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The feasibility of training and development of EI: An exploratory study in Singapore, Hong Kong and Taiwan

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Abstract

Emotional intelligence (EI) has been an emerging topic for psychological, educational, and management researchers and consultants in recent years. However, existing literature has concentrated on demonstrating the effects of EI on either the mental health or on job outcomes such as job attitudes and performance. There is relatively little discussion concerning how EI, as a set of interrelated abilities about handling emotions, is developed. Understanding how EI is developed may be the significant first step for organizations to develop effective EI training programs. As an exploratory effort, we borrowed the basic argument from theories in human development to argue that life experiences affect EI development. Based on samples of university students from Singapore and Hong Kong, whether one of the parents was a full-time parent was a significant predictor of the students' EI. This finding was cross-validated with a sample of graduate students in Taiwan. Furthermore, age as a proxy for life experiences for this graduate student sample was found to be a significant predictor of EI. Implications for EI research and training are discussed.

Keywords: Emotional intelligence; Nurture and EI; EI training and development

1. Introduction

Emotional intelligence (EI) has been an emerging topic for psychological, educational, and management researchers and consultants in recent years. Proponents of the concept argue that it affects an individual's physical and mental health and career achievements (e.g., Goleman, 1995). However, the existing EI literature has concentrated on demonstrating the effects of EI on either the mental health or job outcomes such as job attitudes and performance. There is relatively little discussion concerning how EI, as a set of interrelated abilities about handling emotions, is developed. Understanding how EI is developed may be the significant first step for organizations to develop effective EI training activities and programs. As an exploratory effort, we borrowed from theories in human development to argue that parents' devotion to their children and life experiences affect EI

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development. In the following paragraphs, we summarize the discussion concerning the EI definition in the literature. Following that we develop specific hypotheses on the development of EI and test these hypotheses in Study 1 with university students in Singapore and Hong Kong. Study 2, based on a sample of graduate students in Taiwan, was designed to cross-validate the findings in Study 1 and to further explore the potential influences of life experiences on EI development. Finally, implications for future EI research are discussed.

2. Definition of emotional intelligence: a set of interrelated abilities

In recent years, there has been considerable research to clarify the definition of the EI construct. Originally, the earliest proponents of this construct, Salovey and Mayer (1990) referred to "emotional intelligence" as the ability to deal with emotions. They defined EI as "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 actions" (p. 189). Unfortunately, despite this early ability-based definition, there has been confusion regarding the exact meaning of this construct (Mayer & Salovey, 1997). As Mayer, Caruso and Salovey (2000a) commented, some of "these alternative conceptions of emotional intelligence include not only emotion and intelligence per se, but also motivation, non-ability dispositions and traits, and globalpersonal and social functioning" (p. 268). The BarOn EQi (BarOn, 1997) is a well-known EI scale that belongs to this category.

The inclusion of non-ability dimensions to the EI construct may have damaged its scientific rigor as a distinct construct (Schultea, Ree, & Carrettab, 2004). Fortunately in recent years researchers appear to build a consensus that EI should be an individual's ability to deal with emotions and its domain should include the following four dimensions (e.g., Mayer et al., 2000a; Law, Wong & Song, 2004; Wong, Law & Wong, 2004). (1) Appraisal and expression of emotion in the self: this relates to individuals' ability to understand their deep emotions and to be able to express them naturally. (2) Appraisal and recognition of emotion in others: this relates to individuals' ability to perceive and understand the emotions of people around them. (3) Regulation of emotion in the self: this relates to the ability to keep behaviors under control when experiencing extreme moods. (4) Use of emotion to facilitate performance: this relates to the ability to use emotions and to direct them toward constructive activities and personal performance.

Based on this ability-based definition, new EI measures with acceptable reliability and validity have been developed based on Western (e.g., Mayer et al., 2000a; Mayer, Caruso, & Salovey, 2000b) and Chinese (e.g., Law et al., 2004; Wong & Law, 2002) samples. Furthermore, EI has been shown to be distinct from personality dimensions and has incremental predictive power on criterion variables such as life satisfaction, job satisfaction and job performance (e.g., Law et al., 2004; Saklofskea, Austin, & Minskic, 2002; Wong, Wong & Law, 2005).

To further examine the development of EI studies, we went through the content pages of *Intelligence* from the first issue in 1977 to the September–October issue (issue 5) in 2005. The first article on EI in the Journal appeared in 1996 (Mayer & Geher, 1996). Since then a number of articles on EI have been published, including two in 2005 alone. Among these studies, perhaps the most important piece is Mayer et al. (2000a) which showed that the concept of EI met the traditional standards for intelligence. The study showed that EI is a set of abilities that it is related to but has unique variance to pre-existing intelligences. Papers in the Journal have examined various aspects of EI, including the ability to predict emotions (Geher, Warner, & Brown, 2001), the psychometric properties of EI scales (Palmer, Gignac, Manocha, & Stough, 2005) and the relationships of EI with other intelligence measures (Zeidner, Shani-Zinovich, Matthews, & Roberts, 2005).

3. Training and development of emotional intelligence

The clarification of EI as a set of interrelated abilities has important implications for its training and development. If EI is a set of non-ability dispositions and traits, then it may not be possible to develop or enhance it through training activities and programs. This is especially true for the training of adults. As a set of abilities, there is a possibility that EI may be developed or enhanced by training programs. If EI is solely an inherent talent that has little to do with one's life or developmental experiences, then it may be difficult to design effective EI training programs. However, if EI is not solely an inherent talent but is also related to some types of life and developmental experiences, then we may design effective training programs for EI. A basic issue in human development is whether nature or nurture is more important in the development of personal abilities (e.g., Masten & Coatsworth, 1998). If nature is important in determining an individual's EI, training activities may not be effective. For instance, although General Mental

Abilities (GMA) predict job performance and is the common factor behind a set of abilities such as language and reasoning, nature is generally believed to be more important than nurture in determining a person's GMA. Thus, it is quite difficult to improve the GMA through the use of training programs.

On the contrary, if nurture, i.e., the human experiences resulted from their interactions with the physical and social worlds, is important in determining a person's EI, training programs that organize these experiences in a systematic manner may be effective. In evaluating the competencies being developed in Master of Business Administration (MBA) programs, some studies found that these programs could develop competencies that are closely related to EI such as relationship management and interpersonal abilities (e.g., Boyatzis, Stubbs & Taylor, 2002; Goleman, Boyatzis & McKee, 2002). Unfortunately, these studies provided only indirect evidence that EI may be developed through education program because EI was not measured according to the four ability-based dimensions. Similarly, although many companies are offering EI training activities, little scientific evidence has been provided to show their effectiveness. It is difficult to evaluate the validity of these activities because very little is known about how an individual develops abilities in handling emotions.

4. Purpose and hypotheses of this study

Compared to GMA, EI is a relatively new construct and our knowledge about it is quite limited. Thus, it may not be appropriate or possible for us to examine the exact effect of heritability versus environmentality on EI. Instead, we attempt to make a small step towards this direction. That is, we try to provide evidence to show the possibilities that some "non-nature" experiences may be important for the development of EI. If EI can be enhanced through developmental experiences then it is worthwhile for researchers to study various potential nurture factors and to continue their search for effective EI training activities.

Although the main objective of this study is to examine if nurture affects EI, two hypotheses on potential nature effects are provided so that nurture effects over and above these potential nature effects can be examined. Undoubtedly, an important factor of nature affecting one's EI level is one's parents' EI level. Parents' EI level may also affect the experiences that a person goes through in developing abilities to handle emotions. For instance, according to the social learning theory (Bandura, 1977), high EI parents may handle their emotions in a more appropriate manner and thus their children may develop their EI by observing and learning from such role models. Therefore, we hypothesize:

Hypothesis 1. A person's EI level is positively related to one's parents' EI level.

Apart from parents' EI, the non-ability dispositional traits may reflect largely the nature factors that affect a person's EI development. The Big-Five personality dimensions are non-ability dispositional traits that have received a lot of research attention (e.g., Barrick & Mount, 1991; McCrae, & Costa, 1987). Conceptually, several Big-Five personality dimensions should be closely related to EI (Saklofskea et al., 2002). For instance, neuroticism is a general tendency to over-react to negative stimuli from the environment and a person with strong neurotic characteristics could have difficulty in developing abilities to handle emotions appropriately. Agreeableness is a general tendency to be cooperative and to accommodate other's opinions and comments. Thus, a person strong in agreeableness could find it easier to develop abilities to understand others' emotions and to regulate one's emotions. Finally, conscientiousness is a general tendency to react carefully to stimuli from the environment such as to pay attention to details and to be patient. Thus, a person high in conscientiousness could find it easier to regulate his or her own emotions and to use these emotions to facilitate performance. Therefore, we hypothesize:

Hypothesis 2. A person's personality traits are related to one's EI level.

Both parents' EI and personality may reflect largely the nature factors on EI development. If nurture factors are also important, the specific experiences that a person encounters may have significant impact on EI development. As an exploratory effort, this study examines the parent–child experiences as an objective indicator of the nurture effects. The parent–child relationship is one of the most important factors constituting the child's social environment and the reciprocal interactions between the child and the social environment have an enduring impact on the child's development (e.g., Bronfenbremer & Evans, 2000). For example, a friendly child is likely to evoke positive reactions from parents and these reactions may reinforce the child to be friendly. If either the mother or father, or both of them are full-time parents when the child grows up, it is likely that this child will have more experiences to interact with them. While not suggesting that parents who are working full-time do not provide emotional support to their children, what we argue is that a child who has a full-time parent has more chances to experience emotionally related issues with their parents and thus learn to handle his or her emotions more

appropriately. Furthermore, Polanyi (1962) argued that some types of knowledge and skills cannot be specified in detail. These knowledge types, often referred to as tacit knowledge, may be learnt by modeling after others (Choo, 1998: 117). Children can gain knowledge on practical skills through life experiences and by guidance from parents and other adults (Sternberg et al., 2001). EI is a type of tacit knowledge which may not be specified in detail and children may need to implicitly learn from their parents' actions. Having a full-time parent might provide more of such opportunities for children to model after their parents and thereby develop the children's EI skills. Therefore, we hypothesize:

Hypothesis 3. A person's EI level is positively related to having a mother or father who is a full-time parent when one is growing up.

5. Study 1

5.1. Sample and procedure

The sample came from universities in Singapore (164 students) and Hong Kong (126 students). These students were enrolled in psychology or business courses of which they were required to participate in research activities to fulfill their course requirements. The students did not come from the same class and although they were not volunteers, they could choose to participate in this research project or in other projects that were available. The students that chose to participate in this study were briefed on the purpose of the study before they were given two questionnaires. One was for them to complete and they were asked to give the other to one of their parents to complete. The parents completed the questionnaire independently and they did not have the scoring key. Instructions in the questionnaire requested the parents to seal the completed questionnaires in the envelopes provided so that their children do not see their responses. All invited students and parents returned their questionnaires.

5.2. Measures

5.2.1. Emotional intelligence

Both the parents and the students completed the same Wong's Emotional Intelligence Scale (WEIS), an EI measure developed for Chinese respondents (Wong et al., 2004). This scale consists of two parts, the first part contains 20 scenarios and respondents are forced to choose one option that best reflects their likely reaction in each scenario. An example of a scenario along with the two behavioral responses is: "You have an important examination tomorrow and you are studying hard in your room. Your family is watching a television program which you like very much as well. Since your house is small and so the noise of the television annoys you. You will: (a) ask your family to turn off the television but videotape the program so that you and your family can watch it together tomorrow after your examination; or (b) although a little bit uncomfortable, you put a headphone on (to reduce the noise) so that you can concentrate on your study." The second part contains 20 ability pairs and respondents are forced to choose one out of the two types of abilities that best represent their strengths. For each ability pair, one is EI-related while the other is related to other intelligence dimensions. An example of ability pair is: (a) ability to motivate yourself to face failure positively, versus (b) ability to learn to create an artistic object (e.g., china, painting).

The development of WEIS is reported in the journal article of Wong et al. (2004). Items for the scale were generated by a group of managers and two HR directors based on Salovey, Mayer and colleagues' definition of EI. After item generation and selection stages using independent samples, they showed that in a student ($n=158$ undergraduates) sample and a life insurance agent ($n=102$) sample that WEIS has acceptable convergent validity with the self-report EI measure used by Wong and Law (2002) and Law et al. (2004) ($R=55$) and discriminant validity with the Big-Five personality dimensions. WEIS also has incremental validity on life satisfaction (the student sample), job satisfaction and sales performance (insurance agent sample) after controlling for demographics and Big-Five personality. In a follow-up study, Wong, Wong and Law (in press) cross-validated the discriminant and incremental validity on two hotel employee samples ($n=129$ and $n=190$), and a nurse sample ($n=100$). Peng (2005) used WEIS to measure EI of two Chinese samples (703 employees in a variety of job positions, and 418 insurance agents). As expected, WEIS scores were related positively to deep acting (emotional labor strategy) and negatively to emotional exhaustion. Foo, Elfenbein, Tan, and Aik (2004) used WEIS to measure EI of 164 Chinese undergraduate students in Singapore. These students were then assigned to a negotiation exercise. As expected, WEIS scores were related to positive experiences during the negotiation. With these evidences, WEIS appears to be a reasonably valid measure of EI for Chinese respondents. The internal consistency reliability for the parent and student samples are .70 and .73, respectively.

From the measurement point of view, WEIS is a mixed scale because it contains both behavioral reactions to scenarios and self-evaluation items. However, it should be noted that all the items are based on the four ability dimensions described in the domain of EI, i.e., (1)

appraisal and expression of emotion in the self; (2) appraisal and recognition of emotion in others; (3) regulation of emotion in the self; and (4) use of emotion to facilitate performance. Thus, WEIS should not be confused with scales such as EQ-i that measure both ability and non-ability dimensions. From the study by Law et al. (2004), self-report EI measures can be reasonably valid if its development is based on the four ability dimensions.

5.2.2. Personality traits

We used the McCrae and Costa (1987) adjective scale to measure the Big-Five personality dimensions. The internal consistency reliability for neuroticism, extraversion, openness to new experiences, agreeableness, and conscientiousness of this sample were .80, .82, .67, .81, and .79 respectively.

5.2.3. Full-time parent

In the parent questionnaire, respondents were asked to indicate whether one or both of them were full-time parents during the period that the student grew up. "Yes" to this item was coded as 1 while "No" was coded as 0.

5.2.4. Control variables

Four variables that could affect students' EI were controlled. First, student's gender was measured with a dummy variable (female=0; male=1). EI could function differently for males and females. For example, Brackett, Mayer and Warner (2004) found that EI was related to negative behaviors for college age males but not for college age females. Second, parent respondents were required to report their family income in an open-ended question. As the income levels were different for Singapore and Hong Kong, this variable was standardized for respondents from each society before they were pooled together to form the final sample. Third, academic achievement of the students was measured by a proxy variable. Some evidence suggests that EI is positively related to intelligence (Schultea et al., 2004). The proxy variable was their scores in the university entrance examination and students were asked to report this result in the questionnaire. This variable was standardized for respondents from each society because different scales were used between the two societies. Fourth, a dummy variable, "REGION" was used to capture the potential effect of societies. Singapore was coded as 1 while Hong Kong as 0.

5.3. Results

Descriptive statistics and correlations among all measures are shown in Table 1. As shown in Table 1, EI was significantly correlated to some personality dimensions ($R=-.22$, $p<.01$, $R=.32$, $p<.01$, and $R=.27$, $p<.01$, for neuroticism, agreeableness, and conscientiousness respectively), their parent's EI ($R=.26$, $p<.01$), and full-time parent ($R=.12$, $p<.05$). Thus, Hypothesis 1 2 and 3 received some initial support. A hierarchical regression was used to test the three hypotheses. In step one, the control variables were entered in the equation. In step two, the parent's EI level was entered. In step three, the Big-Five personality dimensions were entered while in the final step, the variable full-time parent was entered. Results in Table 2 show that parent's EI was significantly related to student's EI ($\Delta R^2=.068$, $p<.01$) after accounting for the control variables. Thus, Hypothesis 1 was supported. Supporting Hypothesis 2, the Big-Five personality dimensions were significantly related to student's EI ($\Delta R^2=.138$, $p<.01$) after accounting for the control

Table 1
Descriptive statistics, and correlations among measures for Study 1

	Mean (S.D.)	1	2	3	4	5	6	7	8	9	10	11	12
1. Student's EI	25.2 (4.59)	(.73)											
2. Parent's EI	25.8 (4.64)	.26**	(.70)										
3. Full-time	.49 (.51)	.12*	.12*	–									
4. Income	.00 (1.00)	−.04	.16**	.19**	–								
5. Gender	.31 (.47)	−.11	−.17**	−.12*	−.03	–							
6. Exam	.00 (1.00)	.03	−.06	.09	.01	−.02	–						
7. Neuroticism	3.93 (.98)	−.22**	−.06	−.07	.02	−.24**	−.06	(.80)					
8. Extraversion	4.65 (1.03)	.04	.08	.05	.01	−.09	−.01	−.04	(.82)				
9. Openness	4.39 (.94)	−.09	.07	.06	.09	−.02	−.12*	−.11	.44**	(.67)			
10. Agreeableness	5.04 (.84)	.32**	.06	.08	−.09	−.11	.06	−.27**	.18**	.02	(.81)		
11. Conscientiousness	4.57 (.98)	.27**	.01	−.04	−.05	−.03	.09	−.29**	.24**	.15*	.36**	(.79)	
12. Region	.57 (.50)	.15*	.14	.17**	.00	−.04	.00	−.04	.31**	.33**	.10	.09	–

N ranges from 258 to 290; *$p<.05$; **$p<.01$.
Reliability figures in parentheses.

Table 2
Regression analysis for Study 1

Independent variables	Dependent variable: student's EI			
	M_1	M_2	M_3	M_4
Income	−.04	−.08	−.03	−.06
Gender	−.10	−.04	−.07	−.06
Exam	.04	.06	−.02	−.04
Region	.123	.10	.13*	.11
Parent's EI	–	.27**	.24**	.23**
Neuroticism	–	–	−.13*	−.12
Extraversion	–	–	−.00	−.00
Openness	–	–	−.18**	−.18**
Agreeableness	–	–	.22**	.21**
Conscientiousness	–	–	.14*	.15*
Full-time parent	–	–	–	.13*
R^2	.033	.101**	.239**	.254**
ΔR^2	–	.068**	.138**	.015**

N=250; *p<.05; **p<.01.

variables and parent's EI. Supporting Hypothesis 3, having at least one full-time parent had significant effects on student's EI (ΔR^2=.015, p<.05) after accounting for the control variables, parent's EI and the Big-Five personality dimensions. The beta weights for parent's EI and full-time parent were .23 (p<.01) and .13 (p<.05) respectively.

6. Study 2

6.1. Purpose of Study 2

Although the results in Study 1 supported our hypotheses, the incremental amount of variances of EI explained by the full-time parent variable was small and R^2 change was only 1.5%. Stronger evidence may be needed for the potential nurture effects on EI development before the search for specific experiences and activities that can be incorporated in EI training activities and programs. Study 2 used participants in their twenties to test the relationships of age and education major (in addition to full-time parent) with the participants' EI level. Firstly, past studies have found mixed effects of age on EI. While Hemmati, Mills and Kroner (2004) found no relationship between age and EI, Kafetsios (2004) found a positive relationship between these factors. The average age of participants in these studies was 37 years (S.D. 11.7) and 38.7 (S.D. 13.5) respectively while all the participants in Study 2 were in their twenties. If specific life experiences are important for EI development, university graduates may go through some of the most significant experiences in their twenties that shape their abilities to handle emotions. They have to consider making career choices, starting careers, being treated as independent and mature adults, probably having serious love affairs and considering marriage. As a proxy for experiences, age for people in their twenties should be positively related to their EI level. Thus, we hypothesize:

Hypothesis 4. For people in their twenties, age is positively related to the EI level.

Secondly, educational experiences may be different among people due to the specific subject content. For example, students majoring in the arts and social sciences may be exposed to more human and emotional issues than their counterparts majoring in the natural sciences or in engineering. Thus, we hypothesize:

Hypothesis 5. People majoring in the arts and social sciences have higher EI levels than people majoring in the natural sciences and engineering.

6.2. Sample and procedure

The sample was 152 graduate students in a university in Taiwan. A class of 50 graduate students in business subjects was asked to participate in this research project. They were also asked to invite two to three graduate students currently studying in the same university to join this project. After confirming the participant list, we followed the same procedures as in Study 1. Only some of the participants came from the same class and all participants volunteered to participate in this study. In addition to completing a questionnaire, participants also gave the parent questionnaire to one of their parents and participants received NT$300 (about US$10) when both questionnaires were returned.

6.3. Measures

The measures of EI, Big-Five personality dimensions, and control variables in Study 1 were used in this study. The internal consistency reliability for the parent and student EI are .71 and .68, respectively. The internal consistency reliability for neuroticism, extraversion, openness to new experiences, agreeableness, and conscientiousness of this sample were .80, .81, .78, .80, and .71 respectively. The graduate students reported their ages (open-ended question) which ranged from 22 to 29, with a mean of 23.2 (S.D. 1.54). A multiple-choice question was used to ask the major of their graduate programs. A dummy variable was created to represent this education experience (1=arts and social sciences; 0=natural sciences and engineering).

Table 3
Descriptive statistics, and correlations among measures for Study 2

	Mean (S.D.)	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Student EI	25.5 (4.35)	(.71)												
2. Parent's EI	26.2 (4.45)	.23**	(.68)											
3. Full-time	.56 (.50)	.16*	−.01	–										
4. Age	23.2 (1.54)	.23	−.02	−.09	–									
5. Major	.85 (.36)	.08	.09	−.09	.09	–								
6. Income	70.2 (31.5)	−.09	.01	.00	−.00	.04	–							
7. Gender	.45 (.50)	−.05	−.12	−.15	.02	−.24**	−.09	–						
8. Exam	364.9 (74.0)	−.06	−.02	.03	.10	.07	−.12	.08	–					
9. Neuroticism	3.84 (1.02)	−.28**	−.01	−.06	−.09	.21**	.04	−.22**	−.00	(.80)				
10. Extraversion	4.56 (.93)	.22**	.09	.14	−.06	.00	.15	−.08	−.20*	−.19*	(.81)			
11. Openness	4.70 (.96)	.14	.12	.09	−.02	.00	.06	.06	−.03	−.25**	.47**	(.78)		
12. Agreeableness	5.16 (.80)	.21**	.06	−.04	−.12	−.04	.10	−.05	−.22**	−.37**	.45**	.30**	(.80)	
13. Conscientiousness	4.78 (.86)	.23**	.10	.02	.02	−.14	.09	.02	−.10	−.35**	.31**	.42**	.30**	(.71)

N ranges from 147 to 152; *$p<.05$; **$p<.01$.
Reliability figures in parentheses.

6.4. Results

Descriptive statistics and correlations among all measures are shown in Table 3. As shown in Table 3, EI was significantly correlated to some personality dimensions ($R=-.28$, $p<.01$, $R=.22$, $p<.01$, $R=.21$, $p<.01$, and $R=.23$, $p<.01$, for neuroticism, extraversion, agreeableness, and conscientiousness respectively), their parent's EI ($R=.23$, $p<.01$), and full-time parent ($R=.16$, $p<.05$). The results of the hierarchical regression are shown in Table 4 and show that parent's EI was significantly related to student's EI ($\Delta R^2=.048$, $p<.01$). Thus, Hypothesis 1 was supported. Supporting Hypothesis 2, the Big-Five personality dimensions were significantly related to student's EI ($\Delta R^2=.113$, $p<.01$). Finally, the three proxy variables of life experiences accounted for significant explanation on student's EI ($\Delta R^2=.100$, $p<.01$). The beta weights for full-time parent, age, and major of graduate program were .21 ($p<.05$), .26 ($p<.01$), and .13 (n.s.) respectively in the last regression equation. Thus, Hypotheses 3 and 4 were supported while Hypothesis 5 was not.

Table 4
Regression analysis for Study 2

Independent variables	Dependent variable: student's EI			
	M_1	M_2	M_3	M_4
Income	−.10	−.09	−.12	−.14
Gender	−.07	−.04	−.08	.02
Exam	−.07	−.07	−.03	−.06
Parent's EI	–	.22**	.20*	.20**
Neuroticism	–	–	−.23*	−.18*
Extraversion	–	–	.14	.13
Openness	–	–	−.01	−.05
Agreeableness	–	–	.03	.13
Conscientiousness	–	–	.08	.09
Full-time	–	–	–	.21*
Age	–	–	–	.26**
Major	–	–	–	.13
R^2	.016	.065**	.178**	.278**
ΔR^2	–	.049**	.113**	.100**

$N=141$; *$p<.05$; **$p<.01$.

7. Discussion

7.1. Discussion of findings

In the last decade, EI has been proposed to be a potential important construct for human resource management. After clarifying its definition as a set of interrelated abilities about handling emotions, EI has been shown to have significant impacts on a person's mental health and job outcomes. However, very little is known about how EI is developed and it is unclear whether EI can be improved or enhanced through training activities and programs. This study attempts to provide some initial evidence for the potential importance of nurture factors in the development of EI.

The results of this study indicated that a large amount of variances in EI were left unexplained after controlling for parent's EI and the Big-Five personality dimensions which should have reflected largely the nature effects on EI. For the nurture effects, having a full-time parent was found to be positively related to the university students' EI. These results were cross-validated with a second sample of graduate students in Taiwan. Age, another indicator of the nurture effects of experience for people in their twenties, was also found to be significantly related to the graduate students' EI. It appears that there are potentially large nurture effects to enhance one's EI level. It is therefore worthwhile for researchers to identify other

experiences that may lead to the development of EI and to use these experiences to design effective EI training programs.

The study also has implications for the measurement of EI. A difference between WEIS used in this study and the more popularly used MSCEIT is that the scenario part of WEIS is more accurately described as a simulation test where respondents are asked to describe what one "would do". The MSCEIT is a knowledge based scale of what one "should do" with the assumption that knowledge enables performance. Both formulations usually lead to similar results although at times the results could be different (e.g., Rafaeli, Fiegenbaum, Foo & Tan, 2004). However, such differences are more likely to be found in individualistic cultures as compared to collectivistic cultures (Rafaeli et al., 2004). Since the present study was done in collectivistic cultures of Singapore, Hong Kong, and Taiwan, it is probable that the difference in wordings should not affect the findings.

EI scales such as WEIS, used in this study, and MSCEIT are usually compared against expert answers and future research can use these scales using consensus based measures. That is, for each scenario, indeed of choosing the correct answer from several choices respondents are asked the extent to which each choice is appropriate using a Likert type scale. For each choice, the average of all respondent ratings is taken as the correct answer. An individual's deviation from that average is taken as the level of accuracy of the individual's answer. Consensus based measures are particularly suited in EI research where the social skills nature of the field, the emerging nature of the field and the importance of the context make it difficult to decide what constitutes the correct answer (Legree, Psotka, & Heffner, 2004). In EI it is difficult to determine who the experts are and determining the experts is important in traditional social judgment tests because we compare each respondent's answer to the experts' answers. Consensus based measurements have been used in areas such as knowledge of safe driving speeds (Legree, Heffner, Psotka, Martin & Medsker, 2003), social intelligence (Legree, 1995) and provides more reliable answers than traditional Situational Judgment Tests (SJTs; Legree, 1995). It should be noted that precisely because of the importance of the context, WEIS instead of the more popularly used MSCEIT is more appropriate for this study because WEIS was developed for use with Chinese participants.

7.2. Limitations of the study

This study should be viewed as a first step towards examining nurture effects on EI development and several limitations must be noted. First, this study only measured the EI level of one parent and some of the nature effects might not be controlled for. Future research can measure the EI level of both parents to better control for the nature effects. However, even if the other parent accounts for similar amount of variances in the students' EI such as that found in this study (i.e., 6.8% and 4.8%), a large amount of variances cannot be accounted for by the parents' EI level. Thus, it appears that our conclusion of the potential of nurture effects will not be invalidated even if both parents' EI levels are taken into consideration. We also examined the gender composition of the chosen parent. In Study 1, 66.4% parent respondents were male; in Study 2, it was 57.8%. In Chinese societies, men as compared to women usually receive more education and this might account for the choice of fathers to complete the questionnaires. To examine whether this choice would have any impact on our results, we conducted *t*-tests to see whether the EI scores would be different between (1) male and female parent respondents, and (2) students who chose fathers versus mothers to complete the questionnaire. No significant differences were observed in both analyses. We also included parent's gender in our regression analyses. It was not a significant predictor of the students' EI and all the results reported in Tables 2 and 4 were essentially the same. Thus, parent's gender did not appear to have an effect on the findings.

The second limitation is that we only examined three objective indicators of the potential nurture effects and found significant effects for two of them (i.e., whether one of the parents is a full-time parent and age of the graduate students in their twenties). No other nurture effects were investigated in this study and this gap could be filled by future studies. The third limitation is that we did not find significant effects for the major of study on EI. However, it is pre-mature to conclude that educational experiences are not related to EI development. We only measured the major of the graduate program rather than the details of the educational experiences and most of the respondents in this study were in social science majors. Only 22 (14.9%) of the respondents majored in the natural sciences and in engineering and this might limit the predictive power of this variable. The beta weight and *p*-value of this variable were .13 and .10, respectively, which just failed to reach a marginally significant level. It is therefore worthwhile for future studies to examine the potential effects of educational experiences on EI level.

A fourth limitation is that although the parents' EI scores were higher than the students' in both Studies 1 and 2 these differences were marginal. It appears that this observation is not consistent with the basic argument that EI should be related to age. However, apart from age, we

may need to consider the social development of Singapore, Hong Kong, and Taiwan societies in the past 30 to 40 years. The majority of the parents did not have university education. In addition, 30 to 40 years ago (i.e., the period that parent respondents grew up) these societies were relatively simple and may not be as sophisticated as what they are today. Peng's (2005) collected WEIS scores on two samples in an inner area of China which is a less developed region. Although WEIS scores were related to deep acting and emotional exhaustion as expected, the average scores of these two samples were around 21, which were lower than other employee and university student samples in Hong Kong, Singapore, Taiwan and Beijing. In western and Japanese societies, the increasing trend of traditional intelligence scores from 1930s to 1980s has been observed and labeled as the Flynn effect (e.g., Flynn, 1984, 1987). Recent evidence suggests that this trend continues into at least the 1990s (Teasdale & Owen, 2005). The reasons for the Flynn effect are unknown, but the effect has been attributed to social factors such as educational experiences (Teasdale & Owen, 2005) and to biological factors such as improved nutrition and health care (Neisser, 1998). Therefore, although age may be a good proxy for the developmental experiences of students with similar backgrounds, it is clearly worthwhile for future research to investigate the actual life experiences that lead to EI enhancement.

Finally, extraversion was significantly correlated with EI in the sample of Study 1 but not in Study 2. There could be at least two possible reasons. First, it is simply a sampling error (the mean score for the Hong Kong and Singapore samples is 4.65, slightly higher than the Taiwanese sample of 4.56). Second, the Taiwanese sample comprises graduate students and the sample may not be directly comparable to the undergraduate students in Singapore and Hong Kong. Despite the differences in correlations, the overall effect of the Big-Five personality dimensions on EI is quite similar for the two samples ($\Delta R^2 = .138$ and .113). Thus, the two samples have greater similarity than differences in terms of the relationship between personality and EI.

7.3. Conclusion

Despite these limitations, there are theoretical and empirical implications of this study. Theoretically, future research can develop conceptual frameworks to identify potential antecedents of EI. Specifically, theories related to human development may be of particular relevance. For example, the Ecological Systems Theory of Child Development (e.g., Bronfenbremer & Evans, 2000) specifying the important components of the social environment can be modified and applied to the development of EI.

Practically, antecedents identified by the conceptual framework could be used to guide the design of EI training activities and programs. Furthermore, existing EI training activities and programs should be rigorously evaluated. For example, the particular experiences introduced by the training activities should be examined to see if they are related to one's abilities in handling emotions as specified by the four EI dimensions. In addition, the effectiveness of EI training activities and programs should be studied according to commonly accepted experimental designs. For example, designs with control groups and comparison between pretest and posttest EI levels should be used to test training effectiveness.

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