

# An evaluation of the Medical Model and the Family Systemic Model of Psychology, and Their Description on the Aetiology of ADHD

Z. Deniz AKTAN, and Onur YARAR

**Abstract**—Over the past years, there has been considerable amount of research discussing the aetiology of Attention Deficit and Hyperactivity Disorder [1], [2], [3], [4]. Several researchers have attempted to develop a new perspective for the aetiology of this childhood psychopathological condition by using the different psychological models [5]. Literature in the area demonstrated that each model has several strengths but none of them are totally satisfactory [6]. Therefore, it was proposed that there is not only one reason for Attention Deficit and Hyperactivity Disorder (ADHD) and thus researchers started to focus on different etiological models at the same time [7]. According to Wenar and Kerig [6], there are six main models of childhood psychopathology, known as the medical model, the behavioural model, cognitive models, psychoanalytic models, the family systemic model and social cultural models. Each model has its own perspective and attempts to explain the aetiology of ADHD by using a different paradigm [5]. This paper aims to critically evaluate the aetiology of ADHD by using the medical model and the family structure model. It will then analyse how these models are able to account for the aetiology of ADHD. Finally, it will critically evaluate both these models with their strengths and limitations.

**Keywords**—Attention deficit, hyperactivity, disorder, etiology, family, medical, model.

## I. INTRODUCTION

OVER the past decades, the aetiology of ADHD has been one of the most examined topics in the world of Psychiatry [1], [2], [3], [4]. This part will discuss different aspects on this pathological condition by first defining ADHD.

According to “The Diagnostic and Statistical Manual of Mental Disorders” (DSM-IV) ADHD is a developmental pathological condition which appears before the age of 7, ultimately affecting daily life [8]. According to Green and Chee [9], there are three main components for this developmental pathological condition, such as hyperactivity, attention deficit and impulsivity. The hyperactivity component refers to behaviours like talking a lot, uncontrolled movement and agitation; the second component, which is attention deficit, refers to day dreaming, forgetfulness, uncontrolled focus and

attention problems and the last component, which is impulsivity, refers to the uncontrolled behaviours such as being unable to stay still, unstoppable movement, interrupting a speaker or engaging in a risky activity [9]. The component of hyperactivity is usually overcome in the early years of life; whereas the attention deficit and impulsivity components generally last until the end of life [10]. When taking this in to consideration, it can be easily stated that ADHD is a neurological disorder in both children and adults. The next part of this work will critically evaluate the aetiology of ADHD by using different aspects of the Medical Model and the Family Systemic Models of Psychology.

## II. THE MEDICAL MODEL

Over the past years, several researchers had used medicine to understand the reasons for abnormal behaviours, making the medical model has been one of the most dominant models in the world of psychiatry [5]. According to Wenar and Kerig [6], the medical model consists of two main components, known as organic dysfunctions and physical diseases. The medical model of psychopathology claims that abnormal behaviours are the results of somatic, biologic, genetic or physical problems and can be treated in a medical way [11].

In previous work, Davison and Neale [5] stated that biological researchers have made important progress in the aetiology of psychopathology. In addition, they express that advanced technology gives modern medical science an opportunity to assess the patients by using modern equipment such as EEG, MRI and FMRI. Therefore, it is obvious that the diagnosis and treatment process of several developmental childhood problems are getting easier which are made by using the medical model [5].

The medical model of psychology believes that there are a number of biological hypotheses that examine the aetiology of ADHD and over the past years, all this work has contributed to the development of this model [5]. For instance, supporters of the genetic model believe that hereditary factors are one of the most crucial agents of the medical model [6]. Specifically, in previous work Goodman and Stevenson [12] assessed 238 twins, and results indicated that 51% of monozygotic twins and 38% of fraternal twins have the same diagnosis as their siblings who have ADHD. Moreover, Wenar and Kerig [6] use

Z. Deniz Aktan, T.C. Okan University, Vocational School of Health Service, Istanbul, 34722 Turkey (corresponding author's phone: +905333875486 ; e-mail: deniz.aktan@okan.edu.tr).

Onur Yazar, T.C. Okan University, Vocational School of Health Service, Istanbul, 34722 Turkey (e-mail: onur.yazar@okan.edu.tr).

data from Levy and Hay [13] to examine the efficiency of genetic factors on ADHD and stated that “there is a compelling evidence that heredity plays a major role in causing ADHD”.

The organic deficit hypothesis is another crucial model which is related to neuropsychological factors and used by the medical model to examine the aetiology of ADHD [14]. According to Rutter and Hersov [15], past studies have concentrated on brain injury to explain the aetiology of ADHD. However, in his previous work Barkley [1] indicated that less than five percent of children with ADHD have neurological brain injury problems, therefore Barkley demonstrated that there is no significant association between hyperactivity and brain injury. On the other hand, in their longitudinal work Casttelanos et al. [16] compared the MRI results of ADHD children with a control group, which consists of healthy children. In this work, Casttelanos and colleagues indicated that the pre frontal lobes of children with ADHD were smaller than the control groups' children. Moreover, Casttelanos's hypothesis was supported by Barkley [1] and in earlier work Barkley stated that ADHD children have more difficulties than other children on the assessment process of their neuropsychological test performances which related to frontal lobes performance. Therefore, the functioning of frontal lobes hypothesis was accepted by the world of psychiatry as a neuropsychological factor which assesses the aetiology of ADHD by using the biological and medical context [5].

There has been a considerable amount of research that attempts to analyse the effectiveness of environmental poisons on the aetiology of ADHD by using the medical model approach [5]. For instance, Feingold, who has established the biochemical model of ADHD, claimed that neurotoxins injure the neural systems of ADHD children. Therefore, it was stated that it is necessary to apply a special diet in the treatment process of these children [17]. However, according to Davison and Neale [5] current research demonstrated that there is no significant association between neurotoxin diet and ADHD [18]. Moreover, Davison and Neale [5] added that Nicotine is another substance which plays an important role for development of ADHD. In previous work Braun et al. [19] indicated that exposure to prenatal tobacco is a risk factor for ADHD. Moreover, according to Fung and Lau [20], using tobacco cause higher oscillations of dopamine in brain, which is the cause of ADHD. Overall, when taking this research into consideration, it is clear that environmental poisons are another effective factor on ADHD in accordance to the medical model.

Over the past years, there have been several works that attempt to analyse the strengths and limitations of the medical model [11], [21], [22], [7]. According to McLeod [22], one of the major strengths of the medical model is the objectivity of the approach, which over the past few years has assessed several psychological conditions by using this objectivity [22]. Specifically, in earlier work by Davison and Neale [5] stated

that, the problem solving technique of this model is one of the strongest aspects of the medical approach which refers its objectivity. For instance, this model assesses whether the patients' psychological condition is related to biochemical body stability. In this, it attempts to solve all psychopathological problems by using an appropriate drug which can stabilize the body biochemistry [5]. Specifically, current research indicated that over the past years Ritalin has been used as one of the most appropriate drugs for the treatment process of ADHD [5].

The length of the treatment process and accessibility of this treatment has been another convenient side of this model [5]. In previous work Rutter and Hersov [15], indicated that in ADHD drug treatment reduce the problem behaviour in a very short period, such as 2-3 weeks, whilst this treatment process helps to improve the concentration and motor performance of the children.

Despite its strengths, the medical model is also known to have limitations [6]. There are numerous researchers who attempt to critically evaluate the medical model of psychology [21, 6]. One of the most criticised aspects of this model is its reductionist perspective, which claims that psychology is nothing but biology [5]. In this, supporters of reductionism reject the notion that a person's behaviour can be shaped by the social and cultural environment, and further state that all psychopathological conditions must consist of biological reasons.

According to McLeod [22], the treatment process which is applied by using the medical model has several side effects through drugs; in addition, drugs may not cure the general conditions of patients. Moreover, Wenar and Kerig [6] stated that, the medical model only focuses on physical causes and largely ignores environmental or psychological problems. In previous work, Joseph and Linley [11] claimed that the reductionists' approach is to treat abnormal behaviours in the same way as a broken leg, and ignore the emotional and mental conditions of patients. Additionally, they stated that, there are not only biological effects on abnormal behaviour, environmental factors, social and cultural factors are also effective as much as genetic and biological factors [11].

In earlier work, Wenar and Kerig [6] stated that psychological processes such as stress, traumatic experiences and strong emotions may affect biology as well. In this case, a medical treatment should not be the sole option for the treatment of these patients [6]. For instance, depression may occur because of neurochemical problems; anxiety disorders may occur through the autonomic nervous system problems. However, depression or anxiety may sometimes develop through environmental or social factors such as separation or bereavement [21].

With regard to the treatment process of psychological conditions, Davies and Bhugra [7] stated that it is also necessary to organize the social and environmental perception of the patients. In addition, it is important to focus on parent-child relationships as well; as the use a medical approach may

not always be an effective way for the treatment of such patients [7]. When taking these statements in to consideration, it is obvious that support for the medical model is necessary through the use of other models, such as family systemic models.

### III. THE FAMILY SYSTEMIC MODEL

The other important theoretical orientation of the psychopathological models is the family systemic model [6]. In previous work, Fiese, Wilder and Bickham [23] stated that the family is conceptualized as a system and this system has certain characteristics. According to Wenar and Kerig [6] the main characteristics of this system is that “they are coherent and stable, and they have self-righting tendency, termed *homeostasis*, that allows them to maintain their structure even in the face of change”.

In earlier work, Davison and Neale [5] stated that the Family Systemic Model addresses the influence of family on individual behavior and these systems are complex ones characterized by interdependence between members. According to L'Abate [24] each family member influences each other and in turn, are influenced by every other member in the family system at the same time. Wenar and Kerig [6] use data from Minuchin [25] to examine this model and stated that “one of the ways in which being part of a family helps us to develop is by allowing us to participate in a number of different relationships simultaneously”.

According to Minuchin [25], there are several natural subsystems within the family, such as the *marital subsystem* and *parent-child relationships subsystem*; whilst Minuchin's view on the marital subsystem is the most important one. However, as Kerig [26] stated in previous work, it is particularly important to cover the marital subsystem by drawing clear boundaries around the marital dyad. Otherwise, children may lose their way in the marital relationship, if this boundary cannot be specified. In this case, childhood psychopathology may occur [26].

According to Carr [14], the family systemic model claims that the family relationships are central to personality development; therefore, supporters of this model claim that the aetiology of ADHD refers to children's social interaction with their family. In previous work, Lange et al. [27] demonstrated that high stress in family dynamics, parental psychological problems, low support within the family and coercive parent-child relationships may contribute to ADHD and indicated that there is an association between ADHD and all these conditions.

Bettelheim [28] stated that family structure has a significant effect on the developmental process of ADHD. In addition to this, illness may easily develop if a child's tendency on ADHD is affected by the authority of the family. For instance, if a child's over activities are repressed by the mother, the child may become easily impatient and he/she cannot cope with the expectations of the mother. In this case the mother may present more negative attitudes and the mother-child relationship may

be destroyed by these negative attitudes [28]. Moreover, in previous work DuPAul, McGoey, Eckert and Van Brakle [29] stated that as the families of children with ADHD have a more stressful life in comparison to normal families, they tend to respond more negatively to their children which could be a predisposing factor on the developmental process of ADHD. Therefore, Carr [14] uses data from Nolan and Carr [30] to emphasize the importance of parental training programs, which are applied by attending family therapy and multi-systemic interventions programs. Additionally, they added that these programmes might help to develop parental coping skills with this illness and parent-child relationships [30].

Davison and Neale [5] use data from Ross [31] to explain the importance of family attitudes on ADHD. As such, Hyperactivity is firm by the attention received from the family, which in turn represents the child's over activity attitudes. Therefore, the frequency and intensity of hyperactive behaviours may increase as a result of the family's negative response. Moreover, Ross claimed that the hyperactive behaviours are shaped by the family and siblings attitudes. Therefore, in accordance to the family systemic approach it is obvious that family dynamics, parent-child and parent-siblings relationships and the psychological conditions of family members play an important role on the developmental process of ADHD [5].

Over the past years, a considerable amount of research has been conducted which has attempted to show the strong and weak aspects of the family systemic model [32]. According to Turner and West [32], one of the most crucial strengths of the family systemic model is the narratives that families construct from their own experience. Moreover, this model largely evaluates the environmental and social cultural factors on childhood Psychopathology. Specifically, as Minuchin [25] states, if one of the family members has a psychological symptom or problem, this may affect family dynamics; in addition, children's psychological conditions might suffer because of these environmental effects. In this case, the family systemic model assesses that child-parent relationships as well as child's individual psychology in the family system, and this is one of the most important strength aspects of this model [6].

As mentioned before, although this system has several strengths, it is not totally satisfactory and also has some limitations. Specifically, Turner & West [32] stated that this system has too much focus on homeostasis at the expense of change and largely ignored the biological conditions such as a genetic tendency to psychopathology [32]. As such, it is necessary to support this system by using the other etiological models of psychopathology.

### IV. CONCLUSION

In conclusion, this work attempted to critically evaluate the medical model and the family structure model of childhood psychopathology by using different aspects of several researchers. Initially, it defined both these models and then analysed their different perspectives on the aetiology of

ADHD, and finally strong and weak aspects of both these models were evaluated.

Consequently, it is obvious that each model has a considerable amount of strengths as well as their limitations, and none of them are one hundred percent accountable but they also have several limitations. Moreover, although much progress has been made over the past decades on the aetiology of ADHD, it is obvious that there is no clear evidence in literature which indicates the definite reasons for this illness [14]. Additionally, as each approach has their own treatment method for ADHD, it is obvious that there is no specific treatment process for this illness [30]. For instance, whilst the medical model prefers to treat ADHD by using drugs, the family systemic model emphasize the importance of family therapy in the treatment process of this illness. When taking all these statements in to account, it will be made clearer that there is no satisfactory developmental psychopathological approach which can evaluate the aetiology of ADHD as a developmental psychopathological condition. Therefore, it will be obvious how necessary it is to support each approach by engaging them together.

#### REFERENCES

- [1] R. A Barkley, *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment*. New York: Guilford, 1990
- [2] J. E. Richters, , L. E. Arnold, P. S. Jensen, H. Abikoff, C. Conners, L. Greenhill, ..., J. M. Swanson, NIMH collaborative multisite multi-model treatment study of children with ADHD: I. Background and rationale. *Journal of the American Academy of Child and Adolescent Psychiatry*, 1995, 34, 987-1000. <http://dx.doi.org/10.1097/00004583-199508000-00008>
- [3] D. M. Fergusson, I. E. Fergusson, , L. J. Horwood, G. N. Kinzett, A longitudinal study of detine lead levels, intelligence, school performance, and behaviour. *Journal of Child Psychology and Psychiatry*, 1988, 29, 811-824. <http://dx.doi.org/10.1111/j.1469-7610.1988.tb00753.x>
- [4] C. Johnston & E. J. Mash, Families of children with Attention Deficit/Hyperactivity Disorder: Review and recommendations for future research. *Clinical Child and Family Psychology Review*, 2001, 4, 183-207. <http://dx.doi.org/10.1023/A:1017592030434>
- [5] G. C. Davison & J. M. Neale, *Abnormal Psychology*, 1998, New York: John Wiley & Sons Press.
- [6] C. Wenar & P. Kerig, *Developmental Psychopathology: From infancy through adolescence* (5<sup>th</sup> edition), 2006, New York: McGraw-Hill.
- [7] D. Davies & D. Bhugra, *Models Of Psychopathology (Core Concepts in Therapy)*, 2004, London: Open University Press.
- [8] American psychiatric Association *Diagnostic and Statistical Manual of Mental Disorder* (4<sup>th</sup> ed., text revision), 2000, Washington, DC: American Psychiatric Publishing.
- [9] C. Green & K. Chee, *Understanding Attention Deficit Disorder: Parent's Guide To Attention Deficit Hyperactivity Disorder In Children*, 1995, London: Ebury Press
- [10] J. Biederman, T. Wilens & T. Spencer, Diagnosis and treatment of adult ADHD. In: M.H. Pollack, M.W. Otto & J.F. Rosenbaum, ed.(1996). *Challenges in clinical practice: pharmacologic and psychosocial strategies*, (pp.380-406). New York: Guilford Pres.
- [11] S. Joseph & A. P. Linley, Positive psychology versus the medical model? *American Psychologist*, 2006, 61, 332-333. <http://dx.doi.org/10.1037/0003-066X.60.4.332>
- [12] R. Goodman & J. Stevenson, A twin study of hyperactivity-II. The aetiological role of genes, family relationships, and perinatal adversity. *Journal of Child Psychology and Psychiatry*, 1989, 30, 691-709. <http://dx.doi.org/10.1111/j.1469-7610.1989.tb00782.x>
- [13] F. Levy & D. A. Hay, *Attention, Genes, and ADHD*, 2001, Philadelphia: Taylor & Francis
- [14] A. Carr, *The handbook of child and adolescent clinical psychology: A contextual approach* (2nd edition), 2006, London: Routledge
- [15] M. Rutter & L. Hersov, *Child and Adolescent Psychiatry: Modern Approaches*, 1985, London: Blackwell Scientific Publications.
- [16] F. X. Castellanos, J. N. Giedd, W. L. Marsh, S. D. Hamburger, A. C. Vaituzis, D. P. Dickstein, ..., J. L. Rapoport, Quantitative brain magnetic resonance imaging in ADHD. *Archives of General Psychiatry*, 1996, 53, 607-616. <http://dx.doi.org/10.1001/archpsyc.1996.01830070053009>
- [17] A. A. Brenner, Study Of The Efficacy Of The Feingold Diet On Hyperkinetic Children. Some favorable personal observations. *Clin Pediatr (Phila)*. 1977, Jul;16(7):652-6. <http://dx.doi.org/10.1177/000992287701600715>
- [18] M. D. Gross, Effects of sucrose on hyperkinetic children. *Paediatrics*, 1984, 74, 876-878
- [19] J. M. Braun, R. S. Kahn, T. Froehlich, P. Auinger, P.B. Lanphear Exposures to Environmental Toxicants and Attention Deficit Hyperactivity Disorder in U.S. Children. *Environmental Health Perspectives*, 2006, 114, 1904-1909.
- [20] Y. K. Fung & Y. S. Lau, Effects of prenatal nicotine exposure on rat striatal dopaminergic and nicotinic systems. *Pahramacol Biochem Behaviour*, 1989, 33:1; 6
- [21] B. E. Wampold, Ahn, Hyun-nie & H. L. K. Coleman, Medical model as metaphor: Old habits die hard. *Journal of Counseling Psychology*, 2001, 48, 268-273 <http://dx.doi.org/10.1037/0022-0167.48.3.268>.
- [22] S. A. Mcleod, Simply Psychology. Retrieved on February18,2012from <http://www.simplypsychology.org/medical-model.html>
- [23] B. H. Fiese, J. Wilder & N. L. Bickham, The family context in developmental psychopathology. *Handbook of Developmental Psychopathology* In A. J. Sameroff, M. Lewis, & S. M. Miller (Eds.), 2000.
- [24] L. L'Abate, *Family Psychopathology: The Relational Roots of Dysfunctional Behaviour*, 1998, New York: Guilford Press.
- [25] S. Minuchin, *Families and family therapy*, 1974, Cambridge, MA: Harvard University Press.
- [26] P. K. Kerig, Triangles in the family circle: Effects of family structure on marriage, parenting, and child adjustment. *Journal of Family Psychology*, 1995, 9, 28-43. <http://dx.doi.org/10.1037/0893-3200.9.1.28>
- [27] G. Lange, D. Sheerin, A. Carr, B. Dooley, V. Barton, D., Marshall., M. Doyle, Family factors associated with attention deficit and hyperactivity disorder and emotional disorders in children. *Journal of Family Therapy*, 2005, 27, 76-96. <http://dx.doi.org/10.1111/j.1467-6427.2005.00300.x>
- [28] B. Bettelheim, Bringing up children. *Ladies Home Journal*, 1973, 90, 28.
- [29] G. J. DuPAul, K. E. McGoey, T. L. Eckert & J. VanBrakle, Preschool children with attention deficit/hyperactivity disorder: Impairments in behavioural, social, and school functioning. *Journal of American Academy of Child and Adolescent Psychiatry*, 2001, 40, 508-515. <http://dx.doi.org/10.1097/00004583-200105000-00009>
- [30] M. Nolan & A. Carr, Attention deficit hyperactivity disorder. In A. Carr (ed.), *What Works with Children and Adolescents? A critical Review of Psychological Interventions with Children, Adolescents and their Families* (pp. 65-102), 2000, London: Routledge
- [31] D.M. Ross, & S.A. Ross, *Hyperactivity: Research, theory and action*, 1982, New York: Wiley and sons.
- [32] L. H. Turner & R. West, *Perspectives on family communication*, 1998, Mountain View, CA: Mayfield.