



Impact of Emotional Expression of Parents on their Children who have Specific Learning Disorders and the Role of Parental Educational Counseling Program

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Abstract

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BACKGROUND: Children are the world's real treasures; they should be cherished, well raised, and given the chance to develop properly. Some of them in different countries all over the world are suffering from different forms of specific learning disorders, which can be extremely frustrating the school child, especially if associated with parental high emotional expression.

AIM: The purpose of the study is to identify the relation between emotional expressions (EE) of parents and anxiety rate in their children with specific learning disorders (SLDs), and its correlation with serum cortisol level of the children. The effect of parental educational counseling program (PECP) on the anxiety rate of children and parental emotional expression was studied.

METHODS: The study was carried out on 140 children with SLD to evaluate their anxiety rate using Taylor anxiety scale of children, and measuring serum cortisol level. Data were collected from parents by emotional expression scale (EES). Taylor anxiety scale and EES were repeated for children and parents after conducting sessions of PECP.

RESULTS: Results of Taylor anxiety scale showed that 60% of studied children were suffering from morbid anxiety. Results of EES showed that 80% of parents were practicing high emotional expression. Scores of children on Taylor anxiety scale demonstrated significant drop from 33.06 ± 10.4 to 25.85 ± 10.4 after applying the intervention ($p < 0.001$). More than two-thirds of parents became practicing low EE after receiving sessions of the interventional program PECP. Scores of parents on EES showed significant drop from 61.31 ± 16.84 to 36.51 ± 13.89 after PECP ($p < 0.001$). A statistically significant positive correlation between scores of Taylor anxiety scale and EES before PECP was found ($R = 0.533$), and also after PECP ($R = 0.309$). Average level of serum cortisol of children with SLD was 8.973 ± 1.784 mcg/dl, and it was significantly higher in boys than girls ($p < 0.05$). Serum cortisol level of studied children was higher in children with morbid and severe anxiety ($p < 0.001$). Cortisol levels of children were significantly higher in those whose parents were practicing high EE. Serum cortisol level of children revealed positive correlation with each of their scores on Taylor anxiety scale ($R = 0.771$) and scores of parents on EES ($R = 0.468$).

CONCLUSION: Results of this study proved the presence of direct relation between anxiety in school children with specific learning disorders and high emotional expressions of their parents. Results concluded the effectiveness of PECP in the management of children's anxiety and parental emotional expression.

Introduction

According to DSM-5, studies report 15-20 % of school children have specific learning disorders (SLD); 4–9 % for deficits in reading (Dyslexia), 3-7 % for deficits in mathematics (Dyscalculia) [1]. Epidemiological studies estimate SLD prevalence of 15-20 % for difficulties in reading among Egyptian school children [2]. Many children with SLD struggle in school long before being diagnosed. SLDs can be extremely frustrating for the school child, affect the self-esteem and motivation [3]. Considering this, we conducted this study aiming to assess the impact of parental EE on their children's anxiety level.

Regardless of non-academic talents of the child, the academic performance in many times is

taken as gold standard for judgment. These academic challenges combined with an unsupportive social and familial atmosphere will add further burden to the child with SLD. High EE makes the school child with SLD anxious [4].

SLDs are neuro-developmental disorders that share common features of persistent difficulty in learning key academic skills such as reading, writing, or mathematics [5]. DSM-5 considers SLD as a persistent difficulty in learning skills among average or above level of intellectuality. It is not due to intellectual, visual, auditory disabilities, attention deficit, other mental or neurological disorders, psychosocial adversity, or inadequate education [6].

Cortisol, called "stress hormone", participates in response to stress situations, and enters into

complex interactions with the hormonal and immune system [7]. Corticosteroid has frequently been observed to interact functionally in the pathogenesis of anxiety disorders associated with the dysfunctional hypothalamo-pituitary-adrenocortical (HPA) axis system. Chronic increase in cortisol secretion leads to permanent structural changes (up to irreversible damage) to the hippocampus which increase vulnerability to suffer from depression and anxiety disorders [8]. Regarding this, we measured serum cortisol level for children with SLDs.

High emotional expressions are considered to be an adverse family environment, which includes the quality of interaction patterns and nature of family relationships among the family caregivers and patients [4]. High EE is more likely to cause a relapse than low EE. The three dimensions of high EE are hostility, emotional over involvement (EOI), and critical comments. Low EE represents in warmth and positive remarks [9].

On the other hand; when the family is more educated and doesn't have to 'put up' with the patient and his/her disorder, they are more likely to have low EE [10]. The prevalence of severe stress in SLD children is 16.6%, severe depression is 14.2% and severe anxiety is 23.8% [3]. According to DSM-5; criteria of generalized anxiety disorder in children are anxiety and worry associated with one or more of the following six symptoms, most of days for 6 months (restlessness, being easily fatigued, difficulty concentrating, irritability, muscle tension, and sleep disturbance) [11], [12].

Subjects and Methods

The study was carried out on 140 children with SLDs 10-14 years old, attending the learning disability unit attached to psychiatric department of the educational hospital of Helwan University, Cairo, Egypt. Their levels of anxiety were assessed using Taylor anxiety scale and serum cortisol level. Parental emotional expressions were evaluated using the EES. The study began after obtaining written informed consents from parents and approval of the research ethical committee.

All children were recorded in Arabic governmental national schools. Children with co-morbid disorders as attention deficit hyperactivity disease (ADHD), intellectual disabilities, or nocturnal enuresis, were excluded from the study. Those with a history of sensory impairment (visual or hearing defect), history of head injury, neurological disorder, or those who have an insufficient learning environment were also excluded. Children were diagnosed by two psychiatric consultants according to specific criteria of DSM-5, and using battery for diagnostic assessing standards

of developmental and academic learning disabilities (DASDA) (El-Zayat, 2007) [13]. They were in average or above average IQ (> 85) using Stanford-intelligence scale [14].

All children were subjected to the following:

1. Personal history data: To collect the socio-demographic data of children and their parents. It was attached to the informed consent.
2. Stanford-Binet Intelligence Scale fifth edition (SB-5): This scale includes five factors of cognitive ability; fluid reasoning, knowledge, quantitative reasoning, visual-spatial processing, and working memory. Both verbal and nonverbal responses were measured. Each of five factors was often reduced to a ratio known as the IQ [14].
3. Battery for diagnostic assessing standards of developmental and academic learning disabilities (DASDA), (El-Zayat, 2007): It consists of: developmental learning standards (Attention, memory, auditory perception, visual perception, and motor perception), academic learning standards (Reading, writing, and math), emotional difficulties and social behavior scale [13].
4. Taylor manifest anxiety scale (TMAS): Consists of 50 true or false items to assess anxiety level. Total score is obtained by summing answers of 50 questions about anxiety symptoms. Scores were from Zero to 16 (free), 17-20 (mild), 21-26 (moderate), 27-29 (sever) and 30-50 (morbid anxiety) [15]. The test is taken and interpreted as an explicit measure of anxiety, which was translated into Arabic by Fahmy *et al.* [16]. They also conducted the necessary studies on the test so that they were assured of its reliability. Construct validity has been studied on children in the Egyptian environment from the age of 10-15 years.
5. Serum Cortisol level measurement: 5 ml of venous blood were collected. Morning sample was used for measurement as a biological marker for stress [17]. This test was applied in laboratory department of the hospital, collected and analyzed by their staff. It was measured only before applying PECP intervention. Normal range in this age is 3-21 mcg/dl [18].

All parents will be subjected to the following:

Expressed emotional scale (EES)

It includes 48 items; divided into four subscales of questions; seven items for emotional over involvement (EOI), 13 for family warmth and positive remarks, 19 for criticism and hostility, and 9 items for negative perception. (Answers were: never happened, sometimes and always). The scores were designed to be zero for never happen, 1 for sometimes, and 2 for

always. Total score of positive response in each domain reaching >50% were considered (high) EE, and those with scores <50% were considered (low) emotional expression [19], [20]. The scales have been completed before and after applying PECP intervention.

Interventional method: Parental educational counseling program (PECP)

Family counseling is very important for all areas of the children's psychological, social, educational, professional, and emotional sides. Hence, the study conducted an educational counseling program for parents. Sessions of this program aimed to improve the anxiety of children with SLDs through correction of ways of parents to deal with the disorder. PECP was designed after reviewing studies about the same issue. Their results revealed effective development in psychological disorders of children with learning difficulties after conduction of parental health education [21], [22].

The program consisted of 10 sessions over a period of 10 weeks (session per week). Duration of each was 45 min – 1 h. The program was delivered in Arabic language and in simple ways. It included logic, realistic simulating situations to suit the educational, cultural, and socioeconomic levels of the audience.

Illustrative tools, flyers, and diagrams were added to make the program more informative for parents and more competent for the expecting results. Different strategies (like: interactive lectures, videos, role play, assignments, and summarization) were used in conduction of the sessions to cover all styles of learning; visual, auditory, read and write, and even kinesthetic. Handouts had been distributed beside usage of white board and markers to clarify some points.

Interactive lectures, slides of power point material, assignments, and constructive feedbacks were used in conducting all sessions. Role playing was used in sessions of effective parenting, behavioral modification, and anger management.

The sessions and their specific objectives were as follow:

1. Opening Session: To establish rapport with parents, obtain informed written consent, complete forms of EES questionnaire, introduce the program (definition, objectives, procedures, and system of sessions) and to create parent's motivations towards commitment and participation in the program. This was achieved by clarifying the advantages and benefits of the program in helping them to improve the familial atmosphere and the relation with their children who have SLD.
2. Learning Disabilities and Families: To assist parents to be aware of the concept of SLD, its types, signs, causes. It showed the proper

way to deal, manage, and insight the parents about the importance of their effective role in providing the healthy environment for mental health of the child.

3. Continue (Learning Disabilities and Families): To acquire some skills of positive perception, interaction, and proper responses and construct parental cognition for promotion of children's self-confidence and abilities through encouraging their talents.
4. Signs of Anxiety in Children with SLD: To enlighten parents about manifestations and criteria of children's anxiety and to illustrate some important tips and studying techniques to overcome the anxiety in children.
5. Parental Emotional Expression PEE: Concept and types of EE (High and Low) were discussed. Direct relation of parental EE towards children with levels of anxiety was explained, and how to control high EE.
6. Behavior, Behavioral Modification and Positive Reinforcement: To define the behavior and how to note and record. Strategies of behavioral modification were suggested. Concept of positive reinforcement and how to apply the praise were discussed.
7. Temporary Isolation and Anger Management: To identify the temporary isolation as a useful way to punish, and the negative effects of physical and verbal punishment, enlighten parents about meaning of anger and some strategies for management.
8. Communication Skills and Problem Solving: Providing awareness about effective communication and its role in achieving effective parenting. Assist the audience in acquiring skills to solve problems and to find alternatives.
9. Parental Effectiveness (PE) [(The Role Model) and (Acceptance and Unconditional Love)]: Realize that they are the powerful source of learning, emotional support, an element of developing the personality of their children, and the role model to imitate. Clarify the concept of PE, acceptance, and its effect on the behavior. Stimulate parents to build strong bonds with children through unconditional love.
10. Closing Session: For revision, summarization, feedback, assessment, and complete the post- emotional expressions questionnaires. It was in the 10th session.

Results

Socio-demographic data (Table 1) showed that more than half of patients were boys, with an

Table 1: Socio-demographic data of studied group

Socio-demographic data	No	%	Total	%
Age groups (years)			140	100
10–11	101	72.1%		
12–13	30	21.4%		
14	9	6.4%		
Gender			140	100
Boys	82	58.6%		
Girls	58	41.4%		
Age distribution (Mean ± SD)			(10.94 ± 1.210)	100
Boys	10.95 ± 1.264	58.6%		
Girls	8.586 ± 1.903	41.4%		
Sibling order			140	100
Single	14	10.0%		
Youngest	44	31.4%		
Middle	51	36.4%		
Oldest	31	22.1%		
Educational level			140	100
Grade 5	38	27.1%		
Grade 6	52	37.1%		
Grade 7	23	16.4%		
Grade 8	27	19.3%		
Consanguinity			140	100
Positive	19	13.6%		
Negative	121	86.4%		
Marital status			140	100
Married	118	84.3%		
Separated	22	15.7%		
Father occupation			140	100
Professional	78	55.7%		
Not fixed job	11	7.9%		
Employee	51	36.4%		
Mother education			140	100
Illiterate	99	70.7%		
Read and write	41	29.3%		
Total	140	100%		

average age between 10 and 11 years, the average age of the children was from 10 to 14 years; the mean age ± SD of boys were 10.95 ± 1.246 years and of girls 10.93 ± 1.168. Around 40% of them were of middle sibling order and in the sixth educational level of primary stage. Majority of attendants (90%) were mothers, all of them were housewives, and most of them were illiterate and can read and write. Regarding fathers; 60% of them were working in professional jobs (without fixed income). Majority of parents (87%) showed negative consanguinity.

Table 2: Scores of Taylor scale before and after PECP

Level of Anxiety	Taylor before PECP		Taylor after PECP		p-value
	Score	No	No	%	
Free	0–16	14	30	21.4	< 0.001
Middle	17–20	7	23	16.4	
Moderate	21–26	26	28	20.0	
Sever	27–29	8	5	3.6	
Morbid	30–50	85	54	38.6	
Total		140	140	100.0	

Results of Taylor scale showed that 60% of children were suffering from morbid anxiety before PECP. After PECP, percentage of children with morbid anxiety decreased from 60% to around 40%. Percentage of children free from anxiety increased from 10% to more than 20% (Table 2). Scores of Taylor anxiety scale revealed significant drop from 33.06±10.4 to 25.85±10.4 ($p < 0.001$). Results of EES showed that 80% of parents were practicing

Table 5: Cortisol level of children according to level of anxiety

Anxiety L No.	Taylor scale before PECP				Total	p-value
	Free (14)	Mild (7)	Moderate (26)	Severe (8)		
Serum ± Cortisol	5.60 ± 1.706	7.77 ± 0.048	8.16 ± 1.406	8.75 ± 0.935	9.89 ± 1.038	100%

Table 3: Scores of parental EES before and after PECP

Level of EE	EE before PECP		EE after PECP		p-value
	No	%	No	%	
Low	28	20.0	128	91.4	< 0.001
High	112	80.0	12	8.6	
Total	140	100.0	140	100.0	

high EE before PECP. This percentage decreased from 80% to 8.6%. Those who were practicing low EE increased from 20% to 91.4% after receiving the PECP (Table 3). More than two-thirds of parents became practicing low EE, and scores of EES revealed significant drop from 61.31 ± 16.84 to 36.51 ± 13.89 after PECP ($p < 0.001$).

Mean ± SD of serum cortisol level was significantly higher in boys than in girls ($p < 0.05$) (Table 4). Average level of serum cortisol was higher in children with morbid and severe anxiety ($p < 0.001$) (Table 5). Mean level of serum cortisol was higher in children whose parents have high EE ($p < 0.001$) (Table 6). Relation between scores of Taylor scale and EES before PECP revealed a statistically positive correlation ($R = 0.533$) (Figure 1). After PECP, this relation revealed a statistically positive correlation ($R = 0.309$) (Figure 2). Scores of parents on EES revealed a statistically positive correlation with serum cortisol level of children ($R = 0.468$) (Figure 3). Scores of children on Taylor anxiety scale demonstrated a statistically positive correlation with serum cortisol level ($R = 0.771$) (Figure 4).

Table 4: Cortisol level of children regarding their gender distribution

Gender	Boys	Girls	t	p-value	Total
No	(82)	(58)			140
%	58.6%	41.4%			(100%)
Cortisol (mcg/dl) Mean ± SD	9.25 ± 1.65	8.59 ± 1.90	2.185	0.031	8.973 ± 1.784

Discussion

Analysis of socio-demographic data, showed that more than half (~ 60%) of the children were boys, which may refer to higher care of parents towards boys' education more than girls as a reflection of gender discrimination in our country. The prevalence of SLD in males more than females in the current study is in accordance to the U.S. Department of Education and National Center for Education Statistics, (2019) [23].

Table 6: Serum cortisol level of children according to scores of parents on EES

EE No	Low (28)	High (112)	p-value
Cortiso Level	7.182 ± 2.1384	9.421 ± 1.3657	<0.001
Mean ± SD			

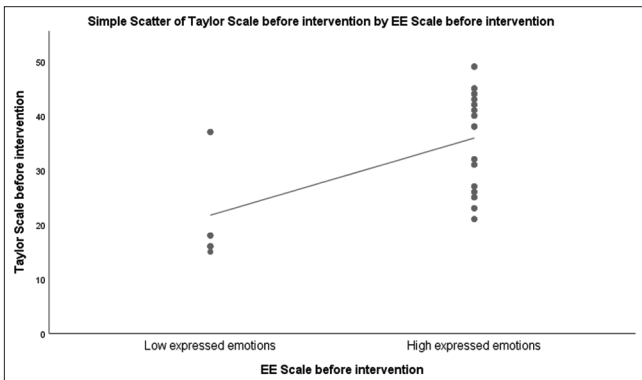


Figure 1: Relation between Taylor and EE scores before PECP

Percentage of mothers in caregivers were 90%, this reflects nature of Egyptian culture in which females are responsible for providing full-time care to family members who are suffering from physical, psychiatric illness, or even mental disorders.

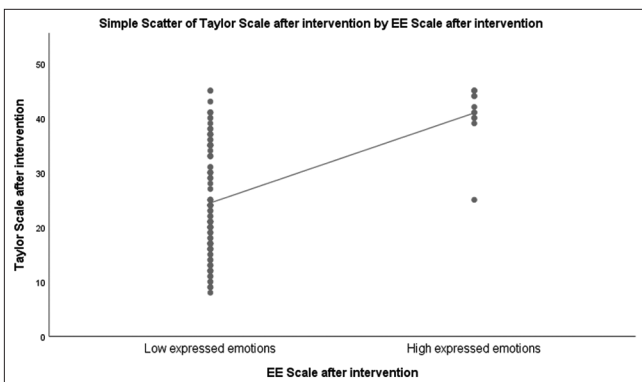


Figure 2: Relation between scores of Taylor and EE after PECP

The prevalence of SLD in children in 6th and 5th educational grades was more than those in 8th and 7th grades. This reflects early appearance of SLDs which is in accordance with American Psychiatric Association, (2013) [24], [25].

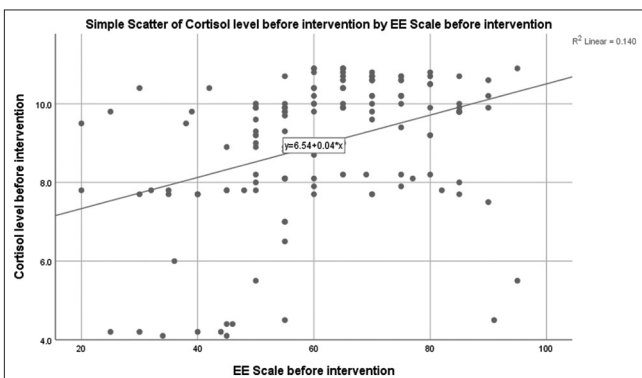


Figure 3: Relation between scores of EES before PECP and serum cortisol level of children

Serum cortisol level is higher in boys than in girls, this may reflect an extra pressure on male children than females. Average serum cortisol in current study was significantly higher in children with morbid and severe anxiety 9.89 + 1.038, 8.75 ± 0.935. In a study performed by Sajaniemi *et al.* 2011 on 200 learning disabled children, it was found that average cortisol level in that study was higher in children with morbid and severe anxiety too [26].

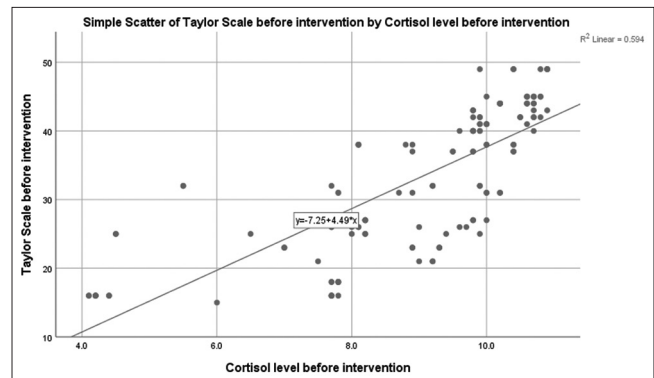


Figure 4: Relation between scores of Taylor scale before PECP and serum cortisol level

Existence of a statistically significant positive correlation between scores of Taylor anxiety scale and EES before and after PECP proved the presence of a direct effect of parental EE on anxiety of the children with SLDs. Improvement of parental EE and children's anxiety after conducting the PECP in spite of high illiteracy level of our sample; suggests that tools and methods used in the interventional program were very appropriate for the educational level of the studied sample.

Conclusion

It was concluded that there is a positive relationship between parental emotional expression and anxiety of school children with SLD. The study proved the presence of a direct effect of high EE of parents on their children. The importance of education and counseling in the improvement of parental EE and reduction of children's anxiety was demonstrated in the study.

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