The Relationship between Personality, Emotional Intelligence, Learning Motivation and Learning Strategies of University Students in Hong Kong

Cecilia Nga-tak Li, Hong Kong Shue Yan University, cecilialnt@gmail.com
Man-tak Leung, Hong Kong Shue Yan University, mtleung@hksyu.edu

Abstract

Numerous research have been conducted to investigate the relationship between learning motivation and learning strategies (Chang, 2005; Pintrich, 1989; 1995; 1999). Pintrich (1995) suggested that intrinsically motivated students would apply cognitive learning strategies and deeper processing in the task. The roles of personality in relation to learning motivation have also been investigated by many researchers. Müller, Palekčić, Beck and Wanninger (2006) suggested that the big five personality factors were related to a continuum of motivational orientation, with six regulatory styles of self-determination located at points of amotivation, extrinsic motivation and intrinsic motivation. Besides personality traits, people usually neglect emotional aspects which are unconscious but important for sustaining and determining the motivational orientation (Müller et al.). Christie, Jordon, Troth and Lawrence (2007) suggested that emotional intelligence and motivation should be separate factors as proposed by Mayer and Salovey (1990). In contrast, Goleman (1995; 1998) argued that self-motivation is one of the subsets of emotional intelligence (as cited in Christie et al., 2007). In this study, the relationship between big five personality (Goldberg, 1990; John, 1990; McCrae & Costa, 1989), emotional intelligence theory (Goleman, 1995), self-determined motivation theory (Deci & Ryan, 1985), and self-regulated learning strategies (Pintrich, 1989) were investigated by structural equation analyses.

Two hundred and three Hong Kong university students participated in the present study. Four questionnaires which measure personality, emotional intelligence, learning motivation and learning strategies, were administrated to the participants. Personality and emotional intelligence were found to be significant predictors of learning motivation and learning strategies. This study has implications for reminding teachers, educators and educational psychologists the importance of students' personality and emotional intelligence in order to encourage the development of intrinsic motivation and meta-cognitive self-regulated learning strategies in students.

Introduction

There is no doubt learning motivation has being spotlighted in educational research throughout the recent decades. Learning motivation is one of the crucial factors

that determine the academic success of students and their learning behaviors (Deci, Vallerand, Pelletier, & Ryan, 1991). In order to promote students academic success, teachers and educators put much effort in fostering students' development of higher levels of learning motivation and more effective learning strategies. As a consequence, there is a growing interest to study the individual aspects like personality and emotional intelligence in affecting students' motivation. Everyone acts and thinks differently as we possess unique types of personality. Müller et al. (2006) stated that students with different personality show different motivational orientations. Just like one's trait, emotional intelligence is one of the individual competences which vary among individuals. Some people are more capable to handle own feelings and understand others' emotion while some are not. Therefore, it is worthwhile to see how students' emotional intelligence and personality are related to their learning motivation and use of learning strategies. To promote the use of effective learning styles, teachers and educators can help students to learn of their own personal interests and gain knowledge of what they really want to know by understanding their personality and emotional intelligence.

Literature Reviews

Personality and learning motivation

In Müller et al. (2006)'s study of personality and self-determined learning motivation, the five personality factors (Big Five) were found to be related to different levels of perceived self-determination (as shown by Self-determination Index, SDI; Vallerand,1997; as cited in Müller et al.,2006). For students who are conscientious, they set clear goals and establish skills to create person-environment interaction. They tend to be self-motivated and intrinsically motivated to learn. Extraversion was found to be related to external and interest-related motives. Similar to the results of extraversion, agreeableness is correlated with social as well as personal motives. Neurotic individuals were found to have lower motivation for personal interest. Those who scored high in openness would like to try new activities with their own needs and incentives. In overall, students who scored high in conscientiousness, agreeableness and openness were more self-determined motivated in their learning (Müller et al., 2006).

Moreover, the role of big five in prediction of undergraduates' academic motivation was investigated by Komarraju, Karau and Schmeck (2009). Similar to the results of Müller et al. (2006) s' study, Komarraju et al. (2009) suggested that conscientious students were more self-motivated to engage in tasks and study. Students who scored

high in openness were comparatively more intrinsically motivated and they found that learning was interesting. On the other hand, extroverted and emotionally unstable students were extrinsically motivated only for pursuing a college degree and disagreeable students were less likely to engage in the classroom activities and would display antisocial behaviors (Komarraju et al., 2009).

Emotionally intelligent and learning motivation

It is argued that self-motivation is one of the competencies of emotional intelligence (Goleman, 1995). This view includes motivation as the factor of emotional intelligence. Other researchers stated that motivation only links to emotional intelligence rather than a factor of it (Christie et.al, 2007; Mayer & Salovey, 1990). In Christie et al. (2007)'s study, they investigated the relationship between Mayer and Salovey (1990)'s conceptualization of emotional intelligence and McClelland (1961)'s theory of motivation (the motivational needs of achievement, affiliation and power). The results supported Mayer and Salovey (1990)'s views that motivation only co-varied with emotional intelligence and did not form a sub-component of emotional intelligence. This contradicted with Goleman's conceptualization of personal drive to be a subset of emotional intelligence. As there are still controversies in the relationship between emotional intelligence and motivation, these studies encourage further research to confirm the link between the two constructs by using different measures of motivation like goal-attainment model or self-determination perspective, and other self-reporting measures of emotional intelligence.

Learning Motivation and Learning Strategies

Motivation links closely with the use of strategies in a task. Students who are intrinsically motivated students would apply more cognitive strategies and deeper processing in the task (Pintrich, 1995). Pintrich (1999) suggested that self-regulation is sustained by combining both motivation and cognition in learning. Self-regulatory strategies can be facilitated by promoting the mastery goals (Pintrich, 1999). Students who focused on mastering the tasks by self-improvement would adopt more cognitive strategies and self-regulatory strategies. On the other hand, students who focus on getting high marks and pleasing others (extrinsic goals) were found to use less cognitive strategies and self-regulatory strategies (Pintrich, 1999).

Chang (2005)'s study also stated that motivation is one of the factors that affect the uses of learning skills. The study showed significant relationship between the qualities of motivation and the use of learning strategies. Intrinsic motivation was significantly

correlated with cognitive strategies (Chang, 2005). External motivation was found to be negatively correlated with cognitive strategies. This showed that students who focus on external rewards in learning are less likely to pay effort and time in deep-processing strategies, especially engaging in cognitive processes like elaboration and organization, rather they would apply skills like note-taking or outlining to achieve academic success (Chang, 2005). On the other hand, intrinsically motivated students are more likely to evaluate and plan their learning with the use of deeper mental processing (Chang, 2005).

The study of learning motivation and learning strategies were consistent by showing the strong linkage between them. The authors especially highlighted the relationship between intrinsic motivation and the two types of learning strategies, cognitive and metacognitive strategies. Their works contributes to promote environment which can cultivate more intrinsic regulation in students and help them to develop higher order of learning strategies.

Hypotheses

The present study intends to investigate the relationship between personality, emotional intelligence, learning motivation and learning strategies among undergraduates in Hong Kong. The present study hypothesized that:

H1: There were significant relationships between personality and learning motivation at the $p = .05$ level. Particularly, openness, conscientious, extraversion, agreeableness and neuroticism would have significant relationship with intrinsic motivation to know, intrinsic motivation to accomplish, intrinsic motivation to experience stimulation, extrinsic motivation identified regulation, extrinsic motivation introjected regulation, extrinsic motivation external regulation, and amotivation.

H2: There were significant relationships between emotional intelligence and learning motivation at the $p = .05$ level. Particularly, knowing ones emotion, managing emotions, motivating oneself, recognizing emotions in others and handling relationships would have significant relationship with intrinsic motivation to know, intrinsic motivation to accomplish, intrinsic motivation to experience stimulation, extrinsic motivation identified regulation, extrinsic motivation introjected regulation, extrinsic motivation external regulation, and amotivation.

H3 and H4: There were significant relationships between learning motivation and learning strategies at the $p = .05$ level. Particularly, intrinsic motivation to know, intrinsic

motivation to accomplish, intrinsic motivation to experience stimulation would have positive significant relationship with rehearsal, elaboration, organization, critical thinking and metacognitive self-regulation (H3). Extrinsic motivation identified regulation, extrinsic motivation introjected regulation, extrinsic motivation external regulation and amotivation would have negative significant relationship with rehearsal, elaboration, organization, critical thinking and metacognitive self-regulation (H4).

Method

Participants

The questionnaires were administrated to 203 undergraduates in Hong Kong. The average age was 20.8 years (*SD =1.53),* and 37.9 % (N = 77) were male and 62.1% (N = 126) were female. Samples were drawn from the universities and institutions in Hong Kong including a number of majors, covering arts, sciences, and social sciences.

Procedure

Data collection was started from October 2010 to March 2011. A pilot study (N = 63) was conducted in December 2010. Participants in the pilot study were drawn from one Hong Kong private university studying Introductory Psychology in winter 2010. Other samples were collected by sampling from other tertiary institutes in Hong Kong. All participants were informed that their participation was voluntary and their responses would be confidential. Participants were given a consent form and a debriefing section respectively before and after the study.

Measures

All questionnaires were translated from English to Chinese. The whole set of questionnaires was divided into five parts: demographic information (age, sex, name of institution, level of study, and faculty of study), learning motivation questionnaire, learning strategy questionnaire, emotional intelligence questionnaire and personality questionnaire.

Big Five Inventory (BFI). This scale measures the five personality types which include Openness (α=.76), Conscientiousness (α=.70), Extraversion (α =.79), Agreeableness (α=.55), and Neuroticism (α=.75) (John, Donahue, & Kentle, 1991). The questionnaire contains 44 items on a 5-point Likert Scale (1 represents “Strongly disagree” and 5

represents “Strongly agree”).

Emotional Intelligence Scale of Adolescent (EIS). This scale was developed by Sun (2004) and based on Goleman (1995)’s five domains of emotional intelligence: “Knowing one’s emotion” (α=.35), “managing emotions” (α=.56), “motivating oneself” (α=.66), “recognizing emotions in others” (α=.74) and “handling relationships” (α=.69). The Chinese version of questionnaire has 27 items on a 4-point Likert Scale (1 represents “I never do that” and 4 represents “I always do that”).

Academic Motivation Scale (AMS). This scale was used to measure the learning motivation of students based on SDT (Vallerand et al., 1992). There are seven subscales on the AMS: Amotivation (AMOT) (α=.82), External Regulation (EMER) (α=.88), Introjected Regulation (EMIN) (α=.72), Identified Regulation (EMID) (α=.82), Intrinsic Motivation to Experience Stimulation (IMES) (α=.83), Intrinsic Motivation to Accomplish (IMTA) (α=.79) and Intrinsic Motivation to Know (IMTK) (α=.73). AMS contains 28 items on a 5-point Likert Scale (1 represents “Does not correspond at all” and 5 represents “corresponds exactly”).

Motivated Strategies for Learning Questionnaire (MSLQ). This scale comprises of two parts--motivation scales and learning strategies scales, which measures the two broad dimensions of self-regulation: Motivation and learning strategies (Pintrich & De Groot, 1990). The present study only adapted the Learning Strategies Scale regarding the cognitive and metacognitive strategies. The cognitive and metacognitive strategies section contains 35 items on a 7-point Likert Scale (1 represents “not at all true of me” and 7 represents “very true of me”) (α=.87). The five strategies include rehearsal, elaboration, organization, critical thinking and metacognitive self-regulation.

Results

Descriptive Statistics and Correlational Analysis

The mean, standard deviations and correlations for personality, emotional intelligence, learning motivation and learning strategies are indicated in Table 1 below.

Table 1

Means, Standard Deviation, Intercorrelations for Personality, Emotional Intelligence, Learning Motivation and Learning Strategies.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1.Openness	1																					
2.Conscientiousness	.15*	1																				
3.Extraversion	.22**	.00	1																			
4.Agreeableness	.23**	.20**	.05	1																		
5.Neuroticism	-.013	-.04	-.26**	-.19**	1																	
6.Knowing one's emotion	.11	.20**	.22**	.24**	-.02	1																
7.Managing emotions	.02	.03	.10	.15*	-.46**	.05	1															
8.Motivating oneself	.19**	.19**	.27**	.18*	-.20**	.42**	.12	1														
9.Recognizing emotions in others	.31**	.10	.17*	.20**	.02	.21**	-.11	.21**	1													
10.Handling relationship	.17**	.15*	.38**	.27**	.02	.42**	-.12	.46**	.42**	1												
11.IMTK	.28**	.24**	.11	.11	-.02	.11	.00	.34**	.15*	.19**	1											
12.IMTA	.09	.17*	.05	.03	.06	-.06	.04	.16*	.07	.13	.45**	1										
13.IMES	.22**	.07	.13	.07	-.06	.05	-.09	.23**	.19**	.24**	.48**	.44**	1									
14.EMID	-.13	.00	-.04	.06	.17*	.20**	.02	.22**	.01	.11	.16*	.08	.11	1								
15.EMIN	-.06	.05	-.02	-.02	.15*	.03	-.15*	.09	.17*	.00	.17*	.35**	.20**	.37**	1							
16.EMER	.01	-.02	-.04	-.03	.27**	.13	-.15*	.01	.11	.06	-.11	-.08	.02	.44**	.45**	1						
17.AMOT	-.06	-.24**	.10	-.14	-.07	-.09	-.07	-.24**	.03	-.08	-.29**	-.04	-.01	-.23**	.03	.06	1					
18.Rehearsal	.07	.12	.03	.23**	.03	.15*	.05	.13	.17*	.13	.09	.15*	.09	.28**	.25**	.17*	-.12	1				
19.Elaboration	.26**	.17*	.06	.19**	-.08	.04	.03	.15*	.14*	.07	.24**	.11	.26**	.14*	.15*	.06	-.11	.48**	1			
20.Organization	.18*	.24**	.19**	.21**	-.03	.17*	-.01	.21**	.13	.19**	.20**	.21**	.20**	.14*	.16*	-.01	-.17*	.60**	.59**	1		
21.Critical Thinking	.34**	.07	.17*	.12	-.15*	-.04	.08	.11	.20**	.07	.15*	.13	.24**	.00	.05	.05	.02	.26**	.64**	.43**	1	
22.Metacognitive self-regulation	.18*	.34**	.11	.17*	-.06	.13	.08	.25**	.14	.14*	.25**	.22**	.24**	.22**	.15*	.03	-.22**	.52**	.66**	.54**	.53**	1
M	3.18	3.14	2.94	3.47	3.13	3.04	2.65	2.99	2.90	3.00	3.69	3.35	3.02	4.05	3.53	4.04	2.02	4.43	4.58	4.51	4.08	4.18
SD	0.63	.056	.066	.045	.058	.043	.055	.051	.063	.046	.068	.078	.078	.072	.076	.080	.081	0.97	0.92	1.00	0.95	0.69

Note; *p<0.05, **p<0.01; IMTK= Intrinsic motivation to know; IMTA= Intrinsic motivation to accomplish; IMES = Intrinsic motivation to experience stimulation; EMID = Extrinsic motivation identified regulation; EMIN = Extrinsic motivation introjected regulation; EMER = Extrinsic motivation external regulation; AMOT = Amotivation

Reliability Analysis

Table 2 shows the reliabilities of the four constructs under studied. The internal consistencies of the five subscales of personality were satisfactory to good, ranging from .56 to .80. Whereas the internal consistencies of the five subscales of emotional intelligence were ranging from .53 to .77. For learning motivation, the internal consistencies of the seven subscales were good and satisfactory, ranging from .77 to .84. The internal consistencies of the five subscales of learning strategies were ranging from .54 to .77.

Table 2

Reliability Coefficient Alphas for Personality, Emotional Intelligence, Learning Motivation

and Learning Strategies.

Scales	**Coefficient Alphas**
Personality	
1. Openness	0.80
2. Conscientiousness	0.72
3. Extraversion	0.77
4. Agreeableness	0.56
5. Neuroticism	0.72
Overall	0.71
Emotional Intelligence	
1. Knowing one's emotion	0.53
2. Managing emotions	0.65
3. Motivating oneself	0.76
4. Recognizing emotions in others	0.75
5. Handling relationships	0.77
Overall	0.81
Learning Motivation	
1.Intrinsic Motivation to Know (IMTK)	0.81
2.Intrinsic Motivation to Accomplish (IMTA)	0.80
3.Intrinsic Motivation to Experience Stimulation (IMES)	0.77
4.Extrinsic Motivation Identified Regulation (EMID)	0.78
5.Extrinsic Motivation Introjected Regulation (EMIN)	0.78
6.Extrinsic Motivation External Regulation (EMER)	0.81
7.Amotivation (AMOT)	0.84
Overall	0.81
Learning Strategies	
1.Rehearsal	0.54
2.Elaboration	0.77
3.Organization	0.64
4.Critical Thinking	0.73
5. Metacognitive self-regulation	0.72
Overall	0.89

Path Analyses

Analyses of observed and latent variables in this study were conducted by using structural equation modeling (SEM) generated by LISREL 8.51. Path analysis models in SEM hypothesized the predictive relations between variables (observed or latent) with theoretical grounding (Shipley, 2000; as cited in Pugesek, Tomer, & Eye, 2003). The path models indicate the direct or indirect effect of independent variables on dependent variables. Also, SEM concerns more on the confirmatory aspect of the proposed theoretical models (Raykov & Marcoulides, 2000; as cited in Pugesek, Tomer, & Eye, 2003). As shown in Model 1 and 2, the five factors of personality and emotional intelligence respectively act as the antecedents in predicting learning strategies with mediator learning motivation. There were quite a number of significant findings in the two models.

The results showed that openness, conscientiousness and neuroticism had significant relationships with the factors of learning motivation (see Model 1) in predicting learning strategies. From the second level (learning motivation) to the third level (learning strategies) of the path diagram, the factors IMTK, IMES, EMID, EMIN and AMOT were significantly related to learning strategies. In the correlation among the antecedents, neuroticism had negative correlation with the other four factors, whereas openness, conscientiousness, extraversion and agreeableness correlated positively with one another.

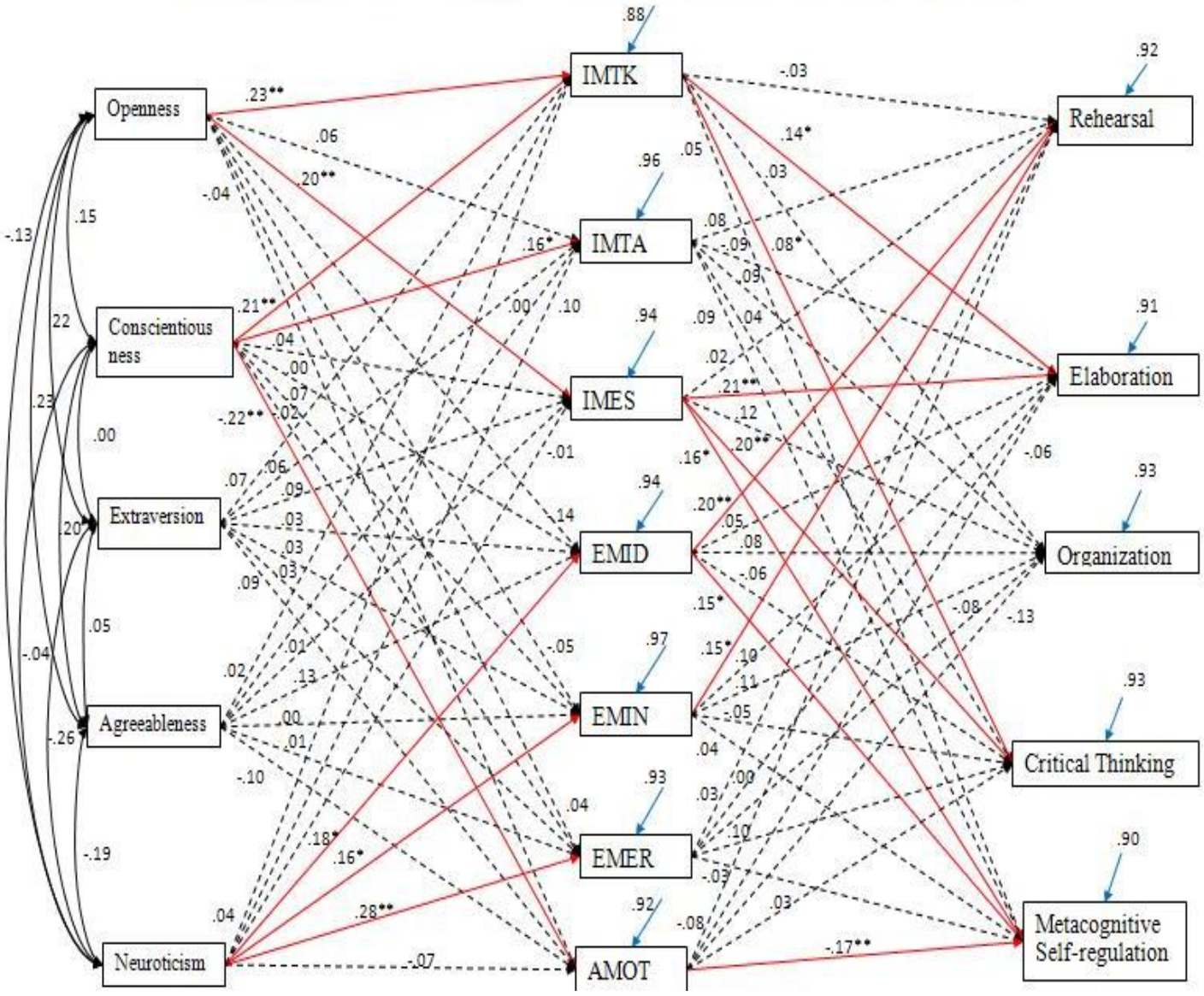
For the domain “motivating oneself” of emotional intelligence, it was found to be positively related to IMTK, IMTA, IMES, EMID and negatively related to AMOT with statistically significances (see Model 2). The relationships between second level and the third level of Model 2 were similar to that of Model 1. Among the correlation between the five antecedents, only “managing emotion” was found to be correlated negatively with “recognizing emotion in others” and “handling relationship”, whereas other factors correlated positively with one another.

Model 3 and 4 show the predictive relation of personality and emotional intelligence with learning motivation and learning strategies. A satisfactory goodness of fit index of personality model was obtained (χ^2 (52) = 211.41, *GFI* = .85, *CFI* = .78, *RMSEA* = .12) (see Model 3). This fairly confirmed that openness and conscientiousness were significant indicators of personality to predict learning strategies with mediator learning motivation.

For the emotional intelligence model, a satisfactory goodness of fit index was also

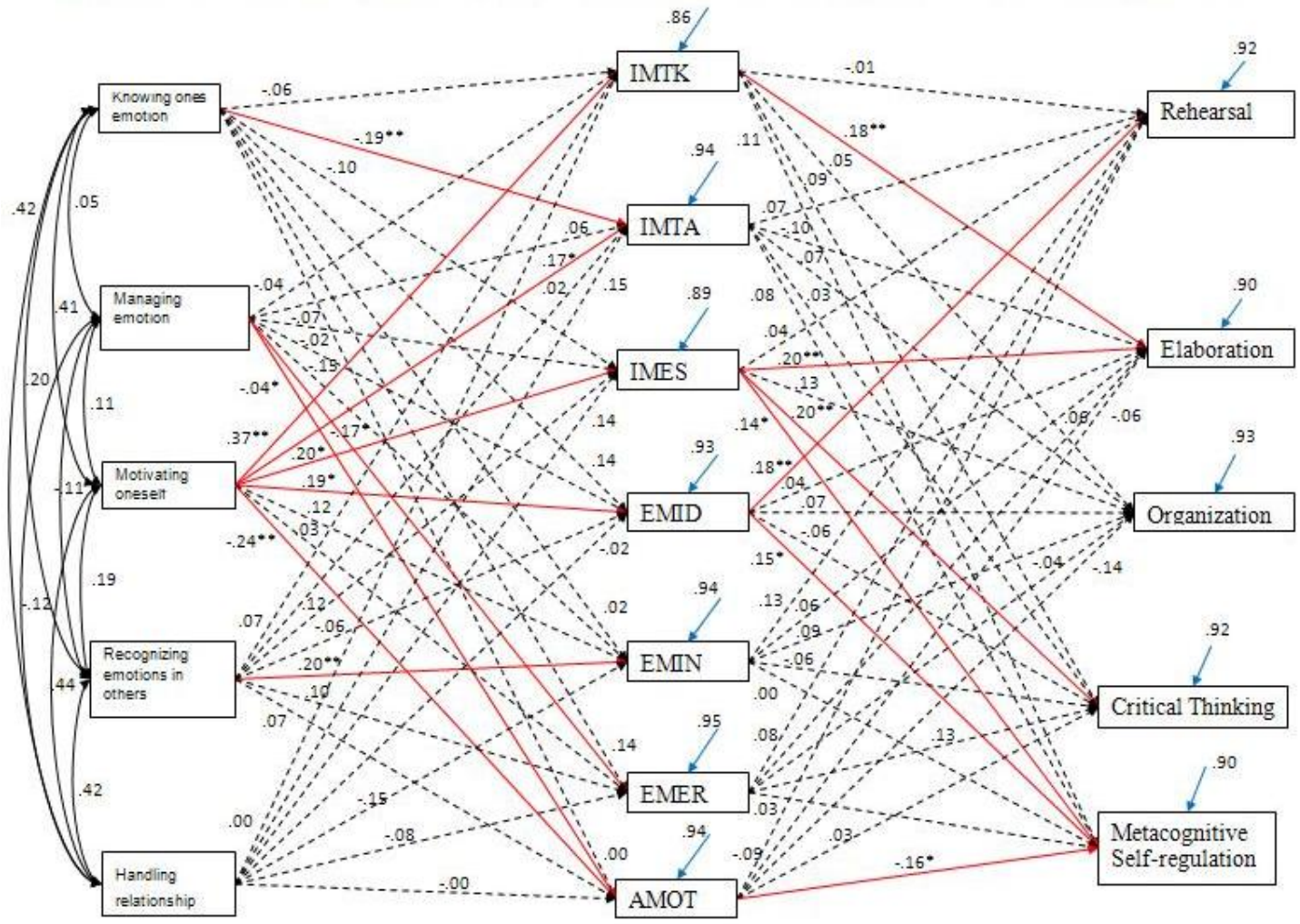
obtained ($\chi^2(63) = 198.74$, *GFI* = .87, *CFI* = .83, *RMSEA* = .09) (see Model 4). This confirmed that “knowing one’s emotion”, “motivating oneself” and “recognizing emotion in others” were significant indicators of emotional intelligence to predict learning strategies with mediator learning motivation.

Model 1. *The path model showing the effects of personality on learning motivation and learning strategies*.



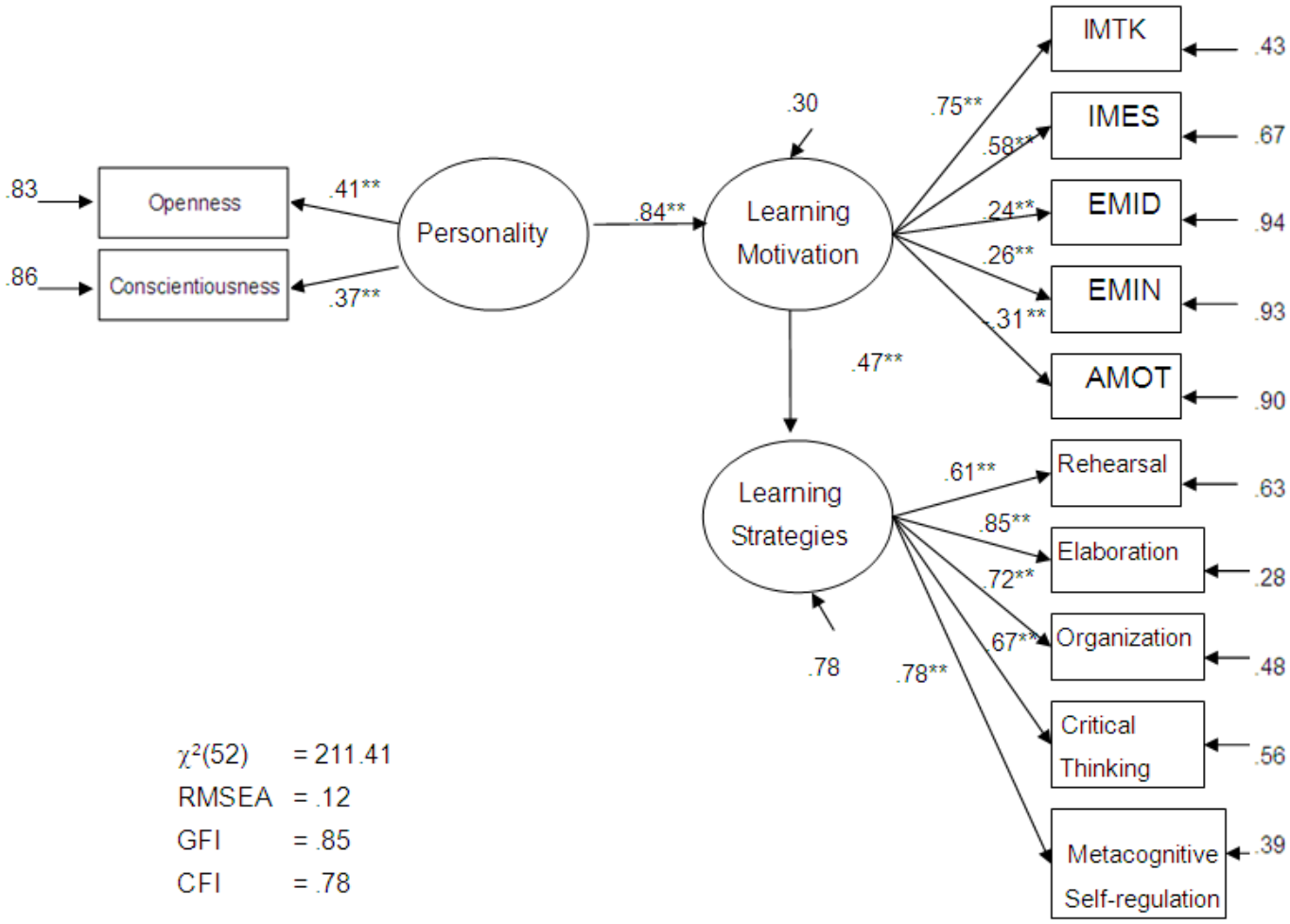
Note: *p<0.05, **p<0.01; IMTK= Intrinsic motivation to know; IMTA= Intrinsic motivation to accomplish; IMES = Intrinsic motivation to experience stimulation; EMID = Extrinsic motivation identified regulation; EMIN = Extrinsic motivation introjected regulation; EMER = Extrinsic motivation external regulation; AMOT = Amotivation.

Model 2. *The path model showing the effects of emotional intelligence on learning motivation and learning strategies.*



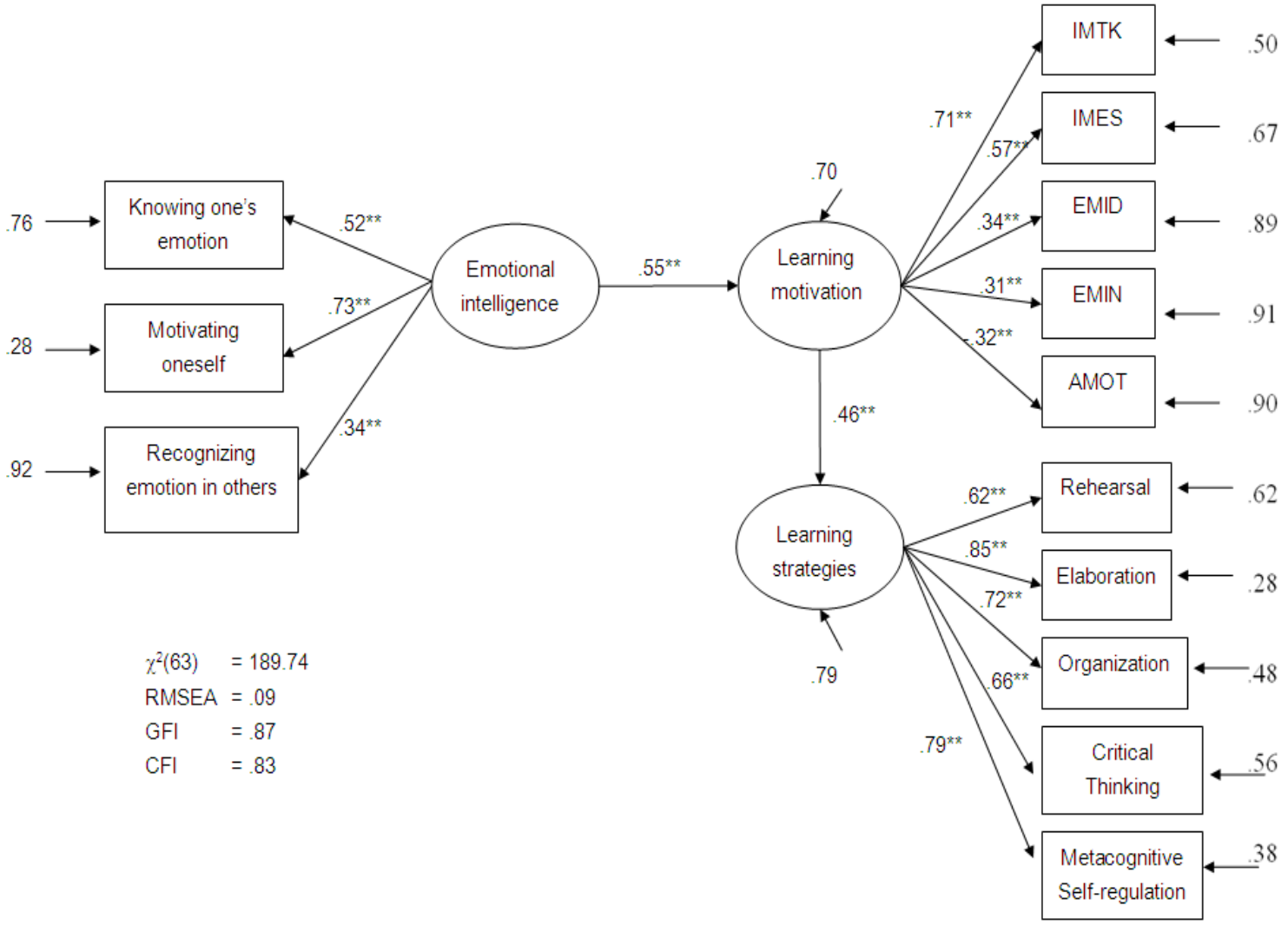
Note: *p<0.05, **p<0.01; IMTK= Intrinsic motivation to know; IMTA= Intrinsic motivation to accomplish; IMES = Intrinsic motivation to experience stimulation; EMID = Extrinsic motivation identified regulation; EMIN = Extrinsic motivation introjected regulation; EMER = Extrinsic motivation external regulation; AMOT = Amotivation.

Model 3. *The structural model of the links between personality, learning motivation and learning strategies.*



Note: RMSEA = Root Mean Square Error of Approximation; GFI = Goodness of Fit Index; CFI = Comparative Fit Index

Model 4. *The structural model of the links between emotional intelligence, learning motivation and learning strategies.*



Note: RMSEA = Root Mean Square Error of Approximation; GFI = Goodness of Fit Index; CFI = Comparative Fit Index

Discussion

Based on the results of Model 1, openness and conscientiousness were found to be the most significant indicators to influence learning motivation and further predict learning strategies. This supports Müller et al. (2006)s' suggestion that students who scored high in openness and conscientiousness are likely to be self-motivated in their learning. Students with high scores in openness are more curious about different new things. They like to learn and gain knowledge with their own needs and incentives. They also like to experience learning which is artistic and creative so that they can experience stimulation for self-fulfillment (Müller et al., 2006). Conscientious students are careful and have interests in tasks. They are disciplined and organized that they tend to have intrinsic wills to accomplish in their study (Komarraju, Karau, & Schmeck, 2009). Those students pay more effort in their study because they have intrinsic motivation to learn and gain new knowlwdge (Müller et al., 2006). Conscientiousness was also found to be significantly related to amotivation in a negative manner. The finding was supportive that conscientious students tend to learn intrinsically and are target-oriented. We can see that students who are neurotic tend to be extrinsically motivated. They are motivated only for pursuing a university degree. They are dominant assured and learn mainly for rewards or praise. Neurotic individuals get nervous easily and they are emotionally instable with lower motivation for personal interest.

Significant relationships were also found between emotional intelligence and learning motivation. This provides new findings between Goleman (1995)'s model of emotional intelligence and Deci and Ryan (1985)'s self-determination perspective of motivation. Students understand their own feelings (knowing one's emotion) tend to be intrinsically motivated. They know how to control their emotion regarding learning and move towards to accomplishment. Besides, students who know how to manage emotion have the capacity to handle anxiety and face ups and downs in life. This helps students to learn about what they like but not by external sources like rewards and praises (Goleman, 1995). Another domain "motivating oneself" in Goleman (1995)'s model, was found to be significantly related to all domains of intrinsic motivation. Students with this quality are productive and able to control emotional impulses (Goleman, 1995; as cited in Culver, 1998). They manage emotions so as to achieve the goals of self-motivation and mastery. Moreover, students who can marshal emotion would learn of self-interest and accomplishment, which is important for achieving self-goals (Salovey & Mayer, 1990). As these individuals know how to motivate themselves and control emotion, they are less likely to have no motivation in learning. Yet, there is an interesting finding that students

who can recognize emotions in other tend to be extrinsically motivated with introjected regulation. That is students' motivation to learn is only meant to impress others like their teachers or parents. One possible explanation is that these students are better to perceive emotions in others, and so they would determine their motives of action just depend on others' feelings and emotional responses. This supports those who scored high in the domain of "recognizing emotions in others" that they are more motivated by others' comments and expectation. In overall, students who know their emotion well and are able to recognize others' emotion possess higher levels of learning motivation with higher orders of self-regulated learning.

The findings highly support the predictions of the relationship between learning motivation and learning strategies that concurs with previous studies (Chang, 2005; Pintrich, 1995). The five domains of cognitive and metacognitive strategies are divided as lower (rehearsal) and higher (elaboration, organization, critical thinking and meta-cognitive self regulation) orders of self-regulated learning (Pintrich, 1989). The present study resembles those reported by Pintrich (1995) that intrinsic motivation was significantly correlated with higher order of self-regulated strategies. Students who are intrinsically motivated to know and experience stimulation tend to apply strategies of elaboration, critical thinking and metacognitive process in learning. They tend to use more cognitive strategies and deeper processing in tasks. These students would apply elaboration strategies like paraphrasing and summarizing of learning materials. Also, they would evaluate the received information with own ideas and apply knowledge in new situations. Intrinsic motivation was also significantly related to the highest order of strategies. Metacognitive strategies include setting goals to direct themselves in learning, skimming materials before studying, figuring out confusion in leaning materials, changing new ways of learning according to levels of difficulty of materials, and deciding what to learn from a topic, etc. Intrinsically motivated students would use the higher orders of learning strategies because they are willing to pay effort in learning to seek out novelties, knowledge and challenges (Deci & Ryan, 1985).

Extrinsic motivation of identified regulation was found to be significantly related to rehearsal and metacognitive self-regulation. This did not support what Pintrich (1995) and Chang (2005)s' suggestion that there were no significant correlation between extrinsic motivation and metacognitive self-regulation. Undergraduates who just want to finish a degree successfully would probably use some basic learning strategies in a task, like rehearsal because they do not pay effort in self-regulated strategies. They would practice and recall the learning materials many times so that they can memorize them

successfully (Chang, 2005). However, this study found that these students who tend to motivate themselves due to identification with long-term objectives (extrinsic motivation indentified regulation) would also apply metacognitive learning strategies. One of the possible explanations is that the inventory MSLQ used to measure learning strategies was developed by using a social-cognitive view, which assumes students' learning strategies can be learned and controlled by themselves (Duncan & McKeachie, 2005). This means that the strategies adopted by students can be changed according to the nature and difficulties of tasks. Those undergraduates who are not interested in a subject or extrinsically motivated may apply both rehearsal and metacognitive strategies like monitoring, regulating and planning, because they can control the use of these strategies regarding the assigned tasks in the lessons, at home or during examination. Probably they would apply rehearsal skills to finish the less difficult tasks or quizzes in the lessons. While handling some tasks that are more difficult, like writing essays in examination, they would use more high-ordered strategies to ensure that they can pass the examination and obtain a degree successfully. They may monitor their comprehension and regulate the reading speed during examinations. They would use any possible strategies to execute their goals. The social-cognitive view of MSLQ explains why undergraduates with extrinsic motivation also apply metacognitive strategies in learning. It is not surprisig that amotivation was found to be significantly related to metacognitive strategies in a negative manner. As metacognitive strategy is placed in the highest level of the five learning strategies, undergraduates without any motivation to learn probably would not apply theses high level of cognition in learning. It is because they are not motivated by anything they valued and they think interested, so they may not put effort and use the self-regulated strategies in learning.

Conclusion

In overall, students with intrinsic motivation would use a more metacognitive of learning strategies. On the other hand, those with extrinsic motivation would use lower level of learning strategies. It is strongly suggested that students should be taught and cultivated with the values of possessing intrinsic motivation in learning and developing self-regulated learning strategies for obtaining meaningful learning experiences. We should not ignore one's personality and emotional intelligence, as they are important antecedents to influence one's learning motivation and learning strategies. Teachers, educators and educational psychologists are encouraged to pay attention to the students' development in personality and emotional intelligence when promoting their motivation and strategies to learn. Improvement of further research should amend some irrelevant

items in the respective questionnaires and include more samples in the study. For the cultural issues, attentions should be paid on the language equivalency in translated version of questionnaires when conducting similar research in Hong Kong. Future research on emotion and motivation can also include other emotionally related constructs like Achievement Emotion, which can give new insights and findings to the educational field. Furthermore, longitudinal research can investigate how the transitional process in one motivation orientation to another, for example from extrinsic to intrinsic motivation, would affect the use of learning strategies.

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