REPUBLIC OF TURKEY
ÇUKUROVA UNIVERSITY
THE INSTITUTE OF SOCIAL SCIENCE
DEPARTMENT OF ENGLISH LANGUAGE TEACHING

ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD) IN EFL CLASSROOMS: ELEMENTARY SCHOOL ENGLISH TEACHERS' KNOWLEDGE OF ADHD, CLASSROOM MANAGEMENT AND TEACHING STRATEGIES

Merve TOHMA

MASTER OF ARTS

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ÖZET

YABANCI DİL OLARAK İNGİLİZCE SINIFLARINDA DEHB: İLKÖĞRETİM İNGİLİZCE ÖĞRETMENLERİNİN DEHB, SINIF YÖNETİMİ VE ÖĞRETİM STRATEJİLERİ HAKKINDAKİ BİLGİLERİ

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Yüksek Lisans Tezi, İngiliz Dili Eğitimi Anabilim Dalı
Danışman: Yrd. Doç. Dr. Neşe CABAROĞLU
Mart 2014, 143 sayfa

Dikkat eksikliği / Hiperaktivite Bozukluğu (DEHB) üzerine yapılan araştırmalar, şimdiye kadar yaklaşık her sınıfta bir çocuğun DEHB' li olduğunu ortaya koymuştur. DEHB belirtileri 2-3 yaşındaki çocuklarda dahi görülmektedir; ancak, bozukluk okulun öğrenciye direttiği ağır talepler nedeniyle en sık ilkokul yıllarında gözlemlenmektedir. DEHB tanısı en sık 7 yaş grubu çocuklara konulmaktadır. Bu nedenle, ilköğretim İngilizce öğretmenlerinin bu öğrencilere daha etkili bir eğitim sunabilmesi için bozukluk hakkında gerekli bilgi donanımına sahip olmaları oldukça önemlidir. Devlet okullarında birer yabancı dil olarak İngilizce öğretmeni olan 252 ilköğretim öğretmeni demografik özelliklerini belirleyen, DEHB hakkındaki bilgilerini ölçen ve DEHB' li öğrenciler için uygulanan eğitimsel müdahalelerini ortaya koyan bir anket doldular. Ankete katılan 252 öğretmen arasından seçilen 10 İngilizce öğretmeni, çalışmanın güvenilirliğini arttırmak adına yarı yapılandırılmış bir görüşmeye tabi tutuldular. Sonuçlar öğretmenlerin Dikkat Eksikliği Bozukluğu Ölçeğinde elde ettikleri ortalama puanın 34 üzerinden 18,23 olduğunu ortaya koydu. Öğretmen Müdahale Anketi ve yarı yapılandırılmış görüşme sonuçlarına bakılacak olursa, öğretmenler bilhassa öğretim yönetimi kategorisinde başarılı oldular. Bu kategori, sınıfın fiziksel düzeni, sınıfın yapısı, çeşitli sunum ve malzeme kullanım biçimi ve ipucu, teşvik ve dikkat denetleyicilerin kullanımı stratejilerini içermekteydi. Öğretmenler token ekonomisi, tepki maliyeti, pozitif pekiştirmeye ara verme, ev tabanlı yükümlülükler ve öz yönetim stratejilerini içeren davranış yönetimi kategorisinde ise başarısız oldular. Öğretmenler davranış yönetimi kategorisine giren müdahalelerin kullanımının daha çok engel teşkil ettiğini dile getirdiler. Birçok demografik değişkenin öğretmenin DEHB bilgi düzeyiyle

hiçbir ilgisinin olmadığı saptandı. Elde edilen bilgiler öğretmenlerin bozukluk hakkındaki teorik ve pratik bilgilerini arttırmak adına daha etkili eğitimlere ihtiyaç duyduklarını ortaya koydu. Bulgular dikkate alınacak olursa, rehberlik öğretmenleri ve hizmet içi eğitim gibi hizmetler sunan diğer hizmet sunucuları, öğretmenlerin DEHB ve bir takım eğitimsel müdahaleler hakkındaki bilgilerine katkıda bulunabilecek faktörleri tekrar gözden geçirmelidir. Rehberlik öğretmenleri ve hizmet sunucuları, DEHB ve eğitimsel müdahaleler konusunda öğretmenlere gerekli bilgiyi sunabilecek bir kaynak olarak görüldüğünden bu konu üzerinde bir inceleme yapılması önem arz etmektedir.

Anahtar Kelimeler: Dikkat eksikliği hiperaktivite bozukluğu (DEHB), ilköğretim İngilizce öğretmenleri, devlet okulları, DEHB bilgisi, eğitimsel müdahaleler

ABSTRACT

ADHD IN EFL CLASSROOMS: ELEMENTARY SCHOOL ENGLISH TEACHERS' KNOWLEDGE OF ADHD, CLASSROOM MANAGEMENT AND TEACHING STRATEGIES

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Research conducted on Attention Deficit/Hyperactivity Disorder (ADHD) so far has revealed that approximately one child in every classroom is estimated to have ADHD. The symptoms of ADHD are present in children as young as 2-3 years old; however, the disorder is most commonly diagnosed in the elementary school years when the demands of school expose the problem. The most common age of diagnosis is 7 years old. Therefore, it is essential that elementary school English teachers are equipped with the necessary information about the disorder to effectively teach these students. 252 elementary school English teachers, all of whom were EFL teachers in state schools, completed a survey containing information on demographic characteristics, a questionnaire on their knowledge of ADHD and a survey on their educational interventions for students with ADHD. 10 teachers were selected from among the 252 teachers and were interviewed in order to collect further data for the study. Results indicated that the teachers' mean scores on the Knowledge of Attention Deficit Disorders Scale (KADDS) were 18,23 out of 34 points. Findings from both Teacher Intervention Survey (TIS) and the semi-structured interview revealed that the teachers performed better in the instructional management category. This category notably included the strategies of physical arrangement of the classroom, structure of the classroom, varied presentation and format of materials and use of cues, prompts and attention checks. Teachers underperformed in behavior management category, notably including token economy, response cost, time-out from positive reinforcement, home – based contingencies and self-management. The results also revealed that the teachers generally perceived more barriers to the implementation of interventions that fell under

the category of behavior management. Findings revealed that teachers need more effective training about ADHD in order to improve the theoretical and practical knowledge about the disorder. It is worth mentioning that school counselors and other service providers need to reconsider the factors that may have a contributing effect on the knowledge of ADHD and implementation of strategies.

Keywords: Attention deficit hyperactivity disorder (ADHD), elementary school English teachers, state schools, knowledge of ADHD, educational interventions

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DISCUSSION AND CONCLUSION

LIST OF ABBREVIATIONS

The following words and phrases appear in the text in full on the first occasion they are used. Subsequently the abbreviation is used.

ADHD : Attention Deficit Hyperactivity Disorder
APA : American Psychological Association
CDC : Center of Disease Control and Prevention
DSM- IV : Diagnostic and Statistical Manual (of Mental Disorders) (4^{th} ed.)
EFL : English as a Foreign Language
KADDS : Knowledge of Attention Deficit Disorder Scale
KARE : The Knowledge of ADHD Rating Evaluation
LAD : Language Acquisition Device
LD : Learning Disabilities
MEB : Milli Eğitim Bakanlığı
NASP : National Association of School Psychologists
NCHS : National Center for Health Statistics
NCLD : National Center for Learning Disabilities
NHIS : National Health Interview Survey
TIS : Teacher Intervention Survey

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CHAPTER I

INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a neurobehavioral disorder (American Psychological Association [APA], 2000), which renders the individual unable to control his behaviours, maintain his attention or avoid distractions (Barkley & Murphy, 2006; Rief, 2005). These deficits caused by ADHD pose a significant challenge for children in school settings. Among the psychiatric disorders, ADHD is the most commonly diagnosed disorder in children in the United States (APA, 2000; Barkley, 2010). Furthermore, a study by Şenol (2005) shows that ADHD appears to be the seventh or fifteenth reason why children are referred to child psychiatrists in Turkey.

Children spend most of their time at schools. During all this time, they are provided with necessary skills and knowledge the school curricula requires. They are taught to fit into the social and cultural expectations that society imposes on them. The school helps them to discover that the world has a rule-governed system and an individual has to follow those rules to guarantee his place in the society. Students with ADHD conflict with this fact more severly than their peers since the core characteristics ADHD brings along such issues as inattention, impulsivity and hyperactivity which render orientation of such children to a rule-governed system problematic (DuPaul & Stoner, 2003). Schools expect students to participate in academic activities, follow rules, be respectful to peers and teachers, be in harmony with the schools' requirements and behave in appropriate ways. These expectations are too demanding for children with ADHD because of the challenges that the disorder brings along. Fulfillment of these expectations is also demanding for teachers; particularly in situations where the teachers have students who are diagnosed with ADHD.

The expectations of schools and teachers are too demanding for students since the problems of inattention and inappropriate behaviour are observed in all children to some extent. However, the frequency and severity of these problems are far beyond the standard levels in children with ADHD, which disable such children manage these difficulties as easily as their peers without ADHD (Daley & Birchwood, 2009).

The amount of time children with ADHD spend at schools renders the schools the primary providers of treatment (Cheng & Jetmalani, 2009). However, teachers

consider ADHD as a very challenging disorder to manage and have difficulties deciding on the appropriate strategy to implement with such children (Dowdy, Patton, Smith & Polloway, 1997). In fact, studies done in the U.S.A. illuminate that the management of ADHD becomes more challenging each day as there is a constant increase in the number of children with ADHD over the last decade (National Center for Health Statistics [NCHS], 2009) with an increased ratio from 7% to 10% since 2005. Therefore, it is essential for teachers to have sufficient knowledge on ADHD in order to be able to employ the appropriate strategies for children with ADHD.

The fact that teachers are generally considered responsible for the behaviours and academic achievement, or failure of the students compels teachers to be more productive in teaching. The situation is more challenging for teachers who have students with ADHD since such teachers need to be more prepared for the difficulties children with ADHD brings to the classroom setting (Bell, Long, Garvan & Bussing, 2011; Rief, 2005). Therefore, investigating ways of helping teachers become aware of the educational interventions available for managing children with ADHD is essential. Studies on ADHD indicate that knowledge of the diagnosis/symptoms, treatment, nature, causes and outcome of the disorder increases the acceptability of interventions (Power, 2000), thus it is also essential to identify what teachers know of ADHD.

1.1. Statement of the Problem

One of the main reasons the parents consult a child psychiatrist is ADHD (Bradley & Johnson, 2002). Conversely, studies conducted in Turkey indicate that ADHD appears to be the seventh or fifteenth reason why children are referred to child psychiatrists. In fact, the frequency of the disorder experienced is higher than expected. Approximately 3% to 6% of elementary school children are estimated to exhibit ADHD (Şenol, 2005), which means there is at least one or two students with ADHD in a classroom with 25-30 students (Kieling et al., 2008). Unfortunately, to the knowledge of the researcher, no large-scale field research has been conducted so far with the purpose of determining the prevalence rates of ADHD in Turkey.

The students diagnosed with ADHD, the teachers managing ADHD in the classroom and the other students in class are adversely affected by the negative returns of the disorder. Children with ADHD are confronted with a number of challenges at school. Academic work is harder for such students since the symptoms of ADHD

renders learning a subject considerably problematic (Waslick & Greenhill, 1997; DSM-IV). Schools require children to adopt certain behaviour patterns, which turns into a real burden for students with ADHD. At schools, students are expected to be a good listener, to be able to sit and focus for long periods of time, and to have good reading and oral language skills. Yet, students with ADHD seem to fail at these requirements. A student with ADHD may frequently appear not to be listening when they are spoken to, may find it challenging to concentrate on what the teacher is saying or writing on the board, and may be easily distracted by things happening around them. Such students are very often observed to interrupt their teacher or classmates by blurting out answers. Schoolwork projects seem rather challenging for these students and they may easily quit dealing with anything that requires substantial mental effort (Waslick & Greenhill, 1997; DSM-IV). Children with ADHD also have social problems. Forming and keeping friendships with their peers is rather challenging for such children since they behave inappropriately and are perceived as a nuisance by other children. Interruption of other children's conversations and games result in the exclusion of the child with ADHD. Therefore, the importance of treating ADHD effectively in childhood and adolescence is essential in that poor social and academic functioning can result in children with ADHD entering adulthood with low self-esteem, resulting in poor economic and employment prospects (National Institute for Clinical Excellence, 2000; Waslick & Greenhill, 1997).

Teachers face the challenges of teaching students with ADHD due to the problematic instructional and behavioral manifestations caused by the disorder. Learning how to cope with ADHD is rather challenging. A child with ADHD can negatively affect the learning environment by causing constant distractions and exhibiting disruptive behavior that will negatively effect teachers and other students (Center for Disease Control and Prevention, 2006). In this respect, classroom management skills of a teacher plays an important role in directing the class properly. However, running a classroom to create an appropriate environment for all the learners is an extremely complex task since teachers need to adapt themselves in a number of different roles which need to be carefully adjusted according to the needs of the children with ADHD (Donald, Lazarus & Lolwana, 2002). Additionally, one of the factors that turn into a challenge for both teachers and other students in the classroom is the time factor. Time allocation is a problem for teachers since the teachers feel that it is not fair to expect the students without ADHD to accomodate themselves to the extended

learning time and to tolerate the improper behaviors of children with ADHD when their focus should be on their own education. Time factor is a problem for students without ADHD due to their feeling of being neglected when the teacher allocates more time for students with ADHD (Pillay, 2001). Therefore, due to the increase in the number of children with ADHD, teachers need to be well-informed about the classroom management strategies to better support the academic growth of these students, while not affecting the rest of the class adversely (Center for Disease Control and Prevention, 2006).

ADHD, as aforecited, affect not only the child, but the teachers and the other students in the classroom. Despite all these adverse affects, Jerome, Gordon & Hustler (1994) stated that there is lack of literature concerning teachers' knowledge of ADHD. The fact that the teachers take part in the initial identification of the disorder and develop the intended behavior in the child by using effective educational interventions, points to the need for more research conducted on the subject area. The direct proportion between the concrete prevelance rates of ADHD in other nations, and the fact that ADHD is the primary reason why people refer to a psychiatrist, may signify that the population of other countries are sufficiently more informed about ADHD. However, the high number of children with ADHD and the low number of children consulting to psychiatrists for ADHD in return indicate the population in Turkey is unfortunately insufficiently informed about the disorder. The lack of knowledge of the population also points to the scarcity of research as well as the lack of training in this field in Turkey. To the best knowledge of the researcher, a set of research has been conducted on ADHD so far in Turkey, yet no research has combined the fields of ADHD and English as a Foreign Language (EFL) so far and no studies exist regarding ADHD in EFL classrooms in particular. It is necessary for researchers in Turkey focus on ADHD in EFL classrooms since one of the primary challenges in education in the country is language learning regardless of the investments made on the field (Demirel,1999). The challenge becomes more problematic and severe for children with ADHD due to the problems accompanied by the disorder (Waslick & Greenhill,1997). Therefore, besides teachers of other branches, it is essential for EFL teachers to have sufficient knowledge on ADHD. This way, when they meet such students in their classrooms they can inform the families, who may not be aware of the existence of the disorder in their children or may not know anything about the disorder at all. Teachers are supposed to approach children with ADHD with more self-devotion, and thus be

more knowledgable about the disorder and strategies to help such children throughout this challenging process. The fact is that even if the teacher is sufficiently knowledgable about the disorder and the strategies to be implemented in the classroom, the application of these strategies generally depends on various variables such as time and effort. Strategies that require more time and effort to implement are likely to effect the willingness of teachers to use the strategy (Power, Hess & Bennett, 1995). Therefore, it is essential to explore the knowledge of EFL teachers with regards to ADHD and the strategies to illuminate how the teachers perceive children with ADHD and to what extent they are beneficial for such students.

1.2. The Aim and Scope of the Study

The present study aims at identifying:

1. to what extent or how much teachers know about the symptoms, diagnosis and causes of ADHD, consequences for teaching and learning, and treatment of ADHD.
2. the classroom management strategies (intervention strategies) that EFL teachers use when teaching students with ADHD. Theory and practice in language teaching and learning are interdependent and can be different. Teachers who have sufficient knowledge about ADHD may experience problems with putting the theory into practice. Therefore, the result of the assessment is essential in that in addition to the determination of the intervention strategies used in the classroom, the relation between the practicing ability and the knowledge of EFL teachers will be determined.
3. the views of elemantary school English teachers about educational intervention strategies. The study analyses the educational interventions in three categories. Firstly, the study assesses the EFL teachers' knowledge of educational interventions. Secondly, the study determines how skilled the teachers perceive themselves when implementing the intervention. Thirdly, the study determines whether the teachers consider the specific intervention applicable in the classroom. The three steps are important to be analysed in that determination of self-evauation and consideration of teachers are valuable guides for educational development and a warning for educational fallacies.

4. whether the demographic characteristics of teachers bear any relation to their knowledge of ADHD. The demographic characteristics include the age, gender, the educational level, the years of teaching experience, ADHD training, the management methods of teachers as well as the self-instructional training for ADHD and the number of students with ADHD taught so far.

1.3. Research Questions

1. To what extent do EFL teachers know about ADHD?
2. Which classroom management strategies (intervention strategies) do EFL teachers use when teaching English to students with ADHD?
3. What are the views of EFL teachers about the educational strategies used when teaching English to children with ADHD?
4. Do the demographic characteristics bear any relation to the teachers' knowledge of ADHD?
   4.1. If yes, which demographic characteristic(s) is/(are) related to their knowledge of ADHD in terms of:
   a. Grade levels?
   b. Years of teaching experience?
   c. Participation in an ADHD training course?
   d. Number of students with ADHD taught?
   e. Participation in in-service training?
   f. Self-study activities?

1.4. Definitions of Terms

Learning: "a relatively pemanent change in an organism's behaviour due to experience" (Myers, 2007)

EFL: English as Foreign Language

LD: Learning Disabilities (LD) are a set of disorders of genetic reasons that cause problems in the ability to listen, speak, read, write and reason (Hamill, 1990).

ADHD: Attention Deficit Hyperactivity Disorder is a disorder displaying itself via symptoms of inattention and hyperactivity- impulsivity, which are beyond the levels appropriate for the age of the child (APA, 2000)

Knowledge of ADHD: Having information on the behaviours and the reasons of those behaviours of a student, understanding the treatment for ADHD, having information on the symptoms/ diagnosis, causes, outcomes and nature of ADHD and finally understanding the educational interventions for children with ADHD.

Educational Interventions: According to Oxford Dictionary, Intevention is "action taken to improve a medical disorder". Educational Interventions are the way to teach the children the academic, communication, social and cognitive skills. The primary aims are to help children acquire the ability to apply all these skills to new conditions and to reduce disruptive behaviour (Myers & Johnson, 2007).

CHAPTER II

LITERATURE REVIEW

The literature review presents a comprehensive overview of ADHD, its prevalence among school aged children, its causes, problems associated with the disorder and the diagnostic criteria. Then, the behavioral and instuctional management techniques are presented. The educational interventions that have been proven effective for children with ADHD are discussed. The chapter also includes some findings obtained from studies on ADHD. The studies conducted so far provide information regarding teachers' knowledge of ADHD in general. In accordance with the title of this study, the chapter provides information regarding ADHD in EFL classes. Furthermore, information concerning obstacles children with ADHD experience is presented. Finally, ADHD and coexisting learning disabilities observed in children with ADHD are discussed.

2.1. Definition of ADHD

American Psychiatric Association (2000) defines ADHD as a disorder displaying itself via symptoms of inattention and hyperactivity-impulsivity, which are beyond the levels appropriate for the age of the child. Barkley (2000) states that a deficit in inhibiting behaviour could be the reason for all of these symptoms observed in most of the children with ADHD.

Diagnostic Statistical Manual of Mental Disorders (DSM-IV-TR) (APA,2000) defines ADHD as behaviours that are observable in individuals in three categories: predominantly inattentive, predominantly hyperactive-impulsive or combined hyperactive-impulsive and inattentive. These patterns are more frequent, severe and persistent in individuals with ADHD when compared to typically developing individuals (Efron, Sciberras & Hassell, 2008).

In contrary to what is actually perceived, ADHD is not a mental or medical problem. Biederman et al. (2011) defines it as a neurobehavioral disorder often observed to arise in early childhood, causing deficits in rule-goverened behavioral and functional impairment followed by problems in academic and social life of the individual in the long run (Barkley & Murphey, 2006). In other words, ADHD is a disorder irrelevant to mental problems, yet is considered a neurological condition that

has an impact on the behaviours of the child to a considerable extent. The disorder manifests itself with hyperactive behaviours, impulsive reactions and inattentive manners which respectively causes the child to be excessively and irritatingly energetic throughout the lesson, to be prone to blurt out answers even when the question is directed to another child in the classroom and to lose attention easily because of distractors. Therefore, it is neccessary to take ADHD into consideration and it is important to minimize the negative effects directly when the child is diagnosed with the disorder.

2.2. Prevalence of ADHD

Millions of children throughout the world are affected by the challenging side-effects of ADHD. The existence of this disorder has been proved to be present in every nation and culture it was put into research (Barkley, 1998b).

The United States is among the leading countries conducting research on ADHD. ADHD was originally known to be an American disorder until 2002 (Biznichuk, 2007). In 2002, the government agencies officially recognised ADHD considering the evidence on the existence and frequency of the disorder throughout the world (Barkley et al., 2002). The United States takes its place in research literature with an approximate ratio of 3% to 5% elementary school children that have been diagnosed with this disorder (APA,2000). Professionals in the United Kingdom assert that 5% of the childhood population of the nation has been diagnosed with ADHD (National Institute for Clinical Excellence, 2000 in Chu, 2003). According to a research conducted on primary school children in South Africa, an approximate ratio of 4% to 5% of the population, which is similar to the prevalence rates of the U.S. and U.K., displayed symptoms of ADHD (Brauer, 1991, Meyer, 1998). Finally, according to National Health Interview Survey (NHIS), in 2010, five million children between ages 3 and 17 were additionally reported to display the symptoms of ADHD with a ratio of 8%. Eleven percent of boys were reported to display the symptoms of ADHD; whereas, the ratio was only 6% in girls.

Studies conducted in Turkey indicate that ADHD appears to be the seventh or fifteenth reason why children are referred to child psychiatrists (Şenol,2005). An epidemiological study on the elementary school children living in urban areas suggests that the prevalence rate of ADHD in Turkey is 8.1% (Erşan et al., 2004). Sürücü (2003)

gives a more comprehensible explanation to the prevalence rates of ADHD in Turkey and asserts that there are 16 million students in Turkey and approximately 1 million of this ratio are diagnosed with ADHD.

2.3. Causes of ADHD

The actual cause of ADHD remains unknown, although studies conducted so far suggest that various factors could be put forth as possible contributers to the occurance of the disorder (Weyandt, 2007).

Studies on families identified eight genes that have a significant correlation with the causation of ADHD, which strengthens the evidence on genetics as a contributing factor (Faraone et. al., 2005; Furman, 2008; Kent et. al., 2005; Visser & Jehan, 2009). Environmental, psychological, and parental factors are also assumed to contribute to the development of ADHD; however, no scientific research has been conducted to support this speculation (Furman, 2008).

The actual causes of ADHD are unknown, yet the outcomes of the disorder can be observed by educators, parents and, psychiatrists. Even though the cause of a problem is unknown, remedies are still possible. Educators, well-informed with the problems that co-occur with the disorder, have the power to eliminate the negative effects of the disorder by using certain management strategies in order to provide an efficient learning environment for students with ADHD.

2.4. Problems Associated with ADHD

In addition to the core problems children with ADHD experience such as inattention, impulsivity, and hyperactivity, ADHD brings along a set of other difficulties which are often considered more severe than the others (DuPaul & Stoner, 2003). Examples of those problems are: congnitive deficits, speech and language impairments, difficulties in interpersonal communications and implementations of tasks (Mash & Wolfe, 2002).

2.4.1. Cognitive Deficits

A misperception about children with ADHD is that they are perceived to suffer from an abnormality in the brain and an inferior intelligence level. However, the fact is that no difference in the intelligence level of children with ADHD exists when

compared to typically developing children, in fact, these children are often considered brighter. Even though their intelligence level stands at a normal or higher level, application of this intelligence to daily routine life poses a significant problem for such children (Mash & Wolfe, 2002).

Barkley (1997) states that ADHD is in co-occurence with cognitive deficits. Cognitive deficits pose negative impact on the daily (Ramsay & Rostain, 2004) and academic life of the individual (Hale, Fiorello & Brown, 2005) in that the child diagnosed with both ADHD and cognitive deficits are observed to have problems with attention, language, perception, the ability to plan and organize, and self-regulation (Gioia et al., 2002; Miller & Cohen, 2001), which are essential for achieving and completing a task (Dawson & Guare, 2004).

Studies conducted on neuro-imaging reveal that the prefrontal cortex of children with ADHD is in a decreased size when compared with those of typically developing children (Cutting et al., 2002). The prefrontal cortex is responsible for the cognitive processes essential for mental skills (Clark, Prior & Kinsella, 2000) such as perception, attention, language performance, the ability to plan and organize and self-regulation (Gioia et al. 2002, Miller & Cohen, 2001); therefore, the decrease in the size of this cortex accompany academic underachievement among such children (Daley & Birchwood, 2009).

2.4.2. Speech and Language Impairments

Language impairment is a language disorder which causes problems in the expressive and receptive language of the individual. Impairments in speech and language are observed in 30% to 60% of the child population with ADHD (Beitchman et al., 2001; Bruce et. al., 2006), which means children with speech and language impairment are most likely to be diagnosed with ADHD as well (McGrath et al., 2008).

Bishop (2006) states that a child with speech and language impairment is observed to initiate talking later than usual, form peculiar and incomplete speech sounds, avoid complex grammatical rules and tend to use relatively simplified language, use a notably restricted vocabulary in the course of conversation, and encounter problems with their verbal short-term memory and the comprehension of complex language, which are in fact features observed in a child with ADHD (Westby et al., 2004).

According to the diagnostic criteria for ADHD, behaviours observed in a child with speech and language impairment are also observed in a child with ADHD. For instance, such children tend to experience difficulties in listening in the course of a conversation and following instructions. In addition, they are more prone to talk excessively and louder, blurt out answers, and interrupt others in a conversation when compared to their peers (Westby et al., 2004).

The linguistic and behavioral difficulties accompanied by speech and language impairment result in lower academic rates (Snowling et al., 2006). The educational underachievement is accompanied by occupational problems. A clear majority of the young population diagnosed with speech and language impairment in childhood tend to be ineffective in their jobs, and almost half of the population never achieve having a regular job (Howlin et al., 2000).

2.4.3. Interpersonal Difficulties

Clinical findings suggest that the 52% to 82% of the children with ADHD experience difficulties in social interactions (Huang-Pollock et al., 2009). According to the current Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-IV), such children experience difficulties in playing activities, waiting turns, listening to others, and not interrupting conversations (APA, 2000)

Studies conducted recently assert that the problems children with ADHD experience in social interactions are the result of a performance deficit rather than a knowledge deficit (Boo & Prins 2007; Huang-Pollock et al. 2009), which implies that such children obtain and comprehend the knowledge necessary for social interactions, yet fail to utilize that knowledge for the direction of behaviours in the course of interaction with others (Boo & Prins 2007).

Reports on the views of teachers and peers of children with ADHD reveal that such children are warm-hearted toward their peers even though they are kept at a distance (Hoza et al. 2005). Children with ADHD are rejected by peers at the very onset of the interaction (Boo & Prins 2007), which results in isolation (Heiman, 2005). The majority of these children are observed to be in a state of controversion with their mothers in particular (Mash & Wolfe, 2002), whereas this ‘wage war’ condition is not as fierce with their fathers (Barkley, 1998a).

Children with ADHD are misperceived to encounter difficulties with social interaction merely in childhood; however, problems in social interaction exist even in adolescence (Bagwell et al., 2001) and adulthood (Friedman et al., 2003). The fact that the social problems continue through their lifetime is likely to result in drug abuse and academic underachievement (Mikami & Hinshaw, 2006).

2.4.4. Situational and Task Factors

The severity of the symptoms vary from one to another child diagnosed with ADHD as well as the performance displayed in different situations and across tasks (Mash & Wolfe, 2005; Barkley, 1998a). The performace of children with ADHD vary by situational factors such as the complexity of the task, the demand for organization, the amount of stimulation, and the immediate feedback obtained from activities (Barkley, in Mash & Wolfe, 2005).

A remarkable observation about children with ADHD is that they are able to watch full-length movies or TV programmes lasting for hours, while short-time tasks easily turn into a burden. The reason is the need for immediate feedback (Martelas, 2004), highly stimulating materials to avoid boredom (Barkley, 1998a: 76, Mash & Wolfe, 2002) and carefully adjusted tasks with regard to complexity and organization (Barkley, 1997 in Mash & Wolfe, 2002) are supplied by these movies and TV programmes. Therefore, the key word to be taken into consideration about children with ADHD with regard to task factor is ‘interesting’ since such children reject tasks that appear uninteresting to them. Unattractive and unfamiliar tasks pose negative feelings for such children in terms of getting involved in the activity (Mash & Wolfe, 2005).

2.5. Diagnosis

ADHD is normally diagnosed by psychologists or qualified professionals; however, the diagnosis of the disorder is a complicated process, which also requires the participation of teachers and parents as the home and school settings are the main environments where the symptoms of the disorder are more frequently observed. Therefore, the participation of teachers and parents are of vital importance in the diagnosis process of the disorder (Elfron et. al., 2008). Unfortunately, there is no diagnostic test to determine the presence of ADHD.

Symptoms observed in children with ADHD are likely to occur in children without ADHD as well (Brown, 2000; Chu, 2003). The false and deceptive indications combined with the lack of medical instruments to test ADHD result in a wrong diagnosis and an unnecessary application of medication (Coles, 2000, Accardo et al., 2000). Most professionals base their diagnosis on the diagnostic criteria of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Text Revision (APA, 2000) along with the identification of the core symptoms.

2.5.1. Primary Symptoms

The primary symptoms of ADHD are inattention, impulsivity and hyperactivity (APA, 2000).

- **Inattention**: Children with ADHD are misperceived to have problems with attentional capacity. Yet, the attention levels of these children are significantly higher than the children without ADHD. In other words, the mind of a child with ADHD is triggered with the whole surrounding stimuli, while the mind of a child without ADHD has the ability of filtering the unnecessary stimuli/information that causes a distraction from the main stimulus (Oberlin, Alfrod & Marocco, 2005), resulting in a failure to accomplish the task required (Bulut, 2007).
- **Hyperactivity**: Hyperactivity is a state of extreme motion, rendering children to launch into an activity that bears no relation to the main task (Barkley, 1998a). American Psychiatric Association (2000) describes children with hyperactivity as individuals that are in need of incessant action and carefully adjusted stimulations to prevent their instant shift to boredom. According to Mash & Wolfe (2002), high levels of energy accompany underachievement, yet Daley & Birchwood (2009) assert that there is no sufficient evidence that supports hyperactivity as a strong reason for academic difficulties in children with ADHD.

  According to a study conducted at the University of Central Florida, children with attention problems utilize this high level of energy to keep alert to

accomplish challenging activities that require too much attention (Rapport, Kofler, Alderson, Timko & DuPaul, 2009).

- **Impulsivity**: Impulsivity is characterized with problems in the regulation of behaviour. Impulsive children experience difficulties in self-control accompanied by impatience in waiting their turns for answers or including themselves in conversations (APA,2000). In impulsive children, reflection comes after action (Bulut, 2007), resulting in a lack of awareness of consequences.

  The high point of impulsivity is that it can be described in behavioral and cognitive respect. In other words, impulsivity is observed both in actions and in thoughts. The behavioral respect is already taken into consideration. Barkley (2000) also considers impulsivity from a cognitive aspect and argues that impulsive children have high tendency to produce more thoughts on irrelevant tasks. Mash & Wolfe (2002) support this statement and assert that the thoughts of these children are out of organization and are in a sort of rush just as their behaviours. Unfortunately, the impulsivity in the thoughts and actions leads to failure in the academic life of such children.

2.5.2. Diagnostic Criteria

Most professionals use The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Text Revised (DSM- IV TR)(2000) to diagnose ADHD. Teachers are not expected to know or use the diagnostic criteria (see Appendix F) since it is the duty of the professionals, yet it is still useful to be aware of these criteria to be able to make correct referrals when necessary.

2.6. Treatment

A multidisciplinary approach which consists of a combination of stimulant medication, behavioral interventions and educational strategies is used for the management of ADHD (Jensen et al, 2007).

2.6.1. Medication

Stimulant medication, which is applied for the treatment of ADHD, has been proven to be effective in developing social interactions and minimizing the attention

problems, thus improving the academic life of the children. The improvement observed in the social, academic and personal life of the children gives rise to the notion that stimulant medication alone is sufficient for the treatment of ADHD (Miranda et al., 2002; Webb & Myric, 2003). However, a wide range of research has shown that medication alone is insufficient and inefficient if the objective is a long-term treatment (Pelham & Gnagy,1999). Medication is effective for a short-term success since the symptoms reoccur when the medication is discontinued. Long-term success is possible with teaching the necessary skills to the children to improve their behaviours and productivity (Pelham & Gnagy, 1999; Miranda et al., 2002).

2.6.2. Behavioral Interventions

Behavioral modification is a team effort. Parents, teachers, and children learn the necessary techniques, strategies and skills from a professional to modify the behaviour of the child with ADHD in a desired way. Teachers and parents use these skills during routine interactions with children. The child, on the other hand, uses these skills on his own to form better interactions with other children without ADHD (National Resource Center on ADHD, 2004).

Behavior modification is often characterized by the term "ABC"s which stands for: Antecedents (things that happen before the behaviour), Behaviours (things that the child does but parents and teachers want to change), and Consequences (things that happen after behaviours). Behaviour modification strategies enable parents and teachers to learn how to change antecedents (e.g. how to give commands to children) and consequences (e.g. how to react against behaviours of a child when a direction is given) with the purpose of changing and rebuilding the behaviour of the child (the child's response to the directions). The way the parents and teachers respond to the reactions results in a modification in the behaviour of the children (National Resource Center on ADHD, 2004).

2.6.3. Educational Interventions

ADHD causes children to struggle with a set of difficulties in the classroom since it is a structured environment (DuPaul & Stoner, 1994). Their inattentiveness, impulsivity, and hyperactivity render sitting still, accomplishing tasks, remanining patient without blurting out the answers extremely difficult to manage (DuPaul &

Stoner, 1994). The problematic characteristics of children with ADHD prevent teachers from establishing an educatory environment. So as to be beneficial for children with and without ADHD and be able to manage the difficulties caused by the disorder, teachers can resort to a range of instructional and behavioral management techniques in their classrooms. Table 1 presents the instructional management techniques that the teachers can use to eliminate learning problems caused by the disorder and to enhance learning as much as possible in the classroom instead. Each technique is briefly described.

Table 1.

The Instructional Management Techniques

The instructional management techniques	**Brief Description**
Structure	Providing organization in the classroom such as posting rules, providing students with daily schedule.
Physical arrangement of the classroom	Arranging seats in classroom, such as having student with ADHD in close proximity to teacher.
Varied presentation of format and materials	Using different modalities such as videos, overheads, posters, models, as well as adding color, shape, or texture.
Use of cues and prompts and attention checks	Using short verbal cues, such as "All eyes on me" or "Listen," subtle nonverbal prompts, a timer, when giving directions, someone repeats them back to the class.
Brief academic tasks interspersed with passive tasks	Presenting tasks briefly, providing instructions in a stepwise fashion rather than all at once, mixing active tasks (doing a project on something) with passive tasks (completing a worksheet independently).
Peer tutoring	Have student help or be helped by another student.

Reference: (Small,2003)

Table 2 presents the behavioral management techniques that teachers can use to eliminate the behavior problems caused by the disorder and to develop the intended behavior instead. Each technique is briefly described.

Table 2.

The Behavioral Management Techniques

The behavioral management techniques	**Brief Description**
Teacher attention	Give student positive and negative verbal feedback, as well as nonverbal feedback such as nods, frowns, smiles, and pats of approval.
Token economy	Awarding tokens or points which are dependent upon specified appropriate behaviors.
Response cost	Taking away privileges, tokens, or points, for inappropriate behavior.
Time-out from positive reinforcement	Restricting the child's access to positive reinforcement such as placing the child in the corner of the room on a chair.
Home-based contingencies	Combining school and home efforts to improve child's classroom behavior, such as teacher fills out a daily report card or check list which indicates whether the child fulfilled the specified goals for that day and sends the report home for the parent to sign and the parent provides suitable rewards at home for appropriate behavior at school.

Reference: (Small, 2003)

Self-management skills such as self-monitoring, self-reinforcement or self-instruction are also inserted as additional subtitles since these skills are considered to contribute to the academic success and behaviour in these children.

2.6.3.1. Structure

The structure of a classroom is either constructive or destructive for children with ADHD in terms of academics and behaviours. Therefore, the classroom is supposed to be organized as required in order to convert the classroom into an effective learning environment for such children. When restructuring the classroom, the difficulties experienced by children with ADHD should be taken into consideration. Children struggling with the disorder experience difficulties with unexpected and unfamiliar situations due to the problems in directing their attention, which is already a challenge, to a completely novel situation, which renders the learning process a burden for such children (Duhaney, 2003). Classrooms organized carefully and rules set with an aim to avoid the inappropriate behaviour in the classroom serve as a facilitator for

children with ADHD since these factors prevent a child encounter an unexpected behaviour or a novel condition leading to confusion.

Classroom rules requiring certain behavioural patterns to be practised in the classroom serve as a contributor to the development of the desired behaviour (Conroy et al., 2008). Rules are necessary to be adjusted according to the target behaviour; in the opposite case, children tend to exhibit agressive and disruptive behaviours with a high degree of probability. Therefore, it is considerably necessary for teachers to apply rules carefully adjusted considering the applicability, the expectations and the ability level in order to develop the desired behaviour (Duhaney, 2003; Brock, 2002). Teachers are supposed to present the rules explicitly (Brock, 2002), remind each rule constantly prior to an activity, explain the consequences of these rules for a better comprehension of the requirements (DuPaul & Stoner, 2003; DuPaul & Weyandt 2006a).

The unexpected cases leading to a distraction of attention are likely to be removed through carefully structured lessons. For instance, it is considerably effective for teachers to create a lecture outline including the main points, expectations and consequences and to provide the children with the lecture outline prior to the lesson. Providing students with a preview of the lesson in the form of an outline renders the instruction more meaningful to children with ADHD (National Association of School Psychologists (NASP), 2010).

To sum up, it is essential to bear in mind that rules are necessary for the improvement of academic performance for children with ADHD in particular (DuPaul & Weyandt, 2006b). Teachers are supposed to explain the rules explicity using a simple language and present these rules to children at the beginning of the school year. Children need to be included in the adjustment process of rules, their opinions need to be asked in the form of a discussion. In this way, children are more prone to accept following the rules (Sadie, 2009). The teacher needs to remind the rules of the classroom constantly and visually prior to the activity to ensure that the children completely understand what is being expected (Amen, 2001; Barkley, 1998a; DuPaul & Stoner, 2003).

2.6.3.2. Physical Arrangements

Making physcial arrangements, for example classroom seating arrangements, is essential for children with ADHD for an effective learning. A classroom arranged

considering the weaknesses and strengths of children is likely to increase, minimize or remove the difficulties accompanied by ADHD (Carbone, 2001; Flick, 1998). Various suggestions are made on how to arrange a class to accomplish the target behavior and the academic goals by various researchers (e.g. Amen,2001; Barkley, 2006; Bester, 2006; Brim & Whitaker, 2000; Carbone, 2001; Cooper & Ideus, 1996; Cruickshank, 2009; DuPaul & Stoner, 2003; Flick, 1998; Green & Chee, 1997; Hyam, 2009; Kewley, 2005 and Staniforth, 2009):

Distraction is a common problem for children with ADHD and is easily triggered even by trivial reasons, which are indeed considered insignificant for their peers without ADHD. Therefore, it is necessary for teachers to avoid even the trivial objects around them that serve as a distractor. For instance, a neat classroom is essential since the improper arrangement of objects standing in sight is very likely to distract the attention of such children. A typical classroom includes posters and projects of students on the walls, yet these objects are still considered as distractors and are necessary to be limited in number. The attention of an individual tends to be swiftly directed to moving objects; therefore, the doors of the classroom should to be closed during class hours.

Seating arrangement has a profound effect on the behaviors of the children with ADHD. Traditional row seating provides convenience for children studying on tasks independently, which requires no interaction at all, yet the traditional seating arrangement is supposed to be changed into a circle in lessons that includes interactive activities such as discussions and presentations. However, group seating means group activities that accompany distractors high in number, which constitutes an obstacle to the attention maintenance of children with ADHD. Therefore, traditional row seating is considered more effective for children with ADHD in terms of tasks that require pair work.

Seating arrangement is a matter requiring attention when the children with ADHD are taken into consideration. Teachers are supposed to avoid seating the child with ADHD in the middle of the classroom. Rather, such children are supposed to be seated beside a wall or at the front row close to the teacher's desk. Additionally, noisy and disorganized children are better seated far from children with ADHD due to their sensitive attention systems. Children with ADHD surrounded by quiet and organized children tend to bring out better performance in class. Even the children sitting at the back of the classroom are likely to distract the attention of the child with ADHD. Auditory or visual interferences such as the sound of the air conditioner or the

movements outside the classroom result in distraction. Therefore, children with ADHD are supposed to be seated far from such interferences.

Structural changes are flexible and modifications could be done when necessary. Physical arrangements in classroom are simple and free of cost. Studies reveal the effectiveness of the intervention in the core and secondary symptoms of children with ADHD (Clark, 2010).

2.6.3.3. Varied Presentation of Formats and Material

Children with ADHD tend to get bored easily due to the activities which are inappropriate for their attention and hyperactivity level. Boredom leads to a lack of concentration along with disruptive behaviours. In order to attract the attention of children with ADHD, teachers are supposed to refer to various materials and strategies (Clark, 2010). Novel materials or strategies are attractive and effective in increasing the attention level as well as decreasing the activity level of such children (National Association of School Psychologists, 2010). For instance, using the board effectively, referring to overhead projectors as visual aids, inserting movement into the original activity, adapting the life of the children to the subject matter, being and allowing students to be funny and active throughout the lecture (Clark, 2010), referring to colors in the course of a task, highlighting the crucial points of a written text with bold characters, directing children to use colored papers to copy the words and referring to animations and films relevant to the subject matter (National Association of School Psychologists, 2010) are among the materials and strategies referred to in a classroom structured with an aim to increase the academic performance of children with ADHD. In addition, DuPaul & Stoner (2003) state that revision of the previous subject matter is essential prior to the presentation of the new material. The authors also suggest that an overview of the new subject matter is necessary for a smooth transition to the main components. Providing information on the subject matter in context facilitates the comprehension of the material. Moreover, in order to facilitate the comprehension of the new material, teachers may refer to the scaffolding technique to teach the subject matter by using the present knowledge of the children with ADHD (Harcombe, 2009). Consequently, varied materials and varied presentation of subject matter contribute to the academic performance of the children with ADHD since novelty and diversity in the

classroom removes boredom, thus results in an increase in the attenion level of such children.

2.6.3.4. Use of Cues, Prompts and Attention Checks

Children with ADHD experience problems with sustained attention, which has an adverse effect on their academic life. Studies reveal the positive effects of cues, prompts and attention checks on the children in terms of maintaining attention through out the task implementation process. (Gardill et al., 1996).

Teachers refer to cueing technique in order to prevent the undesired behaviour of the child, which is likely to cause embarrassment in the classroom (Rief, 1993). There are two forms of cueing: auditory cues and signal cues. Auditory cues direct the attention of the children to the appropriate behaviour or to the important information with attention-grabbing statements such as “this is important” and “this next point is very important” (Clark, 2010). Signal cues, on the other hand, prevent the undesired behaviour by using a hand signal or a word such as “calm down”, “pay attention”, “stop talking” and “stop rocking in the chair” (Positive Behavior Support, 1998). The difficulty in maintaining the attention during the lecture is facilitated when the teacher uses a strong and clear voice and well adjust the use of pauses in the course of instruction (Clark, 2010).

Prompts are essential to achieve desired behaviour. Teachers remind the children the rules to be obeyed in or outside of classroom. Examples to prompts are as follows (Clark, 2010: 18):

- There are five minutes left to complete your work and pack up your books then you will lead off to assembly.
- Line up quietly outside the class.
- When I give the signal, lead in a single file to the hall.
- What are the rules when walking to the hall for assembly?
- That’s correct, no talking or pushing or you will receive warning.

External prompts such as an alarm clock or a bleeper are additionally effective in reminding the children the necessary conducts (Clark,2010).

Examinations are among the leading situations children with ADHD experience difficulty (Robin,1998) due to the problems with reading instructions and the ability to use the allocated time to complete the whole test. Removal or reduction of such difficulties is possible when teachers take certain steps into consideration in the course of preparing an examination. The steps can be presented to the students in the form an attention check list. The steps required to be involved in an examination include (Robin, 1998; Staniforth, 2009):

- Read the directions, choose and circle the key words to keep the main idea.
- Skim the test paper, mark and answer the easy questions first.
- Adjust the time carefully for each question.
- Use the remaining time to go through your answers, spelling and punctuation.
- Make sure that you have your name on the paper.

2.6.3.5. Brief Academic Tasks Interspersed with Passive Tasks

Educational interventions aim to improve the performance of children with and without ADHD during task implementation (DuPaul & Weyandt, 2006a). However, struggling with tasks and instructions poses a greater problem for children with ADHD due to the short attention span accompanied by the disorder, which additionally renders modifications on tasks and instructions essential for such children. Long tasks are supposed to be divided into parts due to the short breaks children with ADHD are in need to accomplish a task. In addition to modifications in tasks, complex instructions are supposed to be clarified in order to render the task implementation process more comprehensible for such children (Reggi & Chronis, 2006).

Modification of tasks is necessary in terms of preventing the undesired behaviour in the classroom (DuPaul & Weyandt, 2006a). Children with ADHD tend to pay more attention to the activities except for tasks required to be completed in the classroom due to the inability to focus on a particular task for a long time. Therefore, reorganization of tasks according to the attention span of such children is essential. Brief tasks provide great convenience for children with ADHD with regards to their short attention span and the need for regular breaks. Such children are easily bored and frustrated even with simple tasks due to their difficulty in focusing. Tasks with higher

level of difficulty are more likely to deter such children from completing the task. The failure in accomplishing the assignment results in a lack of self confidence. Therefore, the difficulty level of tasks is better to be adjusted by degrees from easier to more difficult (NASP, 2010).

Appropriate use of instructions encourage children with ADHD to involve in the task implementation process. Instructions carefully adjusted and modified serve as an effective guidance for such children (DuPaul & Stoner, 2003). Children with ADHD experience difficulties in following the continual instructions and bearing the information in mind. Thus, teachers are supposed to take certain points into consideration for the sake of children with and without ADHD. The significant points teachers should take into account involve 1) using simple statements in speech in order to be more comprehensible 2) attracting the attention of children and maintaining the eye contact 3) using and repeating simplified instructions more than once for children with ADHD 4) teaching the children to repeat the instructions themselves silently until it becomes a habit in order to prevent the children with ADHD from starting the task before it is understood 5) providing the instructions both in written and verbal form since participating visually and auditorily is essential for the confirmation of information and finally, 6) teaching children to underline the instructions dictated verbally (Amen, 2001; Bester, 2006; Cook, 2005; DuPaul & Stoner, 2003; Hyam, 2009; Kewley, 2005; Staniforth, 2009).

Children with ADHD are easily distracted during the implementation of a project for such reasons as the length of the project and whether the project addresses to their field of interest. Teachers resort to choice-making interventions for this reason, which provide the children with more than one choice to be occupied with (Staniforth, 2009). Children are provided with several tasks, expected to make a choice among the presented ones and complete the one selected within a specific time. The fact that the choice is made by children provides them with a sense of control on the task (DuPaul & Weyandt, 2006b).

2.6.3.6. Peer Tutoring

Peers have a significant impact on the behaviour modification of children with ADHD (Reiber & McLaughlin, 2004). Peer support and peer tutoring facilitate the acquisition of the target behaviour (Duhaney, 2003). In the course of the

implementation process of the intervention, the children monitor the behaviours of each other and help the other to acquire the required behaviour (Harlacher, Roberts & Merrell, 2006).

Alienation is among the leading difficulties children with ADHD experience at school, which results in children feeling the need to be accepted among peers. In addition to satisfying the needs, peer tutoring provides prompt feedback to such children as well, thus rendering the children more attentive to the tasks and less impulsive in the course of an activity (Reiber & McLaughlin, 2004). Peer tutoring is effective in terms of providing a cooperation among peers, establishing the environment for rejected children with ADHD to be accepted among peers and strengthening the sense of responsibility of children (Duhaney, 2003).

Peer tutoring has an impact on the academic development of children as well as behaviour modification (Harlacher, Roberts & Merrell, 2006). Intervention provides prompt feedback and error correction, which are, in fact, among the basic techniques such children need in the course of an instruction. Peer-mediated instruction provides children with ADHD with a more stabilized attention, which results in a decrease in time spent on the task. No matter how hard a teacher struggles to teach the children a subject matter, the instruction remains incomplete since the teacher experience difficulties in speaking the same language with the children due to their age and experience. However, a child is able to speak the same language with peers due to the same age and similar experiences. Therefore, peer tutoring is essential for a deep comprehension of course subjects and for the acquisition of the target behaviour (National Association of School Psychologists, 2010). The intervention is practiced by one or more peer in combination (DuPaul & Weyandt, 2006a; Reggi & Chronis, 2006). Even 20 minutes of peer tutoring a day is sufficient to create a difference in the behaviours and the academic life of the children with ADHD (NASP, 2010).

2.6.3.7. Teacher Attention

Teacher attention is an intervention that aims to decrease inappropriate behaviour in classroom (Abramowitz & O'Leary, 1991). Teachers refer to either positive or negative verbal and nonverbal feedback to encourage or discourage a certain behaviour. Positive feedback encourages repetition of a behaviour, thus plays a significant role in behaviour management (DuPaul & Stoner, 2003). Positive feedback

is provided by reinforcers such as smiles, praise, positive attention and rewards, which increase the likelihood of the behaviour displayed (Barkley, 2006; DuPaul & Stoner, 2003) and the withdrawal of such positive reinforcers and positive teacher attention when an inappropriate behaviour is displayed decreases the likelihood of that behaviour (Barkley, 1998b). However, studies reveal that positive feedback is insufficient to prevent the undesired behaviour. Positive and negative feedback are complementary interventions for the reinforcement of the target behaviour and the improvement of the academic performance of the children with ADHD (Barkley, 2006; DuPaul & Stoner, 2003). Negative feedback in the form of reprimands, response cost and time-out are effective in discouraging the undesired behaviour (Teeter, 1998). The intensity of reprimands is essential in order to reach the desired result (Barkley, 2006). The reprimands need to be brief and used immediately after the undesired behaviour. In addition, it is necessary for teachers to avoid emotions when delivering reprimands such as "Arda, stop talking with your friends and get back to your task" and "Melis, you left the class a mess, you need to clean it up at the end of the class hour." Maintaning the eye contact and remaining close to the children in the course of reprimands are essential for the effectiveness of the intervention (Cooper & Ideus, 1996).

2.6.3.8. Token Economy

Token economy system is a technique used with an aim to build the target behaviour and improve the acedemic performance of the children with ADHD (Brock, 2002; DuPaul & Weyandt, 2006b; Trout et al., 2007). The technique is proven to be effective in the classroom environment. The children are provided with tokens or points immediately after the display of the appropriate behaviour and tokens or points collected are exchanged for rewards or other privileges in order to reinforce the appropriate behaviour (Clark, 2010). The intervention provides immediate feedback (National Association of School Psychologists, 2010), which is essential for children with ADHD in the management process of the disorder.

A reward system for children is considerably effective to achieve an improvement behaviorally and academically. In the application process of the token economy, rewards are considered as items on sale and the token or points children collect are allowed to gain the rewards. The children either use the tokens or points at the end of the day to gain a reward or save the tokens or points to use after a while in

order to gain a more valuable reward. The children going after more valuable rewards are automatically conditioned to display the target behaviour for a longer period time, which is likely to turn into a habit in time (Clark, 2010).

The phases to be taken into consideration when implementing a token economy in classroom are as follow (Duhaney, 2003; Reiber & McLaughlin, 2004):

- Tokens or points are chosen.
- The target behaviour is determined and each behaviour are identified to have an equivalent cost.
- A solution to remove the inappropriate behaviour is found.
- Token economy is used in every activity in the classroom to form a habit.
- Rewards and other privileges to be exchanged for tokens and points are determined by the teacher and the child.
- The tokens are used either at the end of the day or after a longer period of time.
- Paying attention to the rates of rewards and penalty points is essential since the rate of rewards are to be higher than the rate of penalty points to reach the goal.

One point to be taken into consideration is that the rewards need to be changed regularly after a period of time to be in accordance with the changes in the interest of the children (Reiber & McLaughlin, 2004).

The token economy system is effective with regards to the positive consequences such as rewards and other privilages; however, DuPaul & Weyandt (2006a) state that negative consequences along with positive ones have a profound effect on children when the target is to remove the inappropriate behaviour. The response cost strategy stipulates that the tokens or points saved throughout the lesson are taken back in the case of an inappropriate behaviour. However, taking the tokens and points back without giving a chance to gain them back is likely to be discouraging since children with ADHD in particular tend to give up easily. Therefore, giving chances to gain the tokens and points back is of importance for children to struggle for the target behaviour once more (DuPaul & Weyandt, 2006b).

2.6.3.9. Response Cost

Reprimands are generally considered to be effective in establishing control in the classroom. However, this verbal technique fails to be satisfactory for all children. A more effective technique, response cost, is reported to serve the purpose when it is children with ADHD in question (Barkley, 2006). The response cost technique is reported to be effective in improving the productivity of children as well as the rate of engagement in tasks. The technique requires to set rules that serves as a deterrent for inappropriate behaviour. A good behaviour earns to points and in order to maintain the points, inappropriate behaviours are to be avoided. Each inappropriate behaviour causes a loss in points, which exclude the children from earning and exchanging privilages and rewards at the end of the day. The technique is likely to improve appropriate behaviour in children with ADHD although they are easily frustrated. The struggle to regain the lost points is likely to lead such children to appropriate behaviour in the end (National Association of School Psychologists, 2010).

2.6.3.10. Time-Out from Positive Reinforcement

Time-out is an intervention that eliminates children from the classroom activities with an aim to decrease the inappropriate behaviour. Studies reveal that intervention is efficient particularly for children with ADHD who display agressive and disruptive behaviours in the classroom (DuPaul & Stoner, 2003).

The time-out area the children are sent as a result of an inappropriate behaviour is supposed to have a neutral ambiance and the duration of stay needs to be short since the intervention is likely to be psychologically devastating for a child who is removed from classroom activities for a long time for behavioral reasons. Teachers ask children who complete their time-out about their feelings and thoughts about the inappropriate behaviours displayed during the lesson. A discussion takes place between the child and the teacher and suggestions on how to remove the undesired behaviour are shared. It is necessary for teachers to bear in mind that intervention is efficient merely for children with ADHD who display considerably distructive and aggressive behaviours (National Association of School Psychologists, 2010). Contrary to the isolation of the child from the classroom activities, intervention allows the child to remain in the classroom as well, yet this time the child is forbidden to be in contact with others. Such children are expected to cease dealing with the classroom activity and lay his or her head down on

the table or sit facing the wall. Variation of intervention is as effective as the previous one that includes the isolation of the child from the classroom activities. (Clark, 2010)

Time-out is reported to be effective in decreasing the undesired behaviour; however, in certain cases intervention is quite likely to encourage the inappropriate behaviour if the aim of the child is to evade from tasks (National Association of School Psychologists, 2010). One solution to this problem requires assigning tasks to such children. The teacher assigns a desk at the back of the class and covers the work table with worksheets. The child displaying an undesired behaviour is directed to the work table and required to work on the specified number of worksheets. The child is allowed to participate in the classroom activities only when the worksheets completed are submitted to the teacher (Barkley & Murphy, 2006). A study conducted by Fabiano et al. (2004) reveals that time-out is significantly effective in decreasing the undesired behaviour of children with ADHD and a time-out lasting only five minutes is sufficient to decrease the inappropriate behaviour.

2.6.3.11. Home-Based Contingencies

This approach combines the interventions of the school and the parents, which serve as an effective cooperation for the sake of the child. A daily report card is an example of a home-based contingency, which provides continuous communication between the teachers and the parents. The performance of a child is reported in the card each day and sent home in order to inform the parents about the daily performance of the child in the lesson. The cards are effective in terms of providing prompt feedback about the behaviours of the child (Curtis, Pisecco, Hamilton & Moore, 2006) as well as establishing communication between the parents and the teachers (Giro & Owens, 2009).

Daily report cards provide feedback via rating from 1 (very poor) to 5 (excellent). The card and results are sent home to parents to be discussed each day or week. Scores equal to points leading to rewards when accumulated adequately. Cards reporting the behavioral development of children are highly effective and informative; however, insertion of academic goals in addition to behavioral ones enhances the productivity of the cards by all means (Pfiffner, Barkely & DuPaul, 2006).

2.6.3.12. Self-Management

Self-management is a combination of interventions which children with ADHD implement themselves. The primary purpose of developing this intervention is to enable children monitor and control their own behaviours (DuPaul & Weyandt, 2006b). Self management strategies include self-evalutaion, self-reinforcement and a combination of self-reinforcement and self-monitoring (Reid, Trout & Schartz, 2005, as cited by DuPaul & Weyandt, 2006b). Interventions such as organization and homework management are considered among the strategies for self-management. Children manage organization themselves by keeping a notebook to record the assignments to be completed and signed by the teacher in the end (Langberg, Epstein, Urbanowicz, Simon & Graham, 2008).

External interventions remain insufficient for behaviour management at a certain point particularly when the intended population is children with ADHD. Since it is these children that suffer from ADHD and are obliged to endure life with the challenges accompanied by the disorder, it is essential to strengthen the self-regulation skills of such children. Therefore, enabling children to acquire the self-management strategies is essential for an improvement in on-task behaviour. For instance, an audiotape can be referred for an auditory stimulation and conditioning. The audiotape is played at certain intervals, each sound is a stimulant for the children with ADHD to monitor their own behaviours to be recorded each time. The teacher performs the same application each time and compares the recordings in order to indicate to the children the off-task behaviours they perform during the instruction. The application raises the self-awareness of such children and builds conditioning. Children acquiring the skill of self-monitoring and self-assessment are observed to be in need of external intervention less in time. Therefore, it is right to claim that self-monitoring strategies are effective in management of on-task behaviours and increasing the attention span of children along with decreasing the level of impulsivity (National Association of School Psychologists, 2010).

Several studies have been conducted to examine the effectiveness of self-management strategies. The results are compatible with each other, revealing that the self-management intervention is effective in improving the self-control of the child. For instance, a study conducted to determine the impact of self-monitoring on the attention level and academic performance of children with ADHD displaying spelling difficulties

reveals the effectiveness of the intervention (Harris, Friedlander, Saddler, Fizzelle & Graham, 2005). In the study, the children are provided with a list containing several spelling words along with six studying tips. The children are supposed to select their spelling words and the selected words are supposed to be either written three times or spelled with eyes closed after a glance as stated in the list of studying tips. The children are observed to perform on-task behaviours more frequently and the results indicated a significant decrease in the number of mistakes in writing or spelling the word (Harris et al., 2005).

2.7. Studies on Teachers' Knowledge of ADHD

Prevalence rates, co-existing problems, causes, symptoms and diagnosis of ADHD in addition to the management strategies have been discussed so far. In this section, some findings obtained from studies on ADHD are discussed.

Jerome, Gordon & Hustler (1994) pointed out that there is inadequate literature with regards to teachers' knowledge of ADHD, which is an obvious call for more research on the issue since teachers, helping children with ADHD to a considerable extent with the utilization of educational interventions in school environment, are considered as an essential piece of the puzzle as well as the source of information in the diagnostic process of ADHD (Bussing, Schoenberg & Perwien, 1998).

Since the implementation of Diagnostic Statistical Manual of Mental Disorders (DSM- IV) in 1994, a very small amount of research has been conducted to measure teachers' knowledge of ADHD. From then on, only seventeen studies have been conducted on the issue throughout the world, six of which belong to the U.S. and five out of six assessing the knowledge of only elementary school teachers. The frequency of studies conducted so far indicates the need for more research in the field.

Jerome, Gordon, & Hustler (1994) attempted to conduct research on Canadian and American teachers to assess their knowledge of ADHD, using a 20 item true-false report questionnaire. The results showed that 89% of teachers participated in the study had no instruction on ADHD at all, and 98% would like to be trained on the issue. The score in total was 77%, implying an unfavourable outcome with regard to ADHD since the ratio of teachers working with more than one student with ADHD was already 85%. The score interval clearly pointed to the necessity for teacher training on ADHD.

Barbaresi & Olsen (1998) conducted the second study on 44 teachers to determine whether teachers' knowledge of ADHD showed any improvement after training. They used 27 true-false item ADHD knowledge questionnaire based on the items from Jerome et al. (1994) questionnaire for assessment. Pre-test and post-test were administered to be able to make a comparison between the levels of knowledge before and after training. The result was favourable in that teachers' knowledge of ADHD showed an improvement with scores increasing from 77% to 85%.

Sciutto, Terjesen & Bender-Frank (2000) conducted the third study to assess teachers' knowledge of ADHD. For assessment, researchers used KADDS (Knowledge of Attention Deficit Disorder Scale), a 36 item forced choice ("true", "false", "don't know") questionnaire as a measurement tool. KADDS assessed teachers' knowledge in three specific areas: symptom/diagnosis, treatment, and prevalence. The research was conducted in six different schools with 149 elementary school teachers. Unfortunately, the results showed no significant difference from the results of the previous studies. The results were striking with an overall score of 47% in teacher knowledge, and subscale scores of 66% in knowledge of symptoms/diagnosis, 33% in knowledge of treatment and 42% in knowledge of prevalence of ADHD.

Snider, Bush and Arrowood (2003) conducted a study on 145 teachers that were selected randomly with a purpose of assessing their knowledge of stimulant medication as treatment method for ADHD. For assessment, a 5-point Likert Scale was developed for the study as measurement tool and teachers were asked to rate 13 statements on ADHD. The study resulted with an overall score of 46%, which is predictable when the results of the previous studies are taken into consideration.

Vereb & DiPerna (2004) conducted a study on 47 elementary teachers with a purpose of assessing the general knowledge of teachers on ADHD and its treatment. KARE (The Knowledge of ADHD Rating Evaluation) survey was developed as a measurement tool. The format of the survey contained the "don't know" option as well as the standard options of "true" and "false". The reason for this insertion was to gain more accurate information. The result of the study showed an increase from the previous studies with an overall score of 67%.

Weyandt, Fulton, Schepman, Verdi and Wilson (2009) conducted the last study in the U.S. on 78 teachers and a school psychologist with the purpose of assessing their knowledge on the causes and treatment of ADHD. The teachers and the school psychologists were asked to respond to a 24-item questionnaire. Once again, the result

was unsatisfactory with an overall score of 45%. The rest of the studies conducted out of the U.S. are reported in countries including Canada, Australia, Europe, the Middle East and Asia.

Jerome et al. conducted a research study on the knowledge of teachers on ADHD in 1994. After this date, the following studies were conducted by Brook et al. (2000), Kos, Richdale & Jackson (2004), Bekle (2004), West, Taylor, Houghton & Hudyma (2005), Ghanizadeth et al. (2007), Holst (2008), Hong (2008), Akram et al. (2009) and finally Nur & Kavakci (2010) and Syed & Hussein (2010).

The results and the number of studies conducted so far point out the limited knowledge of teachers on ADHD and the intense necessity for the implementation of research on the issue in Turkey.

2.8 ADHD in EFL Classrooms

The symptoms and the behavioral problems that ADHD brings along are not solely observed by parents. The same problems often exist, sometimes more severly, in classroom settings. The Center of Disease Control and Prevention (CDC) (2009) points out that children with ADHD have problems with paying the required attention to tasks, stepping out of their imaginary world, listening to others, concentrating on a specific task, remembering to bring objects and materials such as books, pencils and homework, sitting still, keeping quiet, avoiding impulsive behaviours and letting individuals end their conversation. Regardless of the degree of severity of these problems, children with ADHD experience each of these problems inside and outside the classroom. Abikoff et al. (2002 in Hay, Kos, & Richdale (2006)) state that behavioral problems are mostly observed in boys with ADHD while the girls with ADHD mostly manifest the symptoms of inattention in a classroom.

Observations on children with ADHD in classroom settings indicate that in comparison with typically developing children, children with this disorder experience more trouble with academic performance and peer relations (DuPaul & Stoner, 2003). The core symptoms accompanying ADHD (inattention, impulsivity, hyperacitivity) result in academic underachievement even though the children with the disorder embody a high level of academic potential. The underachievement in academic life is the result of low grades and disruptive behaviours, which eventuate in the dismission of such children from school, blocking their way to secondary education. (Clearly et al.,

2006). McGee & Shar (1998) (in DuPaul & Stoner, (2003)) argue that children who have learning difficulties experience chronic academic failure. In time, the failure causes such children to adopt the poor academic self-concept (DuPaul & Stoner, 2003), which results in demotivation along with an increased level of underachievement. In addition to problems in academic performance, children with ADHD struggle with difficulties in peer relationships. Feinberg & Frankel (2002) argue that children with ADHD are quite likely to be underestimated and rejected by peers because of the disruptive behaviour they exhibit. DuPaul & Stoner (2003) argue that the core symptoms of ADHD - inattention, impulsivity and hyperactivity- are the primary reasons why children with ADHD have difficulties in peer relationships. Their impulsive intervention to an ongoing activity with no attempt to ask permission and impatient mood that renders it effortful to wait for their turn in the activity result in their rejection among peers.

The fact that children with ADHD are less likely to change their behaviours to be in harmony with the social environment (Feinberg & Frankel, 2002) calls attention to the role of teachers as supporters of a successful academic and social life and effective modifiers of undesired behaviours for the sake of children with the disorder. Teachers are in a good position to manage ADHD in classroom, which in fact reveals the challenges teachers constantly face in their classrooms.

Turkey, along with many other nations, owns a literature on ADHD that contains a considerable amount of information on symptoms, diagnosis, prevalence, treatment, management strategies, comorbid disorders and teachers' knowledge of ADHD. For instance, Erşan et al. (2004) conducted a study on the symptoms of ADHD; Turgay (1995) and Fettahoğlu & Özatalay (2006) focused on diagnosis of ADHD; Bilgiç et al. (2006), Duran (2006), Çakalaz et al. (2007), Alyanak et al. (2011), Ekinci et al.(2011) focused on comorbid disorders; Şenol (1997), Yolga (2003), Aydın & Ercan (2005), Özcan & Öğülmüş (2010) focused on treatment of ADHD; Albayrak (1998), Öner & Aysev (2000), Duran (2006) and Alyanak et al. (2011) focused on prevalence of ADHD; Toros (2003) focused on teachers' knowledge of ADHD and finally, Şenol et al. (2005) focused on the management strategies to be used with children with ADHD. However, to the best knowledge of the researcher, contrary to some other nations, no studies considering the management of ADHD in EFL classrooms have been conducted in Turkey. In fact, the studies conducted on the subject "ADHD in EFL Classrooms" so far are considerably limited, which renders access to the relevant literature a real

problem. The lack of literature on the subject in parallel with the limited number of research suggest the necessity of this research.

2.9 Obstacles Children with ADHD Experience in Second Language Acquisition

Children with ADHD not only experience problems with their native language but also have difficulties in learning a foreign language. Approximately 50% of the children exhibiting ADHD experience problems caused by speech and language disorders (Cantwell, 2006). As discussed in section 2.4, ADHD is the result of a poor development in the front lobe of the brain (Swanson, 2006). In addition to the impairments and fuctional problems that co-occur with ADHD, some studies suggest another deficit in working memory, which have impact on the language abilities of the children with ADHD (Wilton, 1998).

The problems children with ADHD experience in the acquisition of a second language has its roots in the difficulties such children experienced during the period they acquired their first language. Unfortunately, the skills which are easily and effectively used by a child without ADHD may pose a challenge for children with ADHD. Such children experience difficulties in speaking, listening, reading, and writing in non-linguistic sounds is called the Language Acquisition Device (LAD). LAD enables individuals make a distinction between the linguistic and non- linguistic sounds; however, this fuctional mechanism is impaired in children with ADHD, rendering the listening process rather challenging due to the problems they confront with focusing on different sounds (Chomsky, 2000).

Mapou (2009) argues that children with ADHD have problems with listening comprehension due to their poor abilities in storing the auditory-verbal input for a long time. Children with ADHD attempt to listen to what is told, yet the problem is such attempts mostly have no permanence. The underlying reasons for the distractions that disable children to keep their attention on the required activity are that such children are in need of immediate feedback (Martalas, 2004) and highly stimulating materials to avoid boredom (Barkley, 1998a; Mash & Wolfe, 2002). However, an interesting speech is not always sufficient in that the child with ADHD is more prone to grab the unimportant points of the conversation, which distracts the child from the key points of the topic. Despite all, a presentation of the target vocabulary and the grammar points in an attractive way along with a systematic repetition and reinforcement will increase the

possibility of an enhanced comprehension of the language material on target (Turketi, 2010).

Turketi (2010) states that children with ADHD have poor decoding skills, which prevents them from reading the required material at a reasonable rate. Written language usually turns into a challenging phenomenon for children with ADHD due to the problems frequently observed in switching between letters, words and lines in a reading text. Such problems in a reading activity constitutes an impediment against an accurate interpretation of the content, diverting such children away from the key points and the main ideas.

Engish language is considered challenging for children with ADHD due to the exceptional rules in the language and the 22 letters along with 44 different sounds, which cause differences in reading because of the surrounding sounds and letters (Turketi, 2010). Turketi (2010) further expresses that children with ADHD, whose native language is Russian, Italian, or German experience difficulties in adaptation to the lingustic differences in the English language since their first language differs from English in that it contains letters representing only one sound each, rendering their language rather easy to read. On the other hand, the English language contains letters that form new sounds in combination with the neighboring sound.

Children with ADHD experience difficulties in utilizing the rules of the language appropriately to form sentences in the course of speaking and writing. These children frequently have insufficient size of vocabulary. Their limited vocabulary knowledge gives rise to frustration in children with ADHD since they tend to use the wrong words for the expression of thoughts. Inappropriate use of language with regard to place, time and status is among the negative results of ADHD. In fact, the underlying reason for speaking and writing problems stem from the difficulties children with ADHD have in reading and listening. They are all interrelated (Turketi,2010). While speaking, children with ADHD are frequently observed to use the language with grammatical errors in abundance since they are unable to stop themselves as quickly as their peers without ADHD to correct their mistakes (Renz, 2003).

Tannock (2005: 48) argues that children with ADHD mostly have problems with logical organization of thoughts and production of comprehensible sentences during deeper conversations. He also mentions “an immature motor system” that is peculiar to a person with ADHD. The system renders voice volume control difficult for such

children, which is a satisfactory explanation to why students with ADHD speak louder in the classroom.

In addition to listening, reading and speaking, children with ADHD also have problems with writing, the last skill required for language acquisition. They are confronted with problems in writing similar to the ones in reading: switching between letters and words, writing down what is heard regardless of the necessary grammar and spelling rules, resulting in an incomprehensible pile of information. Writing and speaking are two productive language skills, which are interconnected in that a student with ADHD write in the same wrong manner as he speaks (Turketi, 2010). The problems experienced in the four language skills are highly interconnected. Therefore, interventions to resolve problems in one may bring along resolution in the others.

2.10. Learning Disabilities and ADHD

Learning Disabilities (LD) are a set of disorders that have negative impact on the brain with regard to reception, processing, storage of information and response given to that information, therefore affecting individual's ability to function in listening, reading, writing and mathematics. Mapou (2009) provides a precise definition of learning disabilities:

> A learning disability is a neurodevelopmental disorder affecting a specific academic and/or cognitive skill that occurs in the presence of intact skills in most other realms. The specific impairments are presumed to be due to dysfunction of the brain and to have been present since birth, although their impact may not become fully obvious until later in life. Although most learning disabilities affect academic skills (reading, writing, mathematics) and the associated underlying neuropsychological functions needed for these skills, a learning disability can also affect specific areas of neuropsychological functioning, including attention, executive functions and problem-solving abilities, spoken language, visuospatial skills, or learning and memory. A learning disability substantially limits functioning in one or more aspects of a person's life (e.g., school, work, home, social). It is not better explained by an acquired neurological disorder that occurs either in childhood or later in life, mental retardation, or a pervasive developmental disorder. It is also not due primarily to cultural factors, psychosocial factors, psychiatric disorder, or lack of education, although it may coexist with these factors (p. 8)

According to National Health Interview Survey (NHIS), in 2010, approximately 5 million U.S. children aged 3-17 years were reported to have a learning disability with a ratio of 8%. The gender differences were additionally taken into consideration in this survey, and among male children aged 3-17 years, 9% of boys were reported to have a learning disability while the ratio among female children was only 6%. Five million children between the ages 3 and 17 were additionally reported to display the symptoms of ADHD with a ratio of 8%. Eleven percent of boys were reported to display the symptoms of ADHD; whereas, the ratio was only %6 in girls. Uçar & Karaca (n.d) state that 8-10% of the Turkish population was reported to have a learning disability. Thirty-eight percent of the Turkish child population with a learning disability is reported to be female and the statistics reveal that the number of male children reported to have a learning disability was twice that of the female children (Milli Eğitim Bakanlığı (MEB), 2009). A study by Bilgiç, Kılıç, Gürkan and Aysev (2006) conducted on 266 Turkish children diagnosed with ADHD between ages 4 and 18 revealed that the 21.7% of these children additionally had a learning disability.

Studies conducted so far suggest various factors as possible contributors to the occurance of learning disabilities. An impairment in the brain function is known to be one of the factors leading to the occurence of learning disabilities (Rourke, 2005). In addition to brain dysfunction, scientists reveal that chromosomal regions contribute to the development of learning disabilities in several aspects. No genes are considered responsible in this respect (Plomin & Kovas, 2005). Environmental factors are among the contributors in that poor maintenance of children mentally, academically, spiritually, sociologically, and phsically contributes to the learning disabilities to a considerable extent (Fletcher et al., 2007), which places the parents and teachers in the heart of the situation (Hallahan et al., 1999). Medical factors such as premature birth, diabetes, meningitis, cardiac arrest and pediatric aids are reported to have an effect on the development of the learning disabilities (Hallahan et al., 1999). Finally, contrary to popular belief, intelligence and IQ level bear no relation to a reading disability (Siegel, 2003).

Tuttle & Paquette (1993:5) specify the symptoms of learning disabilities:

- Difficulty with academic skills including reading, writing, speech, and mathematics
- Difficulty with fine-motor skills such as handwriting and copying

- Difficulty with long and short-term memory
- Difficulty with attention (short attention spans, distractibility, hyperactivity impulsivity)
- Difficulty with sensory integration
- Difficulty with organizational skills
- Extreme gaps in sections on IQ tests (for example, high verbal scores but poor performance scores)
- Difficulty in making and keeping friends
- A low self-esteem

Learning disabilities and ADHD are comorbid disorders and manifest features in common. Both disorders develop in chilhood, are related to the brain function and manifest overlapping symptoms (American Psychiatric Association, 2000; Barkley, 2006; Barkley, Murphy & Fischer, 2008). The common features along with the fact that one out of four children diagnosed with ADHD tend to manifest the sypmtoms of learning disabilities reveal the relation between the two disorders (DuPaul & Stoner, 2003).

Learning disabilities and ADHD cause an impairment in concentration, which are accompanied by under performance in the classroom and accordingly academic failure. The impairments caused by learning disabilities and ADHD result in unconfident, reluctant, and academically insufficient children. Therefore, focusing on the diagnosis and management strategies of learning disabilities along with ADHD is essential for the sake of affected children (Kewley, 2005).

Sufficient knowledge on the types of learning disabilities, their causes and treatment strategies, is essential for teachers in order to provide the affected children with the necessary environment to overcome the difficulties ADHD and learning disabilities accompany.

2.10.1. Dyslexia and Reading Disorders

According to International Dyslexia Association (2000), dyslexia is a learning disability that causes difficulties in single word decoding and phonological processing and is not the result of an impairment in sensory abilities. People with dyslexia experience difficulties in language skills such as reading, writing, and spelling.

The British Psychological Association suggests another definition for dyslexia: dyslexia reveals itself in the cases of reading and/or spelling difficulties in words and even the circumstances necessary for learning are provided, the problems at word level keeps in existence (British Psychological Society, 2005).

Research literature mainly focuses on reading disorders when compared with other disabilities affecting writing and math in that reading is the skill that constitutes the largest part of everyday life. Dyslexia is often misunderstood and misinterpreted. The individual with dyslexia is believed to see the letters upside down and experience difficulties in visual processing; however, the fact is that dyslexia is a reading disorder that has a negative impact on decoding and reading of individual words rather than reversing letters (Mapou, 2011a).

The underlying reason for the difficulties accompanied by dyslexia are the phonological problems. The individuals with dyslexia experience difficulties in seperating the sounds of a word, which poses an obstacle for listening, reading, writing and speaking of the word. For instance, in order to be able to understand the word ‘dog’, there are three steps required: 1) perceiving the sounds individually 2) combining them 3) seperating them. The problem in the first phase (listening and understanding) renders the other phases impossible to be completed. Therefore, decoding of sounds is vital for fluent reading and smooth comprehension (Mapou, 2011b)

Research conducted to determine the causes and treatment strategies of reading disorders reveals that ADHD is the most common disorder in co-occurence with Dyslexia (Carroll, Maughan, Goodman & Meltzer, 2005; Maughan & Carroll, 2006). The National Health Interview Survey (NHIS) states that almost 5 million children with the ages varying between 3 and 17 had a learning disability in 2010.

According to Reid & Fawcett (2005), the characteristics of dyslexia, which appear severly or slightly as occasions require include:

- difficulties in effectively utilising short and long-term memory
- difficulty in processing information at speed
- organisational difficulties
- phonological difficulties
- visual difficulties in relation to reading words
- co-ordination difficulties

- difficulties in utilising meta-cognitive strategies
- difficulties in the development of automatic reading of words.

A publication by Vincent & Purvis (n.d.) on ADHD and dyslexia refers to the common characteristics of the two disorders as presented in Table 3.

Table 3.

Common Characteristics of ADHD and Dyslexia

SYMPTOMS	ADHD	DYSLEXIA
Hyperactivity	X	
Poor self-control/impulsivity	X	
Highly distractible	X	
Problems adjusting to the rules of school	X	
Inattentiveness	X	
Frequently interrupts/ problems waiting	X	
Listening problems	**X**	**X**
Behavioral problems early in development	X	
Problems processing auditory information	**X**	**X**
Poor reading comprehension	**X**	**X**
Word finding problems		X
History of language problems		X
Slow reading speed	**X**	**X**
Writing problem	**X**	**X**
Difficulties completing homework	**X**	**X**
Afraid to read aloud		X
Problems decoding words		X
Early rhyming problems		X
Failure to learn letters		X
Poor phonological processing		X
Slow processing speed	**X**	**X**
Problems with retention	**X**	**X**

Research conducted on ADHD and Dyslexia reveals that children identified with ADHD tend to succeed less with reading tests when compared to peers without ADHD, which is accompanied by demotivation and underachievement in academic life of such children (Bussing, Mason, Bell, Porter & Garvan, 2010).

2.10.2. Dysgraphia and Writing Disorders

The Oxford Dictionary defines dysgraphia as a combination of two Greek words *dys* meaning "difficulty/impairment" and *graphia* "writing/making letter forms by hand." Dysgraphia is a writing disorder that causes individuals to experience difficulties in handwriting, storing the written words, processing the letters in words and using their muscles required for writing (Nicolson & Fawcett, 2011)

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) defines dysgraphia as the disability in written expression emerged in individuals regardless of their age, intelligence level and the quality of education received (National Center for Learning Disabilities (NCLD), 2010).

Nicolson & Fawcett (2011: 79) specify the symptoms of dysgraphia as follow:

- Cramping of fingers while writing short entries
- Odd wrist, arm, body, or paper orientations such as bending an arm into an L shape
- Excessive erasures
- Mixed upper case and lower case letters
- Inconsistent form and size of letters, or unfinished letters
- Misuse of lines and margins
- Inefficient speed of copying
- Inattentiveness over details when writing
- Frequent need of verbal cues
- Referring heavily on vision to write
- Poor legibility
- Handwriting inabilities that may interfere with spelling and written composition
- Having a hard time translating ideas to writing, sometimes using the wrong words altogether

- May feel pain while writing

Writing disorder is generally reported to exist in a child during the first exposure to writing activity. Such children are likely to experience problems with basic grammar and spelling rules. For instance, p, q, b and d are among the most challenging letters to be used appropriately in a context. Additionally, choosing the right word is among the challenges such children meet in the course of expression of thoughts via writing (Nicolson & Fawcett, 2011). Writing is a challenging process that requires the planning, creation and revision of a great deal of ideas, which are to be stored in long term memory and retrieved when necessary. The activities involved in this process require an advanced level of attention and a well-functioning working memory, all of which lead to children making loads of mistakes and refering to considerably simple sentences and vocabulary in the course of writing activity (Gregg, Coleman, Stennett & Davis, 2002).

Studies on ADHD and learning disabilities reveal that ADHD causes dysgraphia and both disorders are in co-occurence (Rodríguez et al., 2011). Children diagnosed with ADHD tend to exhibit the symptoms of dysgraphia all at once (Kronenberger & Dunn, 2003). Impairment in working memory, organization and planning constitute the handicaps of ADHD; however, the same challenges are also observed in children with dysgraphia. Therefore, children with ADHD tend to confront challenges about handwriting and written language more when compared to their peers without ADHD (Re et al., 2007; Rosenblum et al., 2008). Research reveals that although children with ADHD are observed to have a low quality of handwriting, no impairment in their speed of handwriting is reported (Ross, Poidevant & Miner, 1995; Re et al., 2007). The low quality of handwriting in children with ADHD serves as a powerful deterrent against a high quality of expressive writing. Additionally, even though no problems with spelling and writing exist, such children tend to experience problems with expressive writing due to the difficulties in organization and planning (Mapou, 2011b).

Children with dysgraphia tend to be badly affected emotionally due to the discrepancy between their hard-to-read writing tasks and the ones of their peers. The low performance in writing tasks results in a decrease in the sense of self-confidence, feelings of efficiency, an increase in the level of anxiety, all of which leads to depression eventually (Nicolson & Fawcett, 2011; Berninger & May, 2011).

The mechanical and emotional problems accompanied by dysgraphia result in academically immature and socially impaired children, in the long term, if the application of appropriate treatment strategies are ignored (Montgomery, 2012).

2.10.3. Dyscalculia and Math Disorder

Dyscalculia is a learning disability that has an adverse impact on the development of specific arithmetic skills. The prevalence rate of dyscalculia among school-age children, varying between 3% and 7%, bear a resemblance to the prevalence rates of dyslexia and ADHD. In addition to the similar prevalence rates with dyslexia and ADHD, dyscalculia is in comorbidity with the two disorders. 15% to 25% children diagnosed with dyslexia and ADHD are reported to display symptoms of dyscalculia (Shalev, 2004). Moreover, a study conducted by Von Aster (2000) on eleven children with dyscalculia revealed that nine of the eleven children displayed the indications of dyslexia and six of these nine children were additionally reported to have ADHD.

Children with dyscalculia experience problems with the perception of concepts, conversion of written problems into mathematical symbols. Proceeding step by step for solution in a mathematical problem, remembering simple rules, multiplication tables, reading symbols and signs, copying the signs, symbols and numbers accurately are among the challenges the children with dyscalculia confront in math lessons (American Psychiatric Association, DSM-IV-TR, 2000; Payne & Turner, 1999).

Mapou (2011b:4) specifies the skills being the source of trouble for children with dyscalculia:

- Attention
- Planning, organization, and problem-solving, often referred to as executive functions*
- Visuospatial skills (perceiving and copy abstract visual material unrelated to words)*
- General knowledge
- Fluency (speed) when completing simple math facts*
- Written calculation (untimed and timed)*
- Word problem solving (written and mental; untimed and timed)*
- Mathematical knowledge (signs, symbols, and concepts; untimed and timed)

The problems children with dyscalculia confront at kindergarten and first grade tend to vanish to a considerable degree and furthermore, an improvement in certain skills is likely to be observed at this age. However, the improvement observed in such skills are reported to cease considerably in time as the age of the child grows older. Unfortunately, the disability is observed to be permanent in individuals on and after the period of adolescence and no treatment strategy including educational interventions is reported to be efficient in the treatment process of the disorder (Shalev, 2004), which accordingly poses a permanent challenge for the academic life of such children.

Learning disabilities and their effect on the brain with regards to reading, writing, listening, and speaking, which are vital skills in language learning and having a considerable impact on the academic and social life of the child, have been discussed so far. The prevalence rates, the symptoms, causes, and outcomes of learning disabilities, the comorbidity between learning disabilities and ADHD have additionally been discussed. Finally, the types of learning disabilities and their general characteritics as well as the impacts on English Language Learning are included in the section.

The next chapter refers to the methods used to conduct the research. The participants and their demographic characteristics, the settings where the research was conducted, the instruments selected to reveal the elementary EFL teachers' knowledge of ADHD and the management strategies, the tools used for data analysis and the procedures followed throughout the survey process are described in the Methodology section.

CHAPTER III

RESEARCH METHODOLOGY

This chapter describes how the participants and settings are selected, which instruments are used through the process, how the data is analysed and which procedures are followed. This study is descriptive and aims to reveal elementary EFL teachers' knowledge of ADHD along with the interventions used to manage ADHD in a classroom.

3.1. Introduction

This chapter describes how the participants and settings are selected, which instruments are used through the process, how the data is analysed and which procedures are followed. This study is descriptive and aims to reveal elementary EFL teachers' knowledge of ADHD along with the interventions used to manage ADHD in a classroom. Figure 1 summarizes the main elements of methodology of the study.

Research Design	**Blended; qualitative and quantitative**
Sampling Strategy	Convenience Sampling (survey and interview)
Participants	252 EFL teachers (survey); 10 EFL teachers (interview)
Data Collection Tools	• Demographic Questionnaire • Knowledge of Attention Deficit Disorders Scale (KADDS) • Teacher Intervention Survey (TIS) • Semi-structured Interview.
Data Analysis Tools	• Descriptive Statistics; One way analysis of variance (ANOVA); Independent-samples t-tests (for analysis of survey data) • Content Analysis (for anaysis of interview data)
Time and Duration	From March 5, 2013 to October 9, 2013; 28 weeks in total

Figure 1. Overall research design

The purpose of this study is to determine how much teachers know about the symptoms, diagnosis and causes of ADHD, consequences for teaching and learning, and treatment of ADHD. It specifically aims to identify the intervention strategies that EFL teachers frequently use when teaching students with ADHD. The views of elemantary school English teachers about educational intervention strategies and whether the demographic characteristics of teachers bear any relation to their knowledge of ADHD are also analysed.

3.2. Research Questions

1. To what extent do EFL teachers know about ADHD?
2. Which classroom management strategies (intervention strategies) do EFL teachers use when teaching English to students with ADHD?
3. What are the views of EFL teachers about the educational strategies used when teaching English to children with ADHD?
4. Do the demographic characteristics bear any relation to the teachers' knowledge of ADHD?
   4.1. If yes, which demographic characteristic(s) is/(are) related to their knowledge of ADHD in terms of:
      a. Grade levels?
      b. Years of teaching experience?
      c. Participation in an ADHD training course?
      d. Number of students with ADHD taught?
      e. Participation in in-service training?
      f. Self-study activities?

3.3. Participants and Settings

The study was conducted with elementary school EFL teachers from 61 state schools in Seyhan district of the city of Adana. A survey was administered to 287 elementary school EFL teachers; however, 35 of the teachers did not complete the survey. Therefore, 252 EFL teachers working in elementary schools were reported to have participated in the survey. Prior to the survey, permission was received from the Ministry of Education to conduct the research in the public elementary schools of the Seyhan district in the city of Adana. In order to identify the participants for the semi-

structured interviews, convenience sampling strategy was used. 10 EFL teachers working in elementary schools in Seyhan District of Adana participated in the semi-structured interview. Prior to the interviews, three pilot interviews were conducted in order to determine the time allocated per interview roughly, to test the interview questions, and to gain experience in interviewing. A large number of teachers rejected to participate in the survey and the interview due to the heavy work load assigned at schools, which obliged the utilization of the convenience sampling technique to teachers.

Demographic characteristics of teachers were organised into two categories in the survey: teachers' characteristics and teachers' experiences with ADHD. Teachers' characteristics included the first five questions and teachers' experiences with ADHD includes the last 4 questions. Teachers' characteristics are shown in Table 4 and teachers' experiences with ADHD in Table 6 (see section 4.1).

Table 4.

Demographic Characteristics of Teachers Participated in Survey

	Number (N)	**Percent (%)**
Age		
21-30 years	52	20,6
31-40 years	76	30,2
41+ years	124	49,2
Gender		
Male	39	15,5
Female	213	84,5
Educational Level		
Bachelor's	243	96,4
Master's	9	3,6
Grade Level		
1-2	48	19,0
3-4	66	26,2
5-6	62	24,6
7-8	76	30,2
Teaching Experience		
1-5	39	15,5
6-10	47	18,7
11-20	79	31,3
21+	87	34,5

***Note*. N= 252**

Results revealed that 26,6% of teachers aged less than or equal to 30 years. 30,2% were between the ages of 31 and 40. 49,2% aged greater than or equal to 41 years. 15,5% of teachers were male and 84,5% of teachers were female. 96,4 of the participants were teachers with a Bachelor's Degree and 3,6% were teachers with a Master's Degree. 19,0% of the participants were first and second grade teachers; 26,2% were third and fourth grade teachers; 24,6% were fifth and sixth grade teachers and

30,2% were seventh and eighth grade teachers. 15,5% of participating teachers had 1 to 5 years of teaching experience; 18,7% of teachers had 6 to 10 years of teaching experience; 31,3 of teachers had 11 to 20 years of teaching experience and finally 34,5% of teachers had 21 or more years of teaching experience.

Table 5.

Demographic Characterstics of the Participants of the Semi-Structured Interviews

	Gender	Age	Years of Teaching Experience	Years of Teaching Experience with ADHD students
Teacher 1	Female	28	4	4
Teacher 2	Female	26	3	1
Teacher 3	Male	29	5	0
Teacher 4	Female	28	3	3
Teacher 5	Female	30	7	4
Teacher 6	Female	32	6	6
Teacher 7	Male	53	31	30
Teacher 8	Female	29	6	6
Teacher 9	Female	27	5	3
Teacher 10	Female	28	5	5

Table 5 shows that the majority of teachers who participated in the interview were females. The age range was between 26 and 53. Years of teaching experience of teachers varies between 3 and 31 years. The teachers were determined to have between 0 and 30 years of experience with ADHD.

3.4. Instruments

The instruments that were selected to be used for the study were Demographic Questionnaire (Appendix B), Knowledge of Attention Deficit Disorders Scale (KADDS) (Appendix C), Teacher Intervention Survey (TIS) (Appendix D) and Semi-structured Interview (Appendix E). The Demographic questionnaire was used to determine the basic characteristics of the participants; the KADDS was used to determine the knowledge of elementary EFL teachers' knowledge of ADHD, the TIS was used to determine the knowledge of elementary EFL teachers about the specific

interventions that are necessary to be used in the classroom for the management of ADHD. Finally, the semi-structured interview was conducted to support the findings of the survey by using the research questions. The language of the survey was English; therefore, an attachment of a list of possible unknown words and terms was provided along with the survey.

3.4.1. Demographic questionnaire

A demographic questionnaire (Appendix B) with nine demographic questions was conducted to collect data on the age, gender, years of teaching experience, highest degree earned, specialization, whether or not the teacher received training on ADHD during teacher training, what other sources of information the teachers used to learn about ADHD. The demographic questionnaire, which was the first part of the survey, was adapted from the questionnaire of Anastopoulos (1992).

3.4.2. Knowledge of Attention Deficit Disorders Scale (KADDS)

The second measurement tool used in the study is the Knowledge of Attention Deificit Disorders Scale (KADDS) (Appendix C). KADDS was used to assess teachers' knowledge and misperceptions regarding symptoms/diagnosis of ADHD, the treatment of the disorder, and general information about the etiology and the consequences of the disorder. KADDS was developed by Sciutto et al. (2000) and permission was granted by Professor Mark Sciutto to use the questionnaire in this study. The questionnaire includes 34 items and is divided into such subscales as symptoms, diagnosis, treatment, nature, causes, and outcomes. Each subscale includes items with "True", "False", "Don't Know" answers. Each correct answer equals to one point. Each "don't know" answer as well as the ones without any answers equal to zero points. Finally, the total number of given points are calculated and converted into percentages both for subscales and the total scale. An attachment of a list of possible unknown words and terms was also provided along with the survey.

3.4.3. Teacher Intervention Survey

The Teacher Intervention Survey is a questionnaire developed and modified by Matlock (1999) and was used in this study to assess the knowledge of teachers on the interventions consulted for managing the children with ADHD in the classroom

(Appendix D). The Likert Scale was used in the questionnaire for measurement; answers included numbers from one to five (1=very low, 2=low, 3=moderate, 4=high, 5=very high) to clarify the teachers' own perceptions on their knowledge, efficacy on the interventions, and the level of aspiration to implement these interventions in the classroom. The survey measured 12 classroom interventions and each intervention contained 6 items, each of which assessed the knowledge, competence, effectiveness, acceptability, time/resources and implementation regarding the disorder. The 12 classroom interventions assessed included Teacher Attention, Token Economy, Response Cost, Time-out from Positive Reinforcement, Home-based Contingencies, Structure, Physical Arrangement, Varied Presentation and Format of Materials, Use of Cues, Prompts and Attention, Brief Academic Tasks Interspersed with Passive Tasks, Peer Tutoring, and Self-management. Finally, an attachment of a list of possible unknown words and terms was provided along with the survey.

3.4.4. Semi-Structured Interview

Semi-structured interview was used to collect information on the teachers' knowledge of ADHD and the educational intervention they used for children with ADHD in the classroom. Interviews provide the researcher with the relevant information in a more detailed way when compared with surveys. It is not restrictive and it allows the researcher to explore interesting points that arise during the interview, which enables the researcher follow the ideas of the participants more closely (Smith, 2003). The interview guide (Appendix E), which included nine questions, was developed by the researcher in order to collect data and it provided structure as well as flexibility. The purpose of the interview was to determine teachers' knowledge of ADHD, the educational interventions they most frequently used in their classrooms and their views about the intervention strategies. Another purpose was to reveal the experiences and emotions of teachers when dealing with children with ADHD. The interviewees were provided with the names of interventions already present at survey. They were given short definitions of these interventions and asked for further information about the strategies provided and any other strategies they used in their classrooms, yet unmentioned by the interviewer.

3.5. Data Analysis

This section includes the description of the data analysis process of the survey and the interview.

3.5.1. Survey

Frequencies and descriptives were used to describe the sample and ADHD knowledge levels. Descriptives were used to rank the order teacher-supported classroom interventions for ADHD. Teachers' demographic characteristics, knowledge of ADHD with regard to symptoms/diagnosis, treatment, causes, and outcomes as well as the educational interventions were analysed by one way analysis of variance (ANOVA). Additionally, independent-samples t-tests were used to determine the relationship between teachers' demographic characteristics and their level of knowledge about ADHD.

3.5.2. Interview

The data were collected, transcribed and analysed by the researcher. The process of analysis involved certain steps and Terre Blanche and Durrheim (1999) regard analysis process as reading through the collected data repeatedly, breaking the data down, categorizing the data, forming themes and subthemes, and finally interpreting newly formed data. During this process, prior to breaking the data down, it was essential for the researcher to be familiarised with the data content. By reading and re-reading the verbatim transcriptions, the researcher became familiar with the data, in other words, knew the data well (Tesch, 1990). In this familiarisation process, the researcher developed the first interpretations about the data. Once the initial interpretations were made, coding process started. Coding process involved identifying the important words, phrases or sentences in the language of the participants with regard to the study. Using these important language items, the researcher made categorisations and formed themes and subthemes regarding the data. This sort of analysis is named as "bottom-up approach" (Terre Blanche & Durrheim, 1999). According to bottom-up approach, the initally formed themes are not predetermined beforehand, contrarily, the themes arise from the data (Patton, 1980; Tesch, 1990). The final step was the elaboration process, in which the themes arising from the data were broken up to see the big picture hidden in the data. Once the whole process was carried out successfully, the researcher ended the

process with final interpretations and checking of the interpreted data (Terre Blanche & Durrheim, 1999).

3.6. Procedures

The principals of the selected schools were contacted. Each school was visited and meetings were held with the principals. In the course of the meetings, the theme, the aims and the importance of the research and the necessity of being attentive and honest when completing the questionnaires were explained. The anonymity of the schools and the participants was affirmed and permission was obtained to conduct the survey. Prior to the delivery of the questionnaires, a letter was attached to each questionnaire, explaning purpose and content of the study (Appendix A). The e-mail address of the researcher was added in the letter. The questionnaires were then delivered to each of the volunteers. In the course of the delivery, each teacher was individually explained once again that no identification of names or schools is required when completing the questionnaires.

As to the interview procedures, appointments for the interviews were set up by the researcher. Before starting the interview, the researcher allocated some time for an informal communication with the participant without audio taping the conversation. Later, the researcher briefly explained goals of the study, and emphasized that the name of the participant would not be revealed in the study. Instead, she/he would be given symbolic identifers such as Teacher 1 or T1. The researcher also reminded the participant not to mention any identifying information about the students. Once the process was explained to the participant, the researcher audio taped the interview. The recording of each interview was later transcribed verbatim by the researcher.

The methods used to conduct the research are described in this chapter. Next chapter presents the findings of the research. Survey findings, including KADDS scores, TIS scores and the correlation between the teachers' knowledge of ADHD and the demographic characteristics, are presented. Findings of the semi-structured interview are also presented in the form of themes and subthemes in results section.

CHAPTER IV

RESULTS

As previously mentioned in Chapter 3, this study aims at identifying:

1. teachers' level of knowledge about the symptoms, diagnosis and causes of ADHD, consequences for teaching and learning, and treatment of ADHD.
2. the classroom management strategies (intervention strategies) that EFL teachers use when teaching students with ADHD.
3. the views of elemantary school English teachers about educational intervention strategies.
4. whether the demographic characteristics of teachers bear any relation to their knowledge of ADHD.

As tools to collect data, the demographic questionnaire was used to determine the basic characteristics of the participants; the KADDS was used to determine the knowledge of elementary EFL teachers' knowledge of ADHD, the TIS was used to determine the knowledge of elementary EFL teachers about the specific interventions that are necessary to be used in the classroom for the management of ADHD. Finally, the semi-structured interview was conducted to better understand and explain the findings of the survey.

4.1. Survey Findings

Among 287 EFL teachers, who were asked to complete the survey, 252 EFL teachers working in elementary schools were reported to participate in the survey. The participants completed a survey containing demographic information, a knowledge of ADHD questionnaire (KADDS), and a survey on teachers' interventions for students with ADHD (TIS). As shown in Table 7, teachers' mean total score from KADDS ranged between 9,00 to 25,00 from a total score of 34. The mean score is 18,23±5,930. KADDS is analysed in three subscales in order to determine teachers' level of knowledge in three different areas of ADHD: general knowledge of ADHD, knowledge of symptoms and diagnosis of ADHD, knowledge of treatment of ADHD. Teachers' scores on the subscales are displayed in Table 8.

The other survey measuring the teachers' perception of educational interventions, Teacher Intervention Survey (TIS), consisting of 12 interventions applied in the classroom for students with ADHD in particular. Teachers' ratings of interventions are shown in Table 9. Each intervention involves 6 questions respectively measuring teachers' perceived knowledge, efficacy, skill, acceptability, time and resource factor and application of interventions. Three of the six questions (question #1, question #2, question #5) additionally determine the perceived barriers against the implementation of the interventions. The mean value of teachers' views about the educational interventions is given in Table 10, while their perceived knowledge, efficacy, skill, acceptability, time and resource factor, application and barrier scores per intervention are expressed in Table 11.

Correlation between demographic variables of teachers and the level of knowledge about ADHD is shown in Table 12. One-way analysis of variance (ANOVA) and independent-samples t-test are used to determine the relationship between teachers' demographic characteristics and the level of knowledge about ADHD.

Table 6 below expresses the experiences of teachers about ADHD. The values are given in numbers and percents.

Table 6.

ADHD Experiences of Participants

	N	%
Participation in an ADHD training course		
Yes	27	10,7
No	225	89,3
No. of students with ADHD taught		
0	4	1,6
1-2	30	11,9
3-5	74	29,4
6+	144	57,1
Collaboration with a physician/psychiatrist		
Yes	162	64,3
No	90	35,7
Participation in in-service training		
Yes	28	11,1
No	224	88,9
Self-study activities		
Yes	224	88,9
No	28	11,1
Self-study books		
Yes	103	40,9
No	149	59,1
Self-study articles		
Yes	81	32,1
No	171	67,9
Self-study pamphlets and handouts		
Yes	146	57,9
No	106	42,1
Self-study television programs		
Yes	191	75,8
No	61	24,2
Self-study internet		
Yes	110	43,7
No	142	56,3

Note. **N=252**

Results revealed that 10,7% of participating teachers had attended a course in ADHD. The rest of the participants with a ratio of 89,7% were reported to have not attended to a course in ADHD. 1,6% of participating teachers never had a student with ADHD. However, 11,9% of teachers had 1 to 2 students diagnosed with ADHD; 29,4% of teachers had 3 to 5 students with ADHD and finally, 57,1% of teachers had at least 6 students diagnosed with ADHD. 64,3 of participating teachers saught professional help and consulted a physician; however, 35,7% of teachers never attempted to get in contact with a physician or a psychologist. Only 11,1% of participating teachers had attended an in-service presentation on ADHD and the vast majority of teachers, with a ratio of 88,9% had never attended an in-service presentation on the disorder. 40,9% of participating teachers improved their knowledge on ADHD by reading books on the disorder. However, 59,1% of teachers were determined to have never used books in the course of self-study. The vast majority of participating teachers with a ratio of 67,9% never used articles in the course of self-study. The rest of the participants with a ratio of 32,1% used articles to improve their knowledge of ADHD. 57,9% of participating teachers used pamphlets and handouts to improve their knowledge on ADHD while 42,1% of the participants never used pamphlets and handouts in the course of self-study. The vast majority of participating teachers with a ratio of 75,8% watched television programs to improve their knowledge of ADHD. The rest of the participants with a ratio of 24,2 % never used television programs in the course of self-study. While 43,7% of participating teachers used internet to improve their knowledge on ADHD, 56,3% of the participants never used internet in the course of self-study. The total score of self-study activities indicated that the vast majority of participating teachers with a ratio of 88,9% participated in at least one self-study activity to improve their knowledge of ADHD. Only 11,1% of participants never participated in an activity to improve their knowledge of the disorder. Table 7 below displays teachers' mean total score on the KADDS.

Table 7.

Teachers' Mean Total Score on the KADDS

	N	**Minimum**	**Maximum**	**Mean**	**SD**
Total	252	9,00	25,00	18,23	5,930

***Note.* SD= Standard Deviation**

The minimum score of teachers earned in KADDS is 9,00 out of 34 points while the maximum score is 25,00 out of 34 points. The mean score is 18,23±5,930.

As explained earlier, KADDS consisted of three subscales, which are general knowledge, symptoms of diagnosis, and treatment. Table 8 displays teachers' scores from the three subscales.

Table 8.

Teachers' Scores on the Subscales of the KADDS

	N	Minimum	Maximum	Mean	SD
General Knowledge	252	1,00	11,00	6,60	3,376
Symptoms and Diagnosis	252	3,00	8,00	5,96	1,378
Treatment	252	4,00	8,00	5,67	1,360

As can be seen in Table 8, teachers' mean score on the general knowledge subscale was 6,60±3,376 (1,00-11,00) while the mean score on the symptoms and diagnosis was 5,96±1,378 (3,00-8,00). Finally, the mean score on the final subscale, treatment, was 5,67±1,360 (4,00-8,00). The results revealed that teachers were well equipped with general knowledge about ADHD. The approximate low mean scores gained in the symptoms/diagnosis and the treatment subscales indicated that the teachers had difficulties in identifying the student with ADHD and in applying the appropriate strategy when coping with such students as well as directing them to physicians during the treatment process.

Another survey administered to the participants of the study is Teacher Intervention Survey, which is composed of 12 educational interventions. Table 9 below presents teachers' ratings of the intervention strategies for coping with students with ADHD.

Table 9.

Teachers' Ratings of Interventions

Type of Intervention	Mean	SD
Teacher Attention	3,64	0,749
Token Economy	3,08	0,883
Response Cost	3,04	0,887
Time-out from Positive Reinforcement	3,01**	0,795
Home Based Contingencies	3,22	0,880
Structure	3,60	0,894
Physical Arrangement	3,70*	0,838
Varied Presentation and Format of Materials	3,47	0,730
Use of Cues Prompts and Attention	3,51	0,753
Brıef Academic Tasks Interspersed with Passive Tasks	3,10	0,813
Peer Tutoring	3,38	0,742
Self Management	3,60	0,777
Teacher Intervention Survey (General)	3,36	0,554

***Note*. Scores were on a Likert Scale (1=Very Low to 5=Very High), *= Highest score, **= Lowest score**

The present study also sought teachers' perception of intervention strategies. For each intervention included in the survey, six questions were asked to measure teachers' perceptions about those 12 educational interventions. Each question assessed teachers' perceived knowledge, skill, efficacy, acceptability, time and resource factor in the implementation and application of those interventions in the classroom. Table 10 below presents teachers' perception of interventions.

Table 10.

Teachers' Perception of Interventions

	Mean	SD
Knowledge	3,51	0,546
Efficacy	3,50	0,586
Skill	3,26	0,580
Acceptability	3,42	0,639
Time And Resource Factor	3,25	0,553
Application	3,24	0,613
Barriers	3,34	0,530

***Note*. Scores were on a Likert Scale (1=Very Low to 5=Very High)**

Table 11 displays participants' perceived knowledge, efficacy, skill, acceptability, time and resource factor, application and barrier scores per intervention.

Table 11.

Teachers' Perceived Knowledge, Efficacy, Skill, Acceptability, Time and Resource Factor, Application and Barrier Scores per Intervention

	Knowledge	Efficacy	Skill	Acceptability	Time And Resource Factor	Application	Barriers[a]
Teacher Attention	3,83	3,71	3,56	3,44	3,71	3,58*	3,75
Token Economy	3,14	2,93	3,23	3,19	3,10	2,91	3,06
Response Cost	3,18	2,90	3,13	3,10	3,06	2,88	3,05
Time-out from Positive Reinforcement	3,58	3,19	2,85**	2,69**	3,02	2,72**	3,26
Home Based Contingencies	3,17	2,93	3,77	3,67	2,60**	3,18	2,90**
Structure	3,61	3,38	3,80	3,78	3,51	3,50	3,50
Physical Arrangement	4,16*	3,90*	3,47	3,34	3,82*	3,51	3,96*
Varied Presentation and Format of Materials	3,52	3,13	4,02*	4,03	2,64	3,44	3,10
Use of Cues Prompts and Attention	3,92	3,68	3,39	3,18	3,51	3,40	3,70
Brief Academic Tasks Interspersed with Passive Tasks	3,06**	2,87**	3,40	3,36	2,92	3,01	2,95
Peer Tutoring	3,65	3,34	3,36	3,22	3,52	3,20	3,51
Self Management	3,34	3,14	4,00	4,04*	3,53	3,52	3,34

***Note.* *=highest score, **= lowest score per intervention / [a]The lower the score, the higher the amount of barriers**

Analysis of responses from Teacher Intervention Survey (Table 11) revealed that teachers perceived themselves knowledgeable about physical arrangement the most

(4,16) and least knowledgable about brief academic tasks interspersed with passive tasks (3,06). Teachers considered physical arrangement the most efficent intervention to be applied in the classroom for students with ADHD (3,90); however the least efficent intervention determined was brief academic tasks interspersed with passive tasks (2,87). Teachers perceived themselves to be skilled in implementing varied presentation and format of materials (4,02) the most while the intervention they perceived themselves the least skilled in implementation was determined as time-out from positive reinforcement (2,85). Teachers considered self-management the most acceptable or suitable intervention (4,04) to implement in classroom for students with ADHD in particular; however, the least acceptable intervention (2,69) to implement in the classroom for such students was determined as time-out from positive reinforcement. Physical arrangement was perceived as the least difficult intervention teachers implemented with regard to time and resources (3,82); however, home-based contingencies was determined as the most difficult intervention to implement with regard to time and resources (2,60). Teacher attention (3,58) was determined as the most applicable intervention, while time-out from positive reinforcement (2,72) was determined as the least applicable intervention to be used in the classroom for students with ADHD. Teachers rated home-based contingencies (2,90) as the intervention that had the most barrier to implement in the classroom. On the other hand, physical arrangement (3,96) was rated as the intervention having the least barrier to be implemented in the classroom for students with ADHD.

Table 12 below shows the correlation between teachers' knowledge of ADHD and demographic variables.

Table 12.

Correlation between Teachers' Knowledge of ADHD and Demographic Variables

		N	Mean	SD	F	T	p	D
	1-2	48	16,88	5,545				
Grade Levels	2-4	66	19,06	6,020	**1,279**	**-**	**0,282**	**-**
	5-6	62	18,26	6,087				
	7-8	76	18,33	5,923				
Years of	1-5 (1)	39	16,1538	1,13644				**4-3,2,1**
Teaching	6-10 (2)	47	12,3617	2,76960	**89,477**	**-**	**0,000***	**1-2**
Experience	11-20 (3)	79	16,6962	6,85071				**3-2**
	21+ (4)	87	23,7126	1,42982				
	Total	252	18,2262	5,92991				
ADHD Course	No	225	18,40	5,978	**-**	**1,457**	**0,154**	**-**
	Yes	27	16,78	5,402				
No. of Students	1-2(1)	30	14,23	2,897				
with ADHD	3-5(2)	74	14,49	5,222	**52,482**	**-**	**0,000***	**3-1,2**
	6+(3)	144	21,03	5,246				
In-Service	No	224	18,34	5,970	**-**	**0,856**	**0,393**	**-**
Training	Yes	28	17,32	5,618				
Self-Study	No	28	17,50	6,015	**-**	**-0,687**	**0,493**	**-**
Activities	Yes	224	18,32	5,926				

Note. **D= Statistical Difference**

A one-way analysis of variance (ANOVA) detected no statistically significant differences between the grade level(s) taught and KADDS in general (p>0,05). Additionally, with regard to the relationship between years of teaching experience and teachers' knowledge of ADHD, the ANOVA results revealed that the mean score of teachers with 1 to 5 years of teaching experience was 16,15; 6 to 10 years of teaching experience was 12,36; 11 to 20 years of teaching experience was 16,69 and 21 or more years of teaching experience was 23,71. A statistically significant difference between KADDS in general and the years of their teaching experience was detected (F: 89,47, p:0,000). The mean score of teachers with 21 or more years of teaching experience was significantly higher than the mean score of teachers with 11 to 20, 6 to 10 and 1 to 5 years of teaching experience. Additionally, the mean score of teachers with 1 to 5 years of teaching experience was significantly higher than the mean score of teachers with 6

to 10 years of teaching experience while the mean score of teachers with 11 to 20 years of teaching experience was significantly higher than the mean score of teachers with 6 to 10 years of teaching experience.

An independent-samples t-test detected no statistically significant differences between participation in an ADHD training course and KADDS in general (p>0,05). With regard to the relationship between teachers' knowledge of ADHD and the number of students with ADHD taught, ANOVA results revealed that while the mean score of teachers with 1 to 2 students with ADHD was 14,23, the mean score of teachers with 3 to 5 students with ADHD was 14,49 and with 6 or more students with ADHD was 21,03. A statistically significant difference between the number of students with ADHD taught and KADDS in general was detected (t: 35,57, p:0,000). The mean score of teachers with 6 or more students with ADHD was significantly higher than the score of teachers with 1 to 2 and 3 to 5 students with ADHD in KADDS in general.

An independent-samples t-test was used to determine the relationship between teachers' knowledge of ADHD and the participation in in-service training. The test detected no statistically significant difference between participation in in-service training and KADDS in general (p>0,05). The test was also used to determine the relationship between self-study activities and teachers' knowledge of ADHD and no statistically significant differences between self-study activities and KADDS in general were detected (p>0,05).

4.2. Interview Findings

As explained in Chapter 3, interviews were conducted with 10 EFL teachers working in elementary schools in Seyhan District of Adana. The purpose of the interview was threefold: to determine teacher' perceptions of their knowledge of ADHD, educational interventions they used and their views about the intervention strategies. In the following sections, findings from the interviews are presented.

4.2.1. Theme 1: Teachers' Perceived Knowledge of ADHD

Participants of the interviews were asked to what extent they felt they were knowledgeable about ADHD. Out of 10, only two of them stated that they had little knowledge. Those two teachers also expressed that they felt inadequately equipped to tackle with the management problems presented by ADHD children. Seven of the

teachers reported that they had average knowledge about ADHD and coping strategies. Teachers also explained that they gained information about ADHD and coping strategies through personal interest and commitment by reading, discussions with other teachers who had experience and through personal experiences, trial and error. Out of 10, only one teacher felt that she was quite knowledgeable about the disorder and coping strategies. The teacher asserted that she acquired her high level of knowledge by participating counseling courses, reading many books about the disorder, communicating with the family of the student and referring to her colleagues, the psychiatrist of the student and the school counselor.

During the interviews, teachers expressed their concerns about misinformation and misperceptions of some teachers and parents. In relation to this, for example, Teacher 2 said: "Everybody, most importantly teachers, tend to label children who are energetic, active and move around as 'hyperactive' eventhough those people lack knowledge about what ADHD means." Similar concerns have been expressed by several other teachers.

4.2.2. Theme 2: Sources of Teachers' Knowledge of ADHD

In the interviews, teachers were asked about sources of their knowledge of ADHD. Table 13 portrays these sources.

Table 13.

Sources of Teachers' Knowledge of ADHD

	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Training on ADHD	**X**		**X**	**X**				**X**	**X**	
Self-study Activities	**X**	**X**	**X**				**X**			**X**
Social Surroundings	**X**	**X**			**X**		**X**		**X**	**X**
Experts	**X**	**X**			**X**	**X**	**X**		**X**	
Exposure to ADHD				**X**			**X**	**X**	**X**	

As can be seen from the table, teachers reported that they obtained information about ADHD from a variety of sources. From among five different sources indicated, "social environment" and "consulting an expert" were the two top frequently mentioned sources. By social environment they meant the people around them: family members, students' families and other teachers. Additionally, teachers reported that they consulted experts when the need arose. Those experts were, teachers explained, psychologists or school counselors. It should be noted that the number of teachers consulting a school counselor (6 teachers) is considerably high when compared to the number of teachers consulting to a psychologist or a psychiatrist. Self-study activities included reading books, watching TV programmes, surfing on the internet in order to be informed about the disorder.

Four teachers reported that they obtained information on ADHD through exposure to ADHD in or outside the classroom. Teachers received knowledge on the disorder either by observing children with ADHD or through experiences with such children in the classroom or in special education and rehabilitation center. It should be noted that the number of teachers obtaining information on the disorder through experience is higher than the number of teachers obtaining information through observation, which is included in the heading of exposure to ADHD.

4.2.3. Theme 3: Difficulties Teachers Experience when Teaching English to Children with ADHD

The teachers who participated in the interview mentioned different types of difficulties. Their responses were categorised into four types: need for special attention, need for movement, lack of participation in lessons, and chaos in the classroom. These difficulties are elaborated upon in the following sections.

4.2.3.1. Sub-Theme 1: Need for Special Attention

During the interviews, some of the teachers stated that children with ADHD were in need of special attention, which is a problematic issue in itself, especially when the need of the majority of the students are taken into consideration. For example, Teacher 4 said: "I had to spend all of my energy to the kids diagnosed with ADHD and this really put me into trouble in terms of time management." Similarly, Teacher 6 stated that the child with ADHD is the one to decide on the state of the lesson: "I was

trying to start and lead the lesson by using the songs and activities the child with ADHD likes to please him. I realized in the end that I had ignored the others to some extent unfortunately."

4.2.3.2. Sub-Theme 2: Need for Movement

Some teachers mentioned the problems caused by the students' need for movement. For example Teacher 4 said:

> I experienced many problems related to ADHD in the classroom. The major problem was the student's need for too much movement. He was full of energy. I could never teach him more than 20 minutes in the early hours of the day in particular. I could reach the maximum level only in the afternoon classes. The length of class hour we were successful to lead the lesson was up to the amount of energy he could get rid of during the day.

Teacher 3 added: "For this reason, it is essential to involve him in the physical activities that require too much energy."

4.2.3.3. Sub-Theme 3: Lack of Participation in Lessons

Some teachers pointed to the connection between the lack of attention and lack of participation in lessons. To exemplify, Teacher 2 said: "My student with the disorder always have problems with paying attention to the lecture and my activities during the lesson. After a while, he forgets what is taught during the lecture. During the activities, he pays his attention to some other stuff irrelevant to the lesson." Teacher 6 added: "He participated in the lessons whenever he wanted, not when I wanted."

4.2.3.4. Sub-Theme 4: Chaos in the Classroom

Some of the teachers thought that sometimes children with ADHD created chaos: "These children have difficulties to control themselves. They are laughing excessively and disturbing other children. The other thing is they get angry easily."

Similarly, Teacher 9 thought: "These kids forget the rules of the classroom easily. They unintentionally break many of the rules. During the lesson they quickly switch from English to Turkish even though the mother tongue is forbidden in the class.

They also prevent the other students from obeying the rule of talking English in the classroom, which prevents the other kids to be exposed to intense English language."

4.2.4. Theme 4: Teachers' Views about the Difficulties Children with ADHD Experience when Learning English

The tachers who participated in the interview stated that the students with ADHD experience various difficulties when learning English. For instance, Teacher 10 said:

> These children easily forget the information they have recently learnt. They give answers to questions impulsively. In fact, they know the right answer but they give wrong answers due to their attention problems. Such children can not give their attention to the lecture and they, therefore, ask the same questions over and over again. In addition to all these difficulties, these children really suffer from their excessive need for movement. Hyperactivity is a huge problem for these children in that it prevents them even from asking for permission to answer a question.

The teachers observed that the children with ADHD had cognitive, speech and language impairments as well as social, situational and task-related difficulties. The teachers pointed to the fact that the difficulties the students experienced resulted in lack of willingness to learn English.

4.2.4.1. Sub-Theme 1: Cognitive Deficits and Academic Underperformance

Cognitive deficits negatively affect the daily(Ramsay & Rostain, 2004) and academic life of the individual (Hale, Fiorello & Brown, 2005) since they cause problems with attention, language, perception, the ability to plan and organize and self-regulation (Gioia et al., 2002; Miller & Cohen, 2001), which are essential for achieving and completing a task (Dawson & Guare, 2004). For instance, Teacher 1 observed that the children with ADHD answered the questions inattentively which brought the wrong answer even though they knew the right answer to the question. Teacher 8 also considered that the lack of attention was a considerable problem when learning English: "Learning a language is a long process. Lack of attention really turns the long learning process into a burden for such students."

In addition to attention-related problems, Teacher 4 mentioned the problems such children had with organization: "My student and I established a portfolio layout for

weekly tasks I assigned him. Establishing such a layout with a child with this disorder was very hard as you can imagine because he had problems with being organized. The child also had problems with his family because of disorganization."

4.2.4.2. Sub-Theme 2: Speech and Language Impairments and Academic Underperformance

Language impairment is a language disorder that causes problems in the expressive and receptive language of the individual. For instance, such children with speech and language impairment tend to experience difficulties in listening and following instructions. In addition, they are more prone to talk excessively and louder, blurt out answers, interrupt others in a conversation when compared to their peers (Westby et al., 2004). The linguistic and behavioral difficulties accompanied by speech and language impairment result in lower academic rates (Snowling et al., 2006). In relation to this, Teacher 7 pointed to the difficulties children with ADHD experience with reading and writing skills when learning English: "My students with ADHD experience difficulties with focusing on a particular subject, accordingly they experience difficulties with lessons which particularly requires a good performance of reading and writing skills. This explains why such students have problems with learning English." In addition to reading and writing skills, Teacher 9 pointed to the difficulties with listening skills: "Perception was a problem all by itself due to the lack of attention. I can say that reading turns into a real burden for such students and the lack of attention and perception causes underperformance in long activities that require listening skills." Teacher 4 pointed to the students' difficulties in expressing what is learned throughout the lesson: "Let's say the student learned the target subject, it does not make any sense because he can not express his thoughts and knowledge."

4.2.4.3. Sub-Theme 3: Interpersonal Difficulties and Academic Underperformance

Current Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-IV) specifies that children with interpersonal difficulties experience difficulties in playing activities, waiting turns, listening to others and not interrupting conversations (APA, 2000). The fact that social problems continue through lifetime is likely to result in academic underachievement (Mikami & Hinshaw, 2006). Teachers in the present study pointed to the difficulties children with ADHD experience in terms of their

relationships with other students in the classrooms. For instance, Teacher 1 pointed to the lack of self-control in the children with ADHD:

> These children have difficulties to control themselves. They are laughing excessively and disturbing other children. The other thing is they get angry easily and begin quarreling. His lack of control and the need for too much movement cause him to blurt out answers the other children are supposed to give. He can not wait to get a permission to speak during the lesson. All these negative behaviours cause the child to experience problems with his friends.

In fact, children with ADHD are not the ones to blame for the disruptive behaviors since these behaviors are the returns of the disorder. These children lack the required self-control to manage their behaviors and rejection from the social environment at schools seems to be a sort of paying a price for these poor management skills.

4.2.4.4. Sub-Theme 4: Situational and Task Factor and Academic Underperformance

The performace of children with ADHD depends on situational factors such as the complexity of the task, the demand for organization, the amount of stimulation, the immediate feedback obtained from activities, all of which also have an impact on the academic performance of the child (Barkley, in Mash & Wolfe, 2005). Teacher 4 mentioned the correlation between situational factors and the academic performance of the child with ADHD:

> I experienced many problems related to ADHD in the classroom. The major problem was the student's need for too much movement. He was full of energy. I could never teach him more than 20 minutes in the early hours of the day in particular. I could reach the maximum level only in the afternoon classes. The length of class hour in which we were successful to lead the lesson was up to the amount of energy he could get rid of during the day. This fact caused a retardation in the learning process.

In addition to situational factors, Teacher 2 pointed to the correlation between the task factor and the academic underperformance: “These students get bored quickly and easily; therefore, they prefer short activities during the lesson.”

4.2.4.5. Sub-Theme 5: Attitudes of Children with ADHD towards Learning English Language

The difficulties accompanied by ADHD have an essential role in determining the feelings of children with ADHD towards language learning process. These difficulties may cause a feeling of dislike for language, inadequecy and a feeling of despair and frustration when learning English language. For instance, Teacher 10 mentioned the feelings of a student with ADHD in her classroom: “ I had real a trouble with my student’s excessive need for movement. Leave me aside, he himself did not like English due to this reason.” Teacher 5 pointed to the feeling of inadequecy in such children: “He was moving around all the time; therefore, he missed the points he was supposed to learn. Consequently, he was unable to answer the questions his peers already knew and this lack of knowledge and acquisiton of the necessary points resulted in a feeling of inadequecy in him.” Finally, Teacher 8 pointed to the feeling of despair in such children: “Since learning a language is a long process, such students in my class fell into despair, which resulted in frustration.”

4.2.5. Theme 5: Difficulties Peers Experience

It is evident that children with ADHD experience problems when learning English in the classroom. Yet, it should also be emphasized that peers without ADHD experience problems in the classroom due to the chaos caused by children with ADHD. For instance, Teacher 9 pointed to the difficulties the peers other than the children with ADHD experience in the classroom:

> Children with ADHD already experience problems during the learning process but they also have the other children without ADHD experience the same problems, unfortunately. They prevent the other children’s participation in the lesson. They constantly move all around the classroom and provoke the others. They make them talk during the lecture and they burst out answers that the other children are supposed to give. Whenever a peer gives a wrong answer to a question, he

immediately comes to the board and corrects the answer. These children intervene in the activities.

As can be inferred from the extract, ADHD does not have negative effects merely on children diagnosed with this disorder. The individuals around the child with ADHD also experience the same negative consequences caused by the disorder.

4.2.6. Theme 6: Educational Interventions Frequently Used in the Classroom and Views about Intervention Strategies

The educational interventions used frequently by the teachers who participated in the interview are presented in Table 14. The interventions shown in the table are organised on the basis of frequency of use.

Table 14.

Educational Interventions Frequently Used in the Classroom

Educational Interventions	**Number of Teachers Using the Intervention**
Varied Presentation and Format of Materials	9
Teacher Attention	8
Physical Arrangement	7
Structure	5
Self-management	5
Use of Cues, Prompts and Attention Checks	4
Brief Academic Tasks Interspersed with Passive Tasks	3
Peer Tutoring	3
Token Economy	2
Home-based Contingencies	2
Response Cost	1
Time-out from Positive Reinforcement	0

As seen in Table 14, the most preferred intervention used for children with ADHD in the classroom is the strategy Varied Presentation and Format of Materials, which include using different modalities such as videos, overheads, posters, models, as well as adding color, shape, or texture. Teacher 5 mentioned the essence of the intervention: “The lesson hour is about forty minutes and you have to integrate various

activities into the lesson; otherwise, inefficient lessons are inevitable when the short-term attention of such kids are taken into consideration." Furthermore, Teacher 8 stated that dramas and songs served the purpose and using fiddle toys and stools and letting the child to chew gum in class hour were of help to manage such kids and to gather their attention. Teacher 9 emphasized the essence of visual and auditory materials: "I prefer to start the lesson once I am sure that I managed to gather the attention of kids and I succeed it by using a simple game as a starter or by visuals on smart board."

The second most preffered intervention identified is the Teacher Attention strategy, which includes giving students positive and negative verbal feedback, as well as nonverbal feedback such as nods, frowns, smiles, and pats of approval. Teacher 5 pointed to the essence of the intervention: "I frequently use Teacher Attention in my classes since it really works with elementary level students with ADHD." Teacher 1 mentioned the efficacy of the intervention on children with ADHD: " I provide my students with frequent and quick feedback, which helps such children to maintain the right behaviour. This way, they become aware of expectations from them and they are informed whether they meet these expectations."

The third most preffered intervention to be used for children with ADHD in the classroom is Pyhsical Arrangement, which includes the arrangement of seats and materials in the classroom, such as having students with ADHD in close proximity to teacher or placing the materials in a way that they do not distract their attention. Teacher 8 emphasized the need to seat the child with ADHD close to the teacher:

> The first thing I observe in children with ADHD is that they are excessively in need of movement and whenever I enter in the classroom, I come across a chaos caused by these children. Therefore, the time I enter in the class I seat these children close to me to have control on them.

Teacher 1 stated that in addition to the placement of these children, it is essential to decorate the classroom according to the needs of children with ADHD:

> I am particularly attentive to have a classroom plain and quiet. The materials used to beautify the classroom with educational aims may have an adverse effect on such children and distract their attention. Even in circumstances that I have to hang

> such materials on the walls, I am careful to seat the child far from those materials. Or I try to hang those materials far from the sight of the child.

The least frequently used intervention for children with ADHD in the classroom is the strategy Time-out from Positive Reinforcement, which restricts the child's access to positive reinforcement such as placing the child in the corner of the room on a chair. Teacher 9 emphasized the inefficacy and the harm the strategy is likely to cause on children with ADHD:

> I very rarely used Time-out from Positive Reinforcement and I definitely can say that this strategy does not work with anybody, especially for children with ADHD. The strategy is used to force the child to listen to the lecture, yet it is considerably risky. My aim is to have the child like the lesson, the English language and to infuse him with the conscious of self-management, yet with the use of this strategy, it is highly likely to lose the child. Therefore, I do not prefer and use this intervention in my classes for so long.

Table 15 presents the findings from the survey and interview with regard to the use of educational interventions.

Table 15.

The comparison of Teachers' Intervention Rankings in Survey and Interview Results

Intervention Ranking	Survey Results	Interview Results
1	Physical Arrangement	Varied Presentation and Format of Materials
2	Teacher Attention	Teacher Attention
3	Structure/Self-management	Physical Arrangement
4	Cues, Prompts and Attention Checks	Structure
5	Varied Presentation and Format of Materials	Self-management

As seen in Table 15, the first five interventions most frequently used to manage children with ADHD in classrooms are almost the same in spite of the order of priority. The least frequently used intervention is not presented in the table; however, the results of both the survey and the interview indicate that the least frequently used intervention is Time-out from Positive Reinforcement strategy.

The educational interventions frequently used by teachers participated in the interview have been presented. Table 16 presents the teachers' views about these first five strategies they used most frequently for children with ADHD.

Table 16.

Views of Elementary School English Teachers About Joint Selection of Most Frequently Used Educational Intervention Strategies In Survey and Semi-Structured Interview

Intervention Strategies	Knowledge	Efficacy	Skill	Acceptability	Time-Resource Factor	Application	Barrier
Physical Arrangement	**X**	**X**			**X**	**X**	**X**
Teacher Attention	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Structure	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Self-management			**X**	**X**	**X**	**X**	
Varied Presentation and Format of Materials			**X**	**X**		**X**	

Note. **Least Barrier scores are taken into consideration.**

As seen in Table 16, the teachers viewed teacher attention and structure intervention strategies the most ideal istrategies to be used for children with ADHD. The teachers' views about these two strategies are good in all aspects.

4.2.7. Theme 7: Teachers' Perceptions of their Ability to Cope with Children with ADHD.

Teachers' self-perceptions about teaching English to children with ADHD is presented in Table 17. The self-perception identifiers are specified as 'insufficient', 'moderate' and 'sufficient'.

Table 17.

Level of Self-sufficiency of Teachers about Teaching English to Children with ADHD

	Insufficient	Moderate	Sufficient
Teacher 1			**X**
Teacher 2			**X**
Teacher 3	**X**		
Teacher 4		**X**	
Teacher 5			**X**
Teacher 6		**X**	
Teacher 7		**X**	
Teacher 8		**X**	
Teacher 9		**X**	
Teacher 10	**X**		

As seen in Table 17, among the ten teachers interviewed, two teachers explained that they felt inefficient about teaching English to children with ADHD. Teacher 10 for example said: "In fact, I can not really feel that I am able to teach such kids. The classrooms are too crowded, the curriculum is really hard to cope with and there are too many chores to deal with at school that it becomes a real burden for me to allocate time for these kids. They slip through the cracks, let's say." Teacher 3 considered the matter from a different angle:

> I can not call myself sufficient to teach children with ADHD because while some of the techniques I have tried to use in the classroom during a lecture so far gave better results, the same techniques were of no use during another lecture. In this respect, I feel the need to improve myself.

Five teachers considered themselves moderately sufficient about teaching English to children with ADHD. Teacher 4 considered herself moderately sufficient since she is creative enough to create the suitable environment for such kids; however the recurring problems are challenges for a complete success:

> Dealing with a student with ADHD requires loads of time. Okay, I run with him, I play football with him to be able to teach him the way he wants and needs but it becomes frustrating when the I realize that I go back to the beginning when the lecture is over and the other one starts.

Three teachers considered themselves sufficient about teaching English to children with ADHD. Among these teachers, Teacher 5 considered herself sufficient to a great extent due to the various strategies she applied in the classroom for such children: "I feel considerably sufficient when teaching English to children with ADHD because I plan my lectures in a way that I can use various strategies. I believe that smooth transitions among activities really work with these kids. I use techniques that we call 'attention gatherer' in particular."

4.2.8. Theme 8: Barriers to Teach English to Children with ADHD

Among the teachers interviewed, four teachers mentioned the barriers to teaching English to children with ADHD. Teachers reported the factors against teaching English to such children which included lack of time to devote special attention to such children, inefficient strategies used in the classroom, heavy workload at school and other factors.

4.2.8.1. Sub-Theme 1: Time Factor

Interview findings reveal that one of the factors that turn into a challenge for both teachers and other students in the classroom is time factor. Time factor is a problem for teachers in that they have to spend more time on children with ADHD when compared to the time allocated for children with ADHD, which is unfair in behalf of other children without ADHD. Teachers consider time factor a problem once again in that the hours of courses at public schools are not sufficient for efficient lecturing. Time is also a problem for students without ADHD due to their feeling of being neglected when the teacher allocates more time for students with ADHD (Pillay, 2001).

One of the teachers, Teacher 3, stated that the child with ADHD is in need of special attention which affect the whole lesson adversely: “The main problem I experience with such children is to keep him still during the lecture. For this reason, I have to involve him to activities that include too much action and I have to warn him to obey the rules. This fact really affects my lesson in an adverse way since I allocate much more time for such kids than I do for other students in the class.”

Teacher 9 mentioned the system-based problems with regard to time: “I have no problems with such kids during the lesson. We overcome the difficulties, in fact. The thing is revision is of great importance when teaching such kids but I do not think that I can really make it due to the very few hours of weekly courses at state schools.”

As this extract illustrates, even if the teacher expresses a wish to invest more time for providing help to children with ADHD, due to concerns over limited time she can not.

4.2.8.2. Sub-Theme 2: Inefficient Strategies

Teachers pointed out that some intervention strategies particularly used to manage ADHD in the classroom had no improving effect on children with ADHD. For instance, Teacher 10 stated that she applied a number of strategies in the classroom when teaching children with ADHD, yet no progress was observed in such children : “The strategies I applied in the classroom had no improving effect on my students with ADHD. I pondered a lot to figure out what I can do more to be successful but I had no time to do research on the learning process of such children.”

4.2.8.3. Sub-Theme 3: Heavy Workload

One of the teachers, Teacher 10, stated that the heavy work load at school constituted a barrier to teach English to children with ADHD: “The classrooms are too crowded, the curriculum is really hard to cope with and there are too many chores to deal with at school that it becomes a real burden for me to allocate time for these kids. They slip through the cracks, let’s say.”

4.2.8.4. Sub-Theme 4: Other Factor

Teacher 10 experienced problems with the parents of students without ADHD and considered the parental issue a barrier to teach English to children with ADHD:

> I tried, I really tried to give the special attention they deserved but it resulted in a chaos in the classroom. The successful students in particular began to get bored. They finally complained to their parents about this issue. They told their parents that they fell behind in the lesson and the hyperactive students understood nothing under no circumstances and I, as a teacher, allocated too much time for such children.

The extract points to the fact that the teachers try for the sake of children with ADHD; however, the different levels of knowledge and learning speed of children with and without ADHD cause teachers to have problems with classroom management. The expectations of children without ADHD and their parents render this process more problematic.

4.2.9. Theme 9: Expert Support

Figure 2 below presents the distribution of the number of teachers who receive support from an expert.

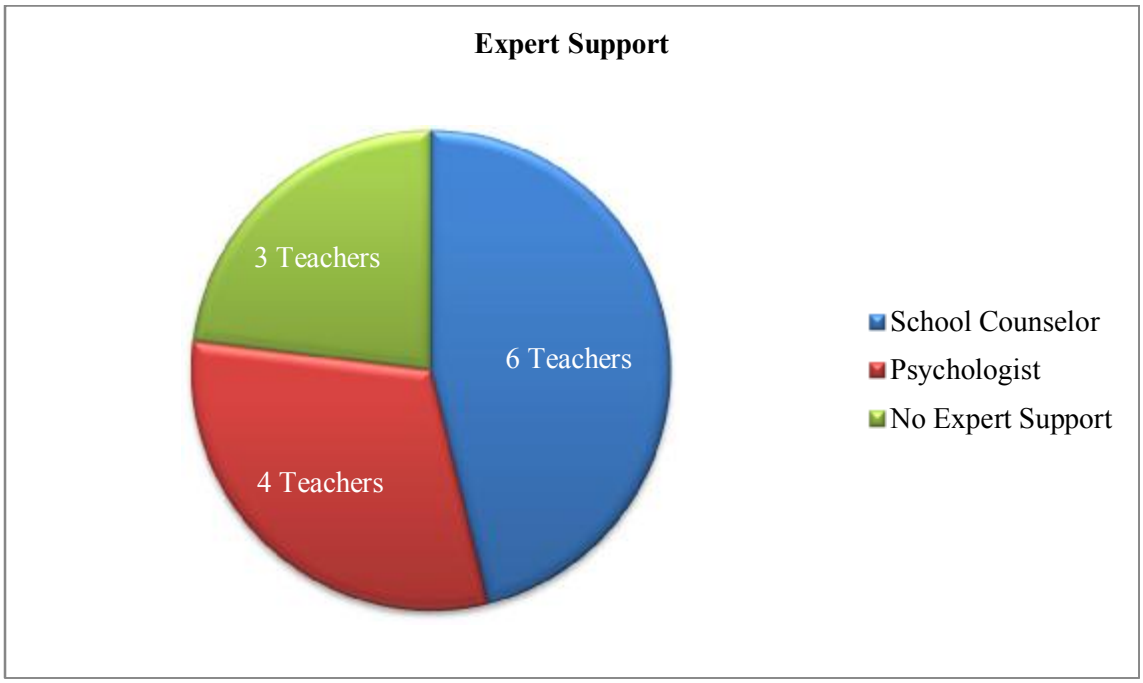

Figure 2. Teachers received expert support

As seen in Figure 2, six teachers reported to have received support from the school counselor and four teachers from a psychologist. Three teachers explained that they never referred to an expert for support. It should be noted that among these teachers, some of the teachers referred to both school counselors and psychologists for

support. Teachers preferred the school counselors the most to receive support from for the management of children with ADHD.

In relation to school counselors, Teacher 1 said: “I received support from the school counselor when teaching kids with ADHD and managing the ADHD related problems.” The striking point in the interview is that among the teachers who received support from the school counselor, Teacher 10 stated that the school counselor had no effect on her management of the ADHD related problems in the classroom: “I spoke to the school counselor to obtain some information about the disorder and the possible techniques to cope with the problem but she repeated the common patterns which I already knew. Unfortunately, she had no positive effect on me.”

Teacher 6 emphasized the importance of referring to a psychologist: “When I refer to a psychologist, I can develop strategies better to manage such kids in the classroom.” Teacher 9 supports the same idea: “I manage those kids with ADHD with the help of the strategies and methods I learned from the psychologist.”

Three teachers reported that they never referred to an expert for support. They stated no special reasons for it. Teacher 7 struggled with the problem on his own: “ No, I never referred to an expert. I myself tried to develop intimacy with the kids. I tried to cope with the problem on my own.”

4.2.10. Theme 10: Recommendations to English Teachers

During the interviews with the participants, they were asked to give some advice to those teachers who never had teaching experience with children with ADHD. The recommendations of English teachers who taught at least one child with ADHD are presented in Table 18. The recommendations are meticulously gathered under three headings; Teacher Approach, Classroom Management Strategies and School-Family-Expert Cooperation.

Table 18.

Recommendations to Teachers of Students with ADHD

Teacher Approach (Communication and Relationship Skills)	• Be patient • Provide special attention • Discover the student's interests • Listen to the student • Recognize the student • Spend time together • Provide soft reactions
Classroom Management Strategies (Instructional and Behavioral Management Strategies)	• Learn classroom management strategies • Use mnemonics technique to enhance word retrieval • Use attractive activities • Use visuals and auditory materials • Use fiddle toys • Instill the students with the sense of responsibility • Use the power of positive reinforcement • Provide feedback • Remind the rules of the classroom • Have the students sit closer to the teacher • Make eye contact
School-Family-Expert Cooperation	• Refer to the school counselor • Establish communication among school, family and experts.

These categories now will be elaborated upon in the following sections.

4.2.10.1. Sub-Theme 1: Teacher Approach

The participants of the interviews believed in the importance of using variety of approaches in teaching. To examplify, Teacher 1 emphasized the importance of patience to teach English to children with ADHD: "I recommend to be patient, which is the most important approach I guess. Language learning is a long and tiresome process and it requires patience especially when teaching the language to kids with the disorder."

Teacher 3 stated that discovering the special interests of children with ADHD is considerably important. Therefore, the teachers should ask the parents about the child's special interests and combine the subjects with the relevant activities accordingly.

Teacher 10 believed in the importance of providing special attention to children with ADHD: "The academic performance of the child does not improve to a great extent but it is essential to boost the self-confidence and the sense of 'I can do it just like other kids do!'."

4.2.10.2. Sub-Theme 2: Classroom Management Strategies

Among the recommendations the teachers provided during the interviews, one strongly recommended strategy was the use of mnemonics. Teacher 1 emphasized the essence of this method: "Retention is a problem for such kids. Associations made between the word and concepts play a role in coding, which really help these kids to recall the words they have difficulty in memorizing." The other recommendation is provided by Teacher 8:

> "I recommend the teachers to use fiddle toys with such children. For example, there are special rocking chairs for such children. This chair gives the child the chance to move in his place. This way he does not feel the need to wander around. There are also special gums produced for these kids. They chew it in the classroom and do not feel the need to blurt out answers or talk excessively during the lecture. But the thing is I used these fiddle toys when I was teaching in Britian. I am not sure if the teachers can find these toys in Turkey. They may demand it from school they work at or from internet. I have never used these toys since I came back to Turkey because the school does not provide us with the relevant stuff, so I did not insist on it but believe me, it works a lot."

As seen from the statements of the teacher, in addition to already known and proven intervention strategies, there are many other additional ways to address a student with ADHD. Yet, application of some of these interventions may be resource demanding and may not be accepted by some schools. Even so, being knowledgeable about various effective interventions is essential in terms of directing colleagues to the use of these intervention strategies in their own classrooms if the schools they work in let them to do so.

4.2.10.3. Sub-Theme 3: School-Family-Expert Cooperation

During the interviews, some of the teachers put an emphasis on close cooperation among certain people. Teacher 1 stated that a cooperation among school, family, and experts is essential to make progress in the improvement of children with ADHD: “The teacher constantly establishes a connection between the school and the family. In certain cases, the teacher should speak to the parents of the child to receive support from a psychologist.”

The findings from surveys and interviews were presented in this chapter so far. In next chapter, the results of the research are discussed, the limitations of the study are described, and the chapter is concluded with an overview of the research process.

CHAPTER V

DISCUSSION AND CONCLUSION

This chapter will include a critical analysis of the results presented in Chapter 4. Teachers' knowledge of ADHD, the intervention strategies they use most frequently for students with ADHD, views of teachers about the educational strategies and the correlation between teachers' demographic variables and their knowledge of ADHD are discussed. The chapter concludes with limitations of study and provides recommendations for future research.

5.1. Teachers' Knowledge of ADHD

Teacher's knowledge of ADHD in this study was found to be average according to survey results. The minimum score of teachers earned in KADDS is 9,00 out of 34 points while the maximum score is 25,00 out of 34 points. Teachers demonstrated an overall knowledge of ADHD at a mean score of 18,23 similar to the mean score of 17.2 found in the original KADDS study (Scuitto et al., 2000). The responses from the semi-structured interview confirmed this finding. Seven teachers who participated in the interview were reported to have average knowledge on ADHD. The results revealed that teachers felt more equipped with general knowledge about ADHD when compared to the approximate low mean scores gained in the symptoms/diagnosis and the treatment subscales. These findings are consistent with the outcomes of several studies which have demonstrated that teachers lack the knowledge of symptoms/diagnosis and treatment of ADHD (Scuitto et al., 2000; Kos et al., 2004; Snider et al., 2003; West et al., 2005). Yet, some studies have found that teachers knew more about symptoms/diagnosis of ADHD than the treatment alternatives of the disorder (Scuitto et al.,2000; West et al., 2005). In this study, there did not appear to be a difference in the average knowledge level of teachers in this two areas, which indicated that the teachers had difficulties in identifying students with ADHD and in applying the appropriate strategy when teaching to such students as well as directing them to physicians during the treatment process. Similar to other studies, the findings here indicate that teachers lack the required information regarding all types of ADHD information (Scuitto et al., 2000; West et al., 2005) which suggests the need for comprehensive training that covers general knowledge, symptoms, and treatment.

The teachers with general knowledge of ADHD have a general idea about the disorder, which facilitates the recognition of the disorder. General knowledge about ADHD is merely a gateway leading to the fundamentals necessary to identify the concept in detail. The fundamentals of a disorder are the symptoms, diagnosis and treatment areas of the disorder. In the absence of knowledge about these areas, the individual is hardly considered to know the disorder. General knowledge area is the theoretical part of the disorder; whereas, symptom, diagnosis and treatment areas are the parts required to transfer the theoretical knowledge to practice. Therefore, the inadequate knowledge of symptoms/diagosis and treatment of ADHD is likely to result in problems for teachers in management of children with ADHD. A teacher with inadequate knowledge of symptoms and diagnosis of the disorder is hardly able to differentiate a student medically undiagnosed with ADHD yet.

The teachers' low level of knowledge about symptoms/diagnosis and treatment of ADHD could be related to the misperceptions about ADHD. Looking at one single specific behaviour in isolation may be misleading. For example, the children who are energetic, who make noise or talk too much can easily be wrongly labelled as having ADHD disorder or as hyperactive by teachers or by various people in the society. However, it is essential to make a distinction between the child's need for movement due to his age and the need for movement in extreme levels (Selçuk, 2001). Despite teachers' detailed observations on students' different behaviours, the teacher is likely to misinterpret the difference in behaviours. In circumstances that the child most probably has ADHD, the teacher may consider the behaviours of the child as simply a problem instead of a sign of a disorder requiring treatment. Converserly, in circumstances that the child exhibits behaviors similar to ADHD-related behaviours, which in fact is caused by the nature of the child, the teacher may consider the child to have ADHD. Since providing answers to the symptoms and diagnosis questions such as whether the child has ADHD or not relates to what a teacher directly observes in a student in his/her class, the teacher is very likely to have misperceptions about ADHD if she/he is not well-equipped with the true information about symptoms and diagnosis of the disorder. Among the teachers who participated in the interview, Teacher 3 emphasized the teachers' tendency to diagnose students moving around and being distracted easily as "hyperactive" even though they lack the knowledge of the main criteria for diagnosis of the disorder. The teacher claimed that many teachers most frequently consider the

movement or the distraction of the child as a symptoms of ADHD, yet this consideration is merely a misperception.

The teacher with inadequate knowledge of symptoms and diagnosis of ADHD would naturally have inadequate knowledge of treatment of the disorder since a solution to the problem is impossible if the existence of a problem is unknown. Only one teacher mentioned the drug-based treatment of ADHD. The other nine teachers never pointed to this issue, instead, these teachers mentioned the possible educational interventions to be used in the classroom. Yet, three teachers emphasized that the strategies could never serve the purpose for children with ADHD and were ineffective when managing this disorder. Among the teachers participated in the interview, Teacher 10 stated that she applied a number of strategies in the classroom when teaching children with ADHD, yet no progress was observed in such children. The teacher added that she tried to do the best in order to be successful, yet she had no time to do research on the learning process of such children. If this statement is taken into consideration, the teachers try for success, yet for some reasons such as lack of time and heavy workload for doing research and inefficient directions of experts, they do not reach the relevant information and lack the necessary adequate information required to manage children with ADHD. One striking point about the results of the interview was that although many of the teachers participated in the interview considered the reference to the school counselor effective in developing strategies to manage children with ADHD, Teacher 10 claimed that reference to the school counselor was of no benefit. Despite the fact that the teachers in general consider school counselors effective in obtaining information with regard to choosing the best strategy to cope with children with ADHD, the exceptions should also be taken into account and further research should be conducted on the issue on an individual basis since the number of teachers participated in the interview was insufficient for generalizations.

Half of the teachers who participated in the interview were reported to consider themselves moderately sufficient to teach English to children with ADHD. More than half of the teachers interviewed (7 teachers) considered themselves moderately knowledgeable about ADHD. When the approximate ratios are taken into consideration, it would be right to claim that the teachers' knowledge of ADHD is related to their self-perception of teaching the language to children with ADHD. Moderate levels of teachers' knowledge of ADHD and their self-perceptions about teaching English to

children with ADHD suggest a need for a comprehensive training for teachers to be able to manage children with ADHD more effectively.

5.2. Teachers' Preferred Intervention Strategies

Since each student has unique needs, it is important for teachers to be able to have a repertoire of interventions in order to best meet the needs of students, especially those that are exhibiting difficulties such as ADHD. Therefore, several educational interventions effective in reducing the challenges children with ADHD may experience in classes were identified and presented to teachers to determine the ones most frequently used in classrooms.

The results of both survey and the interview revealed that the teachers performed better in instructional management category, notably including structure, physical arrangement of the classroom, varied presentation and format of materials, and use of cues, prompts and attention checks. Teachers underperformed in behavior management category, notably including token economy, response cost, time-out from positive reinforcement, home-based contingencies, and self-management. The results also revealed that the teachers generally perceived more barriers to the implementation of interventions that fell under the category of behavior management. The results of this study are supported by findings of Small (2003), where the teachers were determined to perform better in instructional management category than behavior management category. This is probably due to the factors of time, resource and training required to implement the strategies. In previous studies (e.g., Bussing et al., 2002) investigating elementary teacher sources of ADHD information and confidence in working with these students, the authors found significant barriers to effective instruction of students with this disorder. They found that time requirements of some interventions were rated as the greatest hindrance, followed by lack of training. In consideration of these findings, using cues, arranging the classroom, or using different techniques do not usually require additional amounts of teacher time, resources, or advanced training. Yet, the other techniques mentioned above require additional training, require more steps and take more time to implement, which may be why teachers felt less knowledgeable about these interventions.

The mere strategies teachers performed high scores were teacher attention and self-management even though these interventions are involved in behavior management

category. Self-management in particular was among the promising treatments with high ratings, which is surprising when the teachers' low ratings about behavioral management strategies are taken into consideration. The reason for this preference may be that self-management places emphasis on appropriate behavior in the classroom setting and teachers may have felt that this intervention better addressed the needs of this child with ADHD. The teachers, who have 21 or more years of teaching experience mostly rated this strategy as a promising treatment. This group of teachers, based on their long years of teaching experience, may have found the chance to observe the long-term effects of this strategy on students with ADHD. This way, they may have realized that the instructional management strategies alone were not sufficient and effective for academic success and behavioral management strategies were additionally required for academic improvement. Previous research studies support the need for behavioral management strategies, self management in particular, in classroom settings (Barkley et al., 1980; Barry & Messer, 2003; Edwards et al., 1995; Hinshaw et al., 1984; Hinshaw & Melnick, 1992). Besides the most frequently used interventions, the results of both the survey and the interview revealed that the least frequently used intervention was time-out from positive reinforcement. Teachers found time-out to be the least acceptable among these treatments for children with ADHD. This suggests that teachers were opposed to intervention strategies in which the teacher responded to inappropriate behavior with an adverse consequence. This finding is consistent with the literature on the treatments for children with disruptive behavior problems in that teachers preferred positive treatments over punitive strategies in their classrooms (Elliott et al., 1984, Part I & II; Kutsick et al., 1991; Witt et al., 1984). In addition, the results of this study are also parallel to previous literature, which examined classroom strategies specifically for children with ADHD (Power et al., 1995).

In the survey, the general average score (3,36 out of 5 points) revealed that the teachers applied the interventions to some extent in their classrooms, which can neither be considered as sufficient or insufficient. In the interview, the teachers were determined to apply more than one strategy to children with ADHD. Yet again, the use of strategies can neither be considered sufficient or insufficient. In a previous study by Snider et al.(2003) pointed to the fact that the teachers had an average knowledge of educational interventions, which confirms the findings of this study. The findings of the current study suggest that the teachers were aware of some specific educational interventions, yet the teachers were determined to be closed to further research on

various strategies to teach children with ADHD. The other possible reason is that although teachers seemed to understand the types of interventions recommended in school settings (Carney & Gerken, 2007), research has shown that other important factors such as time and intervention acceptability determined whether these treatments were actually delivered to the students in adherence to the syllabus (Hall & Kataria, 1992; Kazdin, 1981; Von Brock & Elliott, 1987).

The interview findings in the study revealed the type of intervention strategies used by the teachers. The striking point noticed in the interviews was that while some teachers provided detailed information about the strategy they used in the classroom, some teachers provided no further information about the strategy; they merely pointed to the name of the strategy they used in the classroom. This fact naturally gave rise to thoughts of the possibility that these teachers were unaware of the details and use of the strategy. Perhaps they did not want to appear ignorant. Fortunately, the number of such teachers, which was less than half of the total, was a source of relief demonstrating no very alarming situation existed. Yet, the results demonstrate that an effective teacher training on the details of ADHD and educational interventions with regard to practice in addition to theory to manage the disorder should be provided to teachers.

5.3. Teachers' Views about Educational Intervention Strategies

Knowledge of teachers in effective interventions for students with ADHD is an important factor to consider when implementing treatment plans for such students. Another important variable to consider is teachers' views of the particular intervention: teachers' perceived knowledge, skill, sense of efficacy, acceptability, time and resource factor, applicability of intervention. Previous studies have noted teachers' preference for positive interventions, such as self-management, as opposed to interventions that include punishment, such as time-out from positive reinforcement. In addition to the type of treatment suggested, time and resource factors required to implement the intervention have been found to affect ratings of preference. The findings regarding time and resource factors are consistent with literature in that they constitute barriers to implement the interventions in the classrooms (Eckert & Hintze, 2000; Martens et aI., 1985; Reimers et aI., 1992).

Among the intervention strategies, physical arrangement was determined to be one of the most frequently used strategies by teachers. The reason of this preference

might be that the teachers perceived themselves knowledgeable about this strategy. The teachers emphasized the efficacy of the strategy when addressing to children with ADHD. The fact that the strategy is unproblematic in terms of time and resource factor probably rendered the intervention more applicable in the classroom. Arrangement of a classroom, in which the students with ADHD are seated close to the teacher and the materials are remained at a distance, is neither a time-consuming nor a resource-demanding event. The teachers stated that the strategy constituted almost no barriers to teaching English to students with ADHD. The factors mentioned as a whole may have rendered the strategy one of the most preferred interventions when managing children with ADHD. The results agree with Baron's (1992) and Wannarka & Ruhl's (2008) idea that the seating arrangement is a priority when considering students' on-task behavior.

The other educational intervention teachers preferred to apply in the classroom very frequently was determined as teacher attention. Results revealed that the teachers perceived themselves knowledgeable and skilled about the strategy. In the interview, the teachers stated that the strategy had positive effects on children with ADHD due to the involved instant feedback and gestures and their signicant effects on reactivating the distracted attention of students with ADHD. This is probably why teachers viewed this strategy acceptable and applicable in their classrooms. In addition to positive sides of the strategy, the teachers pointed that the strategy was neither time-consuming and resource-demanding. The factors mentioned may be the reason teachers considered this strategy a barrier-free intervention to teaching English to children with ADHD.

Findings reveal that an educational intervention very commonly used by teachers in their classrooms is varied presentation and format of materials. The strategy is both time and resource demanding; yet, the teachers seem to be uninfluenced by these negative sides of the stategy when rating. The fact that the strategy addresses to the multiple intelligences of the child (Gardner, 2006) and the theory "multiple intelligence" appears frequently in teacher training programs in Turkey in recent years may be the reason of this preference. The theory of multiple intelligence has been implemented by elementary school teachers across Turkey since 2005 (Erdamar, 2009). The fact that this strategy addresses to various intelligences of a student by presenting various materials in various ways might be the reason to use this intervention in the classroom. Gardner (2006) states that teachers can use multiple intelligence to think about how they should present or deliver material to their students and suggests using

"multiple entry points" to teach each topic. He explains that any topic or concept can be taught in at least seven distinct ways correlating with the intelligences. Approaching a topic in several different ways allows students more exposure to the topic, which in turn has more impact on student learning and removal of boredom. If approached from a different standpoint, it is not only the students but the teachers are also likely to become bored in the course of instruction due to lack of stimulants. In response to boredom, presenting various materials in various ways can be entertaining even for teachers since teacher activation is a prerequisite for activated students. Therefore, this notion of removal of boredom might have encouraged the teachers to implement this strategy more often. The frequency of implementation might have rendered teachers more skilled each time, which was actually reflected in results. The higher the frequency of practice is, the more internalized the strategy becomes.

In the study, the educational intervention teachers very commonly used in their classrooms was determined as self-management. The explanation for this preference can be that the teachers considered themselves skilled when applying the strategy to children with ADHD. The teachers emphasized that the strategy is neither time-consuming nor resource-demanding considering the fact that the time students are taught how to regulate themselves, more time is saved to focus on the fundamentals of the lesson. Besides, the entire burden of treatment is not placed upon the teacher, yet rather is shared by the child who begins to learn how to observe, monitor, and manage his or her own behavior. The burden of treatment, shared by the teacher and child, is consistent with literature which suggests that teachers find it important to develop a sense of responsibility in student (Pisecco et al., 1999). One interpretation of these findings may be that teachers have identified self-management as a strategy which has the potential to increase students' independence and sustainability of effects. If the teacher feels that his or her participation is the only way for improvement, he or she might feel that the effects of intervention is only temporary. This may be concerning for teachers in that their involvement usually ends at the completion of the school year. However, self-management allows the student to become more aware of his or her behavior and offers the student the ability to monitor his or her behaviours. Although the child will eventually leave the care and involvement of that particular teacher, he or she may have already gained the skills which can be taken to the classroom of the following year. In the event that teachers of the following year fail to involve in the child's treatment and development, there may still be hope that some treatment gains

such as awareness and the ability to self-monitor will not be lost and help the students handle the difficult situations caused by the disorder until the next school year. In other words, the strategy involves teaching students self-monitoring and self-evaluation about their own academic and social behavior in the absence of teachers. In this respect, the strategy has life-long effects on students with ADHD, which rendered the strategy highly suitable and applicable to implement for such students.

According to the results of the present study, structure was determined as one of the most frequently used interventions in the classroom. The teachers considered themselves knowledgeable about the strategy. Both constructive and destructive effects of the strategy were mentioned in the interview as the indicator of how knowledgeable the teachers were about this strategy. The level of knowledge of teachers was determined to be the reason why they perceived themselves skilled about this strategy. The necessity to apply certain rules explicitly (Duhaney, 2003; Brock, 2002) and the positive effects of creating an outline of the lesson prior to the lecture (NASP, 2010) were provided to emphasize the efficacy of the strategy. The teachers found the strategy both applicable and acceptable for students with ADHD due to the factors aforecited. The teachers stated that the strategy was neither time-consuming nor resource-demanding. This fact evidently points the reason why teachers preferred this strategy to apply in the classroom for students with ADHD.

Finally, in addition to the strategies the teachers very frequently used in their classrooms for students with ADHD, it is essential to point to the least frequently used intervention and the reasons behind this low frequency. The educational intervention the teachers perceived the least acceptable for students with ADHD is the time-out from positive reinforcement strategy. Some of the teachers who participated in the survey and the interview viewed the strategy unacceptable for students with and without ADHD in that it involved punishment. Perone (2003) shares the same view:

> If you have young children in enlightened preschool settings, you may have heard teachers say, "We don't use punishment here. We use time-out." But if the time-out is contingent on some behavior and if it effectively reduces that behavior, then it is punishment (p.3).

Analysed as a whole, the results reveal that teachers felt more knowledgeable, perceived their skill to be greater, rated as more acceptable, and rated lower barriers to

implementation of instructional management interventions. In other respects, teachers felt that they knew least about, had less skill, rated as less acceptable, and had more barriers to the implementation of behavior management interventions. The results of this study are not consistent with the previous research findings, which reported that teachers preffered behavioral classroom management techniques for the management of ADHD (Yaşar, 2008). The results are also inconsistent with findings revealing that teachers had skills, rated as more acceptable and effective, and knew more about behavioral interventions. The only consistency was that teachers felt that they had more barries to the implementation of behavioral interventions with regard to time and resource factors (Glass & Wegar, 2000; Jerome et aI., 1994; West et aI.,2005).

5.4. Correlation between Teachers' Demographic Characteristics and Teachers' Knowledge of ADHD

The current study aimed at determining the relationship between teachers' demographic variables and their level of ADHD knowledge. The variables included grade levels taught, years of teaching experience, ADHD training courses participated, number of students with ADHD taught, participation in in-service training and self-study activities. Self-study activities involved books, articles, pamphlets, handouts, television programs and internet.

The ANOVA results detected no correlation between teachers' ADHD knowledge and the grade levels taught, which in fact is an expected result. The results in this study are consistent with the results in the study by Piccolo-Torsky and Waishwell (1998), in which no significant differences in knowledge with regard to the grades taught was found. The results were expected since the grade level of a student with ADHD, his/her age, neither increases or decreases the level of difficulty nor eliminate the difficulties accompanied by the disorder. As Bagwell et al. (2001) and Friedman et al. (2003) state, children with ADHD are misperceived to encounter difficulties caused by the disorder merely in childhood; however, the disability is observed to be permanent in individuals on and after the period of adolescence (Shalev, 2004). Therefore, the level of difficulties are likely to be decreased or eliminated merely by an active interference: the student is administered drugs, applied certain instructional and behavioral strategies. Similarly, it is revealed that the grade levels teachers teach has no effect on the teachers' knowledge of ADHD since the teacher is likely to learn about the

disorder merely in an active cycle. Active participation is the key concept of learning a strategy.

A direct connection between the teachers' knowledge of ADHD and the years of their teaching experience was detected. The findings are consistent with the study (Sciutto et al., 2000), where American teachers received higher knowledge scores with greater years of teaching experience than teachers with less experience teaching. In addition, the present study is consistent with findings (Jerome et al., 1994), which revealed that Canadian teacher experience was significantly related to overall ADHD knowledge. However, the results in this study are different from the results in studies (Castenova, 2008; Jerome et. al., 1994; Kos et al., 2004; Piccolo-Torsky & Waishwell, 1998) revealing no relationship between years of teaching experience and ADHD knowledge. Cultural factors or differences in training experiences may be the reason for this discrepancy, or this could be related to the small sample size in those studies. Yet, logically, an increase in the teachers' level of knowledge is more likely to be observed as the years of their teaching experience increased. The length of time a teacher remains in an educational environment increases the frequency of encounters with ADHD. The higher the frequency of the encounters with students with ADHD, the more knowledge teachers acquire about the disorder. The teacher is exposed to new information each time they encounter a student with ADHD, accordingly this creates an opportunity to question the existing knowledge about the disorder. The possibility to explore accurate information about ADHD increases through the method of trial and error. Therefore, it is right to state that experience is the proved or disproved state of knowledge. However, the second group of teachers falls out of line when the results are taken into consideration. The group of teachers with 6 to 10 years of teaching experience was determined to have the least level of knowledge about ADHD. The first group of teachers with the least teaching experience was determined to have more knowledge when compared with the second group of teachers. The fact that the first group of newly qualified teachers have recently acquired knowledge of the disorder and the management strategies may be the reason for the higher score. Additionaly, the younger aged teachers' urge to prove themselves academically may be the other reason for the higher score of knowledge. The second group of teachers, who have already completed the orientation period, may have quit proving themselves academically and entered into a routine process. The routine process may have caused the teachers to be closed to resources of knowledge.

The teachers level of ADHD knowledge was determined to bear no relation to the teachers' participation in an ADHD training course, which is an unexpected result. This result is not consistent with the findings of several studies that assessed elementary teachers' performance on various tests measuring a range of features of ADHD (Jerome et al., 1994; Piccolo-Torsky & Waishwell, 1998; Sciutto et a1., 2000; Vereb & DiPerna, 2004). These studies suggested that the more training teachers receive, the higher their level of ADHD knowledge. Different from the studies mentioned above, it appears that the teachers participated in this study had received little training as part of their formal program of study. Previous studies examining the amount of training that teachers had received on ADHD support these finding (Bussing et aI., 2002; Castenova, 2008; Jerome et aI., 1994; PiccoloTorsky & Waishwell, 1998). In these studies teachers were reported to receive very little to no training in college and some of their training was acquired through self-study. For instance, Snider, Busch, and Arrowhead (2003) found that 80% of teacher knowledge of ADHD came from in-service training, consultation to professionals and parents of ADHD students, reading journal articles, information from television or internet, and professional organizations regarding ADHD training. The Bussing et al. (2002) study reported that 65% of teachers had received brief in-service training and most teachers acquired their knowledge of ADHD through reading at least one article or a book. When combined with the current study results, these findings suggest that there is insufficient formal training within the educational curriculum for teachers and that teachers are seeking additional training through in-service, independent self-study activities such as reading books or articles, and additional courses on ADHD training. The courses, apart from colleges providing formal training, are additional providers of ADHD training; however, when the results are taken into consideration, it appears that there exists two highly probable reasons for this result: no systematic participation in the training courses or participation in courses providing insufficient instruction. Therefore, it is suggested that an overall analysis of the course content with regard to ADHD training in Turkey should be performed; additionally, the course content should be restructured for a better quality of education. If the reason for the unexpected result is the occasional unsystematic participation in the courses, the teachers should be encouraged to attend the courses regularly, which is essential to internalize a concept.

A direct correlation between the teachers' knowledge of ADHD and the number of students with ADHD taught thus far was determined. The results of this study are

supported by findings in the studies of Sciutto et al. (2000) and Small (2003) revealing that the more students with ADHD the teachers taught, the higher the level of knowledge about the disorder. During the academic year, the teachers seize a chance to observe the students with ADHD each time of encounter with such students. The information obtained as a result of observations are proved or disproved in each encounter with a student diagnosed with ADHD. The teachers test each strategy to manage such students. In the course of examination of interventions, the strategies effective or ineffective are determined and more acceptable and applicable strategies are determined to address to the student with ADHD. Consequently, the teachers seize the chance to observe the points that have negative or positive effects on the students diagnosed with the disorder. The process mentioned thus far testifies to the accuracy and rationality of the results.

The teachers' level of ADHD knowledge was determined to bear no relation to the teachers' participation in an in-service training. The results of this study do not support studies, in which the teachers received most of their knowledge of ADHD from in-service training (Castenova, 2008) and that the teachers' participation in in-service training strongly increased the level of teachers' ADHD knowledge (Jerome et. al., 1994; Small, 2003). In fact, in-service training is supposed to inform individuals about a particular subject area, yet the teachers in this study seem to have underutilized these courses; therefore, the unexpected results can be attributed to conditions of Turkey. In Turkey, the in-service training activities are mainly intended for the top executives. Low or medium level employees are occasionally presented with a low quality of education. The employees are expected to educate themselves by referring to other sorts of resources (Taymaz et al., 1997). Turkey fails to be adequately successful in in-service training activities due to the low level of education and the distribution of employees of in-service training courses (Öztürk & Sancak, 2007). The lack of infrastructure in education, financial difficulties, negligence of cost-benefit analysis in sourcing are the leading barriers against in-service training in Turkey (Öztürk & Sancak, 2007). Moreover, the deficiency in the number of units and educators in charge of organization of in-service training activities has an adverse effect on the efficacy of in-service training activities (Öztürk & Sancak, 2007). Therefore, one might well claim that the teachers in this study, who participated in an in-service training, failed to receive a satisfying education due to the reasons beyond their control.

The teachers' level of ADHD knowledge was determined to bear no relation to the teachers' participation in self-study educational activities. The self-study educational activities had no positive effect on the level of teachers' knowledge of ADHD although such activities are attempts to improve the knowledge of an individual about a particular subject. The results of this study are not consistent with the findings of previous literature, which reveals that the majority of teachers received most of their knowledge of ADHD from journal articles, handouts, television programs and internet (Castenova, 2008; Jerome et al., 1994; Small, 2003). The discrepancy in this study is possibly an indicator of insufficient and unsystematic self-study educational activities. One might well claim that the level of knowledge is related to the efficiency of the activity rather than participation in the activity.

5.5. Limitations of Study

There were a number of limitations to the study. One of the limitations was that the severity of the ADHD symptoms diagnosed in students in the participating teachers' classrooms was unknown. In fact, this information has a determining role in the teachers' choice of educational interventions to be used in their classrooms in that the teachers teaching students with milder symptoms of ADHD may consider a strategy unnecessary to apply to the child while the other teachers teaching students with severe symptoms of ADHD may consider the same strategy considerably necessary to apply in the classroom. This fact renders the questioning of efficacy of the interventions a relative concept. The other limitation to the study was about the generalizability of the results since the survey was conducted merely with teachers in state schools of Seyhan District in Adana. Therefore, the results can only be generalized to English teachers working at state schools of the same district. The final limitation included the terms and definitions provided in the Teacher Intervention Survey. More detailed explanation of the terms and definitions were provided to teachers during the interview; however, the teachers participated in the survey may not be adequately familiar with the terminology and the descriptions provided.

5.6. Future Directions

Future research on teachers' knowledge of ADHD and educational interventions is essential in that it is very likely that an English teacher will have at least one student with ADHD in the class. A good amount of research has been conducted on teachers' knowledge on ADHD and educational interventions, yet the number of research conducted on English teachers' knowledge of ADHD and the management strategies used in the classroom for children with ADHD is very limited. Future studies should be conducted to examine the issue with regard to English teachers and their confidence level in applying the strategies since the results reveal that the teachers are equipped with the theoretical knowledge more than the practical knowledge to implement the strategies effectively in classrooms. Futher research could also be conducted to examine the effectiveness of ADHD training provided to teachers and school counselors since some of the teachers participated in the interview emphasized that the school counselors had little or no effect on the developmental process of teachers with regard to ADHD. A larger sample size would naturally result with more accurate and reliable results. Furthermore, a study with children with ADHD could be conducted to gain a different perspective into their preferred intervention strategies from their teachers.

5.7. Conclusion

The main value and purpose of this study was to determine whether the teachers are adequately equipped with the knowledge required to manage children with ADHD in their classrooms. The areas where there is lack of knowledge among teachers were identified and ways of providing support and the necessary knowledge of the disorder were suggested.

This study aimed at investigating the teachers' knowledge of ADHD and the management strategies the teachers used in classes for students with ADHD. Three questionnaires were used to examine teachers' demographic characteristics, knowledge of ADHD and their perceptions of educational inteventions. A set of semi-structured interviews were conducted to increase the credibility of the research results and to further elaborate upon findings from the surveys. The results revealed that the overall knowledge of ADHD of elementary school English teachers who participated in the study is average when the mean score is taken into consideration. However, when the scores of subscales of ADHD is taken into consideration, the results revealed that the

teachers have adequate knowledge on the general knowledge subscale, yet lack knowledge of symptoms/diagnosis and treatment subscales of ADHD. This is a matter of concern in that the teachers play a vital role in the recognition, referral and treatment of the disorder (Sayal & Goodman, 2009).

The sources of teachers' knowledge of ADHD were examined and teachers, few in number, were determined to participate in activities such as a course on ADHD or in-service training. Yet, the teachers' level of ADHD knowledge was determined to bear no relation to the teachers' participation in an ADHD training course, in-service training and self-study activities. The reason for this unexpected result is probably the teachers' irregular attendance to courses or the low quality of education provided in these courses and insufficient self-study activities. The knowledge that the teachers have seems to have been gained from their teaching experiences and the number of students with ADHD taught. The results revealed the necessity of experience of ADHD, which is gained by teaching and observing children with ADHD. The more the teachers are exposed to ADHD, the more knowledgeable they become about the disorder. However, the level of knowledge seems to be negatively effected by the misperceptions of teachers about ADHD since the teachers have a tendency to diagnose students moving around and being distracted easily as hyperactive even though they lack the knowledge of the main criteria for diagnosis of the diorder. The misperceptions also constitue an impediment to knowledge acquisition. Studies (e.g. Sciutto et al., 2000; Kos et al., 2004) conducted on the issue show that when individuals believe that they are knowledgeable about a particular topic, it is unlikely they inquire about that topic. This may be viewed as the implication addressing the lack of sufficient knowledge of ADHD among teachers. Lack of time and heavy workload for doing research and inefficient directions of experts also contributes to the lack of the necessary information required for the management of children with ADHD.

The results revealed that the teachers performed better in instructional management and underperformed in behavior management category. The teachers also claimed that they were adequately trained with regard to theoretical knowledge in ELT, yet considered themselves inadequate with regard to practical knowledge. The findings necessitate effective teacher training on the details of ADHD and practical knowledge on educational interventions.

This study suggests shortcomings in teacher training practices. Moderate levels of teachers' knowledge of ADHD and their self-perceptions about teaching English to

children with ADHD show the need for a comprehensive and effective training for teachers to be able to manage children with ADHD more sufficiently.

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APPENDIXES

Appendix A. LETTER TO TEACHERS

Sevgili Öğretmenlerim,

Çukurova Üniversitesi İngiliz Dili Eğitimi bölümünde tezli yüksek lisans yapmaktayım. Dikkat Eksikliği ve Hiperaktivite Bozukluğu (DEHB) üzerine bir araştırma yapmaktayım. DEHB tanısı konmuş öğrencileri derse dahil etme konusunda biz öğretmenlerin yaşadığı bir takım zorlukların olduğu bir gerçektir. DEHB tanısı konmuş öğrencilerin de yaşadığı bir takım zorluklar göz önüne alındığında el birliğiyle bu öğrencileri eğitim- öğretim hayatına kazandırmamız boynumuzun borcudur.

Peki biz öğretmenler bu zorluklarla başedebilmek için yeterli bilgiye sahip miyiz veya yeterince bilgilendirildik mi? Türkiye'deki İngilizce Öğretmenlerinin yaşadıkları bu sorunları çözebilmek adına bir adım teşkil edebilecek bu araştırmaya anketime katılarak destek verirseniz öğretmenler ve DEHB' li öğrenciler adına büyük yardımda bulunmuş olursunuz. Anket sonuçları Türkiye'deki ilköğretim İngilizce Öğretmenlerinin DEHB ile ilgili bilgilerini ölçmekle birlikte Türkiye'de öğretmenlerin bu zorluğu aşmak adına hangi öğretim stratejilerine başvurduklarını belirleyecektir. Yine bu sonuçlar, öğretmenlerin bu konu üzerine bir eğitim almaya ihtiyaçları olup olmadığını belirleyecektir.

Lütfen bu anketi doldururken, DEHB tanısı konmuş öğrencilerimizin kendi kızlarımız ve oğullarımız olabileceğini göz önünde bulundurarak gerekli hassasiyeti göstermenizi önemle rica ediyorum.

Kimliğiniz ve araştırma raporları gizli tutulacaktır. Anketler İngilizcedir ve terim anlamlı kelimelerin Türkçe karşılıkları ekte mevcuttur.

Araştırma ile ilgili herhangi bir sorunuz olursa, lütfen bana mervetohma@hotmail.com adresinden ulaşınız, memnuniyetle cevaplandırılacaktır.

Bu ankete katılan öğretmenlerin _____ tarihine kadar doldurdukları anketleri okul müdürüne teslim etmelerini önemle rica ederim.

Hassasiyetiniz ve katılımlarınız için çok teşekkür ederim!

Merve Tohma
mervetohma@hotmail.com
İngiliz Dili Eğitimi Yüksek Lisans Öğrencisi
Çukurova Üniversitesi

Appendix B- DEMOGRAPHICS

Please answer the following questions by either writing your answer on the blank or circling your response

1. Age _____

2. Gender
   a. Male
   b. Female

3. Highest degree completed
   a. Bachelor's
   b. Master's
   c. Master's + PhD

4. Grade level(s) you currently teach? _____

5. Years of teaching experience? _____

6. Have you ever taken a course in ADHD during your teaching training?
   a. No
   b. Yes, I was taught briefly in class
   c. Yes, I took an entire semester course on ADHD

7. How many students diagnosed with ADHD have you taught?
   a. 0
   b. 1 or 2
   c. 3- 5
   d. 6 or more

8. If you have had students diagnosed with ADHD in your classroom, have you ever tried to get in contact with their physicians or psychologists?
   a. No
   b. Yes, once or twice
   c. Yes, many times

9. Have you ever:

a. attended an in-service presentationon ADHD?	a. No. b. Yes
b. read any books on ADHD?	a. No. b. Yes
c. read any articles on ADHD?	a. No. b. Yes
d. read any pamphlets/handouts on ADHD?	a. No. b. Yes
e. watched any television programs on ADHD?	a. No. b. Yes
f. searched the internet for information on ADHD?	a. No. b. Yes

Appendix C- KNOWLEDGE OF ATTENTION DEFICIT DISORDERS SCALE (KADDS)

Please anwer the following questions regarding Attention-Deficit/Hyperactivity Disorders (ADHD) by circling your response. If you are unsure of an answer, respond Don't Know (DK). Please do not leave any item blank.

True (T), False (F), or Don't Know (DK)

1. T F DK According to statistics, ADHD is diagnosed in approximately 15% of school age children

2. T F DK Present studies suggest that ADHD in children is largely the result of unsuccessful parenting.

3. T F DK Children with ADHD easily affected and distracted by external stimuli.

4. T F DK Children with ADHD are typically more compliant with their fathers than with their mothers.

5. T F DK In order to make a diagnosis of ADHD, the symptoms must have been present before age seven.

6. T F DK ADHD is more common in the 1st degree biological relatives (i.e. mother, father) of children with ADHD than in the general population.

7. T F DK One symptom of children with ADHD is that they have been physically cruel to other people.

8. T F DK Children with ADHD often fidget or squirm in their seats.

9. T F DK Parent and teacher training in managing a child with ADHD are generally effective when combined with medication treatment.

10. T F DK It is common for children with ADHD to have an inflated sense of self-esteem or grandiosity.

11. T F DK When treatment of a child with ADHD is terminated, it is rare for the child's symptoms to return.

12. T F DK It is possible for an adult to be diagnosed with ADHD.

13. T F DK Children with ADHD often have a history of stealing or destroying other people's things.

14. T F DK Side effects of stimulant drugs used for treatment of ADHD may include mild insomnia and appetite reduction.

15. T F DK There are two clusters of ADHD symptoms: (a) inattention; and (b) hyperactivity/impulsivity.
16. T F DK Symptoms of depression are found more frequently in children with ADHD than in children without ADHD.
17. T F DK Individual psychotherapy is usually sufficient for the treatment of most children with ADHD.
18. T F DK Most children with ADHD "outgrow" their symptoms by the onset of puberty and subsequently function normally in adulthood.
19. T F DK In severe cases of ADHD, medication is often used before other behavior modification techniques are attempted.
20. T F DK In order to be diagnosed as ADHD, a child must exhibit relevant symptoms in two or more settings (e.g., home, school).
21. T F DK If a child with ADHD is able to demonstrate sustained attention to video games or TV for over an hour, that child is also able to sustain attention for at least an hour of class or homework.
22. T F DK Reducing dietary intake of sugar or food additives is generally effective in reducing the symptoms of ADHD.
23. T F DK A diagnosis of ADHD by itself makes a child eligible for placement in special education.
24. T F DK Stimulant drugs are the most common type of drug used to treat children with ADHD
25. T F DK Children with ADHD often have difficulties organizing tasks and activities.
26. T F DK Children with ADHD generally experience more problems in novel situations than in familiar situations.
27. T F DK There are specific physical features which can be identified by medical doctors (e.g., pediatrician) in making a definitive diagnosis of ADHD.
28. T F DK In school age children, the prevalence of ADHD in males and females is equivalent.
29. T F DK In very young children (less than 4 years old), the problem behaviors of ADHD children (e.g. hyperactivity, inattention) are distinctly different from age-appropriate behaviors of children without ADHD.

30. T F DK Children with ADHD are more distinguishable from children without ADHD in a classroom setting than in a free play situation.
31. T F DK The majority of children with ADHD evidence some degree of poor school performance in the elementary school years.
32. T F DK Symptoms of ADHD are often seen in children without ADHD who come from inadequate and chaotic home environments.
33. T F DK Behavioral/Psychological interventions for children with ADHD focus primarily on the child's problems with inattention.
34. T F DK Treatments for ADHD which focus primarily on punishment have been found to be the most effective in reducing the symptoms of ADHD.

Appendix D- TEACHER INTERVENTION SURVEY (TIS)

There have been many different interventions suggested for students with ADHD, several of which are listed below. Please answer each question by circling the appropriate number.

1= very low 2= low 3= moderate 4= high 5= very high

A. TEACHER ATTENTION: give student positive and negative verbal feedback, as well as nonverbal feedback such as nods, frowns, smiles, and pats of approval.

1. How much knowledge/understanding do you have regarding this intervention?	1 2 3 4 5
2. How skilled do you perceive yourself to be in implementing this intervention?	1 2 3 4 5
3. How effective do you consider this intervention to be for students with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
4. To what degree do you think this intervention is suitable, fair, and reasonable for most kids with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
5. How likely are you to have the time/resources to implement this intervention?	1 2 3 4 5
6. How likely would you be to implement this intervention if you had a student in your class who had documented ADHD and who exhibited inattention, hyperactivity, and/or impulsivity (even if he or she was taking medication for these symptoms)?	1 2 3 4 5

B. TOKEN ECONOMY: awarding tokens or points which are dependent upon specified appropriate behaviors.

1. How much knowledge/understanding do you have regarding this intervention?	1 2 3 4 5
2. How skilled do you perceive yourself to be in implementing this intervention?	1 2 3 4 5
3. How effective do you consider this intervention to be for students with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
4. To what degree do you think this intervention is suitable, fair, and reasonable for most kids with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
5. How likely are you to have the time/resources to implement this intervention?	1 2 3 4 5
6. How likely would you be to implement this intervention if you had a student in your class who had documented ADHD and who exhibited inattention, hyperactivity, and/or impulsivity (even if he or she was taking medication for these symptoms)?	1 2 3 4 5

C. RESPONSE COST: taking away privileges, tokens, or points, for inappropriate behavior.

1. How much knowledge/understanding do you have regarding this intervention?	1 2 3 4 5
2. How skilled do you perceive yourself to be in implementing this intervention?	1 2 3 4 5
3. How effective do you consider this intervention to be for students with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
4. To what degree do you think this intervention is suitable, fair, and reasonable for most kids with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
5. How likely are you to have the time/resources to implement this intervention?	1 2 3 4 5
6. How likely would you be to implement this intervention if you had a student in your class who had documented ADHD and who exhibited inattention, hyperactivity, and/or impulsivity (even if he or she was taking medication for these symptoms)?	1 2 3 4 5

D. TIME-OUT FROM POSITIVE REINFORCEMENT:

Restricting the child's access to positive reinforcement such as placing the child in the corner of the room on a chair.

1. How much knowledge/understanding do you have regarding this intervention?	1 2 3 4 5
2. How skilled do you perceive yourself to be in implementing this intervention?	1 2 3 4 5
3. How effective do you consider this intervention to be for students with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
4. To what degree do you think this intervention is suitable, fair, and reasonable for most kids with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
5. How likely are you to have the time/resources to implement this intervention?	1 2 3 4 5
6. How likely would you be to implement this intervention if you had a student in your class who had documented ADHD and who exhibited inattention, hyperactivity, and/or impulsivity (even if he or she was taking medication for these symptoms)?	1 2 3 4 5

E. HOME-BASED CONTINGENCIES: combining school and home efforts to improve child's classroom behavior, such as teacher fills out a daily report card or check list which indicates whether the child fulfilled the specified goals for that day and sends the report home for the parent to sign and the parent provides suitable rewards at home for appropriate behavior at school.

1. How much knowledge/understanding do you have regarding this intervention?	1 2 3 4 5
2. How skilled do you perceive yourself to be in implementing this intervention?	1 2 3 4 5
3. How effective do you consider this intervention to be for students with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
4. To what degree do you think this intervention is suitable, fair, and reasonable for most kids with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
5. How likely are you to have the time/resources to implement this intervention?	1 2 3 4 5
6. How likely would you be to implement this intervention if you had a student in your class who had documented ADHD and who exhibited inattention, hyperactivity, and/or impulsivity (even if he or she was taking medication for these symptoms)?	1 2 3 4 5

F. STRUCTURE: providing organization in the classroom such as posting rules, providing students with daily schedule.

1. How much knowledge/understanding do you have regarding this intervention?	1 2 3 4 5
2. How skilled do you perceive yourself to be in implementing this intervention?	1 2 3 4 5
3. How effective do you consider this intervention to be for students with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
4. To what degree do you think this intervention is suitable, fair, and reasonable for most kids with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
5. How likely are you to have the time/resources to implement this intervention?	1 2 3 4 5
6. How likely would you be to implement this intervention if you had a student in your class who had documented ADHD and who exhibited inattention, hyperactivity, and/or impulsivity (even if he or she was taking medication for these symptoms)?	1 2 3 4 5

G. PHYSICAL ARRANGEMENT: arranging seats in classroom, such as having student with ADHD in close proximity to teacher.

1. How much knowledge/understanding do you have regarding this intervention?	1 2 3 4 5
2. How skilled do you perceive yourself to be in implementing this intervention?	1 2 3 4 5
3. How effective do you consider this intervention to be for students with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
4. To what degree do you think this intervention is suitable, fair, and reasonable for most kids with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
5. How likely are you to have the time/resources to implement this intervention?	1 2 3 4 5
6. How likely would you be to implement this intervention if you had a student in your class who had documented ADHD and who exhibited inattention, hyperactivity, and/or impulsivity (even if he or she was taking medication for these symptoms)?	1 2 3 4 5

H. VARIED PRESENTATION AND FORMAT OF MATERIALS: using different modalities such as videos, overheads, posters, models, as well as adding color, shape, or texture.

1. How much knowledge/understanding do you have regarding this intervention?	1 2 3 4 5
2. How skilled do you perceive yourself to be in implementing this intervention?	1 2 3 4 5
3. How effective do you consider this intervention to be for students with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
4. To what degree do you think this intervention is suitable, fair, and reasonable for most kids with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
5. How likely are you to have the time/resources to implement this intervention?	1 2 3 4 5
6. How likely would you be to implement this intervention if you had a student in your class who had documented ADHD and who exhibited inattention, hyperactivity, and/or impulsivity (even if he or she was taking medication for these symptoms)?	1 2 3 4 5

I. USE OF CUES, PROMPTS AND ATTENTION

CHECKS: using short verbal cues, such as "All eyes on me" or "Listen," subtle nonverbal prompts, a timer, when giving directions, someone repeats them back to the class.

1. How much knowledge/understanding do you have regarding this intervention?	1 2 3 4 5
2. How skilled do you perceive yourself to be in implementing this intervention?	1 2 3 4 5
3. How effective do you consider this intervention to be for students with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
4. To what degree do you think this intervention is suitable, fair, and reasonable for most kids with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
5. How likely are you to have the time/resources to implement this intervention?	1 2 3 4 5
6. How likely would you be to implement this intervention if you had a student in your class who had documented ADHD and who exhibited inattention, hyperactivity, and/or impulsivity (even if he or she was taking medication for these symptoms)?	1 2 3 4 5

J. BRIEF ACADEMIC TASKS INTERSPERSED WITH PASSIVE TASKS: presenting tasks briefly, providing instructions in a stepwise fashion rather than all at once, mixing active tasks (doing a project on something) with passive tasks (completing a worksheet independently).

1. How much knowledge/understanding do you have regarding this intervention?	1 2 3 4 5
2. How skilled do you perceive yourself to be in implementing this intervention?	1 2 3 4 5
3. How effective do you consider this intervention to be for students with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
4. To what degree do you think this intervention is suitable, fair, and reasonable for most kids with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
5. How likely are you to have the time/resources to implement this intervention?	1 2 3 4 5
6. How likely would you be to implement this intervention if you had a student in your class who had documented ADHD and who exhibited inattention, hyperactivity, and/or impulsivity (even if he or she was taking medication for these symptoms)?	1 2 3 4 5

K. PEER TUTORING: have student help or be helped by another student.

1. How much knowledge/understanding do you have regarding this intervention?	1 2 3 4 5
2. How skilled do you perceive yourself to be in implementing this intervention?	1 2 3 4 5
3. How effective do you consider this intervention to be for students with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
4. To what degree do you think this intervention is suitable, fair, and reasonable for most kids with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
5. How likely are you to have the time/resources to implement this intervention?	1 2 3 4 5
6. How likely would you be to implement this intervention if you had a student in your class who had documented ADHD and who exhibited inattention, hyperactivity, and/or impulsivity (even if he or she was taking medication for these symptoms)?	1 2 3 4 5

L. SELF-MANAGEMENT have student monitor and evaluate his/her own academic and social behavior.

1. How much knowledge/understanding do you have regarding this intervention?	1 2 3 4 5
2. How skilled do you perceive yourself to be in implementing this intervention?	1 2 3 4 5
3. How effective do you consider this intervention to be for students with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
4. To what degree do you think this intervention is suitable, fair, and reasonable for most kids with documented ADHD who exhibit inattention, hyperactivity, and/or impulsivity (even if they are taking medication for these symptoms)?	1 2 3 4 5
5. How likely are you to have the time/resources to implement this intervention?	1 2 3 4 5
6. How likely would you be to implement this intervention if you had a student in your class who had documented ADHD and who exhibited inattention, hyperactivity, and/or impulsivity (even if he or she was taking medication for these symptoms)?	1 2 3 4 5

Appendix E- THE SEMI-STRUCTURED INTERVIEW GUIDE

1. Kendinizi Dikkat Eksikliği ve Hiperaktivite Bozukluğu (DEHB) konusunda ne derece bilgili hissediyorsunuz?

2. DEHB hakkındaki bilgilerinizi nereden edindiniz? (örn. kurslar, kitaplar, aile, öğretmen arkadaşlar, psikiyatrist, psikolog, rehber öğretmen vs… Bunlar dışında olanlar varsa ve belirtirseniz çok sevinirim)

3. DEHB teşhisi konulmuş bir öğrenciniz oldu mu?

4. Cevabınız "evet" ise, bu öğrencilerinize İngilizce öğretirken ne gibi sorunlarla karşılaştınız?

5. Öğrenci açısından duruma yaklaşırsak, sizce DEHB' li öğrencileriniz İngilizceyi öğrenirken ne gibi sorunlarla karşılaşıyorlar?

6. DEHB' li öğrencilere İngilizce öğretirken ne gibi stratejiler kullanıyorsunuz? Lütfen örnek veriniz. Buna ek olarak sayfanın sonunda yer alan stratejilerden kullandıklarınız var mı? Kullandığınız bu stratejileri hangi sıklıkla kullanıyorsunuz ve en çok kullanmayı tercih ettiğiniz hangisi?

7. DEHB' li öğrencilere İngilizce öğretirken kendinizi ne derece yeterli hissediyorsunuz?

8. DEHB' li öğrencilere ders anlatırken ve DEHB kaynaklı problemlerle baş ederken uzman desteği aldınız mı? (psikiyatrist, psikolog, rehber öğretmen vs…)

9. Hiç DEHB' li öğrencisi olmamış bir İngilizce öğretmenine bu öğrencisine İngilizceyi en iyi şekilde öğretebilmesi için neler yapmasını önerirsiniz?

Appendix F- THE DIAGNOSTIC CRITERIA FOR DIAGNOSIS OF ADHD

A. Either (1) or (2):

1. six (or more) of the following symptoms of inattention have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

Inattention

(a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities

(b) often has difficulty sustaining attention in tasks or play activities

(c) often does not seem to listen when spoken to directly

(d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)

(e) often has difficulty organizing tasks and activities

(f) often avoids, dislikes, or is reluctant to engage in tasks that require sustaining mental effort (such as schoolwork or homework)

(g) often loses things necessary for tasks or activities (e.g. toys, school assignments, pencils, books, or tools)

(h) is often easily distracted by extraneous stimuli

(i) is often forgetful in daily activities

2. six (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with development level:

Hyperactivity

(a) often fidgets with hands or feet or squirms in seat

(b) often leaves seat in classroom or in other situations in which remaining seated is expected.

(c) Often runs about or climbs excessively in situations in which it is is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)

(d) often has difficult y playing or engaging in leisure activities quietly

(e) is often "on the go" or often acts as if "driven by a motor"

(f) often talks excessively

Impulsivity

(g) often blurts our answers before questions have been completed

(h) often has difficulty awaiting turn

(l) often interrupts or intrudes on others (e.g. butts into conversations or games)

B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were presented before age 7 years.

C. Some impairment from the symptoms is presented in two or more settings (e.g. at school [or work] and at home)

D. There must be clear evidence of clinically significant impairment in school, academic or occupational functioning.

E. The symptoms do not occur exclusively during the course of Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorders and are not better accounted for by another mental disorder.

CURRICULUM VITAE

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