

Journal of Depression and Anxiety Forecast

A Pilot Study of the Effect of Compassionate Meditation by Using GSR Comparison between AEON-HO and Mindfulness

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Abstract

AEON-HO (Altering emotional organization-holistic operation) is an integrated therapy based on mindfulness and Naikan therapy. This pilot study aimed to evaluate the effectiveness of self-compassionate meditation for the body in AEON-HO to examine sympathetic nervous activity and relax state by using Galvanic Skin Response (GSR) compared with meditative works, observing breathing and body scan in mindfulness to prepare the original research that evaluate the effects of each meditation techniques in eight weeks' programs of mindfulness and AEON-HO. The body scan with compassion in the AEON-HO program can be more effective at relaxing than the meditative techniques of mindfulness.

Keywords: AEON-HO; Naikan; Mindfulness; Compassion; GSR

Objectives

Self-compassionate meditation is one of the techniques of compassion therapies, Naikan therapy, and AEON-HO (Altering Emotional Organization-Holistic Operation) therapy. This pilot study aimed to evaluate the effectiveness of self-compassionate meditation for the body in AEON-HO to examine sympathetic nervous activity and relax state by using Galvanic Skin Response (GSR) compared with meditative works, observing breathing and body scan in mindfulness to prepare the original research that evaluates the effects of each meditation techniques in eight weeks' programs of mindfulness and AEON-HO.

The meditation in mindfulness and compassion therapies may have helped to reduce state and trait anxiety by the results of GSR and the Trier social stress test [1]. Also, the meditation based on mindfulness and compassion therapies was useful for the biofeedback treatment of GSR [2]. However, the techniques of compassionate meditation differ among the therapies. Therefore, some researches depicted compassionate meditation can reduce tense and affect sympathetic nervous activity due to GSR, although the ways of compassionate meditation were unspecified in the researches. The ways of compassionate meditation differ among the therapies. In addition to it, there is no comparative research between techniques of meditation in mindfulness: observing breathing and body scan. The compassion technique for the body uses words and/or images in AEON-HO. In this study, I have compared the effects of closing eyes (baseline) observing breathing, body scan, and self-compassionate meditation in AEON-HO by using GSR.

Birnie et al., [3] depicted that Mindfulness depicted that Mindfulness-Based Stress Reduction (MBSR) is successful at increasing participants' levels of self-compassion and specific aspects of empathy, and self-compassion and empathy have strong associations with psychological functioning. They have concluded that compassionate meditation may be a crucial and most strongly impacted component in MBSR to enhance empathy. Therefore, in this study, a self-compassion scale and an empathy scale were also taken to check the volunteers' levels of self-compassion and empathy.

Therapies

AEON-HO is an integrated therapy based on mindfulness and Naikan therapy. However, AEON-HO contains more compassion works, gratitude works, and others and others compared with mindfulness [4].

Mindfulness was developed from some types of the traditional training of Buddhism for psychotherapy for psychotherapy [5]. It is enhancing paying attention to present activities

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Received Date: 04 Dec 2019

Accepted Date: 14 Dec 2019

Published Date: 20 Dec 2019

Citation: Fujisaki C. A Pilot Study of the Effect of Compassionate Meditation by Using GSR Comparison between AEON-HO and Mindfulness. *J Depress Anxiety Forecast*. 2019; 2(1): 1012.

ISSN 2643-7139

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Table 1: SD of amplitude of SRC and F values in task A-D.

Person		SD							Favorite Task	SCS-SF	MES
		A	B1	C1	D1	C2	D2	B2			
1	SD	1.420	0.593	0.275	0.147	0.040	-	0.043	D	37	77
	F value	-	5.736****	4.653****	3.487****	13.249****	-	0.874			
2	SD	1.050	0.735	1.447	0.421	0.493	-	0.497	B	26	70
	F value	-	2.043****	0.258	11.820****	0.730	-	0.981			
3	SD	3.859	2.693	-	0.710	0.964	0.299	0.635	D	32	78
	F value	-	2.053****	-	14.369****	0.543	10.415****	0.221			
4	SD	0.227	0.199	-	0.114	0.152	0.128	0.073	B	37	66
	F value	-	1.298****	-	3.048****	0.565	1.409****	3.042****			
5	SD	0.159	0.279	-	0.119	0.101	0.183	0.387	B	46	65
	F value	-	0.323	-	5.483****	1.384****	0.306	0.223			
6	SD	0.526	0.717	1.987	0.540	0.648	-	2.623	D	29	73
	F value	-	0.538	0.130	13.558****	0.695	-	0.061			
7	SD	0.757	0.683	0.737	0.662	1.608	-	1.779	D	33	83
	F value	-	1.229****	0.860	1.237****	0.170	-	0.817			
8	SD	1.342	0.994	-	1.160	2.363	0.952	2.235	D	37	87
	F value	-	1.823****	-	0.735	0.241	6.163****	0.181			
9	SD	0.256	0.246	-	0.185	0.107	0.084	0.124	C	36	75
	F value	-	1.079****	-	1.747****	2.913****	1.563****	0.479			
10	SD	0.834	1.467	2.288	0.956	0.558		0.397	B	41	81
	F value	-	0.324	0.411	0.404	41.622****		1.969****			
Average		1.043	1.110	1.347	0.509	0.703	0.314	0.880	Average	35.4	75.5
									SD	5.8	7.2

Note. A: closing eyes (baseline); B: observing breathing; C: body scan; D: body scan with compassion (words and/or image). SCS-SF: The sum of values of short index of self-compassion scale. MES: The sum of values of multidimensional empathy scale. F values are paired with the results of the former task $df(9998)$, boundary value of F test=.968). **** $p < .001$

consistently and attitude of acceptance [6]. Nowadays, there are some subtypes of Mindfulness programs like MBSR, Mindfulness-Based Cognitive Therapy (MBCT), Dialectical Behavioral Therapy (DBT), and Acceptance and Commitment Therapy (ACT). Additionally, a new stream of Compassion Therapies has born from Mindfulness such as Compassion Focused Therapy (CFT), Compassion Cultivation Training (CCT), Mindful Self-Compassion program (MSC), Cognitively-Based Compassion Training (CBCT), and Cultivating Emotional Balance (CEB). Neff [7] instructed about compassion as follows: 1 being mindful and open to one's suffering, 2 Being kind, and non-self-condemning, 3 An awareness of sharing experiences of suffering from others rather than feeling ashamed and alone-an openness to our common humanity.

Naikan therapy was also developed from Buddhism monk's practices by Ishin Yoshimoto, and people in medical, educational, industrial, and judicial fields have used since the 1960s [8]. There are some national and international Naikan societies. There are some styles of programs such as one-week residential (original), homework, and one day and classroom.

GSR

Electrodermal Activity (EDA) is a sensitive index of emotional activity and sympathetic nervous activity due to GSR. There are some measurements of EDA: Skin Resistance Change (SRC), Skin Impedance Change (SIC), Skin Potential Activity (SPA) [9]. SRC is the simplest EDA because of the simplest measuring construction and

appearance mechanism [9]. Therefore, SRC was used in this study.

Methods

Participants

I have used recruited 10 student volunteers (5 men and 5 women) with a mean age of 23 years old (SD = 1.7) for the survey. The research administrator read an introduction and the informed consent statement before the experiment. The experiment time for each person was for 40-60 minutes, the time included an explanation about the experiment, filling questioners and scales, GSR experiment, and feedback for questions. All of them reported they were not regular practitioners of meditation.

Scaling procedures

The participants had filled up the short index of self-compassion scale (SCS-SF: Arimitsu, et al., 2016) and the Multi-dimensional Empathy scale (MES: [10]) before the GSR experiment.

SCS-SF is the short 12-item index 5-point sense and was produced "Self-Compassion Scale (SCS)" made by Neff [11]. The reliability and validity of SCS-SF have been validated [12]. Cronbach's alpha for SCS-SF was 73 [12]. MES is 24-item index 5-point sense, self-report measure of 5 dimensions of empathy, for distinctively assessing self/other orientation of either cognitive or emotional components. The reliability and validity have been validated [10]. Cronbach's alpha was 0.68 to 0.74 [10].

GSR experiment

In the pilot study, I have examined SRC of Psychological Galvanic Reflex (PGR) in each task: A. closing eyes (baseline), B. observing breathing, C. body scan, D. body scan with compassion (words and/or images) by using student volunteers. The experimental times of each task were 100 seconds, and sampling terms were 10 milli seconds. ABCDCB schedule was used for 5 volunteers, and ABDCDB schedule was used for the other 5 volunteers.

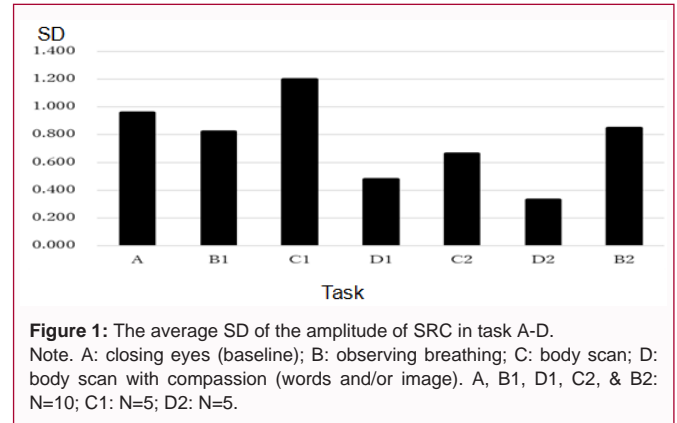
Analysis

The Standard Deviations (SD) of the amplitude of SRC in each task were compared by using Fisher’s F-test. Fisher’s exact test was used for comparing the qualitative variables. IBM SPSS Statistics 24 and Microsoft Excel 2016 were used for statistics.

Results

The SD of the amplitudes of SRC were compared between the former task and the subsequent task in each volunteer by Fisher’s F-test. Boundary value of F-test was 0.968 ($df=9998$). The SD of amplitude has decreased significantly from task A to task B1 in 7 of 10 participants (70%). The SD of amplitude has decreased significantly from task B1 to task C1 in 1 of 5 participants (20%). The SD of amplitude has decreased significantly from task C1 to task D1 in 8 of 10 participants (80%). The SD of amplitude has decreased significantly from task D1 to task C2 in 5 of 10 participants (50%). The SD of amplitude has decreased significantly from task C2 to task D2 in 4 of 5 participants (80%). The SD of amplitude has decreased significantly from task C2 to task B2 in 1 of 5 participants (20%). The SD of amplitude has decreased significantly from task D2 to task B2 in 1 of 5 participants (20%). Each F values were shown in Table 1 (Figure1). Fisher’s exact test was used for comparing the number of sessions that have decreased amplitude of SRC significantly in tasks B, C, and D compared with the former tasks (Table 2, Table 3, and Table 4). According to the multiple comparison, only the task D has decreased the SD of amplitude statistically significantly (chi square was 5.400, $df=1$, $p=.020$).

The average value of SCS-SF was 36.09 (SD=5.92). The average value of MES was 71.36 (SD=15.32).



Discussion

It was found that the SD of the amplitude of 80% of participants has been decreased significantly from task C1 to task D1, and from C2 to task D2. Additionally, task D has the SD of amplitude compared with the former tasks by the analysis by the analysis of Fisher’s exact test. In the prior study, MBSR contained observing breathing and body scan increased self-compassion and specific aspects of empathy [3]. Also, it is known that the meditation containing mindfulness and compassion helps to reduce anxiety and tense by the results of GSR [1,2]. This study has revealed that the task of body scan with compassion in AEON-HO could have soothed the sympathetic nervous activity more than the task of and body scan according to the percentage of the people.

On the other hand, five volunteers preferred task B or task C to task D, although physiologically, four of them were relaxed in task D more than in former tasks: task B or task C. It was revealed that the favorite tasks that the volunteers mentioned subjectively were not always linking with the result of GSR.

In the prior study of SCS-SF, the 718 student volunteers with a mean age of 19.42 years old (SD=1.16) have participated, and the average value of SCS-SF was 35.01 (SD=7.06) [1]. The average value of SCS-SF in this study was close to the result of Arimitsu’s study,

Table 2: The cross table of the number of participants that have decreased amplitude of SRC in the tasks.

		The number of sessions that the amplitude has not decreased	The number of sessions that the amplitude has decreased	Sum	
Task	B	Frequency	11	9	20
		Expected frequency	9.6	10.4	20.0
		Residual error	1.0	-1.0	-
		Percentage of number of the session	45.8%	34.6%	40.0%
	C	Frequency	10	5	15
		Expected frequency	7.2	7.8	15.0
		Residual error	2.5	-5.2	-
		Percentage of number of the session	41.7%	19.2%	30.0%
	D	Frequency	3	12	15
		Expected frequency	7.2	7.8	15.0
		Residual error	-4.5	4.5	-
		Percentage of number of the session	12.5%	46.2%	30.0%
Sum	Frequency	24	26	50	
	Expected frequency	24.0	26.0	50.0	
	Percentage of number of the session	100.0%	100.0%	100.0%	

Table 3: Fisher's exact test for all tasks.

	Value	Degree of freedom	P value (two-sided test)
Chi-square	7.198	2	0.027
The number of case	50	-	-

Table 4: Fischer's exact test in each task.

	B	C	D
Chi-square	0.200	1.667	5.400
df	1	1	1
P value (two-sided test)	0.655	0.197	0.020

^{*}p<0.05

although the sample size in this study was much smaller than the sample size in Arimitsu's. In the prior study of MES, the 871 student volunteers with a mean age of 19.43 years old (SD=1.05) have participated, and the average value of MES was 84.86 (SD=16.32) [10]. The average value of their data is a little higher than the average value in this study.

In this study, I found that 80% of participants have relaxed when they tried the task of the body scan with compassion, while they were not relaxing so much as it when they did other tasks. Therefore, the choice of tasks can be appropriate for the next original research that evaluates the effects of each meditation techniques in eight weeks' programs of mindfulness and AEON-HO.

Limitations and Future Directions

The number of the subjects in this study was too small to analyze the relationship between the result of GSR and psychological scales, SCS-SF and MES statically. Also, other physiological methods should be used to conclude the physiological effect of body scan with compassion compared with observing breathing and body scan in mindfulness.

Conclusion

The body scan with compassion in the AEON-HO program has appeared to be effective for relaxing by activating the parasympathetic nervous system, but subjective preferences were different from the physiological reactions of GSR. The task schedule seems to be appropriate for the next original research.

Ethics Approval

Approval was obtained for this research from the Ethics Committee of the University.

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