

# 노인암 환자들의 영성과 우울증의 관계에서 낙관성과 비관성의 매개효과

남일성<sup>1</sup>, 윤현숙<sup>2</sup>, 김여진<sup>2</sup>, 임연옥<sup>3</sup>, 이현주<sup>4</sup>, 최경원<sup>5</sup>

<sup>1</sup>성공회대학교 사회복지학과, <sup>2</sup>한림대학교 사회복지학과, <sup>3</sup>한림대학교 고령사회연구소, <sup>4</sup>한림성심대학교 사회복지과, <sup>5</sup>한림대학교 일반대학원 사회복지학과

## The Mediating Role of Optimism and Pessimism on the Relationship between Spirituality and Depression among Elderly Cancer Patients

Ilung Nam<sup>1</sup>, Hyunsook Yoon<sup>2</sup>, Yojin Kim<sup>2</sup>, Yeon-Ok Lim<sup>3</sup>, Hyunjoo Lee<sup>4</sup>, Kyoungwon Choi<sup>5</sup>

<sup>1</sup>Department of Social Welfare, Sungkonghoe University, Seoul, Korea

<sup>2</sup>Department of Social Welfare, Hallym University, Chuncheon, Korea

<sup>3</sup>Hallym University Institute of Aging, Hallym University, Chuncheon, Korea

<sup>4</sup>Department of Social Welfare, Hallym Polytechnic University, Chuncheon, Korea

<sup>5</sup>Department of Social Welfare, Graduate School of Hallym University, Chuncheon, Korea

**Background:** Numerous studies have demonstrated that spirituality has protective effects on depression. However, there are only few studies on the theoretical mechanism showing how spirituality effects on depression. Thus, to find mediating variables explaining the relationship between the spirituality and depression may help to develop appropriate program for reducing depression in elderly cancer patients. In this study, we examined the effect of optimism and pessimism as their mediating effects on depression.

**Methods:** This study is to verify the relationships between spirituality and depression along with the mediating effects of optimism and pessimism among 600 South Korean elderly cancer patients who participated in a community-based study about their mental health.

**Results:** Optimism and pessimism are linked with spirituality and depression. Higher spirituality levels were associated with increased optimistic thinking, and then optimistic thinking is associated with low possibility of depression, whereas lower spirituality levels were associated with more pessimistic thinking, and in turn pessimistic thinking is associated with high depression scores.

**Conclusions:** Understanding optimism and pessimism affecting depression level is critical for developing spirituality-based programs to reduce depression in elderly cancer patients.

**Korean J Health Promot 2016;16(2):127-133**

**Keywords:** Spirituality, Optimism, Pessimism, Depression, Neoplasms

## INTRODUCTION

Depression is a common mental health issue experienced by cancer patients,<sup>1)</sup> which can lead to patients' overall poor quality of life.<sup>1,2)</sup> Studies have identified multiple risk factors for depression in cancer patients such as patients' symptom levels, functional impairments, and fatigue.<sup>3,4)</sup> They suggest that cancer patients with depression require clinical inter-

■ Received: January 17, 2016    ■ Accepted: June 13, 2016

■ Corresponding author : **Ilung Nam, PhD**

Department of Social Welfare, Sungkonghoe University, 320  
Yeondong-ro, Guro-gu, Seoul 08359, Korea  
Tel: +82-2-2610-4109, Fax: +82-2-2610-4373  
E-mail: ilsungn@gmail.com

■ This work was supported by the National Research Foundation of Korea Grant funded by the Korean Government (NRF-2011-371-B00015).

vention by health care professionals-including psychological and pharmacological services. They also point to the importance of identifying protective factors that can prevent the onset of depression, such as spirituality. While spirituality has been shown to be a promising protective factor for depression of cancer patients, to date no study has examined the mechanism of the association between spirituality and depression. Finding a mediating variable linking the spirituality-depression relationship may help practitioners and researchers to develop appropriate spirituality-based intervention models for depression of cancer patients.

### 1. Association between spirituality and depression

Numerous studies have demonstrated that spirituality is an important protective factor against the negative effects of depression in various study samples.<sup>5-8)</sup> A possible mechanism of this association that has been proposed is related to the stress process. Pargament<sup>9)</sup> notes that spiritually involved people may have positive appraisals that may help them to perceive negative life events as less stressful and to protect them from depression.

Despite this positive effect of spirituality for depression, few studies have empirically examined the mediating factors in the relationship between spirituality and depression. The current study looks at a promising factor-optimism-that could be associated with spirituality as well as depression, and that might explain the relationship between the personally intrinsic meanings derived from spirituality and mental health.

### 2. Association between spirituality and optimism

Previous studies have reported spirituality has a positive association with optimism, such that individuals who perceived themselves as having more spiritual meanings in their life are more likely to be optimistic.<sup>5,10,11)</sup> Although the exact mechanism for this association is uncertain, spiritual practices such as prayer, meditation, and worship may engender positive emotions such as love, hope, and forgiveness.<sup>12)</sup> These positive emotions could facilitate a spiritually involved individual's optimistic world view. Thus, we hypothesize that cancer patients with greater spirituality are more likely to perceive themselves as more optimistic and less pessimistic.

### 3. Association between optimism and depression

Studies have reported that individuals having a more optimistic personality are more likely to have less depressive symptoms.<sup>13-15)</sup> Discussions from the field of positive psychology provide a theoretical rationale for the relationship between optimism and mental health. Seligman<sup>16)</sup> points out the importance of optimism that might help individuals cope well when bad life events occur such that optimistic individuals believe their misfortunes are not their fault and they have enough motivation and persistence to overcome bad events, whereas pessimistic individuals believe bad events will persist and they give up more easily. He emphasized the role of the manner in which individuals explain to themselves how and why negative life events happen in producing depression as a response to routine setbacks. As in the explanation of the relationship between spirituality and depression, it may be crucial to make positive appraisals of stressful life events to prevent from developing depression, and optimism may play a significant role in preventing depression.

### 4. The mediating role of optimism in the association between spirituality and depression

Given the theoretical development and empirical findings, we consider optimism as a promising factor that may affect mental health. In the present study, we consider whether optimism could also be a mediating variable that might link spirituality and depression. As presented, spirituality is associated with optimism, and optimism is associated with depression. Building on findings from previous studies that examine (1) the relationship between spirituality and optimism, and (2) the relationship between optimism and depression, the current study attempts to link the two relationships. To date, only one known study examines the mediating role of optimism in the relationship between spirituality and depression.<sup>17)</sup> The authors obtained an unexpected result of the non-significant indirect effect of spirituality on depression through optimism. They imposed the inability to accept the study hypothesis (i.e., indirect effect of spirituality on depression through optimism) on a non-clinical sample of college students with relatively low depression scores, suggesting a replication study was needed with a population experiencing more depression. Using

a clinical sample that may be highly depressed given their cancer diagnoses and symptoms, the current study first examines the effect of spirituality on optimism and depressive symptoms. Second, this study tests the indirect effect of spirituality on depressive symptoms through optimism.

In addition, studies examining the role of optimism in psychological well-being have used heterogeneous constructs of optimism that may not accurately measure the benefits of optimism for cancer patients. Recent studies have revealed that optimism has two correlated sub-constructs (i.e., optimism and pessimism) that has not been tested their effects on depressive symptoms.<sup>18)</sup>

In the current study we examine the mediating role of the sub-constructs of optimism in the relationship between spirituality and depression. Thus, the current study contributes to our understanding of the effect of spirituality on depression by using data with multiple personality-related factors to examine the mechanism of the relationship between spirituality and depression. Specifically, the research questions examined are: (1) Are higher levels of spirituality associated with lower levels of depressive symptoms, without controlling for optimism constructs? (2) Are higher levels of spirituality associated with lower levels of depressive symptoms, controlling for optimism constructs? (3) Are higher levels of spirituality associated with higher levels of optimism, and in turn are the increased levels of optimism by spirituality associated with lower levels of depressive symptoms? (4) Are higher levels of spirituality associated with lower levels of pessimism, and in turn are the decreased levels of pessimism by spirituality associated with lower levels of depressive symptoms?

## METHODS

### 1. Participants

This study was a baseline survey of a three-year longitudinal study about the quality of life of older adults with cancer. Six hundred older adults with cancer aged 55 or older were being treated for cancer at three sites of Hallym University Medical Center, Samsung Medical Center, and Ajou University Hospital. The clinical personnel introduced the qualified participants to research staff during admission or scheduled hospital visits. The research staff provided information about the study and invited patients to partici-

pate. Following the completion of informed consent, patients completed a questionnaire.

This study was approved by the Institutional Review Board of Hallym University (HIRB-2011-0089), Samsung Medical Center (SMCIRB-2012-05-006), and Ajou University Hospital (AJIRB-MED-SUR-11-404). All participants provided written consents.

### 2. Measures

**Depression.** A shorter version of the Center for Epidemiologic Studies Depression Scale<sup>19)</sup> was used to measure depression. This scale asked respondents the frequency during the past years that they felt depressed, happy, lonely, sad, and fearful. Answer categories ranged from 0=Never/Rarely to 3=All of the time. Summed scores were calculated by adding the 10 items for the dependent variable of the current study. The two positive items were reversed coded.

**Optimism.** The Life Orientation Test-Revised (LOT-R) was a 10-item measure of optimism with the intensity of optimistic and pessimistic thoughts and behaviors rated on a 5-point Likert-type scale ranging from 1=Never to 5=Very much. Three items (items 1, 4, and 10) measured optimism, 3 items (items 3, 7, and 9) measured pessimism, and the remaining four items were fillers. The LOT-R has been shown to discriminate between relevant groups (i.e., psychological well-being, obesity treatment outcomes) and have good internal reliability ( $\alpha=0.85$ ).<sup>20-22)</sup>

**Spirituality.** A sub-domain of the World Health Organization's Quality of Life was used to measure spirituality. This domain contains four items that address issues related to the meaning of life and personal beliefs (e.g., "To what extent do you have religious belief?"; "To what extent do you consider yourself to be part of a religious community?").<sup>23)</sup>

**Covariates.** Demographic variables of the study participants such as age, sex, employment, years of education, and marital status were included as covariates for the analyses.

### 3. Analysis plan

The first step was to analyze the relationship between spirituality and depression, which was completed by regressing spirituality and the covariates on depression. The

second step was to analyze the relationship between spirituality and two optimism variables (e.g., optimism and pessimism). The next step was to repeat the first step adding optimism variables to the first model. The coefficients and *P* values were reported for the above regression models. The last step was to compute the indirect effects of spirituality on depression through optimism variables. We used a bootstrapping method that circumvented the power problems by conducting a series of models and addressed non-normality in the sampling distribution of the indirect effect.<sup>24,25)</sup> The significance of the indirect effect was tested with the bootstrapped 95 percent confidence intervals.<sup>26)</sup>

## RESULTS

### 1. Demographic information

Participants were predominantly male (67.17%) and unemployed (74.08%). The average age was 68.45 years (standard deviation [SD]=7.06, range=46-86). The average years of education was 8.78 years (SD=4.85, range=0-22). Most patients were married (74.33%).

### 2. Association between spirituality and depression without controlling for optimism and pessimism

There was a significant association between spirituality and depression, such that patients reporting higher spirituality levels were less likely to have higher depression levels ( $B=-0.258$ ,  $P<0.001$ ) (Table 1). Employed patients were less likely to demonstrate higher depression levels than unemployed patients ( $B=-2.203$ ,  $P<0.001$ ). Additionally, married

patients were less likely than non-married caregivers to have higher depression levels ( $B=-1.782$ ,  $P=0.003$ ), and patients with higher education levels were less likely to report higher depression scores ( $B=-0.241$ ,  $P<0.001$ ).

### 3. Association between spirituality and depression controlled for optimism and pessimism

After controlled for optimism and pessimism, spirituality became non-significant in predicting depression levels (Table 2). However, optimism and pessimism demonstrated significant relationships with depression levels. Patients with higher optimism levels were more likely to have lower depression levels ( $B=-0.698$ ,  $P<0.001$ ), whereas patients with higher pessimism levels were more likely to show higher depression levels ( $B=0.700$ ,  $P<0.001$ ). As the same as in the model above (i.e., without controlling for optimism and pessimism; Table 1), there were significant and negative associations between patient's employment, education level, and marriage status, and depression levels.

**Table 1.** Regression results predicting depression of spirituality without controlling for optimism constructs

	<i>B</i>	SE	<i>P</i> value
Spirituality	-0.258	0.064	<0.001
Age, y	0.007	0.034	0.302
Female	-0.707	0.620	0.092
Employed	-2.203	0.540	<0.001
Education, y	-0.241	0.055	<0.001
Married	-1.782	0.644	0.003

Abbreviations: SE, standard error.

**Table 2.** Structural equation model with endogenous variables (optimism and pessimism) predicting depression

	Predicting depression			Predicting optimism			Predicting pessimism		
	<i>B</i>	SE	<i>P</i> value	<i>B</i>	SE	<i>P</i> value	<i>B</i>	SE	<i>P</i> value
Optimism	-0.698	0.128	<0.001	-	-	-	-	-	-
Pessimism	0.700	0.112	<0.001	-	-	-	-	-	-
Spirituality	-0.074	0.059	0.205	0.172	0.021	<0.001	-0.091	0.022	<0.001
Age, y	-0.003	0.033	0.702	-0.003	0.013	0.438	0.011	0.013	0.252
Female	-0.289	0.568	0.480	0.381	0.211	0.074	-0.225	0.218	0.319
Employed	-1.603	0.513	0.002	0.322	0.186	0.081	-0.285	0.198	0.124
Education, y	-0.190	0.051	<0.001	0.021	0.019	0.521	-0.053	0.019	0.009
Married	-1.521	0.605	0.023	0.430	0.224	0.091	0.053	0.226	0.718

Abbreviations: *B*, coefficient; SE, standard error.

#### 4. Association between spirituality and optimism

There was a significant prediction of optimism from spirituality, such that patients perceiving themselves as having more spirituality were likely to report higher optimism levels ( $B=0.172$ ,  $P<0.001$ ). However, covariates such as patient's sex, employment, and marriage status demonstrated only marginal effects in predicting optimism (Table 2).

#### 5. Association between spirituality and pessimism

There was a significant prediction of pessimism from spirituality, such that patients perceiving themselves as having more spirituality were likely to report lower pessimism levels ( $B=-0.09$ ,  $P<0.001$ ). Of the covariates that predicted pessimism, patient's education levels significantly predicted pessimism, such that patients who were more educated showed having less pessimism levels.

#### 6. Indirect effects of spirituality through optimism and pessimism

There was a significant and negative indirect effect of spirituality on depression through optimism, such that cancer patients' higher spirituality levels were associated with increased optimism levels, and in turn the increased optimism levels by spirituality were associated with decreased depression levels ( $B=-0.120$ , 95% confidence interval [CI]  $=-0.178/-0.062$ ) (Table 3). Additionally, there was a significant and negative indirect effect of spirituality on depression through pessimism, such that cancer patients reported higher spirituality levels were associated with decreased pessimism levels, and in turn the decreased pessimism levels by spirituality were associated with decreased depression levels ( $B=-0.063$ , 95% CI  $=-0.100/-0.026$ ) (Table 3).

## DISCUSSION

Depression is common among cancer patients. While interventions for depression of cancer patients are receiving increased attention, little is known about the protective factors that might serve as effective points of intervention. Using regression and path analyses, the current study found a significant association between greater spirituality and lower levels of depression. This finding supports those found in previous studies,<sup>13-15)</sup> and extends these works in two ways, by: (1) investigating the indirect effect of spirituality on depression through optimism among cancer patients who may be highly depressed, and (2) using multiple measures of optimism including optimism and pessimism in relation to depression.

As hypothesized, we found that a greater spirituality level was associated with a lower level of depression. This finding supports recent studies reporting the positive effects of spirituality in reducing depression levels.<sup>5-8)</sup> This finding is encouraging, particularly for researchers and practitioners who struggle to identify protective factors in patients with chronic cancer symptoms. This result of the strong negative relationship between spirituality and depression suggests that the spirituality may be composed of cancer patients' personal characteristics of seeking strength to accept and confronting their stressful circumstances, which may have positive effects on depression.

While this finding emphasizes the importance of spirituality for depression, the effect was fully explained by optimism constructs-optimism and pessimism. It may be because the spirituality measures used in the present study assessed spirituality as meaning in life and strength to face difficulties that may be related to optimism. Hence, multiple dimensions of spirituality should be a subject for a theoretical examination in relation of optimism. In a meta-analysis of studies on the effects of spirituality on psychological well-being, Smith et al.<sup>8)</sup> found that the effects of spirituality varied according to their measurements, with negative reli-

**Table 3.** Indirect effects of spirituality on depression through optimism and pessimism

	<i>B</i>	SE	95% Confidence interval	
			Lower	Upper
Depression → Optimism → Spirituality	-0.120	0.030	-0.178	-0.062
Depression → Pessimism → Spirituality	-0.063	0.019	-0.100	-0.026

Abbreviations: B, coefficient; SE, standard error.

gious coping such as “blaming God for life difficulties” or “avoiding difficulties through involving religious activities” presenting positive associations with depression levels. Thus, whether only spirituality constructs that are associated with optimism can predict depression should be tested. Also, the significant findings for indirect effect of spirituality on depression through optimism and pessimism should also be replicated with multiple dimensions of spirituality measures.

Despite the full mediating effects of optimism constructs, spirituality presented significant indirect effects on depression through optimism and pessimism, whereas Salsman et al.<sup>17)</sup>'s study reported a non-significant indirect effect of spirituality on depression through optimism. The significant results may be because of using a clinical sample that may be more psychologically distressful sample than college students used in the Salsman et al.'s<sup>17)</sup> study.

The finding that cancer patient's optimism reduced their depression levels supports previous studies of cancer patients.<sup>13-15)</sup> This finding implicates that we should target cancer patients with less optimistic and more pessimistic personalities to prevent depression. It seems a simple starting point to screen cancer patients' personality using optimism/pessimism scales. Possible further interventions may include the management of expectations on undergoing medical treatment through discussion with encouragement to cancer patients for becoming more optimistic. Cognitive interventions could also be appropriate in modifying optimism because it could reduce pessimism.<sup>16,27)</sup>

Spirituality related resources can be considered as a component of an optimism-based intervention because of the significant association between spirituality and optimism. For example, pastoral counseling could be an optimal method to identify cancer patients who are vulnerable to depression due to negative spiritual coping.

Although this study has important implications for the mediating role of optimism in the relationship between spirituality and depression, it is limited in its use of spirituality measures. For instance, the spirituality measures used in the current study assessed only two dimensions of spirituality constructs (i.e., meanings in life, strength in difficulties). To broaden the findings of this study, future studies should test the mechanism between spirituality and depression with multiple spirituality measures.

Notwithstanding these limitations, we believe these findings provide important insights into the relationship be-

tween spirituality and depression, which will likely enhance our understanding of caring for cancer patients. The effects of optimism on depression shed new light on mechanisms linking spirituality with depression. Understanding the multifaceted structure of the optimism construct (i.e., optimism and pessimism) and their inverse associations with depression levels is critical for the appropriate provision of spirituality-based interventions for cancer patients experiencing a difficult time in their life.

## 요 약

연구배경: 선행 연구에 의하면 영성은 우울의 보호 요인으로 작동한다고 알려져 있다. 하지만 영성이 어떻게 우울에 영향을 미치는지 그 이론적 메커니즘을 밝힌 연구가 거의 없다. 따라서 영성과 우울 간의 관계를 설명하는 매개변수를 찾는 연구는 노인암 환자들의 우울 감소를 위한 프로그램 개발에 도움이 될 것으로 생각된다. 본 연구에서는 낙관성과 비관성의 매개 효과를 검증했다.

방법: 본 연구는 지역사회 거주 노인암 환자 600명을 대상으로 영성이 우울에 미치는 영향과 그 관계에 낙관성과 비관성이 미치는 매개효과를 검증했다.

결과: 회귀분석과 경로분석 결과, 낙관성과 비관성은 영성과 우울을 매개하는 것으로 나타났다. 영성 수준이 높을수록 낙관성 수준이 높아지고, 높아진 낙관성 수준은 낮은 우울 수준과 관련 있는 것으로 나타났다. 반면, 영성 수준이 높을수록 비관성 수준이 낮아지고, 낮아진 비관성 수준은 높은 우울 수준과 관련 있는 것으로 나타났다.

결론: 암 환자를 대상으로 한 영성 기반의 우울 감소 개입프로그램을 구성하는데 중요한 요인으로 낙관성과 비관성을 이해하는 것이 중요한 것으로 판단된다.

중심 단어: 영성, 낙관성, 비관성, 우울, 암

## REFERENCES

1. Bottomley A. Depression in cancer patients: a literature review. *Eur J Cancer Care (Engl)* 1998;7(3):181-91.
2. Visser MR, Smets EM. Fatigue, depression and quality of life in cancer patients: how are they related? *Support Care Cancer* 1998;6(2):101-8.
3. Given CW, Stommel M, Given B, Osuch J, Kurtz ME, Kurtz JC. The influence of cancer patients' symptoms and functional states on patients' depression and family caregivers' reaction and depression. *Health Psychol* 1993;12(4):277-85.
4. Hopwood P, Stephens RJ. Depression in patients with lung cancer: prevalence and risk factors derived from quality-of-life data. *J Clin Oncol* 2000;18(4):893-903.

5. Koenig HG, George LK, Peterson BL. Religiosity and remission of depression in medically ill older patients. *Am J Psychiatry* 1998;155(4):536-42.
6. Plante TG, Boccaccini MT. The Santa Clara strength of religious faith questionnaire. *Pastoral Psychol* 1997;45(5):375-87.
7. Puskar KR, Sereika SM, Lamb J, Tusaie-Mumford K, McGuinness T. Optimism and its relationship to depression, coping, anger, and life events in rural adolescents. *Issues Ment Health Nurs* 1999;20(2):115-30.
8. Smith TB, McCullough ME, Poll J. Religiousness and depression: evidence for a main effect and the moderating influence of stressful life events. *Psychol Bull* 2003;129(4):614-36.
9. Pargament KI. The psychology of religion and coping: theory, practice and research. New York: Guilford Press, 1997.
10. Koenig HG. Religion, spirituality, and medicine: how are they related and what does it mean? *Mayo Clin Proc* 2001;76(12):1189-91.
11. Plante TG, Yancey S, Sherman A, Guertin M. The association between strength of religious faith and psychological functioning. *Pastoral Psychol* 2000;48(5):405-12.
12. Mueller PS, Plevak DJ, Rummans TA. Religious involvement, spirituality, and medicine: implications for clinical practice. *Mayo Clin Proc* 2001;76(12):1225-35.
13. Cohen L, de Moor C, Amato RJ. The association between treatment-specific optimism and depressive symptomatology in patients enrolled in a phase I cancer clinical trial. *Cancer* 2001;91(10):1949-55.
14. Epping-Jordan JE, Compas BE, Osowiecki DM, Oppedisano G, Gerhardt C, Primo K, et al. Psychological adjustment in breast cancer: processes of emotional distress. *Health Psychol* 1999;18(4):315-26.
15. Schou I, Ekeberg Ø, Ruland CM, Sandvik L, Kåresen R. Pessimism as a predictor of emotional morbidity one year following breast cancer surgery. *Psychooncology* 2004;13(5):309-20.
16. Seligman ME. Learned optimism: how to change your mind and your life. New York: Alfred A. Knopf, 1990.
17. Salsman JM, Brown TL, Brechting EH, Carlson CR. The link between religion and spirituality and psychological adjustment: the mediating role of optimism and social support. *Pers Soc Psychol Bull* 2005;31(4):522-35.
18. Creed PA, Patton W, Bartrum D. Multidimensional properties of the LOT-R: effects of optimism and pessimism on career and well-being related variables in adolescents. *J Career Assess* 2002;10(1):42-61.
19. Kohout FJ, Berkman LF, Evans DA, Cornoni-Huntley J. Two shorter forms of the CES-D depression symptoms index. *J Aging Health* 1993;5(2):179-93.
20. Fontaine KR, Cheskin LJ. Optimism and obesity treatment outcomes. *J Clin Psychol* 1999;55(1):141-3.
21. Herzberg PY, Glaesmer H, Hoyer J. Separating optimism and pessimism: a robust psychometric analysis of the revised Life Orientation Test (LOT-R). *Psychol Assess* 2006;18(4):433-8.
22. Scheier MF, Carver CS, Bridges MW. Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. *J Pers Soc Psychol* 1994;67(6):1063-78.
23. World Health Organization. WHOQOL-BREF: introduction, administration, scoring and generic version of the assessment: field trial version. Geneva: World Health Organization, 1996.
24. Bollen KA, Stine RA. Bootstrapping goodness-of-fit measures in structural equation models. *Sociol Methods Res* 1992;21(2):205-29.
25. Shrout PE, Bolger N. Mediation in experimental and non-experimental studies: new procedures and recommendations. *Psychol Methods* 2002;7(4):422-45.
26. Mackinnon DP, Lockwood CM, Williams J. Confidence limits for the indirect effect: distribution of the product and resampling methods. *Multivariate Behav Res* 2004;39(1):99-128.
27. Riskind JH, Sarampote CS, Mercier MA. For every malady a sovereign cure: optimism training. *J Cogn Psychother* 1996;10(2):105-17.