

Prediction of Psychological Well-Being Based on Dispositional Mindfulness and Cognitive Emotion Regulation Strategies in Students

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ABSTRACT

Objective: The purpose of this study was to investigate the relationship of psychological well-being with variables of mindfulness and emotion regulation strategies, and then to identify which one predicts better psychological well-being.

Methods: We used a descriptive-analytical design for this study. A total of 243 students from 3 Tehran universities were selected using the convenience sampling method. Three measurement instruments were used in this study: mindful attention awareness scale (MAAS), cognitive emotion regulation questionnaire (CERQ), and psychological well-being scale (PWS). The statistical analysis included the Pearson correlation coefficient and stepwise regression analysis. Study variables were calculated with SPSS ver. 19.

Results: The results indicated that mindfulness and psychological well-being are positively correlated to most of the more adaptive cognitive emotion regulation strategies and negatively correlated to most of the less adaptive ones. In the fifth model of regression analysis, positive reappraisal (Beta=0.27), catastrophizing (Beta=-0.24), refocus on planning (Beta=0.24), mindfulness (Beta=0.22), and acceptance (Beta=-0.10) were the best predictors of psychological well-being, consecutively, and together accounted for 46% of the variance.

Conclusion: Higher mindfulness and using more adaptive cognitive emotion regulation strategies are associated with higher psychological well-being. Regression analysis also suggests that higher levels of positive reappraisal, refocusing on planning, mindfulness, lower levels of catastrophizing, and acceptance predict higher levels of psychological well-being.

1. Introduction

For many years, the main focus of research was on psychopathology and the main objective of researchers was to describe and explain the factors underlying psychological disorders and dysfunctions. However, there has been a shift in the literature from focusing on psychological disorders towards mental health and psychological well-being. According to this

new approach, positive affect is not the opposite of negative affect (Capioppo & Berntson, 1999) and well-being is not the absence of mental illness (Ryan & Deci, 2001). Consistent with this view, WHO has defined positive mental health as "a state of well-being in which the individual realizes his or her abilities, can cope with the normal stresses of life, work productively and fruitfully, and make a contribution to his or her community" (WHO, 2001).

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The Ryff scale of psychological well-being was designed to measure different dimensions of psychological well-being. Carol Ryff (1989) designed this instrument in response to the need for a theoretically-based instrument for measuring well-being. Ryff reviewed different areas of the literature such as mental health, development, maturity, and self-actualization. Then, she introduced 6 scales of psychological well-being, including autonomy, self-acceptance, environmental mastery, positive relations with others, purpose in life, and personal growth (Ryff, 1989). Autonomy is related to being determined and able to resist external pressures to act or think in particular ways. Self-acceptance is related to accepting different aspects of self, including its positive and negative qualities and having a positive feeling about the past and present life.

Environmental mastery refers to a sense of mastery in managing the environment, using opportunities effectively, and being able to choose or make situations, which are suitable to personal needs and values. Positive relations with others refer to the ability of having good relationship with others and being capable of developing intimacy and affection. Purpose in life is related to have objectives and find meaning in life. Personal growth refers to a feeling of development in life, seeing self as growing and developing and realizing one's potentials (Ryff & Keyes, 1995).

Psychological well-being is related to a variety of internal and external variables. One of these variables is mindfulness, which could be considered as an enhanced attention or awareness. Mindfulness is described as focusing on the present time, intentionally, in a certain way, and in a nonjudgmental manner (Kabat-Zinn, 2003). Studies have shown that mindfulness is positively related to numerous components of mental health and psychological well-being. For instance, trait mindfulness is positively related to life satisfaction, self-esteem, autonomy, competence, and optimism (Brown & Ryan, 2003), and negatively related to rumination (Raes & Williams, 2009), social anxiety and neuroticism (Dekeyser, Raes, Leijssen, Leysen, & Dewulf, 2008), and depression (Cash & Whittingham, 2010). Studies also indicate that mindfulness is related to the ability to express oneself in different social settings (Dekeyser et al., 2008) and predicts satisfaction in relationships (Barnes et al., 2007; Wachs & Cordova, 2007).

Mindfulness involves different mechanisms that are responsible for its positive outcomes in terms of mental health and psychological well-being. One of these mechanisms is the increase in metacognitive awareness

(Teasdale et al., 2002). Metacognition refers to "cognition about cognition"; this ability helps individuals to observe their thoughts as psychological events rather than real things. We can argue that by being more mindful, people are more able to detach themselves from negative thoughts, which are important factors in many psychological disorders. A reduce in rumination can be another mechanism of mindfulness. A previous study showed that mindfulness affects partly through decrease in ruminative thoughts (Ramel, Goldin, Carmona, and McQuaid, 2004). Acceptance is another mechanism through which mindfulness improves well-being. Mindfulness training emphasizes accepting rather than avoidance of symptoms (Brown & Ryan, 2003).

Emotion regulation consists of internal and external processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to achieve personal goals (Thompson, 1994). The ability to adaptively regulate emotion is crucial for healthy functioning, and many psychological disorders are related to some sort of emotion dysregulation (Werner & Gross, 2009). The ability to control emotion generation process can determine human well-being (Garland, Gaylord, & Park, 2009). Appropriate emotion regulation strategies increase life-satisfaction and decrease negative affect (Martini & Busseri, 2010).

There is a significant link between emotion dysregulation and different psychopathologies such as depression, anxiety, eating disorders, and substance abuse (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Longitudinal studies have shown that having positive expectations about one's ability of regulating the negative affect predicts a reduction in depression (Kassel, Bornovalova, & Mehta, 2007). Furthermore, studies have shown that depressed individuals have problems in using adaptive emotion regulation strategies (Liverant, Brown, Barlow, & Roemer, 2008).

Regulating emotions through conscious processes is called cognitive emotion regulation. In other words, cognitive emotion regulation involves the self-regulatory and conscious parts of emotion regulation (Garnefski, Kraaij, & Spinhoven, 2001). There are 9 different cognitive emotion regulation strategies, including 5 more adaptive strategies; positive reappraisal, positive refocusing, refocus on planning, putting into perspective, and acceptance, 4 less adaptive strategies; self-blame, blaming others, catastrophizing, and rumination (Garnefski et al., 2001).

Many studies have shown relationships between mindfulness and emotion regulation. For example, individuals who scored higher on the mindful attention awareness scale (MAAS) were more in agreement with their affective experience, a finding which suggests that individuals who are more mindful may be more attuned to their implicit emotions (Brown and Ryan, 2003). Self-reported mindfulness is related to measures of awareness such as clarity of emotion and the ability to label emotion (Baer, Smith, & Allen, 2004; Brown & Ryan, 2003) and negatively associated with alexithymia (Baer et al., 2004).

Although mindfulness and cognitive emotion regulation are related constructs, they can have different outcomes in terms of psychological well-being. Mindfulness is defined as a kind of nonelaborative, non-judgmental, present-centered awareness in which each thought, feeling, or sensation that arises in the attentional field is acknowledged and accepted as it is (Bishop et al., 2004). So we can argue that mindfulness is not in accordance with cognitive elaborations that can happen during cognitive emotion regulation. A previous study showed that Iranian male students had lower scores on the Ryff's scales of psychological well-being compared to female students (Michaeli, 2011).

Another study found a positive relationship between emotion regulation and psychological well-being among Iranian students (Yailagh, Shojaei, Behroozy & Maktabi, 2012). The shortage of studies on psychological well-being and its relationship with other psychological constructs such as mindfulness and emotion regulation, among Iranian students indicates a need for more studies on these issues in this population. Moreover, students are faced with many difficulties like being away from their family or having some financial and educational hardships. This fact indicates a need for new studies on this issue in order to make effective interventions and improve Iranian students' psychological well-being.

2. Methods

We used a descriptive, analytical design for this study. The target population included all the university students in Tehran. The study sample consisted of 247 students from 5 residence halls of 3 universities in Tehran (Universities of Tehran, Social welfare and Rehabilitation Sciences, and Kharazmi). The majority of the participants were from other cities of Iran who lived in dormitories in Tehran. The students were selected using the convenience sampling method. Recruitment was carried

out during the second semester of 2013-2014 academic year. The inclusion criterion comprised being a university student and the exclusion criteria were presenting incomplete or invalid answers. The participants were informed about the objectives and the procedure of the study, and they were allowed to leave the study at any time. The participants, who wanted to know the results, could write down their Email addresses on top of their questionnaires. A total of 263 sets of questionnaires were obtained from the students, and 247 valid sets of questionnaires were used for statistical analysis. We did not ask the participants to reveal their names, and their personal information remained completely confidential.

The cognitive emotion regulation questionnaire (CERQ) was developed both on a theoretical and empirical basis, in order to identify the cognitive coping strategies individuals use after experiencing threatening or stressful events (Garnefski et al., 2001). It has 36 items and assesses 9 different cognitive emotion regulation strategies. The strategies are divided into 2 categories: more adaptive strategies, including acceptance, positive reappraisal, positive refocusing, refocus on planning, and putting into perspective; and less adaptive strategies, including self-blame, blaming others, catastrophizing, and rumination. The scores for each strategy can range from 4 to 20. For the total scale score, alpha reliabilities of 0.91, 0.87, and 0.93 were found (Garnefski et al., 2001). In Iran, the Cronbach α for the total scale score was reported at 0.82 (Yousefi, 2003). In the present study, the Cronbach α for the total scale score was calculated at 0.84.

The mindful attention awareness scale (MAAS) is a 15-item, 6-point Likert-type scale designed to assess a central aspect of dispositional mindfulness, i.e. receptive awareness of the present moment; higher scores on the scale indicate greater mindfulness. The scale shows strong psychometric properties and has been validated with college, community, and cancer patient samples (Brown and Ryan, 2003). In Iran, the Cronbach α of the MAAS was reported at 0.81 (Ghorbani, Watson, & Bart, 2009). In the present study, the Cronbach α of this scale was calculated at 0.81.

The Ryff Scales of psychological well-being (PWB) is a theoretically based scale for measuring multiple aspects of psychological well-being, including self-acceptance, positive relations, autonomy, environmental mastery, purpose in life, and personal growth (Ryff, 1989). There are 3 versions of this scale. The version used in this study consists of 84 items; in other words, every scale consists of 14 items. Higher score in every scale indicates that

Table 1. Demographic information of the participants.

Gender	n	Education	n	%	Marital status	n	%
Male	184	BS student	70	28.8	Single	195	80.2
Female	59	MA student	110	45.3	Married	28	11.5
		PhD student	43	17.7			

the respondent has more of that specific quality and the sum of all scores indicates the overall psychological well-being. In Iran, the test-retest reliability of the total scale score was reported at 0.82 (Bayani, Koochaki, & Bayani, 2008). In the present study, the Cronbach α of the total scale score was calculated at 0.93.

Correlations between variables were calculated using the Pearson correlation coefficient. Stepwise regression analysis was used to identify which variable between mindfulness and emotion regulation strategies better predict psychological well-being. The study variables were calculated with SPSS ver. 19.

3. Results

Data configuration

Examination of histograms, skewness and kurtosis showed that all variables were normally distributed. We used scatter plots to examine whether there is a linear relationship between the independent variables and dependent variable; this provided evidence to support the assumption of linearity between the IVs and DV. A visual inspection of Q-Q plot showed a multivariate normal

distribution for the dependent variable. Multicollinearity was examined using the Tolerance Index (Ti) (from 0.48 to 0.92) and the Variance Inflation Factor (VIF) (from 1.08 to 2.06); the results support the absence of multicollinearity between variables. An examination of residual Q-Q plots, skewness, and kurtosis suggested the homoscedasticity and normality of residuals. The Durbin-Watson test ($d=1.83$) indicated the absence of auto-correlation.

Data description

Table 2 shows the descriptive statistics of psychological well-being and its dimensions. For all students, personal growth (62.09), purpose in life (59.60), positive relations (57.16), environmental mastery (57.01), self-acceptance (54.87), and autonomy (54.31) had the highest means consecutively; and the mean of psychological well-being was 345.07. For the male students, personal growth (62.41), purpose in life (59.36), environmental mastery (57.17), positive relations (57.06), self-acceptance (55.42), and autonomy (54.92) had the highest means, consecutively; and the mean of psychological well-being was 346.37. For the female students, personal growth (61.11), purpose in life (60.35), posi-

Table 2. Descriptive statistics of psychological well-being and its dimensions.

Dimension	N			Mean			Standard deviation			t	Sig.
	Female	Male	Total	Female	Male	Total	Female	Male	Total		
Self-acceptance	59	184	243	53.15	55.42	54.87	12.51	10.02	10.69	1.27	0.20
Positive relations	59	184	243	57.47	57.06	57.16	9.61	8.18	8.53	-0.32	0.74
Autonomy	59	184	243	52.40	54.92	54.31	9.43	7.52	8.05	1.88	0.06
Environmental mastery	59	184	243	56.49	57.17	57.01	10.23	9.27	9.50	0.48	0.62
Purpose in life	59	184	243	60.35	59.36	59.60	9.98	9.33	9.48	-0.69	0.48
Personal growth	59	184	243	61.11	62.41	62.09	7.11	8.52	8.21	1.15	0.25
Psychological well-being	59	184	243	341.00	346.37	345.07	48.54	41.84	43.52	0.82	0.41

Table 3. Correlations between mindfulness and psychological well-being dimensions.

Psychological well-being dimensions	Self-acceptance	Positive relations	Autonomy	Environmental mastery	Purpose in life	Personal growth
Mindfulness	0.363**	0.360**	0.318**	0.315**	0.362**	0.360**

Note. * $P < 0.05$; ** $P < 0.01$.

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tive relations (57.47), environmental mastery (56.49), self-acceptance (53.15), and autonomy (52.40) had the highest means, consecutively, and the mean of psychological well-being was 345.07. There was no significant difference between the means of psychological well-being and its 6 dimensions between the male and female students.

Table 3 shows the correlations between mindfulness and psychological well-being dimensions. Mindfulness was positively correlated with all psychological well-being dimensions ($P < 0.01$).

Table 4 shows the correlations between emotion regulation strategies and psychological well-being. Acceptance was negatively correlated with self-acceptance ($P < 0.05$). Positive refocusing, refocus on planning, and positive reappraisal were positively associated with all psychological well-being dimensions ($P < 0.01$). Putting into perspective was positively correlated with all psychological well-being dimensions ($P < 0.01$) except autonomy. Self-blame was negatively correlated with self-

acceptance ($P < 0.01$) and positive relations ($P < 0.05$). Blaming others was negatively correlated with all psychological well-being dimensions ($P < 0.01$) except positive relations. Catastrophizing was negatively correlated with all psychological well-being dimensions ($P < 0.01$). Rumination was positively correlated to personal growth.

Table 5 shows the summary of stepwise regression analysis. Psychological well-being was included as dependent variable; Mindfulness and 9 cognitive emotion regulation strategies were included as independent variables. In the first model, positive reappraisal accounts for 26% of the total variance. In the second model, positive reappraisal and mindfulness account for 38% of the total variance. In the third model, positive reappraisal, mindfulness, and catastrophizing account for 43% of the total variance. In the fourth model, positive reappraisal, mindfulness, catastrophizing, and refocus on planning account for 46% of the total variance. In the fifth model, positive reappraisal, mindfulness, catastrophizing, refocus on planning, and acceptance

Table 4. Correlations between emotion regulation strategies and psychological well-being dimensions.

	Self-acceptance	Positive relations	Autonomy	Environmental mastery	Purpose in life	Personal growth
Acceptance	-0.151*	-0.050	-0.063	-0.042	-0.078	0.042
Positive refocusing	0.334**	0.207**	0.176**	0.340**	0.261**	0.236**
Refocus on planning	0.399**	0.299**	0.214**	0.496**	0.447**	0.487**
Positive reappraisal	0.436**	0.328**	0.272**	0.522**	0.422**	0.478**
Putting into perspective	0.255**	0.216**	0.011	0.202**	0.219**	0.186**
Self-blame	-0.197**	-0.162*	0.017	-0.102	-0.054	0.014
Blaming others	-0.264**	-0.123	-0.189**	-0.190**	-0.195**	-0.256**
Catastrophizing	-0.459**	-0.318**	-0.299**	-0.371**	-0.311**	-0.272**
Rumination	-0.084	-0.022	-0.094	0.041	0.077	0.177**

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Table 5. Summary of stepwise regression analysis for variables predicting psychological well-being (n=243).

Variable	Model 1			Model 2			Model 3			Model 4			Model 5		
	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
Positive reappraisal	6.79	0.72	0.51**	5.93	0.67	0.45**	5.58	0.65	0.42**	3.52	0.89	0.26**	3.57	0.89	0.27**
Mindfulness				1.44	0.21	0.35**	1.04	0.22	0.25**	0.99	0.21	0.24**	0.92	0.21	0.22**
Catastrophizing							-3.73	0.79	-0.25**	-3.74	0.77	-0.25**	-3.63	0.77	-0.24**
Refocus on planning										3.20	0.97	0.22**	3.51	0.98	0.24**
Acceptance													-1.67	0.79	-0.10*
R ²	0.26			0.38			0.43			0.46			0.47		
F	88.30**			75.50**			62.21**			51.23**			42.46**		

Note. *P<0.05; **P<0.01.

account for 47% of the total variance. In the fifth model, positive reappraisal (Beta=0.273), catastrophizing (Beta=-0.245), refocus on planning (Beta=0.244), mindfulness (Beta=0.224) and acceptance (Beta=-0.103) were the best predictors of psychological well-being, respectively.

4. Discussion

According to the findings, personal growth, purpose in life, positive relations, environmental mastery, self-acceptance, and autonomy had the highest means, consecutively. We did not find any significant differences between the means of psychological well-being and its 6 dimensions between the male and female students. In contrast with this result, in a previous study among students of Uremia University in Iran, significant differences were found between the male and female students with respect to all psychological well-being dimensions, except purpose in life (Michaeli, 2011).

The findings of this study showed positive correlation between mindfulness and all psychological well-being dimensions. These findings are in agreement with the previous studies that found correlations between self-reported mindfulness and different dimensions of psychological well-being and mental health. For example, trait mindfulness has been associated with higher levels of life satisfaction, autonomy, competence and self-esteem (Brown & Ryan, 2003). Previous studies have also found that individuals with low levels of mindfulness showed higher levels of distress and lower levels of psychological well-being (Brown and Ryan, 2003; Baer et al., 2004). Studies have also found that mindfulness meditation improves well-being (Carmody & Baer,

2008), and reduces psychological distress (Coffey & Hartman, 2008).

The results showed a relatively strong correlation between most of psychological well-being dimensions and 2 adaptive emotion regulations strategies, i.e. positive reappraisal and refocus on planning. It has been found that those who reported a general tendency to plan for future showed high levels of subjective well-being (Lachman, 2001). In a study on university students, Omran (2011) found that using catastrophizing, self-blame, or rumination strategies was associated with high levels of anxiety and depression. This study also showed that positive refocusing, positive reappraisal, and planning strategies had a positive relationship with low levels of anxiety and depression.

The results also showed a relatively strong relationship between catastrophizing and most of psychological well-being dimensions. Consistent with this finding, previous studies have shown that catastrophizing is related to psychological distress (Sullivan et al., 2001). Pain catastrophizing theories also propose that catastrophizing involves 3 components, i.e. magnification, rumination, and helplessness (Sullivan, Bishop, & Pivik, 1995). Another finding of this study was the negative correlation between acceptance and both mindfulness and self-acceptance dimension. This finding suggests that accepting stressful/negative events and different aspects of the self could be different from each other, and may have different outcomes in terms of psychological well-being.

Moreover, acceptance can have opposite effects when it is applied to situations or actions which can or should be controlled (Hayes & Pankey, 2003). Another interest-

ing finding of this study was the positive relationship between rumination and personal growth. For a better understanding of this result, it is useful to refer to a psychological construct that overlaps with rumination, i.e. process simulation. Process simulation is a conscious process of mentally rehearsing and visualizing the steps related to accomplishing a goal; this process increases the possibility of achieving goals (Taylor, Pham, Rivkin, & Armor, 1998). It can be argued that rumination is also associated with accomplishing some goals and personal growth. Mikulincer (1996) also distinguished 3 categories of rumination; one of these categories is action rumination. Action rumination is a process, which involves focusing on how to accomplish a goal and how past mistakes could be corrected (Mikulincer, 1996); action rumination is associated with achieving goals and enhanced personal growth.

This study also showed positive associations between mindfulness and psychological well-being. Furthermore, most of the adaptive emotion regulation strategies were positively correlated to most of the psychological well-being dimensions, and most of the less adaptive emotion regulation strategies were negatively correlated to most of the psychological well-being dimensions. Positive reappraisal, catastrophizing, refocus on planning, mindfulness, and acceptance were the best predictors of psychological well-being consecutively. Therefore, we can argue that high levels of positive reappraisal, refocus on planning, and mindfulness and low levels of catastrophizing and acceptance predict psychological well-being.

Based on the positive correlations between mindfulness and all psychological well-being dimensions, we can argue that using mindfulness-based interventions could be helpful in promoting psychological well-being in students. We can also propose that learning and mastering the more adaptive cognitive strategies can enhance psychological well-being; therefore, we suggest that interventions based on cognitive emotion regulation strategies, especially positive reappraisal and refocus on planning can be useful in enhancing psychological well-being among students. We also suggest other researchers to investigate the relationships between rumination and psychological well-being and to study different aspects of acceptance and its relationships with well-being and mental health. Regression analysis revealed 5 psychological constructs of positive reappraisal, catastrophizing, refocus on planning, mindfulness, and acceptance as the best predictors of psychological well-being. Thus, we suggest other researchers to investigate the role of these factors in psychological well-being and mental

health using different methods and in various populations.

This was a correlational study, and had the limitations related to this kind of study. We suggest that other researchers explore the relationships between mindfulness, cognitive emotion regulation and psychological well-being using different methods of research. In addition, this study was conducted on university students, so there are some limitations in generalizing these results to other populations. We suggest other researchers to investigate these variables and their relationships in other settings and populations. Another limitation of this study was a sample consisting of students living in dormitories in Tehran. We suggest that other researchers investigate these variables in different contexts.

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