



Mental Health Through an Attribution Retraining Intervention in Students with Epileptic Disorder

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ABSTRACT

This experimental study aimed to examine the effects of a 7-weeks training program on psychosocial problems. 20 students with epileptic disorder were randomly allocated to an intervention (n=12) and control group (n=8) with pre- and post-training assessments. Our study hypothesized that an increase in dependencies on others in order to meet the personal needs would lead to more psychosocial problems in the control group, but not in the experimental group, due to the attribution retraining intervention. Our study found positive effects of the intervention on psychosocial problems, perceived individual ability, used external resources, interpersonal relationship skill and problem-solving skill in the experimental group. The results showed that a attribution retraining intervention program can protect students with epileptic disorder from an increase in psychosocial problems in order to meet the personal needs.

Key Words: Attribution Retraining, Training Program, Mental Health, Dependencies

DOI Number: 10.14704/nq.2017.15.3.1112

NeuroQuantology 2017; 15, 3: 164-171

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Introduction

Mental health relates to psychological well-being that a person can communicate with the community and is satisfied with personal situations and social features (Toffol, Heikinheimo & Partonen, 2013). According to the World Health Organization's comprehensive and complete definition (WHO, 2011) mental health is a form of well-being and recovery, which one can realize his potential abilities, cope with the usual stresses of life, work in a constructive way and play an effective role in the community. Increasing attention to mental health is significant and noticeable only in the context of the mental health needs of children and adolescents (Meltzer *et al.*, 2000; Fattahi *et al.*, 2017). Attention to mental health issues has led to the perception that learning and acquiring age-appropriate skills and competencies is not only

suitable for successful adaptation in childhood, but also improves individual and social capabilities in the next steps of development (Kawachi & Berkman, 2001). This attention has given credit to the impression that learning and acquiring age-appropriate skills and competencies is essential not only for successful adaptation during the current stage of child and adolescent development, but also as a necessary basis for enhancing the individual and social capabilities (Kutcher *et al.*, 2005).

Epilepsy is one of the most serious and common neurological disorders in childhood (Huseyinoglu *et al.*, 2012). The prevalence of epileptic disorder in the world is 3 to 5 percent, and more than a quarter of the people experience psychological problems that may require treatment (Bishop & Boag, 2006).

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Received: 9 August 2017; **Accepted:** 30 August 2017



Further, epilepsy causes psychosocial problems and affects people's lives, because of the long and lifelong reason (Mula & Sander, 2016). This disorder has many results, such as conspicuous feeling, discrimination, removal from society, work and employment problems, and commuting with public transport, so the person does not have a good sense of life and is affected by his mental, emotional and social health (Hills, 2007). A large number of these people believe that this complication limits their daily activities and does not meet their expectations of life. They may exhibit many psychosocial responses to their disability and physical illness, including decreasing self-esteem, anxiety, depression, anger and hostility, inappropriate family relationships and multiple constraints (Reilly, Agnew & Neville, 2011).

Studies showed that about 50 percent of children with epileptic disorder, who are having behavioral problems, suffer from social isolation and have lower self-esteem than children with learning problems. A study in Massachusetts found that 65 percent of people with epileptic disorder evaluate themselves negatively (Ettinger & Kanner, 2007; Li 2017). Children and adolescents with epileptic disorder have problems in school, social communication and sport activities (Fejerman, 2002). Also, these children are more harmed in terms of social adequacy than their healthy peers, siblings, and children with other chronic diseases (Soria *et al.*, 2012; Cao 2016). Turky *et al.* (2008) reported that Children and adolescents with epileptic disorder are at risk of a variety of psychological problems, especially depression, hyperactivity-discomfort, and behavioral disorder, and they have many weaknesses in education and learning.

In accordance with helplessness theory, individuals attribute the cause of their helplessness to cases that are classified based on three dimensions, including internal-external, general-specific, and stable-unstable (Peterson & Park, 1998; Abramson, Seligman & Teasdale, 1978; Tabatabaei *et al.*, 2017). Seligman (2007) believes that not only lack of control in helplessness conditions learned affects the health and well-being of humans, but also how this lack is justified, attribution style, is important for the person. Attribution retraining strategies help individuals to achieve the most consistent possible outcomes (Chodkiewicz & Boyle, 2014). This method is a kind of optimistic explanatory training through education, cognitive reform,

model presentation, cognitive and behavioral exercises, feedback, and if necessary, Program and homework changes.

Some studies examined the effect of attribution retraining on physical and psychological consequences of negative events of life (Weinberg, Hall & Sverdlik, 2015). Sukariyah & Assaad (2012) reported that unsuccessful students attribute their failure to internal and stable factors, and attribution training to this group of students will lead to change attributional style and improve academic performance. Tajrishi *et al.* (2015) showed strong relationships between attribution retraining intervention training and mental health for children.

Attribution retraining method has been shown to be a predictor of mental health in process methods of attribution retraining in the occupational context. Based on facts mentioned above, this study aimed to investigate the influence of attribution retraining intervention on psychosocial problems of 14 to 16 year-old students with epileptic disorder by identifying, describing, and comparing the variables of an attribution retraining group in contrast with a routine training group.

Impact evaluation methods

This was a randomized controlled trial (pretest-posttest) with an active routine training group. The aim was to reduce psychosocial problems in 14 to 16-year-old students with epileptic disorder.

Sample

A total of 35 students with epileptic disorder invited to this experimental study, and 15 of these students dropped out of the study during the initial stages. Thus, the final sample consisted of 20 students with epileptic disorder, 12 male students (60%) and 8 female students (40%). The age of participants was ranged from 14 to 16 years ($M = 15.16$; $SD = 0.66$). All the students were in the ninth grade at four public high schools in the province of Jiangsu (China). With regard to nationality, 75% ($n = 15$) were Chinese, and 25% ($n = 5$) were immigrants from America (40%, $n = 2$), Europe (40%, $n = 2$) and Arab countries (20%, $n = 1$), and 30% of the students ($n = 6$) had learning disorder.

We randomly assigned participants to an attribution retraining group (60%, $n = 12$) and a routine training group (40%, $n = 8$). There were no differences concerning age (attribution



retraining group: $M = 15.36$, $SD = 2.46$; routine training group: $M = 15.21$, $SD = 2.74$), gender (attribution retraining group: 42% female, 58% male; routine training group: 37.5% female, 62.5% male), nationality (attribution retraining group: 84% Chinese ($n = 10$), 8% American ($n = 1$), 8% European ($n = 1$), 0% Arabic ($n = 0$); routine training group: 62.5% Chinese ($n = 5$), 12.5% American ($n = 1$), 12.5% European ($n = 1$), 12.5% Arabic ($n = 1$)), and learning disorder (in both groups: 25% yes, 75% no) (see Table 1).

Measures

Dependencies

For our sample of students with epileptic disorder, who have to do personal things in many aspects, we expected growing external dependencies in order to meet the personal needs (Beyenburg *et al.*, 2005; Roodenberg *et al.*, 2011). We used the variable *dependencies* of the Dependent Personality Questionnaire (DPQ; Hyler, 1994) to examine this effect. The scale is a 8-item questionnaire. Tyrer, Morgan & Cicchetti (2004) supported the reliability and validity of the scale. The questionnaire is measured on a Likert scale where 0= Yes, definitely and 3= No, not at all. In our study, the alpha coefficient of the scale obtained 0.83 (before the attribution retraining training program) and 0.75 (after the attribution retraining training program).

The indicators of mental health

We used the indicators of mental health (somatic symptom disorder, anxiety, social performance disorder and depression) of the General Health Questionnaire (GHQ) (Goldberg and Hillier, 1979). The scales cover negative aspects of psychosocial problems. The scale is a 28-question questionnaire. Many studies supported the reliability and validity of the scale (Werneke *et al.*, 2000; Banles, 1983; Sriram *et al.*, 1989; Stansfield and Marmot, 1992; Aderibigbe and Gureje, 1992). The alpha coefficient of the questionnaire obtained 0.88 (before the attribution retraining training program) and 0.86 (after the attribution retraining training program).

The indicators of attribution retraining

We included the indicators *perceived individual ability, used external resources, interpersonal relationship skill and problem-solving skill* as important cognitive behavioral-related outcome variables (Peterson and Steen, 2009) of the Children's Attribution Style Questionnaire -

Revised (CASQ-R; Kaslow & Nolen-Hoeksema, 1991). The scale is a 24-item questionnaire. Some studies supported the reliability and validity of the scale (Thompson *et al.*, 1998). In our study, the alpha coefficient of the questionnaire obtained 0.77 (before the attribution retraining training program) and 0.82 (after the attribution retraining training program).

Intervention design

We developed a 7-weeks (2 hour per week) attribution retraining program with respect to some another attribution retraining interventions, which have been shown to have a positive effect on psychosocial problems (Seligman, 2006, 2007; Steinhardt and Dolbier, 2008) (see Table 2).

Results

Tables 4 and 5 show the results obtained in the attribution retraining group and routine training group in each age group at before the intervention and after the intervention. The scores of the attribution retraining group are lower than those of the routine training group in the variables dependencies, somatic symptom disorder, anxiety, social performance disorder and depression. At before the intervention, the variables of dependencies, somatic symptom disorder, anxiety, social performance disorder and depression, in 3, 4 and 5 years, had higher scores in the attribution retraining group compared to those obtained in the routine training group. However, in after the intervention, the attribution retraining group had lower scores than the routine training group, after the implementation of the attribution retraining program.

While we found no significant differences in the gender (males and females), a significant age (14, 15 and 16 years) effect was found in the variables dependencies, somatic symptom disorder, anxiety, social performance disorder and depression. In Table 5, we can see that the scores of these variables are always higher for the 14 years compared to those achieved by the 16 years, either in the inter-subject factor group (attribution retraining group vs. routine training group) and in the intra-subject factor test (before intervention vs. after intervention).

Table 2 shows the scores of before the intervention and after the intervention for the attribution retraining group and routine training group divided by age.



Table 1. Descriptive statistics for intervention and control groups.

		Total (n = 20)	Attribution retraining group (n = 12)	Routine training group (n = 8)
	Age	15.16 (SD = 0.66)	15.36 (SD = 2.46)	15.21 (SD = 2.74)
Gender	Male	n = 12	58% (n = 7)	62.5% (n = 5)
	Female	n = 8	42% (n = 5)	37.5% (n = 3)
Nationality	Chinese	n = 15	84% (n = 10)	62.5% (n = 5)
	American	n = 2	8% (n = 1)	12.5% (n = 1)
	Europe	n = 2	8% (n = 1)	12.5% (n = 1)
Learning disorder	Arabic	n = 1	n = 0	12.5% (n = 1)
	Yes	n = 5	25%	25%
	No	n = 15	75%	75%

Table 2. Content list of attribution retraining program broken down into goals and activities

Sessions	Goals	Activities
1	Participants become familiar with each other and trainer. Describing the Pennsylvania Program (mental training)	Running pre-test, reviewing the theoretical basis of attribution retraining program
2	Training the relationship pattern between emotional states following confrontation with negative events and individual belief system based on Ellis's proposed model	Offering multiple scenarios involved with an inconvenient event, consequences of encountering these events and the underlying beliefs of these consequences
3	Evaluating individual attribution pattern in the face of unpleasant events	Defining the concept of attribution, optimism against pessimism, explaining events based on Ellis pattern
4	Controversy and deal with catastrophic attitudes and beliefs	Based on Ellis pattern, controversy and obvious energy factors were tested using different scenarios. Participants learn techniques to deal with negative thoughts using four principles: 1) evidence collection, 2) alternative interpretations offer, 3) catastrophic thoughts avoidance, 4) attack map compilation
5	Recognizing behavioral-individual styles	Dynamic communication training using the disk model
6	5-steps training of problem solving skills	Achieving a successful and efficient problem solving in 5 steps: 1) restraining and thinking, 2) looking at affairs with the views of others, 3) setting goals, 4) choosing a way to act after determining positive and negative cases, 5) testing the effectiveness of chosen solution
7	Assertiveness and negotiation social skills training	In assertiveness social skills training: 1) describing objective events, 2) expressing emotions, 3) demand to emotionally and concisely change, 4) investigating change effect on emotional way; In negotiation social skills training: 1) identifying a logical and inaccessible construction, 2) telling a rational request, 3) pay attention to opposite party demands, 4) attempting to reach an agreement, 5) continuing negotiation to reach an agreement (post-test implementation)

The attribution retraining group, when comparing before the intervention and after the intervention, shows significant differences at 14, 15 and 16 years and the variables dependencies, somatic symptom disorder, anxiety, social performance disorder, depression, perceived individual ability, used external resources, interpersonal relationship skill and problem-solving skill.

The findings show a significant increase of dependences in the routine training group, but no significant increase for the attribution retraining group. Further, the reported significant interaction resulted due to a

significant interaction concerning dependencies, somatic symptom disorder, anxiety, social performance disorder and depression. While these variables increased in the routine training group, no changes occurred in the attribution retraining group. The variables perceived individual ability, used external resources, interpersonal relationship skill and problem-solving skill increased in the attribution retraining group, and remained stable in the routine training group.



Table 3. Distribution of group and age scores

		Total (n = 20)		14 years (n=5)		15 years (n=7)		16 years (n=8)		ANOVA		
Variables	Test	Mean	SD	Mean	SD	Mean	SD	Mean	SD	A F-p	B F-p	A.B F-p
Dependencies	BI	2.29	0.52	2.26	0.22	2.28	0.41	2.30	0.42	1.21	7.15**	0.32
	AI	2.38	0.61	2.36	0.24	2.38	0.42	2.39	0.46			
SSD	BI	2.18	0.34	2.13	0.35	2.20	0.34	2.17	0.55	0.03	4.43*	5.45*
	AI	2.23	0.29	2.20	0.67	2.22	0.37	2.24	0.57			
Anxiety	BI	2.31	0.46	2.29	0.35	2.30	0.46	2.32	0.56	0.13	5.36*	4.25*
	AI	2.38	0.48	2.35	0.61	2.37	0.54	2.39	0.29			
SPD	BI	2.14	0.57	2.11	0.26	2.13	0.55	2.15	0.37	0.29	3.22*	6.87*
	AI	2.21	0.53	2.18	0.37	2.20	0.59	2.22	0.46			
Depression	BI	2.27	0.62	2.24	0.46	2.26	0.38	2.28	0.72	0.48	5.16*	5.62*
	AI	2.32	0.66	2.31	0.49	2.33	0.61	2.30	0.28			
PIA	BI	3.35	0.39	3.30	0.48	3.33	0.62	3.39	0.43	0.46	0.29	4.58*
	AI	3.38	0.48	3.33	0.55	3.36	0.53	3.42	0.44			
UER	BI	3.44	0.49	3.41	0.47	3.44	0.54	3.45	0.61	0.48	0.71	6.16*
	AI	3.48	0.22	3.44	0.44	3.47	0.84	3.53	0.42			
IRS	BI	3.25	0.28	3.20	0.27	3.23	0.49	3.28	0.35	0.73	0.67	7.11*
	AI	3.28	0.35	3.23	0.33	3.26	0.72	3.32	0.38			
PSS	BI	3.56	0.52	3.51	0.27	3.54	0.22	3.60	0.64	0.65	0.49	4.49*
	AI	3.57	0.43	3.54	0.36	3.52	0.37	3.63	0.39			

* $p < 0.05$, ** $p < 0.01$

SSD: Somatic symptom disorder; SPD: Social performance disorder; PIA: Perceived individual ability; UER: Used external resources; IRS: Interpersonal relationship skill; PSS: Problem-solving skill; BI: Before intervention; AI: After intervention, A: Test; B: Group

Table 4. Score statistical results (before intervention and after intervention), for each of the two groups divided by age.

Variables	Age	Group	Before Intervention (BI)		After Intervention (AI)	
			Mean	SD	Mean	SD
Dependencies	14	RTG	2.30	0.56	2.42	0.67
		ARG	2.23	0.54	2.31	0.62
	15	RTG	2.32	0.55	2.43	0.66
		ARG	2.24	0.52	2.33	0.61
	16	RTG	2.34	0.59	2.44	0.73
		ARG	2.26	0.62	2.35	0.77
SSD	14	RTG	2.09	0.59	2.24	0.70
		ARG	2.18	0.57	2.17	0.65
	15	RTG	2.11	0.58	2.27	0.59
		ARG	2.20	0.55	2.18	0.64
	16	RTG	2.13	0.62	2.29	0.76
		ARG	2.21	0.65	2.19	0.80
Anxiety	14	RTG	2.26	0.67	2.39	0.78
		ARG	2.33	0.65	2.32	0.73
	15	RTG	2.26	0.66	2.42	0.77
		ARG	2.35	0.63	2.33	0.72
	16	RTG	2.28	0.70	2.44	0.84
		ARG	2.36	0.73	2.34	0.88
SPD	14	RTG	2.07	0.76	2.22	0.87
		ARG	2.16	0.74	2.15	0.82
	15	RTG	2.09	0.75	2.25	0.86
		ARG	2.18	0.72	2.16	0.81
	16	RTG	2.11	0.79	2.27	0.93
		ARG	2.19	0.82	2.17	0.97
Depression	14	RTG	2.20	0.87	2.35	0.98
		ARG	2.29	0.85	2.28	0.93
	15	RTG	2.22	0.86	2.38	0.97
		ARG	2.31	0.83	2.29	0.92
	16	RTG	2.24	0.90	2.30	0.99
		ARG	2.33	0.93	2.31	0.98
PIA	14	RTG	3.33	0.45	3.28	0.56
		ARG	3.28	0.43	3.38	0.51
	15	RTG	3.35	0.44	3.30	0.55
		ARG	3.31	0.41	3.42	0.50
	16	RTG	3.38	0.48	3.33	0.62
		ARG	3.40	0.51	3.52	0.66



UER	14	RTG	3.44	0.35	3.39	0.46
		ARG	3.39	0.33	3.49	0.41
	15	RTG	3.46	0.34	3.41	0.45
		ARG	3.42	0.31	3.53	0.40
	16	RTG	3.49	0.38	3.44	0.52
		ARG	3.51	0.41	3.63	0.56
IRS	14	RTG	3.23	0.41	3.18	0.52
		ARG	3.18	0.39	3.28	0.47
	15	RTG	3.25	0.40	3.20	0.51
		ARG	3.21	0.37	3.32	0.46
	16	RTG	3.27	0.44	3.23	0.58
		ARG	3.30	0.47	3.42	0.62
PSS	14	RTG	3.54	0.54	3.49	0.65
		ARG	3.49	0.52	3.59	0.60
	15	RTG	3.56	0.53	3.51	0.64
		ARG	3.52	0.50	3.63	0.59
	16	RTG	3.59	0.57	3.54	0.71
		ARG	3.61	0.60	3.73	0.75

RTG: Routine training group; ARG: Attribution retraining group

Discussion

This study aimed to investigate the influence of an attribution retraining program on the epilepsy students' mental health. The results of this study showed that the students with epileptic disorder reported an increase of dependences in order to meet the personal needs in the routine training group. In the attribution retraining group, a tendency of non-significant increased dependences was found. It can be concluded that the personal needs are marked by a strong increase in dependences on others for students with epileptic disorder in the routine training group. This result can say that the personal needs supply and cognitive-related dependences are potential psychosocial problems factors for most of the students.

Studies showed that epileptic disorder is an important factor in the psychosocial problems increase (Mula & Sander, 2016). To prove this evidence, we used 2×2 MANOVA. The participants with epileptic disorder reported an increase of somatic symptom disorder, anxiety, social performance disorder and depression after the intervention in the routine training group. As expected, the personal needs supply at high school are marked by a strong increase in somatic symptom disorder, anxiety, social performance disorder and depression for students with epileptic disorder in the routine training group. We observed a significant decrease of somatic symptom disorder, anxiety, social performance disorder and depression in the attribution retraining group (Table 4). Our findings show that an attribution retraining program can be a specific tool to prevent dependences on other from becoming reflected in higher levels of somatic symptom disorder,

anxiety, social performance disorder and depression.

The results of this study showed that attribution retraining program has a positive effect on epileptic students' mental health. These findings are in-line with other studies (Tajrishi *et al.* 2015; Wang *et al.*, 2013). Further, the results showed that attribution retraining program can improve the physical problems of epileptic students. These findings are in-line with other studies (Larisch, 2004; Blankenstein *et al.*, 2002). In-line with other studies (Larisch, 2004), other result of this study showed that attribution retraining program reduces anxiety and depression in epileptic students.

According to the results of this study, it can be concluded that participation in attribution retraining program increases the self-awareness of people towards thoughts and perceptions. In this program, by introducing an abusive and maladaptive behavior to individuals, it can be taught how to create a specific attribution style to avoid behaviors and interactions that lead to abnormal attribution style and help his mental health. Introducing an attribution retraining program, as one of the cognitive interventions, to trainers, psychologists and counselors who provide rehabilitation services to epileptic children can lead them to improve quality of life and promote mental health and prevent many adaptation problems in adulthood.

Providing the attribution retraining training package in family education classes to parents and transferring the training responsibility to them in order to prolong the training course in order to prolong the training course, the need for more exercises at home and parental supervision on the good conduct of

assignments given to students can lead to more accurate results.

The most important limitation of this study was the use of dependent variable numbers. We focused on the indicators of mental health and attribution retraining as dependent variables. Besides these variables the impact of attribution retraining program on academic performance should be examined.

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