

The Effects of Mind Subtraction Meditation on Depression, Social Anxiety, Aggression, and Cortisol Levels of Elementary School Children in South Korea

Authors: Yang-Gyeong Yoo (Department of Nursing, Kunsan National University), Duck-Joo Lee (Department of Aerospace Engineering, KAIST), In-Soo Lee (Department of Paramedic Science, Korea National University of Transportation), Namin Shin (Department of Education, Dongguk University), Ju-Yeon Park (Gyesan Elementary School), Mi-Ra Yoon (College of Nursing, Chung-Ang University), Boas Yu (School of Nursing and Allied Health Professions, Holy Family University)

Title: The Effects of Mind Subtraction Meditation on Depression, Social Anxiety, Aggression, and Cortisol Levels of Elementary School Children in South Korea

Journal: Journal of Pediatric Nursing, 31, e185–e197, 2016.

본 연구는 학교기반 마음수련 명상이 초등학생의 우울, 사회불안, 공격성 및 타액 코티졸에 미치는 효과를 분석하였다. 자료는 한국의 D도시에 위치한 A초등학교 5학년 학생(평균 10세), 42명(실험군 23명, 대조군 19명/남 22명, 여 20명)으로부터 설문조사(우울, 사회불안, 공격성 측정)와 타액 코티졸 검사의 두 가지 방법으로 수집되었다. 실험설계는 비동등성 대조군 사전사후 실험설계를 활용하여 실험군에게는 8주간의 마음수련 명상 프로그램이 1주 4회 매회 30분 실행하였으며 대조군은 같은 시간에 독서활동을 실행하였다. 사전, 사후 검사는 모두 프로그램 실행 첫 회와 마지막 회가 끝난 후 동일한 시기에 실시되었다. 수집된 자료는 공분산분석(ANCOVA)으로 분석되었으며 자료 분석 결과는 우울을 제외한 사회불안, 공격성,

그리고 타액 코티졸 수치에 있어 실험군이 대조군에 비해 사후 검사가 통계적으로 유의미하게 낮아졌음을 보여주었다. 이는 비교적 짧은 실행기간에도 불구하고 학교 기반 마음수련 명상 프로그램이 초등학교 고학년의 사회, 행동적 정신건강 증진에 효과적인 방법이 될 수 있음을 시사한다. 논문에서는 마음수련 명상의 기본 원리와 실행 방법이 간단히 소개되며 여타 명상법들의 임상 적용 효과들도 논의된다.

주제어: 마음수련, 초등학생, 학교기반 명상 프로그램, 우울, 사회불안, 공격성, 타액 코티졸, 스트레스, 공분산분석

Background

This present study focuses on utilization of Mind Subtraction meditation which had been gaining attention worldwide, including South Korea (Lee, 2012). Previous studies in the Mind Subtraction meditation showed effective reductions in anxiety, depression, stress, and aggression in youth, college students, and educators (Jeong, 2005; Kim, 2010; Kim, 2012; Kim, Yoo, Lee, & Son, 2013). Specifically, this study was conducted to verify the effectiveness of the school-based meditation program on depression, social anxiety, aggression, and salivary cortisol levels, which is a measure of physiological stress level.

Literature Review

Based on a 2012 survey, Korea Youth Counseling & Welfare Institute (2013) reported there had been a three-fold increase in youth counseling since 2008 due to depression and suicidal ideations; and counseling needs of youth with suicide attempts/self-mutilations increased six times. About 30% of youth experienced suicidal ideations with top two reasons being poor academic performance

(42.7%) and family conflict (24.2%), according to Korea National Youth Policy Institute (2014). A recent 2014 survey by Korea Health Promotion Foundation also showed over a half of teenagers had suicidal thoughts; nearly one in three said they felt very depressed (Wall Street Journal Korea, 2014); and the number of youth suicides increased 57 percent since 2001 (Koreaherald.com, 2013).

Social anxiety is also one of psychological symptoms that are most commonly experienced and it occurs in social situations or activities (Kim, Cho & Lee, 2000). Some report 12 to 13 years of age as the typical age when social anxiety is noticed with elementary school years seen as an important period in development of social anxiety symptoms (Kwon, Park & Kim, 2013; Oh & Yang, 2003).

Aggression, another variable in this study, is defined as all types of behaviors with intend to hurt or harm another individual (Roh & Kim, 2013). It is known that children with higher levels of aggression have poorer level of social adaptation than children with lower levels of aggression; and there is a tendency of increasing problematic behaviors as the children get older (Hong & Rho, 1983; Kim, 2010).

Lastly, cortisol hormone levels were measured in this study, which had been shown to be a good measurement for stress levels in human beings (Kim, Jang, Kim & Kim, 2012) and it has been well-studied in many populations, including children, as an important measurement of biologic reactivity to stress (Spratt et al., 2012). In children, several studies indicate salivary cortisol level is a simple and reliable method to measure stress levels in pediatric populations such as children with autism and children who are in foster care (Schupp, Simon & Corbett, 2013; van Andel, Jansen, Grietens, Knorth, & van der Gaag, 2014).

Method

1. Participants of the research

A total of 23 students in the experimental group consisted of 13 boys and 10 girls; and a total of 19 students in the control group consisted of 7 boys and 12 girls.

2. Research design

This study used a nonequivalent group comparison with pretest and posttest design to examine the effects of a school-based meditation program on depression, social anxiety, aggression, and salivary cortisol levels of elementary school students. The experimental group was given the meditation program sessions four times a week with 30 minutes per session, for a total of 8 weeks (see Table 1). The control group was given reading sessions with same frequencies as the experimental group: four times a week with 30 minutes per session, for a total of 8 weeks.

<Table 1> Schedule of Mind Subtraction meditation program

Weeks: Tue, Wed, Thu, Fri (30 minutes each session)	Topic	Contents of meditation activity
1	Orientation; knowing the mind	<ul style="list-style-type: none"> • Orientation to the program (purpose and methods) • Knowing the false and true mind • Knowing the reasons for subtracting the mind • Knowing the method of subtraction and to practice
2	Throwing away of thoughts/ misperceptions about family	<ul style="list-style-type: none"> • Talk about events with family • Finding memories and writing about family • Subtracting thoughts/misperceptions about family • Verbalize feelings after the subtraction

Weeks: Tue, Wed, Thu, Fri (30 minutes each session)	Topic	Contents of meditation activity
3	Throwing away of thoughts/misperceptions about school	<ul style="list-style-type: none"> · Talk about events in school (teachers and peers) · Finding memories and writing about school · Subtracting thoughts/misperceptions about school · Verbalize feelings after the subtraction
4	Throwing away of thoughts of inadequacy and dislikes	<ul style="list-style-type: none"> · Talk about memories of inadequacy and dislikes · Finding memories and writing about inadequacy and dislikes · Subtracting thoughts/misperceptions about inadequacy and dislikes · Verbalize feelings after the subtraction
5	Throwing away of thoughts of anxiety and worries	<ul style="list-style-type: none"> · Talk about memories of anxiety and worries · Finding memories and writing about anxiety and worries · Subtracting thoughts/misperceptions about anxiety and worries · Verbalize feelings after the subtraction
6	Throwing away of anger, irritation, and stress	<ul style="list-style-type: none"> · Talk about memories of anger, irritation, and stress · Finding memories and writing about anger, irritation, and stress · Subtracting thoughts/misperceptions about anger, irritation, and stress · Verbalize feelings after the subtraction
7	Throwing away of scary thoughts and fear	<ul style="list-style-type: none"> · Talk about memories of scary thoughts and fear · Finding memories and writing about scary thoughts and fear · Subtracting thoughts/misperceptions about scary thoughts and fear · Verbalize feelings after the subtraction
8	Throwing away of self (angry self, upset self, fighting self, stressed self, etc.)	<ul style="list-style-type: none"> · Talk about memories of self (what type of self exist?) · Finding memories and writing about self · Subtracting thoughts/misperceptions about self · Verbalize feelings after the subtraction

3. Evaluative tools

A. Depression

Depression was measured using Children's Depression Inventory (CDI) developed by Kovac (1981) which were translated into Korean by Han (1993). This measuring tool consisted of 27 items pertaining to 5 major factor areas related to negative mood, interpersonal problems, ineffectiveness, anhedonia, and negative self-esteem. The research by Han (1993) indicated Cronbach's α as 0.81 and for this study Cronbach's α was 0.810 (pretest) and 0.898 (posttest).

B. Social anxiety

To measure the elementary school students' social anxiety, Social Anxiety Scale for Children – Revised (SASC-R) developed by LaCreca and Stone (1993), which was translated into Korean version by Moon and Oh (2002), was used. It included a total of 18 items on a 5-point scale; higher scores indicate severity of social anxiety. Moon and Oh (2002) stated Cronbach's α as 0.87 and in this study it was 0.858 (pretest) and 0.937 (posttest).

C. Aggression

A Korean version (Park, 2007) of Aggression Questionnaire (BPAQ) developed by Buss and Perry (1992) was used to measure aggression levels of the students. In the study by Park (2007), Cronbach's α as 0.91 and in this study it was 0.858 (pretest) and 0.888 (posttest).

D. Salivary cortisol testing

To evaluate the stress levels, physiological measurements of salivary cortisol were collected. Cortisol levels typically peak in the morning and are at lowest levels in the evening; and cortisol is secreted from the adrenal cortices in response to stress (Schupp, Simon & Corbett, 2013; Clow, Thorn, Evans & Hucklebridge, 2004; Shin, et al., 2011). It was deemed difficult to control for accurate sample collections at home for this study and the investigators decided to collect samples at the same time during school hours for consistency.

Data collection and analysis

The pretest data were collected from the experimental and control groups on the first day of the program in the first week. The posttest data were collected from the groups on the same last day of the program. To analyze the effect of the meditation program, t-tests were used to compare the pretest and posttest scores in depression, social anxiety, aggression, and salivary cortisol levels. Through ANCOVA (analysis of covariance), the differences in intervention results were analyzed with controlling for pretest scores.

Results of the research

The effect of the school-based meditation program on students' depression is shown in Table 2. Before the program, depression mean score for the experimental group was 5.91; for the control group was 12.42. The experimental group's scores were low, which was statistically significant ($p < .001$). After the program, the

experimental group was lower (4.52) than the control group (12.39) ($p < .001$). Analyzing by ANCOVA to control for the previous scores, the experimental group was still lower (7.34) than the control group (8.79), but it was not statistically significant ($p = .347$). These changes in scores may be analyzed as occurring due to pretest average score differences, not due to the meditation program.

<Table 2> The effect of school-based Mind Subtraction meditation on depression

Group	Pretest		Posttest		Adjusted Mean	
	M (SD)	t	M (SD)	t	M (SE)	F
Experimental group	5.91 (3.46)	-4.201***	4.52 (4.79)	-4.075***	7.34 (.92)	.907 (.347)
Control group	12.42 (5.98)		12.39 (7.53)		8.79 (1.06)	
Total	8.86 (5.73)		7.98 (7.23)			

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 3 shows analyzed results of social anxiety pretest and posttest. Mean pretest score for the experimental group was 31.18; and for the control group was 36.22, which showed no significance difference in social anxiety ($p = .119$). After the program, the social anxiety mean scores for the experimental group were lower (30.44) than the control group (46.29), which was statistically significant ($p = .001$). With ANCOVA to control for the previous pretest scores, the experimental group was lower (31.08) than the control group (44.20) ($p = .001$). This analysis demonstrated effectiveness of the school-based meditation program in reducing social anxiety, regardless of the pretest scoring on social anxiety.

<Table 3> The effect of school-based Mind Subtraction meditation on social anxiety

Group	Pretest		Posttest		Adjusted Mean	
	M (SD)	t	M (SD)	t	M (SE)	F
Experimental group	31.18 (8.84)	-1.597	30.44 (8.81)	-3.815**	31.08 (2.30)	13.014**
Control group	36.22 (11.14)		46.29 (15.38)		44.20 (2.71)	
Total	33.45 (10.13)		37.18 (14.28)			

* $p < .05$, ** $p < .01$, *** $p < .001$

The analyzed effect on aggression (see Table 4) demonstrates pretest aggression mean scores for the experimental group was lower (36.36) than the control group (46.35), which was statistically significant ($p = .012$). After the program, the experimental group was lower (30.74) than the control group (45.94) ($p < .001$). Through an analysis using ANCOVA to control for the previous pretest scores, the experimental group was still lower (32.42) than the control group (44.12) ($p = .001$); demonstrating the effectiveness of the meditation program on reducing aggression, regardless of the pretest scores.

<Table 4> The effect of school-based Mind Subtraction meditation on aggression

Group	Pretest		Posttest		Adjusted Mean	
	M (SD)	t	M (SD)	t	M (SE)	F
Experimental group	36.36 (7.78)	-2.719*	30.74 (8.17)	-4.515***	32.42 (2.00)	12.493**
Control group	46.35 (13.52)		45.94 (11.61)		44.12 (2.46)	
Total	40.72 (11.64)		36.97 (12.22)			

* $p < .05$, ** $p < .01$, *** $p < .001$

The result of analysis on cortisol levels in listed on Table 5. Before the program, the experimental group’s mean score was 0.052 and the control group was 0.080, which was statistically significant ($p=.024$). After the program, the experimental group mean score was lower (0.046) than the control group (0.073) ($p<.001$). Using ANCOVA to control for the pretest scores, it was shown that the experimental group was lower (0.049) than the control group (0.070) ($p=.003$). Regardless of the pretest scores, the program was shown to be effective in lowering cortisol levels in the elementary school students.

<Table 5> The effect of school-based Mind Subtraction meditation on salivary cortisol levels

Group	Pretest		Posttest		Adjusted Mean	
	M (SD)	t	M (SD)	t	M (SE)	F
Experimental group	.052 (.024)	-2.407*	.046 (.021)	-4.074***	.049 (.004)	9.869**
Control group	.080 (.046)		.073 (.021)		.070 (.005)	
Total	.064 (.038)		.058 (.025)			

* $p<.05$, ** $p<.01$, *** $p<.001$

Discussion

Even though social anxiety mean scores were significantly reduced after the meditation program was given, depression mean scores did not show statistically significant reductions. This was also noted in other research studies related to meditation (Lim,1996; Lee, 2007). Korean research studies on adults with MBSR approaches

also reported a decrease in social anxiety, but were not able to reduce depression (Lee, Jun, Kim & Gim, 2012; Kim, Kim, Ahn, Seo & Kim, 2013). These results suggest that there may be factors other than anxiety that needs to be taken into account to improve depression.

Secondly, the results of this study showed that the meditation is helpful in improving mental health status of the elementary school students in terms of social anxiety, aggression, and cortisol levels. These results were similar to other previous Mind Subtraction meditation research studies (Kim & Cha, 2011; Kim, 2012; Kim, 2009).

Thirdly, this study also demonstrated effectiveness of the Mind Subtraction meditation in aggression reduction in the elementary school students. This finding is similar to other research studies which also showed a reduction in aggression after attending the meditation program (Cho, 2006; Choi, Lee & Cheon, 2006; Lee, 2009; Kang, 2013; Hwang, 2013; Singh et al., 2007; Kim, Yoo, Lee & Son, 2013).

Lastly, an analysis of salivary cortisol showed stress levels of the students were effectively reduced by the meditation program. Upon the analysis, the pretest cortisol levels for the experimental group were lower than the control group. After using ANCOVA to control for the pretest scores, the posttest cortisol levels were still shown to be lower than the control group; which demonstrated effectiveness of the program in reducing the cortisol levels.

Even though various research studies were conducted to evaluate stress through salivary cortisol levels (Bohnen, Nicolson, Sulon, & Jolles, 1991; Blood, Blood, Bennett, Simpson & Susman, 1994;

Alpers, Abelson, Wilhelm, & Roth, 2003), not many studies have examined salivary cortisol to explore the effects of meditation methods in children or youth. Although the results had shown positive effects, most meditation-related research studies used questionnaires to survey stress reduction. By seeking to measure a physiological indicator of stress, this study contributed to a new approach in evaluating the effectiveness of a school-based meditation program in elementary school students.

Conclusion

This study demonstrated improvements in social anxiety, aggression, and stress in elementary school students receiving the school-based Mind Subtraction meditation program. Because these positive effects of the meditation program were possible with a short duration of meditation sessions offered during the school year, this suggests practicality and usefulness of such program for application in a variety of diverse healthcare settings.

Limitations of this study and recommendations for future studies are discussed. First, the sample size was small and there was no randomization with the groups, which would impact generalization of the findings. In the future, it is suggested that a larger sample size and randomization of the groups should be considered for this type of study. Secondly, this study only examined pretest and posttest during 8 weeks and did not evaluate the changes on a more long-term basis. A follow up assessment of long term duration would be suggested in future studies. Thirdly, salivary cortisol levels were measured only once per pretest and posttest, and is a limitation. It is

recommended that in the future, repeated testing and analysis should be considered for salivary cortisol levels.

References

- Alpers, G. W., Abelson, J. L., Wilhelm, F. H., & Roth, W. T. (2003). Salivary cortisol response during exposure treatment in driving phobics. *Psychosomatic Medicine*, Jul/Aug; 65(4), 679-687. <http://dx.doi.org/10.1097/01.PSY.0000073872.85623.0C>
- Blood, G. W., Blood, I. M., Bennett, S., Simpson, K. C., & Susman, E. J. (1994). Subjective anxiety measurements and cortisol responses in adults who stutter. *Journal of Speech and Hearing Research*, Aug; 37(4), 760-768.
- Bohnen, N., Nicolson, N., Sulon, J., & Jolles, J. (1991). Coping style, trait anxiety and cortisol reactivity during mental stress. *Journal of Psychosomatic Research*, 35(2/3), 141-147.
- Buss, A. H., & Perry, M. P. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology*, 63, 452-459.
- Cho, H. H. (2006). The effects of the mind emptying meditation on aggression reduction of the middle school boy students. Unpublished master's thesis, Changwon National University, Changwon.
- Choi, K. S., Lee, Y. S., & Cheon, S. M. (2006). The effect of Maumsuryun meditation training on neurotic middle school students' anger and anxiety. *The Journal of Humanities*, 11(1), 75-101.
- Clow, A., Thorn, L., Evans, P., & Hucklebridge, F. (2004). The awakening cortisol response: Methodological issues and significance. *Stress*, 7(1), 29-37. <http://dx.doi.org/10.1080/10253890410001667205>
- Han, E. G. (1993). Children's and adolescents' depression, attributional style and academic. Unpublished master's thesis, Seoul National University, Seoul.

- Hong, K. J., & Rho, H. Y. (1983). The effects of assertive training on the reduction of aggression and anxiety in juvenile delinquents. *The Korean Journal of Clinical Psychology*, 4(1), 19-31.
- Hwang, Y. R. (2013). The effects of mindfulness meditation based cognitive behavioral program on reducing children's aggression. Unpublished master's thesis, Seoul National University of Education, Seoul.
- Jeong, J. Y. (2005). The effects of Maum meditation on hwa-byung symptoms, mental health condition, self-esteem and anger: Stress coping methods. Unpublished master's thesis, Graduate School of Social Education Myungji University, Seoul.
- Kang, H. L. (2013). The effects of mindfulness meditation-based dance/movement therapy program on elementary students' anger control and aggression. Unpublished master's thesis, Wonkwang University, Iksan.
- Kang, Y. (2014). Poll Shows Half of Korean Teenagers Have Suicidal Thoughts. *Wall Street Journal Korea*. Retrieved from: <http://blogs.wsj.com/korearealtime/2014/03/20/poll-shows-half-of-korean-teenagers-have-suicidal-thoughts/>
- Kim, E. K. (2010). A study on the effect of the group art-therapy upon the reduction of aggression of children in low-income families. Unpublished master's thesis, Hanyang University, Seoul.
- Kim, J. H., Cho, Y. R., & Lee, M. K. (2000). A comparative study on the self-concepts of university students with social anxiety and depression. *The Korean Journal of Clinical Psychology*, 19(1), 1-15.
- Kim, M. H. (2009). The effects of the Maum meditation program on depression, stress, anxiety and self-esteem in college students. *Journal of Human Completion*, 1, 93-112.
- Kim, M. H. (2012). Comparison of the effect of maum meditation program on the depression, anxiety, and self-esteem of the children and the juveniles. *Journal of the Korea Contents Association*, 12(4), 338-348.

- Kim, M. H., & Cha, J. W. (2011). The effects of the personality development program based on Maum Meditation for primary school students. *Journal of Human completion*, 3, 71-97.
- Kim, M. H., Yoo, Y. G., Lee, E. J., & Son, M. K. (2013). The effect of Maum meditation program on the aggression and autonomy of the children and the juveniles. *Journal of Emotional & Behavioral Disorders*, 29(1), 145-171.
- Kim, Y. H., Kim, H. J., Ahn, S. D., Seo, Y. J., & Kim, S. H. (2013). The effects of meditation on anxiety, depression, fatigue, and quality of life of women undergoing radiation therapy for breast cancer. *Complementary Therapies in Medicine*, 21(4), 379-387. <http://dx.doi.org/10.1016/j.ctim.2013.06.005>
- Kim, Y. M., Jang, M. K., Kim, M. K., & Kim., J. K. (2012). The effects of sand play therapy on parenting stress and saliva cortisol levels of parents undergoing child counseling programs. *The Korean Journal of Child Studies*, 33(3), 83-97. <http://dx.doi.org/10.5723/KJCS.2012.33.3.83>.
- Korea Youth Counseling & Welfare Institute (2013). 2012 Counseling trend analysis report. Retrieved from: <https://www.kyci.or.kr/index.asp>
- Kovacs, M. (1981). Rating scales to assess depression in school-aged children. *Acta Paedopsychiatrica*, 46(5-6), 305-315.
- Kwon, H. Y., Park, K. H., & Kim, H. M. (2013). The mediating effects of stress coping in the relation between parental attachment and social anxiety of elementary school children. *The Korean Journal of Elementary Education*, 12(1), 133-148.
- LaCreca, A. M., & Stone, W. L. (1993). Social anxiety scale for children-revised: Factor structure and current validity. *Journal of Clinical Psychology*, 22(1), 17-27.
- Lee, E. S. (2009). The reduction of aggression through the practice of Maum Meditation. *Journal of Human Completion*, 1, 113-142.

- Lee, I. S. (2012). The effects of Maum meditation levels on mental health. *Journal of Human Completion*, 4, 5-27.
- Lee, J. Y. (2007). The effect of the mindfulness meditation centered health program on binge eating, obesity stress, self-esteem, and depression of obese middle school girls. Unpublished master's thesis, Duksung Women's University, Seoul.
- Lee, W. J., Jun, J. S., Kim, Y. S., & Gim, W. S. (2012). The effects of Korean Mindfulness-Based Stress Reduction (K-MBSR) on the blood pressure, psychological symptoms and quality of life in Korean cancer Patients. *Korean Journal of Stress Research*, 20(1), 1-9.
- Lim, S. H. (1996). The effect of yoga on treating psychological symptoms. Unpublished master's thesis, Hankuk University of Foreign Studies, Seoul.
- Moon, H. S., & Oh, K. J. (2002). A validation study of the Korean social anxiety scale for children and adolescents. *The Korean Journal of Clinical Psychology*, 21(2), 429-443.
- National Youth Policy Institute (2014). 2014 Youth policy report brief. Retrieved from: http://www.nypi.re.kr/brdr/boardrrView.do?menu_nix=00TUt84a&brd_id=BDIDX_9QHE68LfE56Tcg80dqU23q&cont_idx=21&edomweivgp=R
- Oh, K. J., & Yang, Y. R. (2003). Psychological mechanism associated with the development and maintenance of social anxiety in adolescents I: The effects of behavioral inhibition, parental attitude and traumatic experience. *The Korean Journal of Clinical Psychology*, 22(3), 557-576.
- Park, Y. A. (2007). The effects of an anger management program on aggression and emotional strengths in children at risk of EBD. Unpublished master's thesis, Ewha University, Seoul.
- Roh, Y. C., & Kim, H. S. (2013). The mediating effects of emotional regulation on the relationship between optimism and aggression in elementary school students. *Korean Journal of Youth Studies*, 20(7), 23-44.

- Schupp, C. W., Simon, D. & Corbett, B. A. (2013). Cortisol responsivity differences in children with autism spectrum disorders during free and cooperative play. *Journal of Autism Development Disorder*, 43, 2405-2417
- Shin, I. Y., Ahn, R. S., Chun, S. I., Lee, Y. J., Kim, M. S., Lee, C. K., & Sung, S. (2011). Cortisol Awakening Response and nighttime salivary cortisol levels in healthy working Korean subjects. *Yonsei Medical Journal*, 52(3), <http://dx.doi.org/435-444.10.3349/ymj.2011.52.3.435>
- Singh, N. N., Lancioni, G. E., Singh Joy, S. D., Winton, A. S. W., Sabaawi, M., Wahler, R. G., & Singh, J. (2007). Adolescents with conduct disorder can be mindful of their aggressive behavior. *Journal of Emotional and Behavioral Disorders*, 15(1), 56-63.
- Spratt, E. G., Nicholas, J. S., Brady, K. T., Carpenter, L. A., Hatcher, C. R. Meekins, K. A., Furlanetto, R. W., & Charles, J. M. (2012). Enhanced cortisol response to stress in children with autism. *Journal of Autism Development Disorder*, 42, 75-81.
- Strauss, C. C., & Last, C. G. (1993). Social and simple phobias in children. *Journal of Anxiety Disorders*, 7, 141-152.
- Van Andel, H. W. H., Jansen, L. M. C., Grietens, H., Knorth, E. J., & Van der Gaag, R. J. (2014). Salivary cortisol: a possible biomarker in evaluating stress and effects of interventions in young foster children? *European Child & Adolescent Psychiatry*, 23(1), 3-12.
- Youth suicides in S. Korea up 57 pct in a decade (2013, 9, 10). *Korea Herald*. Retrieved from: <http://www.koreaherald.com/view.php?ud=20130910000594>