

Cognitive Emotion Regulation Types among Malaysian Graduates

Soheila Panahi ^{1*}, Aida Suraya Md Yunus ², Samsilah Bt. Roslan ¹

1. Faculty of Educational Studies, University Putra Malaysia, 43400 Serdang, Selangor, Malaysia
2. Faculty of Science, University Putra Malaysia, 43400 Serdang, Selangor, Malaysia
sflowers226@gmail.com, soheilapanahi58@gmail.com

Abstract: This study aims to discern the convergent and discriminant validity of cognitive emotion regulation and to make a comparison of cognitive emotion regulation based on demographic profile of graduate students. A total number of 534 graduate students of age from 19 to 45 years were surveyed in Universiti Putra Malaysia. The convergent and discriminant validity analysis using Stats Tools Package revealed that there are high cognitive emotion regulation strategies among Malaysian graduate students. The descriptive analysis showed that the mean score was highest for positive reappraisal, followed by planning. The ANOVA test showed a significant difference in reappraisal strategy between students from different faculties. Similarly, the ANOVA test showed that there was a significant difference between planning and acceptance strategies among students of different races. The ANOVA further revealed the significant differences in self-blame, other-blame, and rumination strategies among different age groups. The independent t-test also revealed that there were significant differences in self-blame, other-blame, catastrophizing, and putting into perspective between males and females. However, the analysis showed no significant differences in cognitive emotion regulation strategies based on the semester, family size, marital and employment status between graduates.

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1. Introduction

Investigation on emotion regulation among university students became a significant research topic. Previous investigations on American graduates showed that all graduate students with greater academic, environmental stress were associated with maladaptive coping skills and all graduate students using more adaptive coping skills had high psychological well-being (Yang, 2010). In the last few years, the focus was on how cognition regulates emotion that is cognitive emotion regulation. The regulation of emotions is inevitable in relation to individual life. People regulate their emotions or feelings through cognitions or cognitive processes so that they would not be influenced by the power of these emotions, especially during or after they are under pressure (Garnefski, Kraaij, & Spinhoven, 2002).

Garnefski and Kraaiji (2007) define cognitive emotion regulation as the cognitive way of consciously managing and regulating information that causes emotional arousal. In addition, they hold that cognitive emotion regulation is a procedure that aids in handling emotion after the occurrences of traumatic events. Based on Garnefski, Kraaij, and Spinhoven (2001), the nine main emotion regulation strategies, which have gained specific attention, are as follows:

1. Acceptance strategy refers to thoughts of accepting what you have practiced and giving up yourself to what has happened
2. Positive refocusing strategy refers to thinking about enjoyable and satisfactory issues as a substitute for thinking about real events.
3. Refocus on planning strategy refers to thinking about what steps to take and how to manage negative events.
4. Positive reappraisal strategy refers to thoughts of considering a positive meaning to the event based on personal growth.
5. Putting into perspective strategy refers to the thoughts of reducing the significance of the event or focusing on its relativity when made comparison to other events.
6. Self-blame strategy refers to thoughts of blaming someone for what he or she has experienced.
7. Rumination strategy refers to thinking about the feeling and thoughts related to an unpleasant event.
8. Catastrophizing strategy refers to thoughts of clearly focusing on the horror of an experience.
9. Finally, blaming others strategy refers to thoughts of putting the blame of what you have experienced on others.

Zaid, Chan, and Ho (2007) examined emotional problems among Malaysian private medical school's students. They used the cross-sectional method and out of 292 undergraduate students, a total of 253 students filled the questionnaires. They found that the prevalence of emotional problems between medical students was high. A total of 117 students (46.2 %) were found to have emotional problems. In general, the capability to control negative and positive emotions in a context-sensitive manner is a hallmark of psychological well-being (Gross, 2007). Numerous studies corroborated that those participants who utilized reappraisal in their daily life repeatedly reported to have a better psychological well-being (Gross & John, 2003; Nezlek & Kuppens, 2008). Indeed, past studies indicated that the reappraisal capability could protect individuals against depressive symptoms when the strain level is high (Troy, Wilhelm, Shallcross, & Mauss, 2010).

The first purpose of this study was to validate CER among Malaysian university students. With respect to the validity of each questionnaire, the discriminative properties of a scale and its' subscale are likewise necessary. The principle of discriminate validity is that the correlation between measures of theoretically diverse constructs should not be high, meaning different instruments applied to evaluate various constructs, should not be highly associated with instruments of a comparable but different characteristics. Convergent validity is defined as the principle which measures theoretically similar constructs that should be inter-correlated highly. This validity type demonstrates the extent of agreement between measurements of the same characteristics gained by various approaches which are deemed to measure same characteristics (Trochim, 2006).

In one of the previous studies Jermann, Van der Linden, d'Acremont, and Zermatten (2006) replicated the difference between the nine regulation strategies (self-blame, other-blame, rumination, Catastrophizing, putting into perspective, refocusing, positive reappraisal, planning and acceptance) among adolescents through a confirmatory factor analysis. The reliability of the sub-dimensions ranged from good to very good levels and it was similar to the genuine research (Garnefski, Kraaij, & Spinhoven, 2001), with exception of acceptance type. Thus, the factor organization of the French CERQ can be compared with the original questionnaire that is in English language. It is important to note that Jermann et al., (2006) applied the CERQ was developed by Garnefski et al., (2001) for adolescents. But they translated it into French using a back-translation method and the nine-strategy model was

confirmed in a sample of French-speaking undergraduates.

The second aim of this study was to identify differences in cognitive emotion regulation in terms of demographic characteristics including faculty, age, race, number of semesters of study, gender, marital status, employment status, and family size among respondents. Regarding gender, investigation by Garnefski, Kraaij, Spinhoven (2002) revealed that adults usually use more of cognitive coping strategies compared to adolescents. The use of positive refocusing, catastrophizing and other-blame strategies are supposed to be decreasing to some extent in adults. In comparison, both early and late adolescent females make more use of all strategies, except for other-blame. Females use strategies more often than males, although the difference between males and females seems to decrease as they become mature but this does not hold for self-blame. For adults whose ages are between 18 to 65 years, males use this strategy more often than females. With the elderly individuals, the use of some of the cognitive strategies is reduced, while other strategies are applied more often. For example, they apply less self-blame and rumination strategies, as opposed to more acceptance and positive refocusing. Still, a difference between males and females remains visible. Among the psychiatric patients, the gender differences seem to be smaller. Compared to adults of the general population norm group, the psychiatric patient group scored considerably higher on the self-blame, rumination and catastrophizing strategies, whereas they make less use of the positive refocusing, positive reappraisal, and putting into perspective strategies. As stated by Garnefski, Van Den Kommer, et al. (2002), there are significant differences between men and women in their strategies of positive refocusing, rumination, and catastrophizing. In this case, women were reported to be using more of these strategies.

Regarding the different races or ethnic groups, Tate et al. (2006) reported significant differences among African American and white respondents in their use of the copying strategies. The study showed that African Americans used more coping strategies than whites. African Americans were found to possess greater coping resources than whites (Bourjolly, 1998; Conway, 1985; Steffen, Hinderliter, Blumenthal, & Sherwood, 2001). On the other hand, DeMarco, Ostrow, and Difrancesco (1999) reported that there were no racial differences between African American and white gay males in involvement in coping strategies. As stated by Heckman et al. (2000), older African American males used more positive reappraisal than the younger ones.

Moreover, Zlomke and Hahn (2010) using f-test found the largest differences between males and females in these strategies: rumination, putting into perspective, and other-blame. Females reported using more rumination and putting the situation in perspective strategies in the countenance of stress more than males while males reported using blaming others strategy more than females. In contrast with other studies, their research did not report a significant difference between males and females for positive reappraisal strategy. The total number of participants included 1080 undergraduate psychology students among them 291 men (27%) and 789 women (73%) ranging from 18 to 28 years old were selected as the sample.

However, Martin and Dahlen (2005) stated that there were small univariate differences on the strategies; blaming others, rumination, catastrophizing, positive refocusing, refocusing on planning, and positive reappraising, between males and females. Females obtained higher scores on rumination, catastrophizing, positive refocusing, refocusing on planning, and positive reappraising strategies, whereas males obtained higher scores on blaming others strategy. Therefore, the aims of this study were to validate CER among Malaysian students and to explore whether there are significant differences in cognitive emotion regulation and its' components based on students' demographic profile (faculty, age, race, number of semesters of study, gender, marital status, employment status, family size) among graduate students.

2. Methodology

A quantitative research methodology and descriptive correlational design were utilized in this study which involved 534 respondents. In order to select the sample size, multi-stage sampling technique was applied in which the researchers first selected one university out of the 20 Malaysian public universities, then random selection of classes was conducted to choose from six faculties. Finally, the researcher used simple random sampling technique to select respondents from each class.

As stated by Garnefski et al. (2001), the CERQ (Cognitive Emotion Regulation Questionnaire) is a multi-dimensional questionnaire developed to identify the cognitive coping strategies that individuals utilize when they experience events or situations. In contrast to other coping scales that do not clearly distinguish between a person's thoughts and his or her real actions, this scale examines a person's thoughts after experiencing an unpleasant event. The CERQ is very easy to administer and this self-report questionnaire has 36 items and it comprises of nine different cognitive

coping strategies. The CERQ can be used among normal and clinical populations, adults and adolescents from 12 years old and above. There are two types of cognitive processes including unconscious (e.g. projection or denial) as well as conscious cognitive processes such as self-blame, acceptance, rumination, positive refocusing, planning, positive reappraisal, putting into perspective, catastrophizing, and other-blame strategies as indicated by Garnefski, Kraaij, and Spinhoven (2002). The questionnaire adopts the six point Likert scale, ranging from almost never (1) to almost always (5).

The researcher conducted a pilot study prior to administering the questionnaire. To test the questionnaire's reliability, 45 graduate students were randomly selected from six faculties in a Malaysian university. The Cronbach's alpha coefficients were computed for all graduate students to assess the internal consistency of nine CERQ scales. It can be concluded that the alpha coefficients of the different subscales among graduate students ranged from .76 to .89. The acceptance and rumination strategies had the lowest Cronbach's alpha values, while the highest values were for planning and appraisal strategies, respectively. The summary of results is presented in Table 1.

Table 1 Reliability of the Cognitive Emotion Regulation Strategies

Scales	Current reliability	Original reliability
Self-blame	.85	.81
Other-blame	.89	.68
Rumination	.76	.83
Catastrophizing	.84	.72
Put into perspective	.80	.79
Refocusing	.85	.81
Appraisal	.90	.72
Planning	.93	.81
Acceptance	.75	.80

Note: N = 534 youth adults (graduate students). The reliability is calculated based on the outcome of the confirmatory factor analysis. Original reliability is the Cronbach's alpha of the original Dutch scale (Garnefski, Kraaij, & Spinhoven, 2001).

3. Results

The level of significant in this study, 0.05 was considered. The sample consisted of 534 graduate students whose age ranged from 19 to 45 years old, with 155 males (29%) and 379 females (71%). The total population of master degree students in this university is 4,839 which comprised of 3,438 Malays, 843 Chinese, 350 Indians, and 208 other races. Out of

this number, 3,256 were females and 1,583 were males. Research samples were randomly selected from six faculties (Agriculture, 78; Science, 100; Engineering, 81; Modern languages, 78; Educational Studies, 176; Medicine, 80) from different academic semesters. Result of the present research is based on determining Goodness of Fit as well as convergent and discriminant validity of CER. Likewise, findings is discussed in terms of the hypothesis that whether there are significant differences between students' demographic profile (faculty, age, race, number of semester, gender, marital status, employment status, family size) and cognitive emotion regulation components among graduate students.

4. Measurement Model of the CERQ

The measurement model of CERQ shown that Goodness-of-Fit indices (GFI) established was .88, Root mean square residual (RMR) or standardized RMR .06, Root mean square error of approximation (RMSEA) = .05, Comparative fit index (CFI) = .93 and Normed fit index (NFI) is .89. In this study, P value is less than 0.05, DF = 491, and χ^2 (CMIN) = 1181.439, CMIN/df = 2.41.

5. Comparison of CER Subscale Scores for Demographic Variables

In this section, significant differences in cognitive emotion regulation types are discussed in terms of Faculties, age groups, races, and gender among respondents.

5.1 Differences in Cognitive Emotion Regulation Dimensions across Faculties

To determine whether there are significant differences between faculties in the use of cognitive

emotion regulation strategies, a one way ANOVA was conducted. The results showed that among the nine types of cognitive emotion regulation across six faculties, students were different only in the type of reappraisal, $F(5, 528) = 3.43, P = 0.005$. The result of Post-Hoc test showed that the mean score in reappraisal of students from the Faculty of Agriculture ($M = 4.28, SD = .80$) was significantly higher than those from the Faculty of Educational Studies ($M = 3.86, SD = .84$). The summary of the results is presented in Table 3.

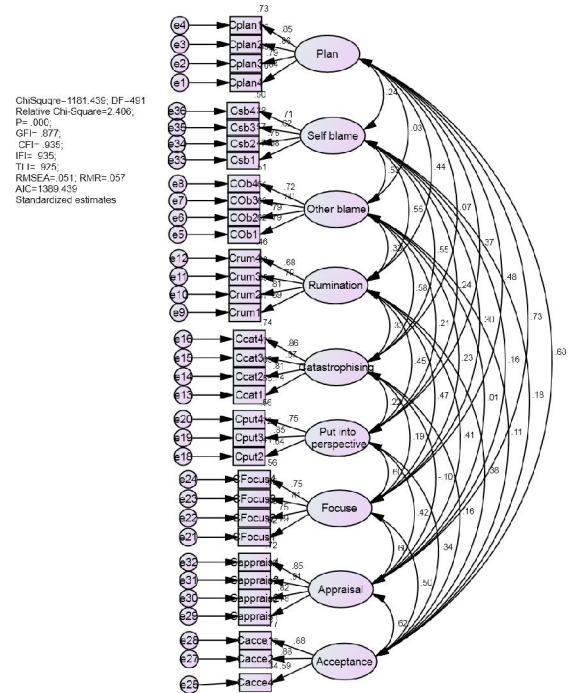


Figure 1. Measurement Model of Cognitive Emotion Regulation

Table 2 Convergent and Discriminant Validity of Cognitive emotion Regulation Scale

	CR	AVE	MSV	ASV	Rea	Pl	Ob	Ru	Ca	Pu	Ref	Ac	Sb
Rea	0.905	0.704	0.539	0.209	0.839								
Pl	0.905	0.703	0.539	0.202	0.734	0.839							
Ob	0.857	0.701	0.342	0.105	-0.010	-0.032	0.775						
Ru	0.831	0.554	0.301	0.181	-0.410	-0.436	0.334	0.744					
Ca	0.893	0.676	0.342	0.110	0.096	-0.072	0.585	0.331	0.882				
Pu	0.792	0.563	0.360	0.143	0.424	0.367	-0.210	-0.445	-0.225	0.750			
Ref	0.856	0.599	0.361	0.201	0.601	0.488	-0.228	-0.475	-0.186	0.600	0.774		
Ac	0.830	0.626	0.426	0.179	0.625	0.678	-0.111	-0.380	-0.158	0.341	0.498	0.791	
Sb	0.785	0.480	0.303	0.143	-0.160	-0.239	0.526	0.549	0.550	-0.303	-0.180	-0.180	0.692

Rea = Appraisal, Pl = Planning, Ob = Other-blame, Ru = Rumination, Ca = Catastrophising, Pu = Putting into, Ref = Refocusing, Ac = Acceptance, Sb = Self-blame

Table 3 Differences in Cognitive Emotion Regulation Dimension across Faculties

Dimension	Faculty	N	Mean	F	Sig
Reappraisal	Educational Studies	116	3.86	3.43	.005
	Modern languages	78	3.92		
	Engineering	81	3.93		
	Medicine	80	4.11		
	Science	100	4.15		
	Agriculture	79	4.28		

5.2 Differences in Cognitive Emotion Regulation Dimensions across Age Groups

A one way ANOVA was conducted to compare cognitive emotion regulation types among respondents of different age groups. The result revealed that the mean score of those between the ages of 19 to 23 ($M = 2.88$, $SD = .77$), 24 to 28 ($M = 2.91$, $SD = .78$), and 29 to 33 ($M = 2.77$, $SD = .72$) were significantly higher in self-blame compared to those of age group between 39 to above, $M = 2.22$, $SD = .52$, $F(5, 529) = 5.45$, $P = .000$. Likewise, mean score of the age group of 19 to 23 ($M = 2.68$, $SD = .81$) were significantly higher in other-blame than those in age group between 29 and 33, $M = 2.37$, $SD = .72$, $F(5, 529) = 2.84$, $P = .027$. For rumination, the mean score was also higher for the 19 to 23 ($M = 3.31$, $SD = .78$) and the 24 to 28 years age groups ($M = 3.33$, $SD = .76$) than those with age 39 and above $M = 2.80$, $SD = .68$, $F(5, 529) = 3.91$, $P = .003$. (See Table 4).

Table 4. Differences in Cognitive Emotion Regulation Dimensions across Age Groups

Dimensions	Age	N	Mean	F	Sig
Self-blame	19-23	86	2.88	5.45	.000
	24-28	305	2.91		
	29-33	85	2.77		
	34-38	32	2.72		
	39 and above	26	2.22		
Other blame	19-23	86	2.68	2.84	.027
	24-28	305	2.51		
	29-33	85	2.37		
	34-38	32	2.43		
	39 and above	26	2.24		
Rumination	19-23	86	3.31	3.91	.003
	24-28	305	3.33		
	29-33	85	3.17		
	34-38	32	3.06		
	39 and above	26	2.80		

5.3 Differences in Cognitive Emotion Regulation Dimensions across Races

With regard to races, a one way ANOVA showed that there were significant differences in planning $F(2, 531) = 8.99$, $P = .000$, and acceptance $F(2, 531) = 4.23$, $P = .02$ among Malay, Chinese, and Indian respondents. The results of Post Hoc comparisons among three races indicated that the mean scores of planning was significantly higher among Malay ($M = 4.04$, $SD = .73$) and Indian ($M = 4.01$, $SD = .76$) students than Chinese ($M = 3.67$, $SD = .77$) students. Moreover, the mean scores of acceptance is significantly higher for Malay ($M = 3.66$, $SD = .74$) students as compared to Chinese students ($M = 3.39$, $SD = .79$) (See Table 5).

Table 5: Differences in Cognitive Emotion Regulation Dimensions across Races

Dimensions	Race	N	Mean	F	Sig
Planning	Chinese	87	3.67	8.99	.000
	Indian	58	4.01		
	Malay	384	4.04		
Acceptance	Chinese	87	3.39	4.23	.02
	Indian	63	3.55		
	Malay	384	3.66		

5.4 Difference in Cognitive Emotion Regulation Dimensions across Gender

An independent sample t-test was performed to compare the scores of the different types of cognitive emotion regulation between male and female students. As shown in Table 6, the results showed that there was significant difference in self-blame between males ($M = 2.99$, $SD = .73$) and females, $M = 2.78$, $SD = .79$, $t(532) = 2.99$, $P < 0.05$. There was also significant difference in other blame between males ($M = 2.73$, $SD = .72$) and females, $M = 2.40$, $SD = .74$, $t(532) = 4.73$, $P < 0.05$, catastrophising between males ($M = 2.66$, $SD = .89$) and females, $M = 2.37$, $SD = .94$, $t(532) = 3.23$, $p < 0.05$, and putting into perspective between males ($M = 3.27$, $SD = .79$) and, $M = 3.07$, $SD = .82$, $t(532) = 2.66$, $p < 0.05$. However, there was no significant difference in rumination, positive refocusing, positive reappraisal, planning, and acceptance between male and female students. Based on the results of this study, male students used more of self-blame, other blame, catastrophising, and putting into perspective strategies than female students. (See table 6)

Table 6. Differences in Cognitive Emotion Regulation Dimensions across Gender

Levels	Gender	Mean	SD	t	Sig
Self-blame	Male	2.99	.73	2.99	.003
	Female	2.78	.79		
Other-blame	Male	2.73	.72	4.73	.000
	Female	2.40	.74		
Catastrophizing	Male	2.66	.89	3.23	.001
	Female	2.37	.94		
Putting into perspective	Male	3.27	.79	2.66	.008
	Female	3.07	.82		

N = Male, 155

N = Female, 379

6. Discussions

The findings revealed that the Average Variance Extracted (AVE) for all dimensions of cognitive emotion regulation was greater than Maximum Shared Squared Variance (MSV) and Average Shared Squared Variance (ASV). Furthermore AVE of items for nine dimensions was greater than 0.50 with exception of the self-blame. It means that discriminant and convergent validity of CER questionnaire is high. In other words, it can be argued that students could recognize inter-correlation between items or recognize the similarities among items and likewise they could distinguish the differences between items. This study is supported by Garnefski et al., (2002) who stated that the CERQ has been shown to have good reliability and validity. In most studies, Cronbach's alpha coefficient ranged from 0.72 to 0.85. In another study conducted by d'Acremont and Van der Linden (2007), the reliability coefficient of the subscales was found to be very good and comparable to the original research (Garnefski et al., 2001), except for the acceptance strategy that had an acceptable reliability coefficient. Moreover, the study confirmed the distinction between more appropriate and less appropriate strategies.

The results of the one-way ANOVA analysis showed that among the nine dimensions of cognitive emotion regulation and across the six faculties, the respondents differed only in the dimension of reappraisal. According to faculties, the reappraisal scores were highest among the students from the

Faculty of Agriculture, and this was followed by the Faculty of Science. The lowest scores in reappraisal were found for the respondents from the Faculty of Educational Studies. In this regard, Rudd, Baker, and Hoover (2000) showed that agriculture students were mostly field-independent in their learning styles (67%). Meanwhile, Keefe (1982) stated "Learning styles are cognitive, affective, and physiological traits that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (p, 32).

According to Witkin, Moore, Goodenough, and Cox (1977), persons with field-dependent learning style have a tendency to a global perception, more relying on their social environment, have a more difficult time to solve problems, learn better humanized concepts and tend to favour a spectator view to learning. In addition, individuals with field-dependent learning style have been found to be more extrinsically motivated by teachers' organization and structure. Conversely, individuals with field-independent preferences are more tended to analytic concepts, hence finding it easier to solve problems. In addition, these people are more likely to favour learning activities that require individual efforts and study. Moreover, they prefer developing their own structures and organization for learning and are more intrinsically motivated and less receptive to social reinforcement. Similarly, Garton, Ball, and Dyer (2002) stated the same result in a study on agriculture students, whereby the majority of whom were found to have field-independent learning style. It can be

argued that analytic view among the students from agriculture and science may lead them to use reappraisal strategy than global perception.

The results of this study showed significant differences in the three dimensions of cognitive emotion regulation including self-blame, other blame and rumination across the different age groups (5 groups). The respondents aged 39 years and above had the lowest score, while those in ages of 24 to 28 years and 19 to 23 years had the highest score. In a study by Garnefski and Kraaij (2006), significantly higher scores were found for self-blame, rumination, catastrophizing and other-blame in an adult psychiatric sample. In the current study, with the increase in age, applying strategies of rumination, self-blame and other blame decreased. As expected, unlike adult psychiatric patient, the graduate students of the present study used adaptive strategies cognitively and consciously.

The one-way ANOVA analysis showed that the students were significantly different in their planning and acceptance, and races (Malay, Chinese and Indian). In this regard, while the Malay students were high in both planning and acceptance, the Chinese students scored the lowest in these two dimensions. This result is in line with Tate et al. (2006), who discovered differences in using coping strategies among African American and white. Accordingly, African Americans made use of numerous coping strategies at a higher level than the Whites. In addition, African Americans were also found to possess greater coping resources than the Whites (Bourjolly, 1998; Conway, 1985; Steffen, Hinderliter, Blumenthal, & Sherwood, 2001). In contrast, DeMarco, Ostrow, and Difrancesco (1999) found no racial differences in the involvement with coping strategies among African American and White gays. Heckman et al. (2000) found that older African American men reported greater use of positive reappraisal. However, these differences were attributed to different cultural orientations and life philosophy (Pollack, Harvin, & Cramer, 2000). The respondents of the present study, however, are different in terms of their high educational backgrounds.

The findings revealed differences in self-blame, other blame, catastrophizing, and putting into perspective score between the male and female respondents. Based on the results, the males scored higher than in all dimensions noted above. However, Garnefski et al. (2004) showed that females scored higher than males in other blame, catastrophizing and putting into perspective, whereas males scored higher in self-blame. Martin and Dahlen (2005) reported that women scored higher on rumination, catastrophizing, positive refocusing, planning and positive

reappraising, whereas men were higher on self-blame. Zlomke and Hahn (2010) found the largest gender differences for the strategies of rumination, putting into perspective and other-blame, whereas women reported using rumination and putting into perspective in face of stress more than men, with men reported blaming others more than women. As observed, there are controversial results regarding different cognitive strategies used by men and women. It can be argued that the use of these strategies by men and women is perhaps influenced by the structure of different societies.

7. Conclusion

The present study shows a high discriminate and convergent validity for dimensions of cognitive emotion regulation questionnaire. Regarding the faculties, students from Faculty of Agriculture obtained the highest score in reappraisal strategy while students from Faculty of Educational Studies acquired the lowest score in this dimension. This study also showed that students between age 39 years and above had the lowest score in self-blame, other blame, and rumination strategies while, students of age group from 19 to 23 had the highest score in these dimensions. In other words, it can be concluded that the use of maladaptive strategies decreases with age.

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Corresponding Author:

Soheila Panahi, Faculty of Educational Studies, University Putra Malaysia, 43400 Serdang, Selangor, Malaysia,
sflowers226@gmail.com,
soheilapanahi58@gmail.com

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