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Investigating Resilience in Families of Children with and Without ADHD Diagnose

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1. Abstract

Environmental risk factors decrease family functionality and increase the chance of impaired development in children (Seidman et al., 1995; Kaplan, Crawford, Fisher, & Dewey, 1998). The child depends on the family for the need of food, shelter, love and adopting functional styles of problem solving. The power to overcome adversities has been defined as resilience (Walsh, 1996). Resilience is divided into individual and family resilience. Resilience is observed in crises periods (Patterson, 2002). These periods are surfaced when the demands exceed capabilities. Failure on overcoming crises is explained by low resilience power. This dysfunctionality increases the probability for psychiatric disorders, including ADHD. The study involves 30 parents of children with ADHD and 103 parents of children without ADHD. These groups were compared by using the Family Resilience Scale (Kaner, Bayraklı, 2010). This scale was found to be suitable for measuring family resilience. There are various resilience scales (Connor & Davidson, 2003; Hjemdal, Roazzi, Dias, & Friborg, 2015; Jew, Green, & Kroger, 1999; Hu, & Gan, 2008) developed and available to use but only a few measure parental resilience (Siebert, 2008; Sixbey, 2005). The scale has challenge, self-efficacy, commitment to life and control subscales. The scales are scored on a 5 point Likert score. Higher scores indicate higher levels of resilience. The total resilience score is calculated by the sum of subscales. It was hypothesized that parents of children with ADHD will have significantly lower family resilience scores compared to parents of children without ADHD. T test results revealed that there is a significant difference between groups on family resilience scores. Families of children with ADHD had score means in all four subscales and total score. Pearson's correlation analysis revealed challenge subscale as the strongest correlator of family resilience. These findings show similarity to the findings suggesting ADHD diagnoses impair family functionality. This finding is discussed reversed; the possibility of protection by resilient family structure from ADHD diagnosis.

2. Introduction

Attention deficit hyper activity disorder has been defined by symptoms of inattention and hyperactivity/impulsivity (American Psychiatric Association, 2013). Children and adults with ADHD have social and academic dysfunctionality manifestations (Kaplan, Crawford, Fisher, & Dewey, 1998). ADHD has genetic background information as well as social and family background. Genetic background will be briefly mentioned in the next section.

Having ADHD symptoms is quite a challenge for a child. The demands exceed capabilities. Depending on the perspective this challenge can evolve into a crisis. The evidence suggests families of children with ADHD are more dysfunctional compared to the families of non ADHD children (Pour & Kasaei, 2013). Family is a learning environment of social skills, relationships, roles, nurture, love, resilience and etc. Resilience is visible during crises periods. Since it is defined as the ability to withstand and overcome crises. A crisis occurs when the demands exceed the capabilities. After a crisis is encountered the family has two action options; re-adjusting for new demands or keeping the dysfunctional style. Family resilience is used to repair and maintain functionality. Parents of children with ADHD are known to be more prone to anxiety, stress and psychosocial difficulties (Harpin, 2005).

Genetic and Environmental Interaction

The environmental factors regained its significant after the study supporting the interplay of environment and genetics (Hergenhahn, 2009).

A study made by Waterland & Jirtle (2003) revealed that coat colour of the offspring can be altered by modifying the maternal diet. Verbal intelligence was also found to be heritable.

Another study made by Rowe, Jacobson and van den Oord (1999) showed highly educated families have 26% more heritable high verbal intelligence compared to less educated families.

Depression was also associated with genetic factors. The interaction of 5-HTTLPR and impairing environmental factors was found to be influencing the depression (Uher & McGuffin, 2010). Similar to 5-HTTLPR the low MAOA activity increases the risk for antisocial behaviour; however serious adversity (e.g. maltreatment, abuse) is required to surface this behaviour (Caspi, 2002). Another gene prone to insensitive parenting was found to be DRD4 (dopamine receptor gene) which has been found to significantly increase the risk of ADHD (Bakermans-Kranenburg & van IJzendoorn, 2006).

According to the studies on genetic environmental interplay, family adversity and/or dysfunction play the trigger role. The availability of genetic base may not be adequate but with the addition of family adversity the condition has more possibility of developing into a threat for individual's well-being.

Parenting and Family Functions

Family is the core society in the human society concept. The first bond or attachment is critical for lifelong psychological health (Shonkoff et al., 2011; Warren, Huston, Egeland, & Sroufe, 1997). A relationship between the parents and the child which is emotionally positive and mutually beneficial has been the golden standard of healthy/secure attachment (Aronoff, 2012). In these attachments a parent is expected to acknowledge and satisfy the needs of the child (Benoit, 2004). Failure to engage in a secure attachment may harm family relationships, problem solving skills, social adaptation ability, friendships and romantic relationships (Sullivan, Perry, Sloan, Kleinhaus, & Burtchen, 2011). The core feature of psychiatric diagnosing is impairment in daily function. An early impairment caused by the family can follow to later life and determine psychological health.

Parenting styles were categorized into three groups by Baumrind (1971) ; authoritarian parents who imply discipline and obedience, authoritative parents who also establish disciplinary in a more flexed manner, permissive parents who are dismissive and unpredictable. Elder (1968) found that children raised by permissive parents can become independent, self-confident individuals. However Coopersmith (1967) found these children can grow up to be individuals with low self-esteem. Authoritative style has been found to improve school involvement and encourage success (Steinberg, Lamborn, Dornbusch, & Darling, 1992), improve psychosocial maturity (Steinberg, Elmen, & Mounts, 1989), academic adjustment (Strage & Brandt, 1999), child's life satisfaction (Suldo & Huebner, 2004) and psychosocial competence (Lamborn, Mounts, Steinberg, & Dornbusch, 1991). Benefits of Authoritative parenting has found to improve comorbid Schizophrenia and substance use disorders (Barrowclough et al., 2001), bipolar disorder (Clarkin et al., 1990), self-harm (Harrington et al., 1998), phobias and anxiety disorders (Ginsburg, Silverman, & Kurtines, 1995; Dadds, Heard, & Rapee, 1992), eating disorders (Eisler, Dare, Hodes, Russell, Dodge, Le Grange, 2000; Geist, Heinmaa, Stephens, Davis, & Katzman, 2000), trauma (Berkowitz, Stover, & Marans, 2010) and cases of ADHD (Power et

al., 2012; Cunningham, 2007). Additionally warm, accepting, supporting and child-centred parenting has been associated with the development of resilience in children (Zakeri, Jowkar, & Razmjooe, 2010). These children face problems as well as others but their approach and reaction defines the outcome. Beyond attachment children learn patterns of behaviours through observing and modelling their parents (Bandura & Walters, 1977). Due to this, resilient parent's children have a higher chance of adopting a more resilient character.

Family functions are divided by Ooms (1996) into four groups; membership, economic support, caring for the vulnerable and childraising. A family membership will give a member personal and social identity. Furthermore they are responsible providing adequate food, shelter and clothing. Moreover on care, a family also needs to establish self-care for their disabled, ill or vulnerable members. They also need to promote health, nurture, education, safety and social values during childraise. All of the expected benefits are outcomes of a healthy family functioning. The children of these families are expected to display family love, marital commitment and securely attached children.

Circumplex Model of Marital and Family Systems

Several models were formed to understand family systems and their functions (Beavers & Hampson, 2000; Benjamin, 1977; Epstein, Baldwin, & Bishop, 1983; French, & Guidera, 1974; Gottman, 1994; Kantor, 1975; Leff, & Vaughn, 1984; Bales, & Parsons, 2014; Reiss, 1981). Circumplex model has analysed these various models in order to find a mutual pattern and point out the optimal qualities for a functional family (Olson, 2000). Since family resilience is a type of functionality, understanding family systems and their functions becomes a necessity. Model suggests that family systems seek balance in every subsystem.

According to the Circumplex Model, families have three central dimensions; cohesion, flexibility, and communication. Cohesion is defined as emotional bonding that family members have toward one another. It determines how the family balances between separateness and togetherness. The cohesion has four levels; disengaged, separated, connected and enmeshed. It has to find balance between separated and connected levels. This area allows individuals to experience connection and separateness. Extremes in cohesion can either diminish individual independence (enmeshed) or disengage family members where they will have significantly low attachment to each other. It is critical to maintain individual independence without losing togetherness. A separated relationship has more emotional separateness but it is not as disconnected as disengaged relationships. On the other hand connected relationships have more emotional closeness and loyalty to the relationship. In a separated relationship individual times are more important, but in connected relationships the times spend together are more important. The separated relationships will offer more autonomy over the individual for decision making therefore it is more preferable for individuals whom seek more individuality and independence. The connected relationships offer more time together, who seek advice or guidance from the family members may benefit.

A family needs to have flexibility. The amount of flexibility can vary through four levels; rigid, structured, flexible and chaotic. The optimal level is between structured and flexible level. These

Levels are conducive for family relationships and beneficial against problems. Families which adopt a more flexible style tend to be more functional over time. Differences between structured and flexible styles can be observed by leaders. A structured leader will adopt a democratic leadership and negotiate with other family members. Family roles are stable. A flexible leader will be equalitarian. Negotiations will be more open. Roles and rules can change when required. The extremes of flexibility will either be controlled by a "rigid" leader where decisions are imposed, roles and rules do not change and negotiations are highly limited or it can be "chaotic" where decisions and negotiations are impulsive and neither structured nor organized.

Third dimension of this model is communication. Communication acts as pons between cohesion and flexibility. Several factors are important for measuring communication. They are listed by Olson as; listening skills (empathy and attentive listening), speaking skills (speaking only for oneself), self-disclosure (sharing feelings both about the self and the relationship), clarity, continuity tracking (staying on topic), respect and regard. Additionally it is a key skill for problem solving.

Circumplex Model of Marital and Family Systems has demonstrated that families who successfully find balance on the three central dimensions (cohesion, flexibility and communication) will function and solve problems more effectively compared to unbalanced families. This principle is valid for crises periods as well. Functionality at crises periods depends on the resilience of the family (Walsh, 1996). During crises families struggle to regain balance in their family systems. In order to grasp the idea of regaining the balance and resilience, the concept of crises and its structure must be acknowledged.

Double ABCX Model of Family Stress and Adaptation

The McCubbin & Patterson (1983) model explains the process of stress the effects on family.

Stress begins with a) the stressful event, the main source of anxiety and concludes with by b) the outcome of the stressful event. This process is influenced by c) intervening factors; e.g. family resources, coherence and meaning and coping strategies. This model suggests stress is a process with clustered effect.

The crisis begins before the exact occurrence/climax of the crisis. The foundation of the crisis is formed by a crisis producing event (the stressor) resources and perceptions. Crisis producing event is followed by the pile up of demands. The outcome can either be in a bonadaptive (positive end of the continuum, minimum discrepancy between the pile up and family capabilities) or maladaptive (continued imbalance between the piled up demands and family capabilities) type. Pre-crisis will include all available resources but post-crisis resources will only include the adaptive resources. The resources can be personal (self-esteem, knowledge), family system (cohesion, adaptability/flexibility and communication) or social (social support). Members' well-being (physical and psychological) has been impaired. A sense of acceptance and understanding of the current crisis is necessary. On the other hand coherence is influenced by the experiences of the members. These experiences build the individual perspective and shape the definition of the current situation as a crisis, or as a problem. Moreover, the definition given to the crisis influences the perspective on the family resources as well as the problem itself. Therefore coherence helps to mediate between crisis and adaptation. Thus with the functional perspective and adequate resources, the problematic event can be neutralized before it develops or effectively dealt with after the crises is formed.

Family, Resilience and ADHD

Resilience is defined as the ability to withstand and rebound from crisis (Walsh, 1996), alternatively defining psychological resistance. It is categorized under two groups; individual and family resilience. Building resistance requires certain exposure to risk and stress. Resistance derives from psychological coping processes rather than external protective factors. First efforts to understand individual resilience investigated the protective factors that helped children to be resilient (Rutter, 1987). Werner and Smith (1992) shed light to the hardiness of children of the island of Kauai. In spite of all the difficulties they encountered, a significant amount of them have grown to be healthy adults with jobs and capability to love and care (these qualities were rated by various standard measures). Their success was explained with personality traits (happy and easy-going temperament) and protective factors. Higher intelligent was also found to be helpful but not as essential as easy-going temperament. Strong self-esteem was found to be most helpful against adversity. Further explanations on strong self-esteem were made by Kabasa (1985). Strong self-esteem was defined as hardiness with three characteristics; belief that they can influence and control events, adopting a strong feeling of commitment and appreciating change as a challenge for additional improvement. Additional sources (moral and spiritual sources) are also supporting the individual. Feeling of confidence was found to be the most beneficial in face of adversity. This evidence supports Werner & Smith's (1992) findings on self-esteem. Further studies imply on the importance of hopefulness for recovery in different terms. Retaining hope seems to be a key in both building and maintaining an effective coping mechanism.

The family has been found to be a potential source of resilience (Patterson, 2002). The aim then became identifying family mechanisms which enable greater coping.

Having a caring, supportive and close relationship with a significant adult promotes building and maintaining self-esteem (Walsh, 1996). Additionally the parent/significant adult influence the interpretation of problem and resource. This was mentioned previously as a key influencer on resources and perspective. The criticality of perspective has emerged. A strong self-esteem, hardiness or interpretation mainly functions the same way, by changing the lenses and supporting the individual. This support builds confidence to struggle adversity, as this is the only way to overcome problems. It may be said that acceptance of the issue solves many problems. However this acceptance requires self-esteem and hardiness as well.

According to this theory, families must view adversity periods as challenging rather than damaging. As this way of thinking is more likely to improve perspective and increase resilience. The term Bonadaptation is critical at this point. It suggests that families are capable of regenerating after crises. This capacity of self-repair can also be defined as the power of family resilience.

Analysis of Oh and Chang (2014) has formed six dimensions of family resilience:

Collective confidence; a resilient family has the belief that they can manage hardships and perceive control over adversities. These beliefs are shared among all family members. This sense of control is the basic belief that they can control their responses rather than the situation itself. This allows them to distinguish what they can change and what they must accept. In this case resilient families would select the healthiest response in terms of psychology and practicality. E.g. they focus on the solution and get things done rather than getting overwhelmed by the adversity.

Interconnectedness; a resilient family has a sense of connectedness, the belief that they can depend on each other. This interconnectedness enables families to act as a unit and work together. family roles and responsibilities can be re-arranged. Family resilience is associated with interconnectedness.

Positive life view; resilient families tend to have positive and optimistic characteristics. The perspective defines the adversity. A resilient family tends to see the stressful and potential crises producing event as challenging and manageable.

Resourcefulness; ability to identify and utilize social support as needed. But this does not mean that resilient families possess all necessary resources. When the available resources fall behind the family uses creative ways to build or find new resources, e.g. social networks. The support can be gathered within the family as well. Inner family support is defined as commitment. Different types of adversities demand different types of resources, as the resources of the family itself may not be sufficient for many problems.

Open communication; resilient families communicate more openly. This openness includes an open atmosphere to share individual emotions as well as discussing freely to increase productivity.

Collaborative problems solving; effective problem solving involves a set of collaboration based behaviours. These behaviours involve reallocation of roles and responsibilities, rearrangements of life and relinquishing personal desires.

Benefits of being resilient include acceptance of the situation, change in the life perspective, enhanced relationship qualities, reinforced resilient properties and improved health related outcomes.

Resilience is a form of functionality. A type of functionality which can be individual or family based. Children of resilient families had the most benefit from their family. Additionally emphasises on the modelling based learning (Bandura, 1977) and family parenting styles suggested that children first learn by their parents through modelling. Due to all this; the family protects the child from adversities by acting with calmness and focusing on the solution rather than the emotion or whatever leads to overwhelming. But they also teach their children to handle adversities as the same way they did with calmness, focusing on the solution and working with the whole family as a unit

with open communication. Having ADHD symptoms for a child is quite challenging whether it is diagnosed or not. The demands of his social, academic and family environment exceed his capabilities. This proneness to ADHD can be viewed as a type of challenge. If the parents had acted in a healthy manner then the child may have acted in a similar manner which may avoid ADHD diagnose.



3. Method

Participants

The participants are gathered from Neva Counselling Centre and Vona Special Education School. The Counselling centre focuses on children with ADHD and mostly with students who have academic problems and rather lighter conditions such as ADHD. The special education school focuses more on the developmental disorders such as Autism and Asperger's. Plus children with low cognitive capabilities, physical disabilities etc. do also get educated at these schools. Both of these organizations are located in Ankara, Turkey. Most of the data was collected from Neva Counselling Centre. The parents of children from the special education were unwilling to participate in this study. The age span is 6 to 18 years. The control group was 103 parents of children without an ADHD diagnose. The experiment group consisted of 30 parents of children with an ADHD diagnose.

Materials

The forms and the scale were completed by parents. General demographic information was collected with the demographic form, developed for this study. It included basic information about the child as well; age and level of education. Rest of the questions included ADHD diagnose; whether he/she was diagnosed with ADHD or not, ADHD type (predominantly hyperactive, predominantly inattentive or combined) and severity (mild, moderate or intense), type of treatment (pharmacotherapy, psychotherapy, pharmacotherapy plus psychotherapy or no treatment), number of siblings of the child and comorbidity. Age of diagnose has been removed from the form due to uncertainty of most parents.

Family Resilience Scale (FRS)

Family Resilience was developed in Turkey in order to measure family perceptions on resilience (Kaner, Bayraklı, 2010).

The Keiser-Meyer-Olkin Test (0.948) and The Barlett's Test of Sphericity (significant) validated the data is suitable for factor analysis. Principal component analysis marked 17 components with eigenvalues exceeding 1 for FRS which explains 32.49 % of total variance. The rotations were resulted

four factors in 43 items. Then Confirmatory Factor Analysis (CFA) was performed to verify the factor structure. Standardized solution coefficients were between 0.45-0.73 with t values ranging from 10.06-18.00. R^2 values ranged from 0.20 to 0.54. The factors were conceptualized as Challenge (17 items), Self-efficacy (9 items), Commitment to Life (8 items) and Control (3 items). The challenge subscale is defined as the power to face difficulties and overcoming obstacles. Another definition is the ability to be resilient and healthy risk taking. The questions 1,2,5,7,8,12,15,16,17,18,20,21,24,26,41,46 and 59 are challenge subscale questions. The Self-Efficacy subscale represents the necessary skills needed for continuing life with efficiency. The subscale is calculated by the sum of the questions 45, 55, 67, 74, 76, 80, 81, 82 and 83. The Commitment to Life subscale implies the positive life perspective and positive involvement to life. The questions of the subscale commitment to life are; 10, 28, 32, 35, 36, 42, 64 and 65. The final subscale is the control subscale. The control subscale has only three questions; 68, 70 and 75 and it demonstrates ability to control own life. Item-total correlations were calculated and it was found that correlation coefficients ranged from 0.451-0.689 for Challenge, 0.468-0.697 for Self-efficacy, 0.387-0.637 for Commitment to Life, 0.339-0.408 for Control and 0.339-0.697 for the total scale. Construct validity of FRS was also significantly correlated by inter-correlations of the subscales and total scale (0.44-0.93, $p < 0.000$). Additional convergent validity coefficients between FRS and Parental Self-Efficacy Scale and Rosenbaum's Learned Resourcefulness Scale were significantly positive. Furthermore Divergent validity coefficients between FRS and Beck Depression Inventory were significantly negative. The FRS has four subscales as stated above. The scores are calculated on a 5-likert psychometric scale. Minimum score per question is 1 and maximum is 5.

Design

The study is designed as between groups or between subjects. No intervention to control the condition was done. The independent variable was the ADHD diagnose of the child. The experimental group consisted of parents of children with ADHD. The control group was consisted of parents of children without ADHD. The dependant variables were family resilience score (total) and its subscales. The aim was identifying factors possible of contributing to the condition.

The study aims to answer the following questions: Does having a child with ADHD effect family resilience? Does having a child with ADHD decrease family resilience? Obviously the final question can be asked the other way around as well: Does having low family resilience increases the probability of ADHD diagnoses for the child? This discussion will be considered in the discussion part.

Ethics

The standards of behaviour adopted in this research were structured to protect participant rights and freedom. The names were not taken to protect the privacy of the information given by the participants. No physical intervention is done in the research due to this no physical risk was involved. The study has minimum impact on daily functionality and psychological well-being. Personal awareness on ADHD and family functionality was a possible personal benefit. Many of the participants were very interested on the research supporting this relationship. Few of the participants asked for additional debrief sheets to inform relatives or friends. The ethical approval was given by the Psychology Departmental Research Ethics Panel (DREP) and ratified by the Faculty Research Ethics Panel under the terms of Anglia Ruskin University's Policy and Code of Practice for the Conduct of Research with Human Participants. Additional approvals from the Neva Counselling Centre and Vona Special Education School are included at the appendix.

Procedure

Study began by inviting the potential participants. The potential participants firstly get the information sheet and debrief sheet. It was followed by the consent form to get agreement for participation. The participants were first asked to complete the general demographic information form. The information form is followed by the Family Resilience Scale. The completion of both forms took approximately 15 minutes. After the scale is completed the participants were asked if they have any questions regarding the study. If not the withdrawal option is given to them as they have the option to withdraw their participation by the 30th of August by contacting the researcher via the e-mail given in the debrief sheet. None of the participants asked to withdrawal from the study. Participant names were excluded in order to avoid possible effects of parental role sensitivity. The parental role can be quite sensitive to comments and judgment. Their completed forms were shuffled into the rest by the participants as this was mentioned before the study. It is unknown how much this precaution aided the data but the evidence made this act of precaution a necessity.

Results

Demographic findings show that most of ADHD diagnoses were moderate and treated with pharmacotherapy. The comorbidity was less than expected as 76.7 % of ADHD children have no comorbidity. 70 % of both group data was collected from mothers. The mean of parent ages was 36.76 for ADHD group to 37.66 for the control group. Parents who participated in the study mostly had university degrees. The average number of siblings was 1.5 without any difference between groups. And the age mean of the children with ADHD was 10.07 and 11.25 for children without ADHD. Most of the children who are diagnosed with ADHD had combined presentations; however a few parents mentioned they do not remember about the predominance of the diagnosis. 53.4% of the children without ADHD diagnoses were attending primary school followed by 25.2 % attendance to middle school. On the other hand 73.3 % of ADHD children attended primary school (See Table 1).

Experimental Group	
ADHD severity	96 % Moderate ADHD 1 case of Severe ADHD
ADHD type	96 % Combined ADHD presentation
Type of treatment	66.7 % Pharmacotherapy 16.7 % Pharmacotherapy and Psychotherapy 10 % No treatment 6 % Psychotherapy
Comorbidity	76.7 % No comorbidity 13.3 % Oppositional Defiant Disorder 10 % Conduct Disorder
Level of education	73.3 % Primary School 13.3 % Middle School 13.3 % High School

Table 1: Descriptive for Experimental Group

A t-test was used to investigate the difference on family resilience scores between groups.

Calculation revealed a statistically significant difference between two groups [$t(131) = -15.001$, $p < .001$]. With this evidence the null hypothesis has been rejected. The parents of children with ADHD and parents of children without ADHD had significant differences on their Family Resilience Scale scores, thus families resilience differed between family with ADHD children and families without ADHD children. Total scores for family resilience between parents of children with ADHD ($\mu = 95.7$, $\sigma = 21.14$) and parents of children without ADHD ($\mu = 149.72$, $\sigma = 16.22$).

Pearson's correlation coefficients were calculated in order to explain the relationships between total resilience score, challenge, self-efficacy, commitment to life and control subscales. There was a strong positive correlation between total resilience score, challenge subscale score ($r = .954$, $p < .01$), self-efficacy subscale score ($r = .874$, $p < .01$) and the commitment to life subscale score ($r = .852$, $p < .01$). The strongest correlation was between total resilience score and challenge subscale. Control subscale ($r = .141$, $p = .133$) was not correlated to the total resilience score as it failed to display significance. The mean scores of Control subscale were the closest between groups (See Table 2).

	Not diagnosed with ADHD		Diagnosed with ADHD	
	μ	σ	μ	σ
Challenge	66.69	10.98	34.4	11.05
Self-Efficacy	36.95	4.65	25.6	6.39
Commitment to Life	35.0	4.34	24.96	6.60
Control	10.32	2.47	10.8	3.37

Table 2: Subscale means and standard deviations

5. Discussion

The results revealed the relationship between family resilience and ADHD. The parents of children with ADHD had significantly lower resilience scores compared to parents of children without diagnose. The literature did not have any studies involving family resilience and ADHD. However resilience is defined as the ability to withstand and rebound from crises and adversity (Walsh, 1996). The purpose of resilience is to regain balance over the family system. The regained balance indicates the normal functionality. It was well known that ADHD can cause dysfunctions in the family (Foley, 2011). Additional diagnoses e.g. primarily reading disabilities seem to increase family dysfunctionality further (Kaplan, Crawford, Fisher, & Dewey, 1998), the same principle was conducted in this study as well but since the comorbidity percentage was 23.3% the results were not analysed. The functional family atmosphere includes effective parenting, open atmosphere to share feelings and ideas, connectedness, effective problem solving skills, resourcefulness (Oh & Chang, 2014). Family functionality is also determined by family relationships. According to Pires (2012); family functionality is highly correlated by family relationships and negative family relationships were associated with symptoms of ADHD. However Pires (2012) has also emphasized on the importance of parental characteristics. The child who grows up and learns several essential skills is clearly in the influence of the family and parents in cases of functionality and hardiness. The hardiness was used to address to resilience before the term was frequently used (Weiss et al., 2013). The Family Resilience scale and the hardiness definitions show similarity, as both of them focus on the power of struggle and not being discouraged by adversities. Outside of ADHD the resilience of mother's were found to be predicting the family health-promoting activity (Monteith & Ford-Gilboe, 2002). Adopting a health promoting lifestyle is clearly influences the child's well-being. Due to this evidence it can be said that maternal resilience is one of the strongest predictors of child's resilience. This supports the use of an parental resilience perception scale rather than a child resilience scale. This well-being includes the

psychiatric well-being as well since psychological health is a significant part of human health.

Furthermore studies explaining family resilience have emphasized on the family functions for their members (Patterson, 2002). One of the particular emphasizes was on the family's appraisal of their sources of stress and the relevant sources for managing those stressor. The Family Resilience Scale has defined itself as measurement of parental perceptions of resilience. At this part it is obvious that the use of the word perception was to emphasize the importance of parental perspective which determines the outcome significantly by changing the view on resources and the problem itself. This also can be associated with hope in family since hope is only an idea.

The second part of the analysis involved the correlation investigation between total resilience scores and subscales. This analysis revealed Challenge as the strongest correlator of family resilience. Being resilient was defined as the ability to withstand adversities and the Challenge subscale met this definition. The fact that it is the strongest correlator to the total resilience score was expected. The validity testing of the Family Resilience Scale revealed a similar correlation. The scale was advised to be used with precaution with large samples. However it is unclear what was meant by large samples. The correlation analysis was conducted in order to compare with the findings of Kaner and Bayraklı (2010). The control subscale failed to correlate to the scale, as this also supported the validity and reliability of the scale. The definitions of family resilience support the findings and the general aim of the questions. The challenge subscale best defines family resilience as it has questions on; struggling with adversities, overcoming difficulties, risk taking, using previous experiences to solve current problems and most importantly it had a general atmosphere of confidence. The findings also show similarity to the studies between family functionality and ADHD.

This study was conducted to emphasize on the importance of family in ADHD diagnoses. Supporting the child within the family can decrease the stress and anxiety of the child. Children with ADHD symptomology are in great stress, as this stress can be quite a challenge. A diagnose or proneness to ADHD is a crises for the child and family. The ADHD diagnose requires several criteria. But with a

resilient attitude this crisis can become a challenge where family can act as a unit and improve some symptoms. Improvements in the family system can improve the overall well-being of the child. As this kind of improvement has the probability of improving the ADHD symptoms.

Great amount of children may benefit from this as they will avoid using prescription medicines. It is important to remember that these drugs were designed for improving ADHD symptomology. Many of parents today prefer to use pharmacotherapy as the first line of treatment and its effectiveness is supported (Abikoff et al., 2004). However studies made on the clinician uncertainty and possible misdiagnose, urge upon to increase psychoeducation training for the family such as resilience training.

Bruchmüller, Margraf & Schneider (2012) conducted a study where they are given vignettes to several children. The vignettes varied from full ADHD criteria to unfulfilled DSM-V criteria. Boys with inadequate criteria were diagnosed twice more than girls with inadequate criteria. This biasness on client gender reveals the clinician uncertainty and misdiagnose.

This evidence suggests that diagnosing mechanism of clinicians obviously do not function accurately.

Thus urges on the need to maximize family originated ADHD contributions.

6. Conclusion

The interaction of ADHD and family resilience was investigated. The aim of this study was to further understand family factors and ADHD. The analysis investigated ADHD and family functionality further in terms as resilience. It has proven that families with ADHD children lack the adequate family resilience. It is also suggested that these families can benefit from resilience training in order to improve ADHD symptomology.

7. Limitations

First limitation was the group ratio. The sample size which was 133 is satisfactory. But the problem was with the ratio of control and experiment group. The ration should have been closer than the current ratio 1:4.

Second limitation was the lack of comorbidity. Previous studies suggest the comorbidity as an influencing factor on the functionality.

Thirldly the scale was not designed for large samples. The data also lacked the necessary homogeneity and normality. This restrained further analysis with the data. The control subscale showed the smallest difference between groups and lacked a significant correlation to the resilience scores.

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Appendices

Appendix 1 Family Resilience Scale (Turkish version)

	Beni asla tanımlamıyor	Beni biraz tanımlıyor	Beni orta düzeyde tanımlıyor	Beni iyi tanımlıyor	Beni çok iyi tanımlıyor
1. Güçlükler karşısında yılmadan, sabırla mücadele ederim.					
2. Daha önceden de güçlükler yaşadığım için, zor şeylerin üstesinden gelirim.					
5. Başarı için olabildiğince yüksek ama ulaşılabilir hedeflerim var.					
7. Çıkabilecek problemleri önceden kestirerek önlemlerini alırım.					
8. Daha iyi duruma gelebilmek için risk alırım.					
10. Yeni şeyleri denemeyi severim.					
12. İşlerin belirsiz ve tahmin edilemez olması beni korkutmaz.					
15. Ciddi sorunlar karşısında bile iyimserliğimi kaybetmem.					
16. Başkalarının üstesinden gelemeyeceği olumsuz yaşam koşulları ile baş etmeyi bilirim.					
17. En zor şartlarda bile kendi kendimi iyileştirme					

yetisine sahibim.					
18. Bir plan yaptığımda, genellikle bunu gerçekleştirebileceğimden emin olurum.					
20. Kimsenin fark edemediği yaratıcı çözüm yollarını görebilirim.					
21. Düşündüğümde daha güçlü bir insan olduğumu görüyorum.					
24. Zor olan durumları bile lehime çevirmekte hünerliyim.					
26. Çözüm yollarını hemen görerek uygulamaya koyarım.					
28. Sokulgan, arkadaş canlısı ve sıcakkanlıyım.					
32. Genellikle hayatta gülerek bir şeyler bulabilirim.					
35. Yaşamak güzel.					
36. Aktif ve enerjik olmayı severim.					
41. Beklenmedik durumlarla etkili mücadele edebilme gücüne inanıyorum.					
42. Çoğu zaman yaşam benim için ilginç ve heyecan vericidir.					
45. Yaptığım şeylerde başarılı olmayı isterim.					

46. Bir kriz durumunda yararlı bir eylemde bulunmaya odaklanırım.					
55. Biri bana zarar vermek isterse bunu önlemek için elimden geleni yaparım.					
59. Genellikle önüme çıkan engellerin üstesinden gelebilirim.					
64. Yeni insanlarla tanışmak, yeni yaşantılar beni ürkütmez.					
65. Kendimle barışığım.					
67. Diğer insanlara karşı düşünceli ve saygılıyım.					
68. Genellikle yaşamıma bir önceki gün kaldığım yerden devam etmek isterim.					
70. Biri beni üzen bir şey yaptığında, sakinleşip bunu tartışacak duruma geleceğim uygun zamanı beklerim.					
74. Çevremdekiler üzerinde olumlu izlenimler bırakarak onların güvenini kazanırım.					
75. Değiştiremeyeceğim şeyleri kabul ederim.					
76. Yaşamımda duygusal olarak bağlı olduğum kişiler var.					
80. Acil durumlarda insanlar bana güvenirler.					

81. Beni zorlayan bir işi yaparken ne zaman kimden yardım isteyeceğimi bilirim.					
82. Zamanımı boşa harcamam.					
83. Sahip olduğum özellikleri değerli buluyorum.					

Appendix 2 Family Resilience Scale (English version):

Translation was done by the researcher in order to give idea to the readers about the scale.

No validity or reliability was done for the English version.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
1. I will struggle against difficulties with patience.					
2. I can overcome hard issues since I have been through them before.					
5. I have aims of high success but they are also achievable.					
7. I can foresee problems and take precautions.					
8. I will take risk to get better.					
10. I like trying new things.					
12. The ambiguity of things does not intimidate me.					
15. I won't lose my optimism against serious problems.					
16. I know how to overcome issues that others cannot overcome.					
17. I have the self-repair ability which helps even					

with the most difficult times.					
18. When I make a plan, I usually make sure it can be achieved.					
20. I can discover creative ways to deal which has not been discovered before.					
21. I believe I am stronger than I think.					
24. I can turn difficult situations to my benefit.					
26. I will see solutions right away and implement it.					
28. I am friendly, warm and social.					
32. Generally I can find things in life to appreciate.					
35. Life is good.					
36. I love being active and energetic.					
41. I trust my ability to fight against unexpected issues.					
42. In most cases life is interesting and thrilling for me.					
45. I like to be successful at things I do.					
46. I focus on acting on the beneficial in crises.					
55. If someone does his best to harm me, I will do my best to avoid it.					
59. Generally I can overcome the difficulties I face.					
64. Meeting new people does not intimidate me.					
65. I am at peace with myself.					
67. I am respectful and considerate against others.					
68. Usually I like to continue my life where I left on the previous day.					
70. When someone upsets me, I will wait until I am calm and able to discuss this rationally.					
74. I gain my surroundings respect by giving them positive impressions.					

75. I accept the things I cannot change.					
76. I have people in my life whom I am emotionally attached.					
80. People trust me in emergency situations.					
81. I know when and who to ask for help during working with a challenge.					
82. I won't waste my time.					
83. I value my characteristics.					



Appendix 3 Information Form (Turkish version)

Bilgi Formu

Yaşınız

Annesiyim [] Babasıyım []

Eğitim düzeyiniz

[] İlkokul [] Ortaokul [] Lise [] Üniversite []
Yükseklisans

Çocuğunuzun yaşı

Çocuğunuzun eğitim düzeyi

[] İlkokul [] Ortaokul [] Lise [] Üniversite []
Yükseklisans

Çocuğunuz/Çocuklarınız DEHB (Dikkat eksikliği ve hiperaktivite bozukluğu) ile tanındı mı?

[] Evet [] Hayır (Cevabınız hayır ise 11.soruya geçebilirsiniz)

Tanı yaşı

DEHB tipi

[] Hiperaktivite önplanda [] Dikkat eksikliği önplanda [] Karma tip

DEHB yoğunluğu

[] Hafif [] Orta [] Ağır

DEHB tanısı var ise şu an da uygulanmakta olan tedavi yöntemi nedir?

[] İlaç tedavisi [] Psikoterapi [] İlaç tedavisi+ psikoterapi [] Tedavi
uygulanmıyor

Çocuğunuzun kardeş sayısı (çocuğunuz hariç)?

DEHB dışında çocuğunuz aşağıdakilerden hangileri ile tanındı?

[] Karşıt olma-Karşıt gelme bozukluğu

[] Davranım bozukluğu

[] Yıkıcı duygudurum düzenleyememe bozukluğu

Diğer.....
.....

Appendix 4 Information Form (English version)

Participant Information Form

1.Age

2.I'm the Mother [] ,Father []

3.Education level

[] Primary school [] Middle school [] High School [] University [] Master's/ Doctorate

4.Age of the child

5.Education level of the child

[] Primary school [] Middle school [] High School [] University [] Master's/ Doctorate

6.Did your children diagnosed with ADHD (Attention Deficit Hyperactivity Disorder) ?

[] Yes [] No (Cevabınız hayır ise 11.soruya geçebilirsiniz)

7.Age of diagnosis

8.ADHD type

[] Predominantly hyperactive presentation [] Predominantly inattentive presentation
[] Combined presentation

9.ADHD severity [] Mild [] Moderate [] Severe

10.If your child has been diagnosed with ADHD, what kind of treatment is she/he receiving ?

[] Pharmacotherapy [] Psychotherapy [] Pharmacotherapy+ Psychotherapy
[] Not receiving any treatment

11.How many children do you have?

12.Did your child has been diagnosed with any of the above?

[] Oppositional defiant disorder [] Conduct disorder [] Destructive mood dysregulation disorder

other.....
.....
.....

Appendix 5 Ethics Approval Letter

Principal investigator:	Tuna Kadioglu
Project title:	Family Resilience in families of children with ADHD
Project supervisor:	Viren Swami
DREP code:	EHM15-047
Approval date	Approval is valid until the submission date.

Application decision: Approve

All documents (PIS, Consent form, Debrief) given to participants, must be printed onto Anglia Ruskin University headed paper – please see the VLE for the template.

Any advert must contain the following statement:

The study has received ethics approval by the Psychology Departmental Research Ethics Panel (DREP) and ratified by the Faculty Research Ethics Panel under the terms of Anglia Ruskin University's Policy and Code of Practice for the Conduct of Research with Human Participants

It is your responsibility to ensure that you comply with Anglia Ruskin University's Policy and Code of Practice for Research with Human Participants and specifically:

- The procedure for reporting adverse events and incidents.
- The Data Protection Act (1998) and any other legislation relevant to your research. You must also ensure that you are aware of any emerging legislation relating to your research and make any changes to your study (which you will need to obtain ethical approval for) to comply with this.
- Obtaining any further ethical approval required from the organisation or country (if not carrying out research in the UK) where you will be carrying the research out. Please ensure that you send the DREP Secretary copies of this documentation.
- Any laws of the country where you are carrying the research out (if these conflict with any aspects of the ethical approval given, please notify DREP prior to starting the research).
- The British Psychological Society Code of Human Research Ethics and other relevant guidelines

Due to health and safety regulations students may only work in the departmental laboratories between 9-5pm Monday- Friday. Work can only take place when a psychology technician or your supervisor is present in the department to provide support. Please also note that your research may be subject to random monitoring by the committee.

If you make changes to any aspect of your approved research, it is important that you discuss this with your supervisor as they can advise you on whether you need any additional ethical approval.

Appendix 6 Information given to the participant (Consent form, debrief sheet and participant information sheet)

Participant Consent Form

Title of the project: Investigating resilience in families of children with and without ADHD diagnose

Main investigator and contact details: Tuna Kadioğlu (tk376@student.anglia.ac.uk)

Supervisor and contact details: Professor Viren Swami (viren.swami@anglia.ac.uk)

1. I agree to take part in the above research. I have read the Participant Information Sheet that has been provided. I understand what my role will be in this research, and all my questions have been answered to my satisfaction.
2. I understand that I am free to withdraw from the research, for any reason and without prejudice, until 31st of August.
3. I have been informed that the confidentiality of the information I provide will be safeguarded.
4. I am free to ask any questions at any time before and during the study.
5. I have been provided with a copy of this form and the Participant Information Sheet upon request.

Data Protection: I agree to the University¹ processing personal data which I have supplied. I agree to the processing of such data for any purposes connected with the Research Project as outlined to me.

Name of participant (print).....Signed.....Date.....

YOU WILL BE GIVEN A COPY OF THIS FORM TO KEEP UPON REQUEST

¹ "The University" includes Anglia Ruskin University and its partner colleges

If you wish to withdraw from the research, please complete the form below and return to the main investigator named above.

Title of Project: Investigating resilience in families of children with and without ADHD diagnose

I WISH TO WITHDRAW FROM THIS STUDY

Signed: _____

Date: _____

Participant Debrief Sheet

Title of the project: Investigating resilience in families of children with and without ADHD diagnose

Thank you for participating in the study titled "Investigating resilience in families of children with and without ADHD diagnose". This study is looking at:

The role of family in ADHD diagnoses. ADHD is one of the most common child psychiatric diagnosed disorders. It occurs in most cultures in about 5% of children and 2.5% in adults (American Psychiatric Association, 2013).

Biological (Curatolo, D'Agati, & Moavero, 2010) and genetic (Khan & Faraone, 2006; Faraone, Biederman, Chen, Milberger, & et al, 1995) component has been stressed in the literature.

Discussions about the social contribution e.g. the environment have been growing (Larsson, Larsson, & Lichtenstein, 2004; Nikolas & Burt, 2010). In this wide perspective on ADHD, social psychology focuses on the external factors (Banerjee, Middleton, & Faraone, 2007; Froehlich et al., 2011). Social systems are the main subjects in social psychology.

The importance of social factors can reach out to genetics, as an interaction between genetics and environments was suggested in ADHD (Rutter, Moffitt, & Caspi, 2006).

Discussions also include; social constructions (Polanczyk & Rohde, 2007), impact of parent teacher agreement (Wolraich et al., 2004), social and school influence (Schneider, 2006) and many more.

Additional external factors as effects of media (Buckingham, 2000), cultural constructions (Timimi & Taylor, 2003; Anderson, 1996), power of medical industry (Conrad, 2005; Scheffler, Hinshaw, Modrek, & Levine, 2007), biased therapists (Bruchmüller, Margraf, & Schneider, 2012) and many more can be named.

The social system focused on this paper is the family, due to its significance in various studies.

The importance of family has been proven not only in psychology and psychiatry but also on physical health (Videon & Manning, 2003; McCusker, Kennedy, Anderson, Hicks, & Hanrahan, 2002; Gauderer, Crane, Green, DeCou, & Abrams, 2001), religiousness (Myers, 1996), psychological based illness (Minuchin, 1975), anxiety (Barrett, Rapee, Dadds, & Ryan, 1996), aggression (Margolin & Gordis, 2000), criminal act (Utting, Bright, & Henricson, 1993), depression (Weissman, 1984) suicide (Asarnow, Carlson, & Guthrie, 1987) and ADHD (Harpin, 2005; Seidman et al., 1995; Counts, Nigg, Stawicki, Rappley, & Von Eye, 2005; Kepley & Ostrander, 2007).

The same can be said in the Turkish psychology literature about ADHD and family importance (Pekcanlar, Turgav, Miral, & Baykara, 1999; Karaman, Durukan, & Kara, 2012). Parents of children with ADHD are known to be more prone to psychological health problems and benefit greatly from family interventions (Lange et al., 2005). The resilience of the parents may become critical at this point for the children since they are influenced by their parents. Family resilience will be measured with Family Resilience Scale (Kaner, Bayraklı, 2010).

The aim of the study is to investigate the relationship between family resilience and ADHD. Hypothesis of the study is; parents of children with ADHD will have lower scores on Family Resilience Scale.

Thank you once again for your time in completing this study. Please contact me if you have any further questions about the research. My e-mail address is tk376@student.anglia.ac.uk and my supervisor's email is viren.swami@anglia.ac.uk.

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Participant Information Sheet

Title of the project: Investigating resilience in families of children with and without ADHD diagnose

The Research Project

My name is Tuna Kadioğlu and I am a postgraduate student at the Department of Psychology in Anglia Ruskin University. I am conducting a study on “Investigating resilience in families of children with and without ADHD diagnose”. You are invited to participate. My supervisor is Prof Viren Swami(viren.swami@anglia.ac.uk).

I am conducting this study to examine

The importance of resilience in families of children with ADHD.

Data recorded in the course of this study will be analysed with the aim of writing my postgraduate dissertation. If you wish to contact me for further information about the study, please do so via tk376@student.anglia.ac.uk . This research is not funded.

Your Participation in the Research Project

You have been invited to take part in this research because you have met the requirement of the population. There is no obligation to take part in this study. Should you choose not to take part in this study, there will be no penalty involved. If you decide to take part in this study and wish to withdraw, you are free to do so without prejudice, up until 31st of August. If you choose to withdraw from the study, you can do so by handing the researcher the provided withdrawal slip, or contacting him/her via email noting your withdrawal.

If you agree to take part in the study:

The participation will involve completing the demographic information sheet and the Family Resilience Scale. The scale has 37 questions and it will be used to measure family resilience. The demographic information sheet is a form developed to obtain general information about the participants. The test can be assessed with paper or online using online survey software platform. In cases of online participating, individuals may terminate their participation by closing their browser at any stage. In cases of paper participating, participants can contact me (tk376@student.anglia.ac.uk) and can withdraw from the study until 31st of August.

There will be no risk involved in participating in this study, beyond that experienced in day-to-day life. All standard health and safety regulations will be adhered to, and a risk assessment will be completed prior to testing. There are no special precautions that you need to take before, during or after taking part in the study. Agreement to participate in this research does not compromise your legal rights should something go wrong.

Individual participants' results from this research will remain completely confidential, accessed only by me and my supervisor. Your name will be linked with an identification number on the consent form only, and consent forms will be securely stored. Data collected from your participation will be stored securely for three years. After this period, all data and forms will be securely disposed of. YOU WILL BE GIVEN A COPY OF THIS TO KEEP, TOGETHER WITH A COPY OF YOUR CONSENT FORM UPON REQUEST