picture of a person's life or a culture's well-being?

Instead of labeling students with the scores, perhaps our emphasis should be on turning the scores into opportunities and actions for young people to contribute to their communities—and understand *how* and *why* they do so. The scales described in this volume can help achieve this goal because they incorporate sensitivity and self-evaluation, and because they focus on how the person perceives and contributes to ethical, cultural, spiritual, social, and physical aspects of the environment.

I believe we need to go beyond measuring *capacities* to better understand *intention*. People behave for a reason. We are not just responders to various environmental stimuli. We direct our actions toward a person, an institution, a belief, an image, a goal, a symbol. We commit ourselves, reflect, and correct to stay on track. What we do with the resources we have, such as our intelligences, affects others who share our social and cultural environment.

Unfortunately, several recent books and research programs focus on this contribution angle from a negative perspective. These authors emphasize the limitations and errors of intelligence; they describe the many ways that our intelligences go "irrationally" wrong in decision-making, reasoning, and judgment (e.g., Ariely, 2009; Stanovich, 2009). I prefer to find ways for people to better self-regulate their intellectual resources to do right and to do good. In other words, the end "game"—of school or of life—is not what we *collect*, such as scores or grades, but what we *give* to the community with the capacities we develop. This is where multiple intelligences meets purpose.

Kirsi Tirri & Petri Nokelainen. Measuring Multiple Intelligences and Moral Sensitivities in Education,

PURPOSE: WHY WE DO WHAT WE DO

Purpose is an internal moral compass, a "stable and generalized intention to accomplish something that is at once meaningful to the self and of consequence beyond the self" (Damon, Menon & Bronk, 2003). Purpose integrates engagement in a meaningful activity, extension of that activity into the future, and an orientation to have a prosocial impact. Although not all purposes may aspire to help others (Damon, 2008), I focus on noble purposes that provide a beacon for people to self-regulate their behavior in culturally valued activities (Zimmerman, 2008) for the good of a wider community (Gestdottir & Lerner, 2007; Larson, 2006). Purpose makes actions—and the intelligences underlying those actions—matter.

Purpose contributes to moral citizenship by moving control of one's behavior away from reacting to outside stimuli to be more based on an internal reason (Marken, 1990) while still taking into consideration other people, institutions, and the future. To use a metaphor: without purpose, a person is like a sailboat, going whichever way the wind blows. With purpose, a young person is like a powerboat, moving forward using a controlled power source toward some marker on the horizon. Educating with purpose in mind, then, suggests that the job of schools includes supporting the development of this internal compass. Such educational emphasis helps a young person determine how he or she can best utilize the knowledge, skills, and intelligences on which schools have more traditionally focused.

This refocus may be particularly important for urban schools, which bring together teachers and students from a wider diversity of backgrounds and with a wider diversity of interests and skill levels (see Tirri, 2008). "Cookie cutter" one-size-fits-all educational standards and programs do not fit well under these circumstances. What is called for is a way of thinking about education that allows—and even encourages—the development of a wide variety of intellectual and skill profiles. This variety allows for a more complex, nuanced society of interacting individuals whose differences in contributions are complementary to each other and perhaps catalyze each other.

MULTIPLE INTELLIGENCES: INTERACTIONS INCREASE PERFORMANCE POSSIBILITIES

Multiple intelligence (MI) theory's main claim is that it is more fruitful to describe an individual's cognitive ability in terms of several relatively independent but *interacting* intelligences rather than a single "general" intelligence (see Gardner, 1983, 2006). An intelligence is a biopsychological potential to process particular types of information to solve problems or create products that are valued in at least one culture or community. Intelligences do not work in isolation. Think of Lego building blocks. If children have only one block to play with, there is a limited scope of items they could build; mostly they can just "bang" that general intelligence against problems. Children can accomplish much more nuanced and complex thinking by having several blocks that can interconnect to make a wide variety of patterns. That is how the 8-1/2 intelligences work.

Each person has an intelligence profile—a description of his or her relative strengths and weaknesses among the different intelligences: linguistic intelligence processes words; logical-mathematical intelligence processes numbers and logical operations; musical intelligence processes sound and rhythm; spatial intelligence processes shapes and directions; bodily-kinesthetic intelligence processes movement and coordination; naturalistic intelligence processes lists and categories; interpersonal intelligence processes people and social interactions; intrapersonal intelligence processes the self; and (at least provisionally) existential intelligence processes profound, hard-to-grasp abstractions.

What makes a multiple intelligences approach so powerful is the focus on patterns of interactions among the intelligences (Moran & Gardner, 2006b). Most skills or performances of a task do not isolate one intelligence but rather combine intelligences to achieve a purpose. Take dance, for example. It combines musical intelligence to recognize and keep rhythm, bodily-kinesthetic intelligence to control fluid and expressive movements, spatial intelligence to navigate around the dance floor or stage and to make visual patterns, plus perhaps logical-mathematical intelligence to count time and interpersonal intelligence to take into account the perspective of the audience. Different individual dancers can use different combinations of these intelligences to produce similar dance performances.

In addition, most performances are not completely done by one person. We collaborate. People assimilate intellectual tools from books or other artifacts and from interacting with other individuals (Vygotsky, 1978). Through performances of tasks, we contribute to each others' identities and environment (Moran & John-Steiner, 2004). That is, we alter the cultural landscape and make available further resources for others to assimilate.

The opportunity we face, then, is to develop assessments and educational programs that not only build individual intelligences, but also help those intelligences—within and across individuals—synergize better. Many educators assume that a higher score for all intelligences is ideal. But people with such equipotentiality may have trouble deciding where they can best contribute to society. Strengths *and weaknesses* are both important in determining students' academic, career, and life development (see Moran, Kornhaber, & Gardner, 2006). Assessments that can help guide a person, and help him or her increasingly *self*-regulate, would be important tools for educators and young people to understand the potentials they have to contribute to their communities.

Intelligences can interact in three main ways: interfere with each other, compensate for each other, and catalyze each other (Moran & Gardner, 2006b). Interference means that one intelligence may get in the way of another intelligence expressing itself to its fullest ability. A student with good social skills may have trouble making friends because she cannot speak well. A linguistic intelligence weakness interferes with an interpersonal strength. Or a student who can't regulate his moods or thoughts can't seem to finish his problem sets even though he knows the material. An intrapersonal intelligence weakness interferes with a logical-mathematical strength.

Compensation allows a particular educational standard to be met through different combinations of strengths. A student may be considered a good speaker in class presentations because he can effectively use his body posture and gestures even if his sentence structure is mildly convoluted. His bodily-kinesthetic intelligence compensates for his linguistic intelligence. Or a student may earn high marks on a paper for writing well even if her argument is not quite solid. Her linguistic intelligence compensates for lower logical-mathematical intelligence.

Catalysis means one intelligence amplifies the expression of another. A student may conceptualize a math problem through drawings and diagrams. Her spatial intelligence catalyzes her logical-mathematical intelligence. Or a student may focus his writing on the cadence and rhythm of words. His musical intelligence catalyzes his linguistic intelligence in a poetic way.

These three interactions show how there may be difficulty in assessing intelligences solely in a linear fashion. If one intelligence interferes with the others, then the student's overall potential can be lower than the straight sum. This may be the case with students who don't "test well": their linguistic intelligence of reading and writing may interfere with the expression of whatever content the test is assessing. If intelligences are compensating or catalyzing one another, the student's overall potential can be higher than the straight sum. This may be why some students perform well in context—that is, they have "street smarts"—whereas they do not perform well in the decontextualized setting of a school classroom (e.g., Sternberg, Nokes, Geissler, Prince, Okiatcha, Bundy, & Grigorenko, 2001).

With multiple intelligences, there can be multiplicative as well as additive effects of intelligences. The correlations among intelligences scales found by Tirri and Nokelainen (2008) may indicate these more intricate interactions. Furthermore, these interactions may not be visible to the individual; they are often easier to see by others who can observe the individual's performance, such as MI-trained parents, teachers, bosses or coworkers. Thus, MI assessment may call for "360-degree" performance evaluations that triangulate self-report with reports by significant others.

Even more importantly, MI assessment calls for contextualization—what the intelligences are being used for. Without the purpose of the dance performance, the intelligences of the dancers, choreographer, and technical support personnel are only abstract potentials. What educators and, later, employers want to know is: what can this particular person do in particular, relevant situations? To this end, several types of ecologically valid assessments have been developed, including portfolios, performance tasks, projects, and observation scales (see Shearer, 2009, for a review). An extreme version of MI engagement and assessment was developed by Danfoss Universe's Explorama, a children's science museum in Denmark built on multiple intelligence theory principles (see www.danfossuniverse.dk). Exhibits feature activities in which individuals can interact with materials, and sometimes with other exhibit visitors, to use different intelligences toward particular purposes.

Purposes—the intentions toward contributing to something larger than the self—relate to multiple intelligences on three levels: the school level of purposes to

assess and educate the intelligences themselves, the national level of purposes to incorporate a multiple intelligences approach into cultural/educational policy and practice, and the individual/cultural interaction level of purposes to harness the intelligences of individuals as resources to be contributed to a particular culture. I address each of these levels in turn.

THE PURPOSES OF INTELLIGENCE ASSESSMENT

Intelligence tests have been around for decades (see Moran & Gardner, 2006a, for review). Early assessments focused on a general thinking capacity called *g*. Increasingly, tests were developed for more modular mental functions. Some modules focused on types of information processed, such as linguistic, mathematical, and spatial (Gardner, 1983; Wechsler, 1958). Other modules focused on contexts, such as academic, creative, or practical (Sternberg, 1985). Still other modules focused on thinking processes, such as fluid versus crystallized intelligence (Cattell, 1971), or performance versus disposition or sensitivity (Perkins, Tishman, Ritchhart, Donis, & Andrade, 2000).

Yet, these varied tests seem to have been developed for a similar purpose: to label and categorize students. Sometimes, this purpose was an end in itself: once a child was labeled, he or she was constrained by the expectations of that label. Gifted students performed well in school, and deficient students performed poorly, regardless of environmental factors. Studies have shown moderate correlations among I.Q., grades and status of one's work field (Herrnstein & Murray, 1994; Sternberg, 1985; Subotnik & Arnold, 1994). However, this expectation that a high score on an intelligence test equates with school and life success has been called into question by findings that suggest people with high scores (1) do not necessarily "score" higher in the workplace in terms of salary or work satisfaction (Rode, Arthaud-Day, Mooney, Near & Baldwin, 2008); (2) endure alienation, frustration, and unhappiness (Hollingworth, 1942; Sears & Barbee, 1977), and (3) fail to live up to expectations for *extra*ordinary achievements such as leadership and creativity (Moran & Gardner, 2006a; Terman & Oden, 1947).

More recently, these tests have become a means to a different purpose: the development of environmental supports. That is, intelligence test scores contribute to whether a child qualifies for special assistance: gifted programs, special education programs, additional time during tests, and other individualized education plan (IEP) supports. From this framework, the purpose of the tests is to provide a foundation for building scaffolds for performance. Studies show that scaffolding increases the child's performance level compared to doing the task without such environmental supports as tools, instruction, role-modeling, and the like (Fischer & Pipp, 1984). There is less emphasis on understanding what "basket" of capacities the person has that he or she can transfer across contexts and more emphasis on making the person achieves a certain performance level.

These purposes for intelligence tests—to label and to scaffold—continue into the adult workplace (see Furnham, 2008; Sackett, Borneman, & Connelly, 2008, for reviews). Many industries use aptitude and intelligence assessments to label and track employees; determine variability in competences among staff for hiring,

compensation, and promotion; and build teams with complementary skills. Furthermore, there has been increasing emphasis on the social and emotional intelligences that help people work together well. As employers increase their demand for such skills, more studies and educational opportunities are arising to scaffold their development, not only among adults (see Zeidner, Roberts, & Matthews, 2008, for review), but at younger ages as well (e.g., Downey, Mountstephen, Lloyd, Hansen, & Stough, 2008).

In summary, people use intelligence assessments, in general, to provide a shorthand description of the test-taker. This description helps test-givers predict how the person is likely to behave, at least in situations relevant to the intelligence or skill under examination. Such predictions are important for planning and placement. They help test-givers (and sometimes test-takers) develop educational strategies, management strategies, and expectations about the future and the test-taker's place within society. Discerning individual differences in capabilities helps people select and perhaps modify learning and work environments to their strengths, and determine an optimum level of complexity they can cognitively handle (Gottfredson, 2003; Lubinski, 2004). In addition, assessments can help drive society to hold the capacity tested in higher esteem. As the cliché goes, "what gets measured, gets done." Psychological constructs and other phenomena for which valid and reliable tests are available are often considered more important or critical than constructs lacking in assessments (Shearer, 2009).

THE PURPOSES OF A MULTIPLE INTELLIGENCES APPROACH TO EDUCATION

The purposes of using a multiple intelligences approach in school, including multiple intelligences assessment, differ from the purpose of intelligence tests in general. I came to this interest in the intersection of multiple intelligences and purpose while editing *Multiple Intelligences around the World* (Chen, Moran & Gardner, 2009). Thirty chapters from researchers, policymakers, principals, and teachers who had championed multiple intelligences in their countries describe their opportunities and obstacles of infusing MI theory into school practices and policies. What struck me, in reviewing these chapters for overarching patterns, was that there were two primary purposes, at the country or cultural level, that drove the use of multiple intelligences: inclusion and creativity (Moran, 2009c). These culture-level purposes emphasize how education is the development of the young person's potential and capacities to contribute to the greater good in a meaningful way.

MI theory provides a way of thinking about education that is better than general intelligence and scores. MIT theory offers a forum for allowing and supporting a wider variety of talents and skills to be expressed and to contribute to the community. Education is not about differentiating among individuals, as general intelligence scores suggest. Rather, education is about how to integrate the potentials of individuals for cultural progress. As the cliché suggests, "more heads are better than one." When many minds are working in complementary fashion to move a culture or community closer to its goals, multiple intelligences are supporting cultural purpose. Educators from Colombia, Korea and England emphasized how MI develops self-awareness and personal meaning, coming to

better understand who we are within a community's various ways of being. Educators from Argentina, Denmark, England and Australia focused on how MI invites more people from more diverse backgrounds—racial, socioeconomic, gender, cultural—to become productive contributors to their mainstream cultures. By celebrating differences, people under these conditions of diversity are allowed and encouraged to interact and learn from each other.

By allowing a wider variety of self-expressions and interpretations of experience to interact, MI theory helps drive creativity. Creativity arises from the interaction of an individual with cultural tools, artifacts and information developed by previous and contemporary generations. But the appropriation of these cultural resources is not perfect: individuals make different "senses" of the cultural meanings available in their environment (see Moran & John-Steiner, 2003). This variability leads them to use the cultural resources in different ways. Thus, when they work—when they, in turn, produce cultural products, ideas, or services for others to consume or use—these differences become manifest. Products or ideas or services that are both strongly different from conventionally accepted meanings yet are also accepted by a critical mass of cultural members are considered "creative" and transform the culture (Csikszentmihalyi, 1988). People understand some phenomenon differently after a creative artifact arises than they did before the creative artifact existed: creativity changes the "playing field" for those who follow. Thus, creativity is an *extraordinary* contribution to culture.

In *Multiple Intelligences around the World*, educators from Japan, China, and England focused on the role of MI in creativity, both in terms of self-expression and of creating change in our environment. They emphasized the "novelty" aspect of creativity—coming up with new ideas based on a particular person's sense-making (see Amabile, 1996). Educators from Denmark, China, Turkey, and the Philippines discussed making the world a better place by emphasizing harmony and addressing our societies' pressing problems. They focused on the "appropriateness" aspect of creativity—how new ideas must be applied in a context and accepted as useful by others relevant to that context (Amabile, 1996).

THE PURPOSES OF MULTIPLE INTELLIGENCES TO INDIVIDUALS' CONTRIBUTIONS TO CULTURE

Writing the chapter on the cultural purposes of multiple intelligences for *Multiple Intelligences around the World* stimulated my thinking about the interaction of multiple intelligences and purpose at the *personal/cultural interaction* level—how a person comes to understand his or her contribution to the wider culture. In some ways, this "level" is not a singular level, but rather it emphasizes how individuals and cultures compose each other (Moran & John-Steiner, 2003). The boundary between person and culture is an intellectual convenience to help us understand learning or performance through a "divide and conquer" strategy. For example, many researchers or practitioners break phenomena down into smaller units to more easily assimilate them or work with them.

But there is a cost to such reductionism. We lose sight of what emerges when intelligences and people cooperate (see Sawyer, 2003). This cooperation drives

both cultural stability and cultural evolution. Thus, perhaps an "act and interact" strategy may be revealing. Each of us has a multiple intelligences profile. That profile, though, is not an end in itself. That profile is a resource, an asset I have that I can commit to some purpose. The reason developing that resource is important is because I can *use* it, hopefully for the greater good.

One way I've been thinking about this is through a metaphor of a jigsaw puzzle. If I am going to contribute, I need to know where I fit. The individual puzzle pieces—each a different shape with a different small image—snap together to create a bigger picture of the community. When one piece connects to other pieces in the puzzle, the piece's shape and image interact with the shapes and images of other pieces. An individual's intelligence profile is like the puzzle piece's smaller image of colors and shapes that have the potential to interact with other pieces' images *if connected*. Connected, they create something bigger than each piece individually. They build the greater good. Purpose is like the puzzle piece's tabs and nooks that give a clue to where the piece might fit. Purpose is understanding where one aligns with the "big picture."

Research we've been doing at the Stanford Youth Purpose Project (see Malin, Reilly, Quinn, & Moran, 2011; Moran, 2009a; Moran, 2010; Moran, Malin, Bundick, & Reilly, 2011) shows that only about a quarter of young people age 12 to 22 have a sense of how they can contribute to the big picture and have "locked in" and actually engaged in relevant activities. One in 10 understand there is a big picture but don't know where they fit; they have a dream but not a lock-in. Another quarter are locked-in but don't really see the big picture—they are oriented to general normative goals like college, jobs, and money with an intention to benefit primarily the self. And, unfortunately, 40% in our sample are drifting, dabbling, disconnected puzzle pieces—they don't know who they are (the image on their piece) nor how they can contribute (how they connect to other puzzle pieces).

Nonpurposeful youth are found more in younger grades, and the purposeful and self-oriented life goal students are more prevalent in 12th grade and college. However, the age differences also suggest that the normative endpoint, at least in the United States, may be self-oriented life goal—be successful, make money—not purpose or making a contribution to the community. Purpose, which takes into consideration a prosocial dimension, seems to be a form of giftedness in intrapersonal intelligence (Moran, 2009a). Furthermore, purposes to change the world for the better in some way—through creativity, for example—are difficult to sustain (Moran, 2010). Young people who form and sustain a purpose show exceptional initiative by proactively seeking opportunities and building for themselves a cohesive system of social supports for their particular purpose (Malin et al., 2011; Moran et al., 2011).

Perhaps it is that our culture and schools haven't yet acknowledged, valued, and supported purpose and the development of intrapersonal intelligence and self-understanding. That is, purpose may be seen as gifted because only special individuals realize it without any supports. With supports, more young people may develop purpose. How do schools help young people discover how they can contribute?

This opportunity is where I find the assessments in this volume particularly valuable. Because they are self-report measures, they provide indicators of not only the intelligence under assessment, but also of the person's perception of that intelligence. Thus, they filter assessment of the other intelligences through intrapersonal intelligence. The assessments can be used as tools to help young people understand and regulate themselves better.

In addition, some of the scales, such as the spirituality scale and environmental scale, assess how sensitive the person is to opportunities to engage the intelligence, which is a person/environment interaction. These assessments might be used by educators, or by young people themselves, as supports for developing their awareness and sensitivity to their growing selves and how that self impacts the wider world. Sensitivity has been posited as the "bottleneck" for many young people's failure to perform in certain contexts (Perkins et al., 2000). Young people simply don't see the need.

That is, supports from family and friends need to focus on supporting the particular purpose or aim of the young person, not just the youth's general development (Malin et al., 2011; Moran et al., 2011). Families who provide normative *direction* are associated with young people who have self-oriented life goals that mostly benefit the self. Families who provide *encouragement* once a young person has expressed an interest or spark are associated with purposeful young people. The family bolsters the youth's development but follows the child's lead. The young person initiates, *notices* and engages, then the family supplies supporting external resources. These resources may be material, such as books or tools or driving the child to orchestra practice. Or they may be cognitive, such as providing insight, or emotional, such as "keep going, you can do it" conversations. With age, young people draw this type of support less from family and more from friends, then from social institutions, to continue their purposeful endeavors.

Besides the family, two key supports seem to be (1) opportunities to act and (2) responses to challenges (Malin et al., 2011; Moran, 2010). What makes these two supports interesting is that they emphasize the interaction of the young person with the environment. It is not so much the particular event, role or support in the environment—a volunteer position or an adult role model—as how the young person perceives and makes use of it. Thus, personal meaning of an event is more impactful toward being purposeful than the event itself: it's the sensitivity to the *meaning* of the opportunity or challenge that spawns the person to see how he or she could use the event to contribute positively to the community now and in the future. This may be particularly relevant to creative purposes (Moran, 2009b).

Compared to young people with only dreams or self-oriented goals, youth with purpose are more likely to talk about seeking out situations to engage their purpose—they move their puzzle piece around and try different "fits" with various other pieces—instead of hanging out and expecting the fit to "just happen." They also are more likely to talk about how challenges and struggles were opportunities not barriers. They turned a negative—being teased or bullied at school, lack of jobs for teens, witnessing a car accident, losing a loved one—into an emotional and sometimes cognitive support to initiate a kindness campaign, start a high tech business to give students internships, and be a health volunteer with the aim toward

a career in cancer research (Malin et al., 2011). All of these supports were filtered through intrapersonal intelligence that evaluated what the environment had to offer *in terms of the young person's self-understanding*. Rathman (2005) makes a strong case that the development of intrapersonal intelligence should be the *backbone* of education. Without that, young people won't know how to develop, make meaning of, or make use of their other 7-1/2 intelligences without external direction and motivation.

If schools don't include intrapersonal intelligence in standards, curricula, and assessments, we don't "see" it. It's an invisible aspect of the individual that we just take for granted. There are some schools and school districts that make this intelligence central. The private Hyde School in Maine emphasizes the effect of one's thoughts and behaviors on others and how each student is a critical component of the aggregate community. New Hampshire schools have a Follow the Child initiative that tracks individual strengths, weaknesses, and interests from K through 12. England's standards incorporate Personal, Social, Health, Economic Education and Citizenship Education that places leadership, self-awareness and making a positive contribution at its core.

But many schools fall short of supporting intrapersonal intelligence and purpose. Perhaps the best "testing" is real-life, purposeful, problem-solving contributions. Again, purpose emphasizes how the child can, will, and does intentionally contribute to the community. It is a step beyond performance and demonstration of competency, which are more often assessed in educational practice. Performance and demonstration make learning and capabilities visible; they show *what* students can do. But they often do not have an impact on the wider school, neighborhood, or beyond. These emphases still keep students segregated from playing a real role in their cultures. As one American principal proclaimed in his chapter in *Multiple Intelligences around the World*, what is needed is relevance (Rizzo, 2009). Two Colombian scholars eloquently described how making a genuine contribution to their communities affects young people: youth can "pronounce themselves as people" (Barrera & León-Agustí, 2009).

Many young people can and want to contribute, if given the opening. In Argentina, students created an anthology of written work that was distributed to community members. In Denmark, young people helped design exhibits in a science park. In the Philippines, students planted trees and raised money for books for poorer children. At the New City School in St Louis, different grade levels focus on providing a service to the wider community: book-making, art framing, birthday bashes, and an online newspaper (see Chen et al., 2009).

CONCLUSION: HELP YOUNG PEOPLE BE THEMSELVES NOT CONFORM TO AN ABSTRACT STANDARD

Multiple intelligences are not ends in themselves—a "performance" in a project or a "score" on an intelligence assessment is only meaningful in the context of a reason for why the act or score may matter. Should we develop children's various capacities? Absolutely! But we shouldn't stop there. We also need to support the purposes toward which young people will direct those capacities.

Assessments used as developmental tools to help educators understand who young people are—and, better yet, to help young people understand themselves better—are an important support. The scales described in this volume are particularly valuable tools because they incorporate sensitivity and self-evaluation. Thus, they can be viewed as assessments of intrapersonal intelligence and of the interaction of the person with cultural, spiritual, and physical aspects of the environment.

It would be helpful for citizens of all ages to perceive, seek, find, use, evaluate, and refine cultural resources. Intelligences *are* cultural resources: developing the minds of citizens is how culture carries on and develops. Ultimately, those resources appropriated by individuals should be given back to the culture in the form of new products and tools for others to use and further develop. We are part of something larger. Harnessing cultural resources in a thoughtful, proactive manner is being purposeful.

Intelligence and purpose are not either/or propositions. We don't have to choose between them. Rather intelligences and purpose development are symbiotic—one catalyzes the other. Stimulating young people to find their purposes—what their particular profile of intellectual strengths and weaknesses can contribute—helps each child become more himself or herself, instead of everyone trying to be cut from the same mold. Each of us matters, not because of scores, but because of what we can contribute to the "bigger picture." When our contributions interact, our cultures and societies become even richer.

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