The prevalence of ADHD symptoms in a culturally diverse and developing country, Lebanon

Marie Bathiche, MA

Department of Psychiatry

McGill University, Montreal

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Abstract

Attention Deficit Hyperactivity Disorder, (ADHD), is one of the most common behavioral disorders in children. The role of culture on ADHD symptoms has received little attention in the literature. As a result, trying to determine the extent of which our current knowledge on ADHD is externally valid for other western as well as non-western societies including developing countries remains the challenge.

The purpose of this research was to examine the prevalence of ADHD symptoms in Lebanon, a developing Middle Eastern country. The present study provides the first epidemiological data on ADHD symptoms in Lebanese children and is the first to use a combination of qualitative and quantitative methods to explore the influence of culture on the identification and understanding of ADHD symptoms.

Data was collected in two phases. In the qualitative phase, a total of 21 key informants were interviewed. An open-ended questionnaire based on the concept of the Patients Explanatory Models of Kleinman was used and all responses were analyzed based on Corin's model of sign, meaning and action. The quantitative phase included a sample of 1746 children, Christian and Muslim, in grades kindergarten through four and between the ages of five and 11 years. Two commonly used instruments were

employed in this study: a checklist based on the DSM-IV, (Swanson, Nolan & Pelham: SNAP-IV, Swanson, 1992), as well as Achenbach's Teacher Report Form (TRF, Achenbach, 1991).

The quantitative results of this study were consistent with other studies, using the same methodology, in terms of the overall prevalence of ADHD symptoms, which was 22.3% in this Lebanese population. In terms of the different ADHD subtypes, it was found that symptoms consistent with the ADHD-I subtype was the most frequent whereas the ADHD-C subtype was the least frequent in terms of overall prevalence. This result is consistent with other community studies using DSM-IV criteria and teacher rating scales, but is inconsistent with most clinic-based samples where the prevalence of ADHD-C is the most common subtype.

Furthermore, in terms of child characteristics, gender and age were significantly associated with ADHD symptoms. There were a greater number of males than females who were regarded as having ADHD symptoms and this is consistent with most studies. However, in relation to the age factor, in general, the overall prevalence of ADHD symptoms was found to increase with the age of children. These results are inconsistent with the North American literature in which it is well documented that, overall ADHD symptoms tend to decrease with age.

Factor analysis performed on the Lebanese data, identified and confirmed the presence of a bidimensional construct as suggested by the DSM-IV. In terms of cultural differences, a

comparison of the Lebanese data with that of an American sample found a difference in frequency of symptoms as well as in terms of the Internalizing and Externalizing factors. Overall, Lebanese children were rated by teachers as having lower levels of problem behavior than American children. Furthermore, in terms of the Externalizing factor, Lebanese children were found to have lower scores than American children in all age groups, regardless of sex.

Finally, SES, religion and language of school instruction were found to be associated with the prevalence rate of ADHD symptoms in Lebanon.

In conclusion, in order to ensure that a specific diagnosis is valid it is crucial to understand that diagnosis can differ cross culturally at many levels. Even though the prevalence of ADHD symptoms in Lebanon were found to be similar to other countries, the perception and understanding of these symptoms was very different as seen by the key informants. The results suggest that that traditional treatment and intervention used for ADHD in Western countries may not be directly as successful in a country like Lebanon and that culturally sensitive approaches should be developed in collaboration with local mental health and education professionals.

Résume

Le rôle de la culture sur les symptômes du trouble déficitaire de l'attention avec hyperactivité (TDAH) à reçu peu d'attention dans la littérature. Par conséquent, savoir à quel point notre connaissance sur le TDAH est valide dans des sociétés non-occidentales, et en particulier dans les pays en voie de développement, demeure un défi important. Le but de cette recherche est d'examiner la prévalence des symptômes de TDAH au Liban, un pays oriental en voie de développement. Cette étude fournit les premières données épidémiologique sur les symptômes du TDAH chez les enfants Libanais et innove en utilisant une combinaison de méthodes qualitative et quantitative pour explorer l'influence de la culture sur l'identification et la compréhension des symptômes du TDAH.

Les données ont été recueillies en deux phases. Durant la phase qualitative un total de 21 informateurs clés a été interviewé. Des questions ouvertes étaient posées et toutes les réponses ont été analysées à partir du model de Kleinman sur les modèles explicatifs. La phase quantitative inclue un échantillon de 1746 enfants, Chrétiens et Musulmans, âgés de cinq à onze ans, fréquentant l'école de la maternelle jusqu'à la quatrième année. Deux instruments classiques ont été utilisés pour cette étude : une liste de symptômes du TDAH basé sur le DSM-IV (Swanson, Nolan

& Pelham : SNAP-IV, Swanson, 1992) et le Achenbach's Teachers Report Form (TRF) (Achenbach, 1991).

Les résultats quantitatifs de cette étude sont comparables à ceux d'autres études, utilisant la même méthodologie, en termes de la prévalence générale des symptômes du TDAH, qui est de 22,3% pour la population Libanaise. En termes des différents sous-types de TDAH, le profil de symptômes qui correspond au sous-type TDAH-I est le plus fréquent, et le sous-type TDAH-C est le moins fréquent. Ces résultats sont semblables à ceux de d'autres études en population générale qui utilisent les critères du DSM-IV et l'échelle du TRF mais ne sont pas conformes aux études sur des échantillons cliniques dans lesquelles ou la prédominance du TDAH-C est plus fréquent.

Sur le plan des caractéristiques démographiques des enfants, le sexe et l'âge sont associés de manière significative avec les symptômes de TDAH. Il y a plus de garçons que de filles qui ont des symptômes de TDAH comme dans la plupart des autres études. Par contre, en ce qui concerne l'âge au Liban, la prévalence des symptômes de TDAH augmente avec l'âge de l'enfant, ce qui est contraire a ce que l'on retrouve dans la littérature Nord-Américaine, ou il est bien documenté que les symptômes de TDAH ont tendance a diminuer avec l'âge.

Les facteurs analysés à partir des données Libanaises, confirment la présence d'une construction bidimensionnelle, tel que suggéré dans le DSM-IV. Sur le plan des différences culturelles, la

comparaison des données Libanaises avec un échantillon Américain met en évidence une fréquence différente de certains symptômes en termes d'internalisation et d'externalisation. En général, les professeurs rapportent pour les enfants libanais des niveaux moins élevés de problèmes de comportement que ceux rapportés pour les enfants Américains, et ce, pour toutes les catégories d'âge.

Finalement, la prévalence de symptômes de TDAH est associée avec le statut socio-économique, la religion et la langue d'enseignement dans les écoles libanaises.

En conclusion, ces résultats confirment l'importance de comprendre que la validité d'un diagnostic peut être influencée par la culture de plusieurs façons. Les données recueillies auprès des informateurs clés soulignent que si la prévalence des symptômes de TDAH au Liban est assez similaire à celle d'autre pays, la perception et la compréhension de ces symptômes par différents acteurs sont par contre très différentes. Ces résultats suggèrent que les traitements et les interventions utilisés classiquement dans les pays occidentaux peuvent être peu appropriés dans un pays comme le Liban, et que des approches sensibles à la culture devraient être développées en collaboration avec les professionnels locaux travaillant dans le domaine de la santé mentale locale et de l'éducation.

Statement of Originality

After reviewing the literature on ADHD, it became apparent that ADHD has received little attention in non-western countries especially in the Middle East. With the exception of a few studies confirming the presence of ADHD symptoms in two Arabic countries, published research on the prevalence of ADHD in other Arab countries in the Middle East was not available.

Given the void of ADHD research in under developed Middle Eastern countries, Lebanon was chosen in order to develop a better understanding of ADHD in that area, for various reasons. First, the author was born in Lebanon and spoke the language, and was familiar with the culture. Second, Lebanon provides an interesting, diverse base from which to sample a population. It is a country characterized by a combination of urban and rural settings, conservative and liberal attitudes, as well as Christian and Muslim religions; thus allowing the study of many variables such as religion and SES.

An important contribution of this study was the revision of Achenbach's Teacher Report Form, which was used to collect data. Although, there was an Arabic version of the Teacher Report Form already available, it had limitations. For this study, the form was updated and retranslated and a copy was provided to Dr.

Achenbach. Other researchers who are working in countries where the primary language is Arabic are now using this revised TRF.

The main purpose of this research was to examine the prevalence of ADHD symptoms in Lebanon. This study is unique in that, no previous study has looked at the prevalence of ADHD symptoms in Lebanese children, nor provided published data on this disorder. The present study is the first to provide epidemiological data on ADHD symptoms in Lebanese children. It is also the first in the literature to examine the role of religion with regards to ADHD symptoms. This has important implications in today's multicultural society where children come from various cultural backgrounds, where both religion as well as other cultural factors may affect the correct identification of the problem and the success of treatment and intervention. In addition, this is the first study to use a combination of qualitative and quantitative methods to explore the influence of culture on the identification and understanding of ADHD symptoms.

The quantitative component of this study has provided the first opportunity to compare the prevalence of ADHD symptoms in the Middle East with that in North America. This study is original due to the fact that it was based on a very large sample size allowing for a comparison to be made and it helps understand ADHD on a different level and examine its validity in countries besides North America.

The qualitative component of the study has provided unique information on ADHD in the Middle East, which can apply to many other non-western countries. This has important implications for diagnosis, treatment and intervention. The fact that symptoms of ADHD may be similar in different cultures but the meaning and understanding of these symptoms may differ is extremely important for service providers. This study made it evident how the standard treatment used for ADHD in North America may not be as successful in countries like Lebanon due to the different perception of this disorder.

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Chapter 1

Literature Review

Attention Deficit Hyperactivity Disorder, (ADHD), is one of the most common behavioral disorders in children (American Psychiatric Association, 1994; Remschmidt, 2005; Wolraich et al., 2005). Data provided by the U.S Department of Health and Human Services, estimates that approximately 4 million children between the ages of 3 and 17 years have ADHD in the United States (Centers for Disease Control and Prevention, March 2005). ADHD is a neurobiological disorder characterized by pervasive inattentiveness and/or hyperactivity-impulsivity. Both symptom groups interfere with the individual's overall level of functioning, resulting in significant impairment in one or more social, emotional and/or cognitive domains (American Psychological Association, APA, 1994).

In both the United States and Canada, ADHD is regarded as a primary concern from a medical, psychological and social perspective. It has been estimated that approximately 50 percent of the referrals in child psychiatric clinics, of children between the ages of 6 and 12 years, are due to ADHD (Cantwell, 1996; Pierrehumbert, Bader, Thevoz, Kinal, & Halfon, 2006). It is therefore not surprising that the majority of the scientific research on this childhood behavioral disorder has been

carried out in North America. A review of the available literature indicates that, although there has been some research on ADHD in other western European societies, such as Germany, England and Finland, there has been very limited empirical research on ADHD in non-Western societies. In fact, ADHD remains unrecognized, misdiagnosed and untreated in many countries (Remschmidt, 2005). The latter is particularly true of developing societies.

A great majority of children in the world live in settings that have poor conditions such as poverty, poor nutrition, war or lack of proper education (Bilyk-Fleitlich & Goodman, 2004). However, most of our knowledge on ADHD has focused on samples of children from Western countries, which are considered to be middle- to high-income and from developed countries. Therefore, the results obtained from such studies cannot be generalized to all children due to cultural and socioeconomic differences between them. As a result, trying to determine the extent to which our current knowledge on ADHD is externally valid for other societies remains the challenge.

The development of human behaviors, attitudes and values is greatly influenced by the society and culture in which individuals live. On one hand, the values and expectations prevalent in a specific culture may influence the behavior displayed by its members (Weisz, Suwanlert, Chaiyasit & Walter, 1987) and also affect how certain behaviors or symptoms are interpreted and understood. These

behaviors evolve over time and as the culture changes. On the other hand, the ways, in which behaviors are recognized, labeled and addressed, varies both culturally and with time (Haslam, 2005).

Knowledge acquired in the West tends to be treated as universal. Although this may be potentially true, it may also be problematic if culturally inappropriate interventions are proposed. It is therefore, important to study the epidemiological and clinical issues pertinent to ADHD in non-western societies. For example, is ADHD as prevalent in non-western societies? Are there any cultural differences associated with different patterns of this childhood disorder? How are ADHD type, behavior, and symptoms interpreted, understood, and dealt with in different cultures? These are some of the questions to be addressed in the present research.

This literature review will cover the following areas: (a) present an overview on ADHD including its diagnosis, etiology, prevalence rates in North America and its treatment; (b) discuss the role of culture in psychopathology and the issue of validity of cross cultural epidemiological research; (c) present the different dimensions of culture and how they can affect the prevalence of ADHD (d) review the available literature on the epidemiology of ADHD in other western and non-western societies. At the end of this review, the reasons behind the differences in the prevalence rates of ADHD will become apparent. In addition, both the relative void in the literature on ADHD in non-

western societies as well as, the importance of the present research in addressing this void will become apparent.

An overview of ADHD will be covered in the next section. This will include: the definition of ADHD, its comorbidity with other disorders, possible causes of ADHD, its prevalence rates and most common forms of treatment.

1.1 Attention Deficit Hyperactivity Disorder (ADHD): An overview of the disorder and its prevalence rate.

Attention Deficit Hyperactivity Disorder (ADHD) is defined, in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), as a persistent pattern of inattention and/or hyperactivity-impulsivity. These patterns interfere with the individual's social, academic or occupational functioning and are present in more than one setting such as home or school. In order for a diagnosis of ADHD to be made, the core features must have appeared before the age of 7, lasted for at least 6 months and resulted in significant impairment (4^{th} ed.; DSM-IV, American Psychological Association, 1994). ADHD is currently defined in the DSM-IV, as consisting of 3 subtypes: an Inattentive type (ADHD-I), a hyperactive-impulsive type (ADHD-HI), and a combined type (ADHD-C). It is more common in males than in females with boys receiving the diagnosis at least 4 times as often as girls (Cantwell, 1996; Pierrehumbert et al., 2006; Rowland, Lesesne, & Abramowitz, 2002).

Although it is believed that girls are under-diagnosed due to the fact that they are less disruptive.

ADHD has become one of the most common psychiatric disorders in school-age children and is closely associated with social, emotional and academic problems (Pierrehumbert et al., 2006; Schneider & Tan, 1997; Singh, 2004). Most children with ADHD experience academic problems, peer rejection, repeated failure and low self-esteem (Biederman & Faraone, 2005). ADHD used to be exclusively considered a childhood disorder; however, about 60 to 80 percent of children continue to have problems with inattention and impulsivity as adults (Rappley, 2005; Wolraich et al., 2005). Longitudinal studies have shown that the symptoms continue into adulthood and can be quite debilitating to the individual, negatively impacting achievement and interpersonal relationships (Barkley, 2002; Biederman & Faraone, 2005; Gittelman, Mannuzza, Shenker, & Bonagura, 1985; Weiss & Hechtman, 1993).

ADHD does not usually present in isolation but often coexists with another disorder (co-morbidity). Common co-morbid conditions include learning disabilities, conduct disorder, oppositional defiant disorder, mood disorders and anxiety disorders. Estimates of rates of co-morbidity are about 25% for learning disabilities, 27% for anxiety disorders, 20% for mood disorder and 25-40% for oppositional defiant disorder/conduct disorder (American Academy of Pediatrics, 2000;

Goldman, Genel, Bezman, & Slanetz, 1998; Milberger, Biederman, Faraone, Murphy, & Tsuang, 1995; Szatamari, Offord & Boyle, 1989).

Although the etiology of ADHD is not yet clear and completely understood, recent studies have suggested a strong genetic link (Rowland et al., 2002). Studies of twins have suggested that hyperactivity is greater among monozygotic than dizygotic twins suggesting a strong genetic component (Faraone, Biederman, & Friedman, 2000; Palacio et al., 2004; Rowland et al., 2002; Swanson et al., 2000;). Specifically, dopamine transporter and receptor genes have been implicated. The cortical, particularly the prefrontal lobes, cerebellum and subcoritcal areas (corpus collusum, thalamus) have been implicated in relation to this disorder (Cantwell, 1996; Castellanos, 1997; Yeo et al., 2003). Structural and functional neuroimaging studies show that patients with ADHD have smaller right frontal widths and volume reduction in those specific regions of the brain (Biederman & Faraone, 2005; Remschmidt, 2005).

Environmental factors have also been implicated in ADHD and while some have been supported, others are not warranted. For example, particular foods or food additives were thought to cause ADHD; however, studies have failed to support this and have disproved this theory (Wolraich, Wilson, & White, 1995). In contrast, prenatal and perinatal complications (i.e., poor maternal health, fetal distress, toxaemia and low birth weight) have been shown to increase the risk for

ADHD (Hack, Youngstrom, & Cartar, 2004). Finally, factors such as, maternal smoking during pregnancy poses an increased risk for ADHD in children (Arnold et al., 2005; Markussen-Linnet, Dalsgaard, & Obel, 2003; Remschmidt, 2005).

Epidemiological studies have suggested that the prevalence of ADHD, in the United States, in school-age children is between 3 and 5 percent (Cantwell, 1996; Reid et al., 2000). A recent report postulated that about 7% of school aged children between the ages of 6 and 11 years have been diagnosed with ADHD (CDC Report, 2002; Singh, I., 2004). Prevalence rates tend to vary according to the population sampled as well as the diagnostic criteria and instruments used. However, a review based on 13 epidemiological studies suggests that, the best estimate of ADHD appears to be 5% to 10% (Scahill & Schwab-Stone, 2002).

Epidemiological studies have shown a great deal of variation in the estimated prevalence of ADHD, which has raised questions about the reliability and validity of these studies and the accuracy of this diagnosis. There are several controversies around ADHD and its diagnosis. There have been numerous changes in the definition of ADHD over the past 2 decades causing some researchers to question the validity of ADHD and regard it as a catch all diagnosis. Although this position is extreme, many researchers agree that as currently defined, ADHD consists of a heterogeneous population sharing

common symptoms (Denckla, 1992; Rowland et al., 2002).

However, when reviewing the literature, it becomes apparent that the variability in prevalence is more likely to be related to differences in methodology rather than the diagnosis. In the case of ADHD, how it is defined, who is defining it and when it is being defined are all crucial factors that affect prevalence. Studies have shown that depending on which definition or diagnostic system is used, prevalence rates will differ. This problem with the ADHD diagnosis can be seen in the differences between the US diagnostic criteria for the disorder (i.e., DSM-IV) and the European diagnostic criteria (i.e., ICD-10). This difference will be discussed in greater detail at a later point when comparing international studies on ADHD.

In addition to how ADHD is diagnosed, who is diagnosing the condition is very important. Another controversy is that the ADHD diagnosis is very subjective; diagnosis depends heavily on parent and teacher reports and their judgment of symptoms as being developmentally inappropriate or normal. Furthermore, the choice of informant and how many informants are used to estimate prevalence will greatly affect the obtained rate (Scahill & Schwab-Stone, 2002). Finally, ADHD diagnostic criteria were developed and based on younger children (MTA Cooperative Group, 1999). The common prevalence rate of 3% to 5% may be affected when pre-school children or adolescents are included in the sample. In conclusion, the above-

mentioned factors all contribute to the differing prevalence rates and must be kept in mind when comparing studies.

Due to the prevalence of ADHD and its potential for leading to severe problems in affected individuals (Mannuzza, Gittelman-Klein, Horowitz-Konig, & Giampino, 1989), this area has been intensively studied in the last 3 decades and has received unprecedented attention in scientific journals, at professional conferences and by the media. As a result, valuable knowledge on ADHD and a greater understanding has been acquired on its etiology, clinical predictors, history and outcome as well as its assessment and management (Barkley, 1990; Biederman & Faraone, 2005; Brown et al., 2005; Conners & Well, 1986; Hechtman, Weiss, Perlman, & Amsel, 1984; Pelham & Hinshaw, 1992; Remschmidt, 2005).

Unlike the controversy around the etiology and prevalence rate of ADHD, when it comes to treatment there appears to be agreement in that the primary and most prevalent choice of treatment has been psychostimulants (Diamond, Tannock & Schachar, 1999; Rowland et al., 2002; Safer & Zito, 1999). This type of treatment remains the most effective short-term treatment in alleviating the core, disruptive symptoms of ADHD. When used and monitored under very controlled circumstances, psycho-stimulants can significantly reduce both teacher as well as parents ratings of the severity of ADHD symptoms (MTA Cooperative Group, 1999). There are many choices of stimulants

available including methylphenidate (e.g., Ritalin, Concerta and Biphentin) and amphetamine compounds (e.g., Adderall and Dexedrine). While some are immediate release (multiple doses required) others are long-acting stimulants. Another recent effective medication that has been used to treat ADHD is atomoxetine (e.g., Straterra), particularly in children with anxiety and/or tics. Finally, tricyclic antidepressants have also been used in the past to treat ADHD in children but are not nowadays commonly used due to concerns about cardiac effects (Biederman, Thisted, Greenhill, & Ryan, 1995; Biederman & Faraone, 2005). In conclusion, it can be seen that stimulants are still the medication of choice for treating ADHD.

In addition to medication, a variety of psychosocial and behavioral treatments have been used in the treatment of ADHD. The effectiveness of behavioral therapy depends on the subjects receiving the treatment. In a Multimodal Treatment Study of ADHD (MTA Cooperative Group, 1999), it was indicated that behavioral therapy in combination with medication is as effective as pharmacologic therapy alone for ADHD symptoms only. However, for social, academic and emotional functioning, the combined behavioral and medication treatment was best. Furthermore, the combined treatment was also most useful for comorbid cases (Rowland et al., 2002; Wells et al., 2000). In summary, although medication may be necessary and sufficient to deal with the core symptoms of ADHD, other interventions

may also be needed to improve academic, social and emotional functioning. Some patients may not respond to stimulants or may develop serious side effects in which case the non-stimulants may be useful. Research has also shown that education and counseling of the patient and the surrounding social network is necessary and useful for long term success (Brown et al., 2005).

After having presented an overview of ADHD, the prevalence rate of this disorder and its treatment, the relationship between culture and psychopathology will be discussed in the next section.

1.2 Relationship between culture and psychopathology

Most dictionaries define 'culture' as a shared symbolic system of values, beliefs and attitudes that shapes and influences ones' perception and behavior (The American Heritage Dictionary of the English Language, 2005). Culture can be regarded as an abstract or mental code, which a group of individuals share in the process of social interaction (Jenkins & Karno, 1992). As nations become increasingly diverse, there is a greater need for identifying the ways in which, culture can affect the diagnosis and treatment of mental health disorders (Deckard-Deater, Atzaba-Poria, & Pike, 2004).

The relationship between culture and psychopathology has been extensively examined in the literature (Good, 1992; Kleinman, 1987; Littlewood, 1985; Lucas & Barrett, 1995; Westermeyer, 1987).

Population studies of children over the last 3 decades, has enhanced our understanding of different cultures and how they impact the behavior of children (Erol, Simsek, Oner, & Munir, 2005). Classical questions such as 'To what extent are mental disorders universal?' and 'Are there any culture-specific diseases?' have been very common in the field of psychiatry. The controversial 'nature-nurture' issue has been as prevalent in psychiatry as it has been in many other disciplines and there has been a tendency and an attempt to adopt one extreme position over another, cultural relativism versus universalism. However, it has become increasingly evident that in the field of psychiatry, the diagnosis of mental disorders is as much influenced by cultural and social factors as it is by biological and genetic ones (Rohde, Szobot, Polanczyk, Schmitz, Martins & Tramontina, 2005).

Research studies have indicated that although certain disorders may exist worldwide they do in fact differ in their rates and patterns (Mangweth, Pope, Hudson, & Biebel, 1996; Weissman, Bland, Canino & Faravelli, 1996; Weissman et al., 1997). For example, panic disorder, depression and bulimia nervosa are examples of disorders that are universal but differ in their prevalence and pattern. Furthermore, a disorder like schizophrenia shows little variance in its prevalence across cultures but differs significantly in outcome (Vedantam, 2005). Finally, other disorders like alcoholism and substance abuse vary greatly cross culturally in terms of their prevalence (Westermeyer, 1987). Realizing

such differences in disorders across cultures will contribute to our understanding of psychopathology and the interaction that occurs between mediating cultural variables and the prevalence of specific disorders.

A major complaint, by anthropologists studying culture, is that there has been a bias in the field of medicine and a tendency for cross-cultural psychiatrists to try and discern universals and focus on similarities in mental disorders despite the differences (Kleinman, 1988). Modern psychiatry is based on the assumption that mental illnesses are largely organic disorders of the brain (Vedantham, 2005). A set of descriptive or epidemiological studies, that gather data from different countries and focus on the similarities in diagnostic criteria for certain disorders, are common in cross cultural psychiatry. Specific diagnostic systems such as the Diagnostic and Statistical Manual (DSM), (APA, 1980; 1987; 1994) and the International Classification of Diseases (ICD; World Health Organization, WHO, 1978; 1994) have been developed to diagnose mental disorders internationally and encourage adopting a single set of diagnostic criteria by which diagnoses are made worldwide.

Although Gladstone, (1957), did not believe in the existence of international psychiatry, several factors over the last several decades have contributed to the evolution of cross cultural diagnoses and psychopathology (Westermeyer, 1987). Tremendous efforts by large

organizations such as the World Health Organization (WHO) and the National Institute of Mental Health (NIMH) have been specifically made in an attempt to demonstrate that psychiatric disorders exist in all societies and are world wide occurring phenomena (Sartorius et al., 1986; WHO, 1973). This 'universalist' position, that tends to emphasize the biological aspect of mental disease and discount the role of culture and society, has raised a great deal of controversy by anthropologists and the proponents of culture, who believe mental illness is to a great extent shaped by cultural factors (Bilyk -Fleitilich & Goodman, 2004; Kleinman, 1987).

The difference between anthropologists and psychiatrists in the study of cross- cultural mental health and illness is clearly evident in the methods they utilize, known as the 'emic-etic' paradigm (Brislin, Looner, & Thorndike, 1973; Canino, Lewis-Fernandez & Bravo, 1997). Anthropologists tend to study phenomena from within the culture, 'emic' approach, in an attempt to understand its significance to that particular culture. On the other hand, clinicians attempt to compare and identify phenomena across different cultures, 'etic' approach, employing the diagnostic categories of Western psychiatry such as the DSM-IV or the ICD-10. Ideally, a combination of both emic and etic approaches will result in research that is not biased and is culturally meaningful, methodologically accurate, valid and reliable (Kirmayer, 1989).

The role of culture in psychopathology is clearly evident in the

study of psychiatric distress and somatization. All cultures tend to differentiate between 'abnormal' and 'normal' behavior; however, people around the world tend to vary in the way mental distress is expressed (Abboud, 1998). Cultural aspects can define and create specific sources of distress and determine the way in which individuals value and interpret these symptoms (Mezzich, Kleinman, Fabrega, Parron, 1995; Rohde et al., 2005). This difference in symptoms or expression may reflect what has been referred to as 'local idioms of distress'. The latter can be regarded as cultural models that explain symptoms as well as attributions and ways of explaining distress. Although symptoms may appear similar across cultures, if taken in isolation, they may have a different meaning, when the culture in question is taken in consideration.

The role of idiom of distress can be clarified by considering the distinction between illness and disease. According to Kleinman (1988), illness refers to the subjective experience of the patient whereas disease is based on a medical model and is diagnosed according to the interpretation of this experience by specific professionals. Although a disease may be diagnosed using a specific model of pathology and imposing a certain nosology, the illness aspect of this disease may vary cross culturally and the symptoms manifested may be culturally based and shaped. For example, Kleinman (1986) showed that patients in China diagnosed as having neurasthenia could be re-diagnosed as

cases of major depressive disorder using the DSM-III diagnostic criteria. However the fact that medication, routinely used to treat major depression, does not entirely alleviate their symptoms suggests that there may be something qualitatively different about this particular group of individuals. The latter suggests that, even if a core disease exists, the illness construct around it may greatly differ.

At this point, an introduction to what has become known as 'Explanatory Models of Illness' is warranted (Bussing, Schoenberg, Rogers, Zima, & Angus, 1998; Kleinman, 1987, 1988). The latter are cognitive models, that describe an individual's beliefs about illness, determines how an individual conceptualizes and understands illness and consequently will affect their help seeking behavior and response to intervention. An inconsistency between a patient's explanatory model of illness and that of the provider may lead to an inaccurate diagnosis and poor response to treatment. In cross cultural research, it is essential to try and elicit the explanatory models of individuals we are dealing with through structured qualitative interviews as well as try to understand the local idioms of distress if treatment and intervention are to be valid and reliable.

In addition to culture affecting the expression of mental distress and the symptoms displayed by individuals, it also affects the attitudes toward mental distress. The recognition of symptoms and the labeling of distress as being deviant or pathological depends on the norms

accepted in a particular culture. Even when a particular disease can be diagnosed, using a certain theoretical model in a specific culture, the illness behavior displayed by its members may differ. Consequently, only what is considered as being serious enough by that society will be labeled as being pathological or abnormal.

For example, in Costa Rica the role of culture on Tourette syndrome is very interesting. In a study using the DSM-IV, Tourette syndrome was found to present with symptoms and demographic patterns similar to North America. However, severe symptoms which are considered to impact the individual's overall functioning in North America were not regarded as being problematic in this particular culture (Mathews et al., 2001). In Costa Rica tics are regarded as being "manas" or bad habits that can be controlled by the individual; thus, are not recognized socially or labeled as symptoms requiring medical attention.

Based on the above, it can be seen that culture plays a role in both the expression of mental distress as well as the labeling and social recognition of this distress as being deviant. A final area that the role of culture can be seen is the help seeking behaviors of individuals with psychopathology. Research has shown that minorities receive fewer health services than whites and make less use of the mental health system (Yeh, Hough, McCabe, Lau, & Garland, 2004). For example, in cultures where the family is an integral support system, there is a lesser

need for seeking professional help. The latter is true of Hispanics as well as Puerto Ricans where individuals greatly depend on support from families and friends. Similarly, in the Hispanic culture the role of religion and spiritual healing is important and as a result medical causes of mental illness are rated as being less important rendering mental health services less crucial (Varela et al., 2004; Yeh, Hough, McCabe, Lau, & Garland, 2004).

Despite the role of culture in psychopathology, there is no doubt that certain psychiatric disorders, such as schizophrenia, depression and anxiety disorders, are universal and occur in all societies. However, the need to recognize the importance of local idioms of distress and try to elicit explanatory models in cross-cultural research is evident when faced with the challenge of culture bound disorders. For example, in Latin America the terms 'nervios' and 'attaque de nervios' are common and refer to one's feeling in situations of somatic distress associated with family conflict or threat (Rohde et al., 2005; Varela et al., 2004). In such situations the individual may display behavior consistent with the diagnosis of depression or psychosis due to the presence of symptoms such as hearing voices and seeing shadows. Focusing on one set of symptoms without considering the culture or cause may lead to a misdiagnosis and result in an intervention not beneficial to the individual.

Consequently, an awareness of culture and the role it plays is

essential in understanding and treating disorders. Thus, adopting a framework that will enable us to understand the local idiom of distress and how particular behaviors are perceived within each culture is crucial and beneficial. Trying to identify the patterns of a disorder that are greatly influenced by cultural factors, and those that transcend culture, ensures both a more valid diagnosis as well as an effective intervention. Cross-cultural psychiatry has attempted to examine the extent to which certain mental disorders can be externally validated in different cultures.

The whole issue of validity is crucial in psychological research. In order for treatment to be successful, accurate assessment is essential to allow for a correct diagnosis and consequently appropriate treatment. In cross-cultural research the issue of validity becomes more complicated and is often compromised when western categories are imposed on societies for which they are not meaningful (Rogler, 1989; Rohde et al., 2005). According to Kleinman (1987), "validation is not simply verification of concepts used to explain observation but rather...verification of the meaning of the observations in a particular social system". The latter is of central importance due to the fact that the illness construct relates directly to services provided and the health model adopted. An inadequate attempt to understand the meaning of behavior in different societies and a preoccupation with imposing a given standard has led to invalid conclusions and inaccurate results in

cross cultural research (Mathews et al., 2001).

For example, a study by Hamdi, Amin & Abou-Saleh (1997), looked at the validity of the western diagnosis of endogenous depression in a traditional Arab community. Although the results of their research indicate that endogenous depression as defined by western diagnostic systems can be identified in Arab patients, there were important differences in the manner and the frequency with which depressive symptoms were expressed in this culture. Due to the Islamic influence in that culture, loss of libido, guilt feelings and suicidal thoughts, usually predictive of endogenous depression, were not frequently reported symptoms in Arab patients. The latter was only evident and understood as the result of an unstructured diagnostic interview that allowed elaborations to be made about local expressions and local idioms used to describe the depressed mood. This suggests that, attempting to apply the clinical construct of endogenous depression derived from western studies in an Arab culture may overlook features of an illness that are not addressed by that particular instrument.

Based on the above, it can be concluded that in cross cultural studies, if results are to be valid then both a categorical approach (i.e., using DSM-IV diagnoses) as well as a qualitative approach (i.e., understanding symptoms in terms of explanatory models and idioms of distress) is required. However, in the majority of child studies looking at

the cross-cultural validity of psychological and mental disorders, the approach used tends to be more categorical in nature. The limitation of this approach is evident in psychiatric diagnoses that require the presence of impairment or distress (Mathews et al., 2001). Any given behavior is considered to be normal or abnormal within a society depending on the attitudes and expectations of that particular society (Gidwani, Opitz, & Perrin, 2006). For example, while parents in one culture may regard a child's behavior as meeting the hyperactivity criteria for ADHD, parents of another culture may view the same child as within the normal range. Therefore, it is not sufficient to apply the DSM-IV criteria to make a diagnosis in different cultures but what is needed is to determine if the diagnosis on a given scale actually means the same thing across cultures.

Although the exportation of knowledge from western cultures may be helpful in other cultures and in certain aspects of a disorder, it may also be harmful by disqualifying local resources or unduly pathologizing behavior considered as variant from the norm. The latter is likely to bias the way individuals from other societies are viewed and may lead to a misjudgment due to the unavailability of necessary information and the poor understanding that identical behavior can be viewed differently in diverse societies.

In cross-cultural diagnoses, the four most frequent problems encountered include: misdiagnosis, overestimation or underestimation

of psychopathology and a complete 'miss' or neglect of a diagnosis (Westermeyer, 1987). To reduce the occurrence of the latter problems, it is essential that diagnostic concepts and methods be applied in a culturally sensitive manner. Becoming cognizant of this will help make mental health research culturally sensitive and avoid 'category fallacy'. The latter has been defined as 'the reification of a nosological category developed for a particular cultural group that is then applied to members of another culture for whom it lacks coherence and its validity has not been established' (Kleinman, 1977).

In most child studies, the prevalence of mental disorders has been studied by applying a DSM-IV construct and examining the extent to which, it is similar or different in a particular culture. Depending entirely on a categorical method, has allowed a diagnosis to be made without confirming the meaning of that diagnosis in a cultural context. For cross culture research to be valid, it is crucial for researchers and clinicians to be both familiar with the standards of what is considered normal and deviant as well as the conceptualization of a disorder in a child's culture (Rohde et al., 2005).

In summary, to the same extent that, trying to discern universals and focus on similarities in mental disorders is essential, it is also necessary to be cognizant of how disorders may differ cross-culturally. A system that attempts to combine both a categorical approach as well as a qualitative approach is more likely to result in a valid diagnosis and

lower the possibility of a misdiagnosis.

1.3 Cultural Dimensions and ADHD Prevalence

In brief, ADHD is a neurobiological disorder that in childhood appears more prominent in males than in females. The etiology of ADHD is not very clear but overall agreement exists in that, it has a genetic component as seen in twin and family studies and is expressed in brain changes as seen in neuroimaging studies (Biederman & Faraone, 2005; Remschmidt, 2005). Other suggestions have been that factors in both the prenatal as well as the postnatal environment may affect the development of ADHD (i.e., smoking, maternal stress). So it appears that this disorder is influenced by a multitude of factors including biological pre-dispositions as well as environmental factors.

As mentioned earlier, differences in the methodology of research studies contribute to the differing prevalence rates of ADHD. However, another factor that may influence the ADHD diagnosis and prevalence is culture. As previously discussed there is a relationship between culture and psychopathology and this will now be discussed more specifically in terms of ADHD. In all cultures, children display 'hyperactive' and disruptive behavior, which is considered by adults as being unacceptable. The extent to which a behavior is unacceptable depends on the way it gets labeled, the diagnostic criteria adopted and the treatment or action undertaken (Gingerich, Turnock, Litfin, & Rosen,

1998). In other words, cultures may differ on 3 dimensions, which are all likely to contribute to differences in the detection and diagnosis of ADHD. These dimensions are useful in drawing distinctions between societies and they include: (1) The prevailing professional culture, (2) The people culture or adult's judgments about child psychopathology also known as Explanatory Model of Illness and, (3) the symptoms displayed by children (i.e., local idioms of distress). How each of these dimensions can be applied to the ADHD diagnosis and affect its prevalence will be discussed next.

1.3.1 Professional Culture

The prevailing 'professional culture' of a specific society will determine whether a particular psychological or medical problem is actually identified; thus, warranting further attention and treatment. Consequently, the prevalence of ADHD in different societies may vary as a function of who is doing the diagnosing, the way it is being done and the type of treatment delivered.

For example, there appears to be a clear discrepancy between the American and the European perspective on ADHD (Reid & Maag, 1997). In a study estimating the rate of school-age children on stimulant medication, it was found that while the rate in the U.S. was estimated to be at 1.3 million in 1993, it was only 6000 when contrasted with 8 European countries whose combined population exceeds that of

the US (Furman, 1996).

As previously mentioned in the section on ADHD, the prevalence rate of ADHD in the U.K. is lower than in North America and it is possible that this difference may be due to the diagnostic system used in Britain. A study comparing DSM-IV criteria with those of the ICD-10 showed that the difference in prevalence rates were not due to cross national differences in the rate of the behavior but rather to differences in diagnosis and conceptualization of the disorder (Tripp, Siu, Schaughency & Singh, 1999). As a result, countries using one diagnostic system over another may report different prevalence rates. The difference between the two diagnostic systems will be discussed in greater detail at a later point.

Another example of the role of 'professional culture' can be demonstrated in a study using videotapes of patients and asking clinicians from various backgrounds to rate them and make the appropriate diagnoses. Mann, Ikeda, Mueller, Takahashi, Tao et al. (1992), compared the ratings of mental health professionals, in four different countries, on hyperactive-disruptive behaviors. The results indicated that, the definition of and attitudes towards hyperactivity are subject to cultural variation. It was found that Chinese and Indonesian clinicians provided higher ratings of hyperactivity than the clinicians from Japan and the United States. Consequently, although uniform and identical rating criteria may be used in different countries, being

considered as hyperactive may vary depending on the perception of the clinician. Once again, this supports the assertion that the prevalence and the diagnosis of a particular behavior may depend on who is actually doing the diagnosing and the manner in which it is done.

1.3.2 People Culture or Explanatory Model of Illness

In addition to the prevailing 'professional culture', societies may differ with respect to the existing 'people culture' or what has been known as Explanatory Model of Illness (Kleinman, 1987). As mentioned earlier in the discussion on culture, it is important for cross-cultural research to elicit these explanatory models of illness from individuals when carrying out research in different cultures. Adults play a major and in fact, a determining role in the identification and referral of children for any psychological or behavioral problems they may be experiencing (Weisz et al., 1988). Therefore, understanding adult attitudes toward child problems is crucial. The latter is possible by considering the culture and society to which those adults belong and with which they identify. The problems that parents or teachers may perceive as being serious and warrant attention is greatly shaped by their prevailing cultural beliefs and values. Therefore cultural differences in adult judgments about child psychopathology may consequently lead to a difference in the prevalence of ADHD cross culturally.

1.3.3 Symptoms displayed by children or local idioms of distress

Finally, societies may also differ in the extent to which children display certain symptoms and types of behavior. For example, children living in a society which values obedience and politeness will behave differently than those raised to value competitiveness, autonomy and success. An example of cultural differences is evident in the way Japanese and Indian children are inaccurately labeled as being 'passive' or 'slow learners' when compared to the average North American. Similarly, cultures like Jamaica, that do not promote aggression and other under controlled behavior will tend to have children that show a high level of internalizing behaviors such as shyness, anxiety and depression (Lambert, Weisz, & Knight, 1989). This is likely to be due to the way these children have been raised and the belief system to which they adhere. Therefore, when considering ADHD, it is important to be aware of such differences and the fact that the thresholds for displaying certain behavioral problems may vary cross culturally.

For example, it is possible that children from other cultures do not display the same symptoms as North American children do in terms of hyperactivity. It is also possible that the symptom's displayed by children in other countries are not considered as intense or debilitating that they require clinical attention and warrant psychopharmacological

treatment as in the United States.

In the next 2 sections, the prevalence of ADHD in other western as well as non-western countries will be reviewed and discussed in more detail. When reviewing these studies it is important to try and interpret differences in prevalence rates as being due to the different methodologies used in the studies or the different dimensions of culture that were just discussed.

1.4 ADHD: review of cross-cultural research in western societies

When culture or ethnicity is the primary focus, a review of the research on ADHD revealed that, there are a limited number of published articles dealing specifically with ADHD in other societies. Results from the available literature suggest that ADHD appears to be externally valid and can be identified in other western cultures. However, once again, there is a tremendous variation in the prevalence rates reported internationally (Pierrehumbert et al., 2006). For example rate of ADHD was found to be 10% in Australia, 6% in Brazil and 18% in Germany (Baumgaertel, Wolraich, & Dietrich, 1995; Rohde et al., 1999).

Furthermore, when reviewing the literature and comparing cross-cultural studies, it is important to keep in mind that valid and firm conclusions are not possible due to the diverse methodologies adopted by most studies. For example, a review of the literature showed that

the prevalence of ADHD was found to be higher in studies using the DSM-IV than the ICD criteria. Similarly, a difference in prevalence rates was seen in studies where diagnosis is based solely on symptoms than those where functional impairment is included. However, a review of 50 epidemiological studies showed that the prevalence of ADHD, when DSM defined diagnosis was used in all studies, resulted in rates that were similar worldwide (Biederman & Faraone, 2005; Doyle, 2004).

A review of the literature indicates that there are 2 main approaches used in cross-cultural epidemiological research (Bird, 1996; Crijnen, Achenbach, & Verhulst, 1997). One approach is based on using a diagnostic construct, such as the DSM-IV or the ICD-10, where specific symptoms are associated with particular mental disorders. The second approach is more empirically based and involves using standardized instruments that quantify reports of behavioral or emotional problems. An example of empirically based instruments where similar problems are rated quantitatively by parents and teachers, include the Child Behavior Checklist (CBCL) and the Teacher Report Form [TRF] (Achenbach, 1991). Research studies have shown that, prevalence rates may vary depending on whether a diagnostic or empirical approach is used in the research. Furthermore, depending on which instrument is used within each approach, different prevalence rates will be obtained. This will be made clear by the review below.

An epidemiological study examining childhood disorders was

able to confirm the existence of ADHD in several western countries such as New Zealand, Netherlands and Germany (Anderson & Werry, 1994). ADHD has also been identified in Italy, Britain and Iceland (Ford, Goodman, & Meltzer, 2003; Magnusson, Smari, Gretarsdottir, & Prandardottir, 1999; O'Leary, Vivian, & Nisi, 1985). Additional studies have identified ADHD in Puerto Rico (Canino et al., 2004) as well as in developing western countries like Brazil (Souza, Pinheiro, Denardin, Mattos, & Rohde, 2004) and Ukraine (Gadow et al., 2000). However, within Western cultures there is a wide variation in the frequency, recognition, diagnosis and treatment of ADHD (Anderson, 1996).

For example, it is well documented in the literature that, the prevalence rate of ADHD in North America is consistently higher than in Britain (Prendergast, Taylor & Raport, 1988). Earlier studies reported that, while in the United States 1% to 12% of children are affected with ADHD, in the UK this prevalence rate was less than 1%. Although the recognition and treatment of ADHD is increasing in the UK, it is still reported to be lower in comparison to other western countries (Overmeyer & Taylor, 1999).

One of the reasons for this striking difference in prevalence of ADHD is due to the fact that in the UK, the ICD-10 diagnostic framework is used to diagnose ADHD. The ICD-10 diagnosis of ADHD is much more restrictive than the DSM-IV and requires a higher degree of symptom expression (Rohde et al., 2005; Tripp, Siu, Schaughency, &

Singh, 1999). Furthermore, unlike the DSM-IV, the ICD-10 does not permit the co-morbidity of ADHD with certain disorders such as anxiety, mood, pervasive disorders as well as schizophrenia. For example, if a child has ADHD and ODD/CD, the latter is considered as being more serious and will preempt the diagnosis of ADHD. Based on the differences between the ICD-10 and the DSM-IV, it is not surprising that ADHD rates are much lower in the UK than in the United States and other countries.

Another study assessed the prevalence of ADHD in Iceland using a behavioral rating scale (Magnusson et al., 1999). Parents and teachers were asked to rate 6-and 8-year old children separately. Overall, it was found that the teachers' ratings on ADHD symptoms were lower than the parents' ratings. This finding is inconsistent with the general research on ADHD, which indicates that teachers tend to rate children higher than parents on behavioral rating scales (Baumgaertel et al., 1995; DuPaul, Power, Anastopoulos, Reid, McGoey & Ikeda, 1997; Gaub & Carlson, 1997). Another difference in the Icelandic data, was that the total teacher ratings of symptoms exceeding the cutoff point was lower in this study than in other studies looking at teacher ratings in German and American children (Baumgaertel et al., 1995; Gaub & Carlson, 1997; Magnusson et al., 1999; Wolraich et al., 1996). These inconsistencies in results may indicate actual cross- cultural differences that may be resulting in lower

means and scores.

ADHD is not a common diagnosis in Italy and psychostimulants are reportedly not available on the market (Gallucci et al., 1993). An early study by O'Leary et al., (1985), reported that the prevalence rate of hyperactivity in Italian children, using the Conners Teacher Rating Scale, was 12%. However, the authors in this study did report that there were differences in the obtained factor structures, which may suggest a conceptual difference in the meaning of the ADHD construct. Furthermore, in the Italian population it was reported that the cut-off score was higher for males and lower for females than the commonly used cut-off score in North America. The latter suggests that the norms used to identify children with behavioral problems in North America may not be identical for children in other societies. Although the situation concerning ADHD and medication may have changed nowadays, recent studies on ADHD in Italy do not seem to be available.

In a pilot study, Galluci et al., (1993), assessed the frequency of occurrence of ADHD symptoms in a number of schools in Italy. All the participating teachers were given a questionnaire and asked to rate their students by indicating the presence or absence of certain symptoms. The results of this study revealed that many of the children were considered "possible" cases of ADHD but not "likely" cases as they missed the required threshold. Although ADHD is likely to exist in Italian school-aged children, the authors stressed the need for more

systematic investigations to evaluate the true prevalence of this disorder in the Italian population. In general, although the behaviors typical of ADHD may be considered as deviant and unacceptable in Italy, they do not appear to be conceptualized as a syndrome or a diagnosis that warrants clinical treatment.

A study carried out in Germany, on a sample of elementary school aged children, found that the prevalence rate of ADHD was much higher than that in the U.S.A. The observed prevalence rate was estimated at 17.8%. This study applied the DSM-IV ADHD criteria and in contrast to the above-mentioned studies, the result was prevalence rates that were higher than the States. However, it is important to mention that the study was based solely on ADHD symptoms (Baumgaertel, A., Wolraich, & Dietrich, 1995). In Switzerland, an epidemiological study looking at the prevalence of ADHD using the DSM-III was found to be 9% (Steinhausen, Metzke, Meier, & Kannenberg, 1997).

Another study in Switzerland employed the Conners' rating scale to compare ADHD symptoms of children between the ages of 5 and 17 with a North American sample (Pierrehumbert et al., 2006). The results of the study showed that there were no differences in the mean scores for ADHD symptoms in both samples. However, an interesting finding was that in the Swiss study, older children were described as exhibiting a higher number of ADHD symptoms than same-aged children in the

North American sample. This is inconsistent with most studies where ADHD symptoms tend to decrease with age (Barkley, 1990; Cantwell, 1996). However, an interesting explanation for this is that, in the Swiss study the severity of ADHD symptoms was found to correlate with school achievement. In other words, more symptoms were reported for the older group who had a lower level of achievement.

Many studies looking at the prevalence of ADHD tend to use checklists that only consider current symptoms and not other important DSM-IV criteria such as impairment, symptom onset and duration. A study by Graetz, Sawyer, Hazell, Arney & Baghurst (2001), looked at ADHD in Australian children using the DSM-IV and requiring more criteria be met. The prevalence of ADHD in the Australian sample was reported to be 6.8%, which is much lower than most studies but closer to the rate suggested by the DSM-IV (i.e., 3 to 5 percent). In the same study, if presence of symptoms was the only criteria considered, then the prevalence rate of ADHD would have been 14.7%.

A recent study looking at prevalence rates of DSM-IV disorders in Puerto Rico was able to identify ADHD as one of the most prevalent disorders. The prevalence rate was estimated at 8.0% and ADHD was more common in males than females (Canino et al., 2004). The importance of considering a measure of impairment was found to greatly affect the prevalence rate by reducing the number of individuals who meet ADHD diagnosis based solely on symptoms.

So far the studies mentioned above have focused on ADHD in school-age children. A study in Sweden examined ADHD in preschool children and found that similar symptoms exist at a very early age. However, younger children tend to show more inattentive and overactive behaviors than older ones. Younger children were rarely rated on items pertaining to impulsivity and the authors suggested that this may be due to such symptoms being perceived as typical of young children and thus not rated by Swedish parents (Kadesjo, C., Kadesjo, B., Hagglof, & Gillberg, 2001).

Rohde et al., (1999), examined the prevalence of ADHD in a sample of Brazilian adolescents. Initially, all students were screened for ADHD using a rating scale comprised of 18 DSM-IV symptoms. A psychiatric evaluation was then conducted on all the positive cases as well as on a random sample of negative screened subjects. It was found that the prevalence of ADHD was 5.8% and this was reported to be consistent with studies carried out in the United States. The authors conclude that their findings support the notion that ADHD is a cross culturally valid diagnosis and is prevalent in adolescence.

1.5 ADHD: Research in non-western societies and developing countries

Based on the above reviewed studies, that examined the existence of ADHD in different cultures, it is reasonable to assume that

this disorder is not unique to the North American society. So far the discussion has been on ADHD in western societies; however, Anderson (1996), questioned whether childhood hyperactivity is merely the product of a western or more "permissive" culture in comparison to the cultures of developing countries. Other researchers have suggested the possibility that in some cultures the ADHD diagnosis may not be useful or may only be required in a modified form (Leung, Luk, Ho, Taylor, Mak & Bacon-Shone, 1996). In order for any diagnosis to be culturally valid, it must be able to account for several variables including ethnicity, religion, habits and values (Rohde et al., 2005).

Although published literature indicates that cross cultural studies have been limited to western societies, an epidemiological study of childhood disorders was able to identify ADHD in non western societies such as Chile, Thailand, China and Kenya (Bird, 1996). However, there has been inconsistency in the prevalence rate of ADHD despite the fact that the core features of this syndrome may be identified cross culturally.

Studies of Chinese school children have reported prevalence rates of ADHD ranging from 1.3% to 13.6% (Gingerich, Turnock, Litfin & Rosen, 1998; Tao, 1992). Prevalence rates greatly depended on which assessment instrument was used. For example, when DSM-III criteria were applied the prevalence of ADHD was found to be 3%. A study by Leung et al., (1996), examined the diagnosis and prevalence of

hyperactivity in Hong Kong using different diagnostic definitions of hyperactivity (i.e., ICD-10, DSM-III and DSM-IIIR). Overall, his results suggest that while the disorder can be identified among Chinese children, the prevalence rate of ADHD is much lower than that in western societies. Furthermore, depending on which diagnostic system was used the prevalence rate varied from 0.78% to 8.9%. The results of this study raise the question about the validity of different diagnostic systems that need to be considered when comparing cross cultural studies and the prevalence of ADHD.

In order to assess behavioral disorders in Chinese children, behavioral rating scales developed in North America have been translated and used in several studies. A study using a Chinese version of the Teacher Report Form (TRF-CV), found that the prevalence of behavioral and emotional problems in Chinese children (15.5%) appears to be comparable to the range of 14% to 20% found in American and European samples (Liu, Kurita, Tachimori, Guo, Ze, 2000). The prevalence in this study was higher than previous findings in Chinese children and closer to the prevalence of other countries. It is believed that this may be due to a more valid and reliable rating scale as well as a more representative sample.

A study by Li, Su, Townes & Varley (1989), compared the scores of Chinese and American children diagnosed with ADHD on the Achenbach Child Behavior Checklist (CBCL) and Teacher Rating Form

(TRF). They found that, the suggested U.S. cutoff T-score of 70 was inappropriate in the Chinese culture and led to a high rate of false negatives. Similarly, a study conducted in Korea also found that the suggested U.S. cutoff T-score of 70 on the CBCL resulted in many children with ADHD not being identified (Kim et al., 2005). The latter strongly suggests that norms specifically developed for different cultures need to be established in order to allow an accurate diagnosis. However, despite cultural differences between Chinese and American children, the authors report that both the CBCL as well as the TRF were found to be useful in differentiating between Chinese children with ADHD and those with no behavioral problems.

Another study examined the validity of the factor structures of ADHD in a sample of Taiwanese children (Yang, Schaller & Parker; 2000). Teachers were asked to rate school age children using a 20-item ADHD checklist and the factor structures of their ratings were explored and compared to those reported in U.S. based research. Their results suggested that the behaviors associated with ADHD are cross culturally similar due to the presence of identical ADHD factor structures in Taiwanese and U.S. based research. This is particularly interesting since ADHD was reportedly not recognized as a disability in schools in Taiwan.

A region where there has been hardly any information on ADHD is in the Arab regions of the Middle East. However, the 2 countries

where there have been studies examining the prevalence of ADHD in primary school children are United Arab Emirates and Qatar (Bener, Al Qahtani, & Abdelaal, 2006; Bu-Haroon, Eapen, & Bener, 1999). In these studies, the overall prevalence rates were found to be 14.9% and 9.4% respectively. In both studies, the Conners' Teacher's Rating Scale was used to identify children with symptoms. An interesting finding was that ADHD symptoms were significantly correlated with the presence of multiple marriages, which is common in those regions.

Overall, the above studies appear to suggest that ADHD is not merely a constructed phenomenon by the Western societies and can be identified in non-western and developing societies such as Taiwan, Korea, Hong Kong, China, Qatar and the United Arab Emirates. However, it is difficult to make any valid comparisons between international prevalence studies due to their diverse research methodologies including the different rating scales, interview schedules and diagnostic comparisons. Consequently, a great deal of uncertainty remains as to whether the differing rates are due to genuine cultural or contextual differences or to the disparate measures and diagnostic constructs.

1.6 Conclusion

In conclusion, it can be seen that research on ADHD has yielded different prevalence rates across countries. Although most of the

research has been carried out in North America, research in other countries confirms the presence of ADHD symptoms in different cultures with discrepancy in the rate at which these symptoms are displayed. Arriving at a diagnosis of ADHD is not straightforward and objective. ADHD, unlike some medical disorders is not something that can be measured or confirmed by objective means. The diagnosis is greatly dependent on subjective information and ratings provided by parents, teachers and others that are part of the child's environment. Unfortunately, ADHD cannot be confirmed by objective medical means and the objective tests alone that are used to assess ADHD are insufficient to reach a diagnosis. This issue of diagnosis added to the problem of cultural differences presents a real challenge in the cross-cultural validity of ADHD and its diagnosis. Future research on the neurological and genetic underpinnings of ADHD may help reduce a lot of the controversy around ADHD and result in a more confident diagnosis.

Chapter 2

Research Problem

Most of our knowledge on ADHD has been generated in Western societies, trying to extend our current knowledge to other non-western societies, remains the challenge. The development of human behaviors, attitudes and values is greatly influenced by the society and culture in which individuals live. Thus, it would be unreasonable to assume that Western children are representative of children around the world and neglecting the role of culture may challenge the cross cultural validity of the diagnosis and its equivalence in different settings. In other words, applying a diagnosis without confirming its meaning in a particular cultural context may result in a misdiagnosis or what is also known as a category fallacy.

ADHD does appear to exist in societies as non-western as Hong Kong, China and Taiwan; however, research, specifically dealing with ADHD, in the more underdeveloped countries of Asia, the Middle East and Africa still needs to be examined. Although not much has been done on African children, preliminary studies, examining the clinical characteristics of ADHD in African-American and non native children, have suggested that ADHD can be identified in these children with similar although not identical psychiatric co-morbidity and dysfunction as observed in Caucasians (Samuel et al., 1999; Beiser, Dion &

Gotowiec, 2000).

It has been reported that psychological treatment, as well as psychotherapy, is rare and inadequate in non-western cultures particularly in the more under-developed and conservative countries (Ibrahim & Ibrahim, 1993). The attitudes towards mental health and counseling differ in such countries from the attitudes found in western countries (Day, 1983; Moracco, 1985). People are less likely to seek or make use of such services. Such cultural differences are likely to influence the way ADHD will be defined, diagnosed by professionals, reported by adults and displayed by the children.

In many Arab countries in the Middle East, a pervasive attitude is that mental illness is a social stigma that reflects negatively on the family of the individual diagnosed. Psychiatric symptoms are usually attributed to causes such as 'bad nerves' or 'evil spirits' (Budman, Lipson, & Meleis,1992). Traditional healers, religious authorities or family physicians are usually the first options when seeking treatment. After all else fails, psychiatric care may be considered as a last option.

Based on the earlier literature review of ADHD, it is apparent that ADHD has received little attention in the Middle East and there is a void in the scientific literature regarding this behavioral disorder in this area. With the exception of a study in Oman (Al Sharbati, Al Adawi, Al Hussaini, Al Lawati, & Martin, 2004) as well as a study in United Arab Emirates (Bu-Haroon, A., Eapen, V., & Bener, A., 1999), confirming the

presence of ADHD symptoms in those countries, published research on the prevalence of ADHD in other Arab countries in the Middle East is not available.

2.1 Research site selection

Given the void of ADHD research in under developed Middle Eastern countries, Lebanon was selected in order to develop a better understanding of ADHD in that area. Lebanon provides an interesting base to sample a population, due to it being a country characterized by a combination of urban and rural settings, conservative and liberal attitudes, as well as Christian and Muslim religions. No previous published study has looked at the prevalence of ADHD in Lebanese children nor provided data on this disorder from this area. However, there has been a preliminary study looking at the clinical profile of ADHD individuals in an outpatient psychiatry clinic (Fayyad, 2005). .

In Lebanon behavioral disorders are evident in academic settings; however, data regarding their frequency has not been reported (Saigh, 1984). Although ADHD has been recognized in Lebanon and is currently diagnosed and treated with stimulants, there is no published epidemiological data available on the disorder in children in Lebanon. The need to increase awareness in the schools and community is recognized by the professionals in the field (Fayyad, Sadek & Cordahi, 2001).

Since this study was carried out in Lebanon, an overview of the country will be presented to better understand the demographic, cultural and social factors that are present in this society.

2.2 Lebanon

Most of the information on Lebanon was obtained from reports provided by United Nations Development Program (UNDP, 2003). Lebanon, a country with a total area of 10,452 square kilometers, is situated on the eastern coast of the Mediterranean Sea, bounded on the north and east by Syria and on the south by Israel. The region known as greater Beirut is heavily populated with around 1.5 million inhabitants, of which 400,000 reside in the city of Beirut, the capital of Lebanon.

Beirut is a mixture of old and new; it became a center for Arab intellectual nationalism and thought and was the most cosmopolitan city in the Middle East as far back as the early 19th century. It was famous for being liberal and for becoming an epicenter where the East meets the West. Furthermore, it provided ample exposure to Western cultures for Arabs in the Middle East, and was a port of entry for the rest of the world. Lebanon remained under the French mandate until 1941. Civil war broke out in 1975 and lasted for more than 15 years.

Beirut has not only continued to be the commercial center of the country, but is also consistently identified as having the best

educational and health services. These services, both public and private, are largely concentrated in the cities and on the coast, and in particular in Beirut. The center of the city was heavily destroyed during the civil war that lasted for 15 years. This has resulted in an urban expansion of the city and the increase of the population as a result of the massive internal displacement from peripheral areas to the city and its suburbs. Since the war, more than half of the total population of Lebanon lives in Beirut. This also includes those who have been displaced as a result of the war. Beirut is the largest city in the country and is inhabited by people of every religious, ethnic, educational, economic and social group (Deeb, 1997).

2.2.1 Population

The total population of Lebanon is about 3,577,000 of whom 7 percent are non-Lebanese. Around 27% of the population is between the ages of O-14 years (United Nations Educational, Scientific and Cultural Organization, 2005). In terms of ethnic classification, 95 percent of the Lebanese people are Arabs, while the remaining are from different ethnicities such as Armenian, Kurdish and Assyrian. Armenians are the largest ethnic minority living in Lebanon.

2.2.2 Language

The official language of Lebanon is Arabic and French follows as the second language. Lately, English is becoming more common and the vast majority of Beirutis (i.e., people from the capital and main city of Beirut) are bilingual and some are even trilingual. The increased usage of the English language, as opposed to French, suggests a change in the culture of the people in Lebanon. One hypothesis may be that a larger number of Lebanese are being exposed and influenced by the North American culture as seen by them adopting their language and behavior.

2.2.3 Religion

Lebanon is a multi-confessional nation and consists of more than 17 distinct religious sects (11 Christian sects, 5 Muslim sects and Judaism), which are officially recognized by the Lebanese government. Within the Christians, the most common are the Maronite Catholics, Greek Orthodox and Greek Catholic. The Muslim groups are mainly the Shiite, Sunnite and the Druze. At the time of independence and prior to the civil war, Christians formed a slight majority of the population; however, currently the Muslims are estimated to make up 70 percent of total population. It is believed that the massive migration among Christian groups, during the last 4

decades, as well as the higher fertility rates among Muslims contributed to this demographic change between the two groups.

2.2.4 Effect of the civil war on education

Lebanese schools are divided into three categories: private, public and semi-private. Private and semi-private schools are the educational institutions owned and operated by other than a government authority. In contrast, public schools are free and they are under government authority (Ministry of Education). The Ministry of Education provides all the public schools with the books needed, for each level and often for free. Semi-private schools, which are mainly parochial schools, are those that operate as private schools yet charge much lower fees and offer scholarships to the underprivileged. These semi private schools are partially subsidized by the government and have been in existence for a long time even before the independence of Lebanon in 1943. They are mainly operated by philanthropic associations that provide educational services to their communities.

The effect of a 15-year civil war has done great harm to the public schooling system in Lebanon. A study by Dr. Tabbarah in collaboration with the Center for Development Studies and Projects has provided an in-depth analysis of the educational system in Lebanon (Daily Star, 2000). In addition to the fact that two-thirds of the primary school buildings were lost to war, the overall quality of education

dropped and suffered due to teaching hours being reduced and teachers being under qualified. During the period extending from 1972 to 1991, there was a decrease of 21 percent in the enrollment of students in the public schools. On the other hand, the overall enrollment at private schools increased by 88 percent. It is estimated that about 62 percent of Lebanon's school students attend private school. The educational quality of private schools are of a much higher caliber than the public schools as measured by the success rate in end of year official examinations. Furthermore, it has been reported that the private system is much more advanced in terms of school equipment, teachers' qualifications and the condition of the schools overall (Daily Star, 2000). The situation in Lebanon does not give parents much choice between sending their children to an expensive yet high quality private education or settle for a free but low quality public education.

Over a million people in Lebanon are living below the poverty line and in the rural areas 75 percent of the population are in poverty (Omar, H., 2004). Presently in Lebanon, a large proportion of the population has been affected by deprivation. There is a widely held belief that the increase in poverty is a result of the war (Haddad, 1996). In a recent study, poverty across religions was examined. Although there are 17 officially recognized Lebanese sects the study focused on the 4 largest religious groups. The results were interesting and indicated that, Sunni and Shiites have the highest level of excess

poverty while the Druze and Maronites have the lowest level. Furthermore, among all four groups the Sunni have a higher level of excess poverty than the Shiites but also tend to have the higher level of inequality in wealth (El Khoury & Panizza, 2001).

As a result of the economic hardship in Lebanon, it is expected that there will be a greater demand for the public schools system. However, a serious issue is that the public schools will not be able to cope with this increase in number of students. There is both a need for a greater number of public schools available to the population as well as a need to drastically improve the quality of public education. There is a distinct difference between private and public education in Lebanon and children attending schools in the different sectors vary in many ways. The most evident difference is that it can be safely generalized that the children attending the public schools have a lower socioeconomic status than children in the private sectors. A study by Melzer in 2002, found that children in the public sector were significantly shorter and weighed less than those at the private schools.

It appears that with poverty and the situation of the public schools in Lebanon, a country that has always valued education, the situation is quite grim. A study by the UN Children's Fund (UNICEF) and Lebanon's Central Administration of Statistics has found that 45 percent of children in Lebanon drop out of schools and join the workforce before they finish secondary education. A need to

understand the implications of this drop out and how poverty may be affecting the mental health of children is necessary.

Based on what has been said, it is essential that both the role of socioeconomic factors as well as the difference between private and public schools be taken into consideration, in any study of child psychopathology in Lebanon.

2.3 Purpose of the study

Both the lack of quantitative data on ADHD in Lebanon, as well as the absence of any investigations on cultural differences, which may influence the diagnosis of ADHD were the main forces behind the study. The main objectives of this study were (a) to obtain basic information and estimate the prevalence of ADHD symptoms in Lebanese children based on teacher ratings; (b) to analyze these teacher ratings and how they differ with gender and age; (c) to study the effect of the school and social environment on ADHD symptoms and finally (d) to compare the Lebanese data with the prevalence and pattern of ADHD in North America. Since no other published study appears to have examined this disorder in children in Lebanon, the present study was largely exploratory in nature. However, the qualitative component of the study may help provide unique information on ADHD in the Middle East.

Some of the questions intrinsic to the design of this study

comprise the following: (a) Does ADHD exist and is it prevalent in a non-Western society such as Lebanon (b) How do child factors such as age and gender affect the prevalence of ADHD symptoms in Lebanon? (c) Warranted that, ADHD is a valid diagnosis in Lebanon can it be diagnosed using the traditional standardized measures in this different culture? (d) Do specific environmental factors such as religion, SES and type of school affect ADHD symptoms? (e) Finally, how is ADHD labeled, treated and dealt with by parents, teachers and professionals? How do the local explanatory models and idioms of distress of the Lebanese culture affect the ADHD diagnosis?

Chapter 3

Method

3.1 Overall Study Design and General Strategy

In order to answer the questions presented in the previous chapter, a 2-phase design of both qualitative and quantitative methods was used in the study. In both phases, the sample was drawn from two of the six Governorates or 'Mohafazats' that make up Lebanon (Beirut and its greater area as well as Mount Lebanon). The capital city of Beirut was chosen after several consultations with different research experts in Lebanon, including UNICEF, UNESCO and epidemiologists, who agreed that the population in Beirut is representative of that of Lebanon in general. However, in order to avoid a sample that may be biased in some way, a second area, Mount Lebanon, was selected to ensure that the different religious groups would be equally represented in the sample. While Beirut would ensure a good representation of Muslims, choosing Mount Lebanon guaranteed that Christians would be equally represented in the sample.

Subjects from both public and non-public schools (i.e., private and semi-private) were recruited, to examine if differences exist in various socioeconomic status groups. Since there was no formal measure of SES used in the study and specific data on child and family

information was not collected, school data was used as a proxy for SES. The latter was determined based on official city criteria; thus, children attending a specific school often share more or less the same SES. The SES of the students attending a certain school was verified by asking the principal to classify the majority of children attending their school in terms of their socioeconomic status as being upper, middle or low (where upper is the richest 33% of the population and lower is the poorest 33% of the population). In terms of SES, 55% of the children came from schools of a middle SES and 45% of children came from schools of a low SES. Although this is not a specific measure, it provided us with a variable, which allowed us to contrast the social and economic environment of schools. No children from the upper SES were included as schools in those areas refused participation in the study.

In order for the research to be carried out at the schools, extensive consultation and several meetings with the Ministry of Education were required. During these meetings, details about the research were presented and a written proposal of the research was provided. The latter had to be accepted by an ethics research committee before allowing the researcher to conduct the study and gain access to the schools. This process took several months of discussions between the Ministry and the researcher. Once approval by the ethics committee was obtained, a written request to the schools

from the Ministry of Education was provided to the researcher in order to allow access to the schools. Two separate requests were provided: one for the Greater Beirut area schools and another one for the schools in Mount Lebanon (see Appendix A and B). The researcher was responsible for all the school contacts, arranging the meetings with school personnel and collecting the research data. This required spending a few weeks to get to know the system and meeting with key individuals.

Professional translators along with the input of the researcher translated all the instruments into Arabic. In order to increase equivalence of meaning between the languages (English and Arabic), the 'back-translation' method was used to verify the quality of the translation. The researcher's familiarity with the culture of the area and fluency in the local language facilitated both implementation of the study as well as interpretation of the data.

Initially, when the study was presented, there was a great deal of resistance by school personnel and administrators. It became apparent that this was due to the fact that the study was being implemented by a Canadian or foreign institution. In addition, resistance also stemmed from a fear of being judged inaccurately and not gaining much from cooperating with a foreign institution. However, the fact that the researcher spoke Arabic and was originally from the area, made it easier to overcome the existing barriers. Reassurance

was provided to those involved that the research results will be shared with them and will offer useful insight to the situation of children in Lebanon.

The qualitative phase was completed during the summer and the quantitative phase took place in the spring of the following year. During each phase, the researcher was required to spend a few months in Lebanon to ensure completion and follow up closely with the school personnel involved. During those few months, several visits to the schools were made to answer any questions and ensure that the forms were being completed accurately and in a timely fashion. The goal of the qualitative phase was to explore the validity of the ADHD construct and the associated social representation in some of the involved groups: the parents, the teachers and the clinical professionals. This would then help interpret the quantitative results from a cultural and social local perspective. Once all the data was collected from the schools, a certificate of appreciation was given to both the school principal as well as the teachers for their participation and cooperation (see Appendix C).

3.2 Phase 1 Qualitative: explanation of representations around ADHD and of community explanatory models around behavioural and learning difficulties

3.2.1 Subjects

A total of 21 key informants including parents, teachers and clinical professionals (e.g., psychologists, psychiatrists) were interviewed. More specifically, this included: seven community members, who were either parents or religious members from the two major religious groups (i.e., Christian and Muslim), seven teachers, and seven professionals (psychologists, psychiatrists, special educational consultants) from prominent academic and clinical institutions.

3.2.2 Procedure and Instruments Used

The main purpose of Phase 1 was to independently explore local categories and constructions of school related problems (behavioral and learning difficulties). Clinical professionals were asked about their familiarity with the diagnosis of ADHD based on the DSM-IV, the situation of ADHD in Lebanon and how society perceives and treats such symptoms. Academic professionals were asked about the situation in schools, whether a syndrome of behaviors consistent with ADHD is acknowledged as such and how teachers cope with a student with such a behavioral profile. Finally, parents and community religious leaders were asked about their own experiences and opinions

regarding the behavior of children in today's society. The purpose of these open-ended interviews was to gather qualitative data related to representative views about ADHD symptoms and about behavioral and learning difficulties and their treatment in Lebanon.

A questionnaire was developed by the researcher to elicit the opinion of the key informant with regards to behavioral and learning difficulties of children between the ages of six and 10 years. The interview was adapted according to the type of informant (i.e., parent, teacher, medical professional) but in general it was based on three broad questions using Kleinman's explanatory model: (1) What do you or your family call you child's difficulties? (2) Why do you think it started when it did? (3) What is likely to happen and what do you think should happen? (see Appendix D).

During the interview with the key informants, more specific and structured questions were asked to elicit local opinions and experiences around behavioral and learning problems. The informant was explained the purpose of the interview and 12 specific questions were asked (see Appendix E). At the end of these questions, five vignettes were presented, each depicting a child with a learning or behavioral difficulty (i.e., learning difficulty, ADHD-Inattentive, ADHD-Combined, CD and ODD). After presenting each vignette, the informant was asked 10 specific questions about the individual in the vignette to further elicit different theories and knowledge about behavioral difficulties in children

and more specifically ADHD (see Appendix F). All the information from the key informants was taped and later transcribed by the researcher. Interviews were conducted at a time and place of convenience for the individual concerned.

3.2.3 Qualitative Analyses

For the qualitative data, response categories were established after an appraisal of all the material to represent the main themes that emerged from the data. All transcriptions were coded accordingly. The responses were analyzed based on Corin's (1992), model of sign (symptom), meaning and action (treatment). In addition, for each vignette all the different terms and phrases that were used to describe learning or behavioral problems were compiled. When the interview was conducted in Arabic, the specific words that were used to describe the child with the learning or behavioral difficulty was translated literally to English. The purpose of this was to preserve the richness of meaning and metaphors embedded in the local category ascribed to these behaviors (i.e., medical label, bad child label, or other) in the Lebanese culture.

3.3 Phase 2 quantitative measure of ADHD: prevalence and correlates

3.3.1 Subjects

In the quantitative phase, the subjects consisted of children who were born at the end of the civil war (i.e., after 1991). The latter helped decrease the direct war effects (i.e., depression, anxiety and post traumatic stress disorder [PTSD]), which can confound the presentation and etiology of learning and behavioral difficulties. However, it is noteworthy to mention, that the transmission of trauma through generations and the ongoing social turmoil probably affected the symptom presentation. Data was obtained from 1781 children in grades kindergarten through four and between the ages of five and 11 years. Due to incomplete rating scales, 35 subjects had to be eliminated leaving a final sample of 1746 children.

Children receiving special services were included in the study sample if they were attending regular classes; however, the teacher indicated whether a student received such special services. As mentioned earlier, school information was used as a proxy to evaluate group SES. Subjects from private, semi-private and public schools were recruited. The language of instruction of the students was Arabic, English or French and some of the schools also taught Armenian.

Subjects were also identified in terms of religion as being mainly Muslim or Christian children. This was done mainly by the school affiliation or by the school personnel. Schools in certain areas were likely to be homogenous, (i.e., belong to one or the other religion); however, some schools were clearly heterogeneous and consisted of both Muslims and Christians. In such situations when the school was mixed, school personnel were able to accurately provide such information regarding their students. In the selection of schools, one of the objectives was to equally represent both religions in the sample as much as possible. This was to both ensure a fair representation of the population as well as note any cultural differences between religions regarding learning and behavioral difficulties.

3.3.2 Procedure

Data was collected in the spring of the academic year; however, school consent was obtained in the fall of the previous year. Access to the schools from the different geographical areas in Lebanon was provided through the Ministry of Education. A total of 18 schools, public, semi-private and private, were chosen for the study (see Table 1). Those schools were from 2 Mohafazats: Greater Beirut, (includes city of Beirut), as well as Mount Lebanon. The goal was to recruit schools from all the major parts of the capital, as well as from Mount Lebanon. After several months of meetings with the Ministry of

Education, in order to get approval by the ethics committee to carry out the study, the researcher was provided with a written request introducing the researcher and asking school personnel to cooperate in the study. This written request facilitated the process of entering the schools but did not guarantee the participation of the schools in the study. In addition, the Ministry of Education provided the researcher with a booklet listing all the public and non-public schools in Lebanon.

The selection of schools to be included in the study was randomly made by a computerized program made available by The National Center of Research and Educational Development in Beirut. Using the comprehensive list of schools provided by the Ministry of Education, a random selection of 10% of those schools in each of the areas of Beirut and Mount Lebanon was made and a new list of schools was compiled. The selected schools were equally representative of the area selected and final inclusion depended on whether the school agreed to participate in the study. Whenever a selected school refused participation, the researcher targeted another school in the same area that agreed to participate.

From the provided list, the researcher proceeded in visiting each school to set up a meeting with the principal to explain the study and what were the requirements for the data collection. In some cases, this required several visits to each selected school in order to obtain a written consent. A letter provided by the McGill University as well as

the Montreal Children's Hospital was given to each school thanking them for their cooperation and providing description of the purpose of the study. This letter was provided in either English or Arabic depending on the school (see Appendix G and H). Once the principal had consented to having the study carried out in the school, they were asked to randomly select homeroom teachers from each grade level to participate in the study. All teachers were given an opportunity to participate in the study, and in each school at least one teacher from each grade level volunteered to complete rating scales. Once the exact number of subjects was known at each school, the researcher returned the next day with the questionnaires in the language requested. Questionnaires were completed either in English, Arabic or French depending on the language of instruction at the school and the preference of the teacher completing the questionnaire.

The quantitative data was collected, in the middle of the academic year, at a point when the teachers had been sufficiently exposed to their students (spring of the academic year). The latter was to ensure that they had had the opportunity to get to know and observe their students' behavior; thus, would be able to reliably complete the behavioral rating scales. Some of the teachers knew a number of the students from the previous academic years. When students had more than one teacher, the homeroom teacher (i.e., the one that spends most time with the student) was selected to complete the

questionnaires. The questionnaires were then distributed to the homeroom teachers of the selected classes and they were asked to complete the questionnaires on their students.

All the selected teachers completed and returned questionnaires on their students within a time limit varying from 2 weeks to 3 months. In most cases, teachers were asked to complete questionnaires on all the students in their classroom; however, in some schools the classes were very large and the researcher randomly selected students. A total of 121 teachers from 18 schools participated in the study.

Several schools refused participation in the study and this occurred from both public as well as non-public schools but for different reasons. Most public schools refused participation due to time restrictions, unmotivated staff, and refusal by teachers to participate. In the case of private schools, refusal to participate was mainly the result of fear of being labeled in some way, a fear that the topic of research may upset parents, a lack of interest in the study and the perception that this was not of any immediate benefit. In most cases, there was reluctance and hesitation on the part of the principal. Reassurance was needed that the study's goal was neither to diagnose children nor to look for faults in the system. However, it was with the help of well-established organizations in Lebanon that consent from several schools was obtained. The latter included organizations that fund several of the semi-private schools such as the Hariri Foundation, Makaseed

Foundation as well as the Catholic dioceses. The researcher was connected to the head of the Catholic churches in Lebanon by a local priest in Montreal. After getting to know the system in Lebanon, the researcher contacted such organizations to gain access into their schools. The research process thus revealed deep fears about stigmatization associated with mental health diagnosis and anxieties about being labeled "incompetent" by external persons and foreign agencies.

3.3.3 Instruments Used

Two commonly used instruments were employed in this study: a checklist based on the DSM-IV was used to determine the symptomatic dimensions conforming to the ADHD syndrome (Swanson, Nolan, and Pelham Questionnaire, SNAP-IV) as well as Achenbach's Teacher Report Form (TRF). The latter is widely used in epidemiological studies and assesses a wide range of emotional and behavioral problems in children (Achenbach, 1991).

SNAP-IV

An ADHD checklist known as the Swanson, Nolan and Pelham questionnaire (SNAP-IV; Swanson, 1992) was used (see appendix I). The first 18 symptoms listed on the checklist are derived directly from the DSM-IV and correspond to the ADHD criterion A (9 Inattention, 6 Hyperactivity and 3 Impulsivity items). The SNAP-IV uses a 4-point

Likert rating scale, ranging from 0 (never), 1 (sometimes), 2 (often) to 3 (almost always), which assesses the frequency of the appearance of the symptoms in the child's behavior. Total scores range from a minimum of 0 to a maximum of 54. The ADHD checklist is divided into 2 subscales: Inattentive (maximum score of 27), and Hyperactive-Impulsive (maximum score of 27).

There are two scoring procedures: a categorical model and a dimensional model. In the latter, two scores are calculated: an Inattention (ADHD-I) subscore summing the points scored on the 9 items categorized as Inattention symptoms in the DSM-IV and a Hyperactivity-Impulsivity (ADHD-HI) subscore for the 9 items derived from the DSM-IV Hyperactivity and Impulsivity categories. If the mean score for each factor is at or above a certain cut-off point then the child is considered as having a clinically significant problem in terms of severity.

In the categorical model, which is the method used in this study, a specific symptom is considered to be clinically significant if it is rated as occurring "often" (2) to "almost always" (3). It was considered that a child fulfilled DSM-IV criteria for the Inattentive subtype (ADHD-I) and the Hyperactive-Impulsive subtype (ADHD-HI), if it obtained a score of 2 or 3 on at least 6 items of the Inattentive scale or the Hyperactive-Impulsive scale. Finally, a score of 2 or 3 on six items of both subscales was the criterion for the ADHD Combined type (ADHD-C).

Although the SNAP contains behavioral symptoms of specific disorders, they do not include essential diagnostic criteria (i.e., age of onset, impairment of functioning) that would allow us to make a clinical diagnosis. A professional translator along with input of the researcher translated the SNAP-IV into Arabic. It was also back-translated from Arabic to English to assure accuracy of translation.

Teacher Report Form (TRF)

Another instrument used in this study was the Teacher's Report Form (TRF; Achenbach, 1991) developed by Achenbach and Edelbrook (1986). The TRF is a teacher questionnaire for assessing a broad range of children's competencies and behavioral problems in a standardized way (see Appendix J). The TRF has been translated into more than 51 languages and used widely in epidemiological studies (Liu et al., 2000). The TRF consists of 113 items describing behavioral problems. Items on a Likert scale are scored "0" if not true, "1" if somewhat true and "2" if very true or often true. The TRF is scored on 8 syndrome scales, two broad band scales: Internalizing and Externalizing, and a Total Problems scale. The syndrome scales "Withdrawn", "Somatic Complaints" and "Anxious/Depressed" scales together form the "Internalizing" scale and the scales "Delinquent Behavior" and "Aggressive Behavior" together form the "Externalizing" scale. The "Social Problems", "Attention Problems" and "Thought

Problems" scales do not belong to either group but are part of the Total Problems scale.

A translation of the TRF was already available in Arabic; however, it had limitations. For this study, the form was updated and retranslated and a copy was provided to Dr. Achenbach. Other researchers who are working in countries where the primary language is Arabic are now using this revised TRF

3.3.4 Statistical Analyses

The data collected was coded and entered into an Excel program. It was then validated to ensure accuracy during data entry. Data was analyzed using SPSS. An analysis of the data was first performed to see how the sample was distributed in terms of age, gender, grade and type of school. Next the frequency of ADHD symptoms on the SNAP-IV as well as the TRF was calculated and the effects of child characteristics such as gender and age on the SNAP-IV subscale scores (Inattention subscale and Hyperactivity-Impulsivity subscale) were examined with two-way analyses of variance. In addition, the effect of internal cultural variation on ADHD was studied by looking at group variables representing sources of cultural heterogeneity within the Lebanese society; such as religion, SES and language and analyzing how they affect symptoms. The prevalence of

ADHD symptoms in this sample was assessed based on the SNAP-IV rating scales referring to DSM-IV criteria.

Epidemiological data on ADHD symptoms that was collected in Lebanon is compared to North American data provided by Achenbach. One of the goals of the study was to examine the applicability of the North American syndromes to the Lebanese sample; therefore, we tested the degree to which the cross informant scale model describes the TRF factor structure in the sample of Lebanese children. An oblique or orthogonal rotation was carried out to explore the underlying factor structures of ADHD and to check the internal consistency of the scales. Finally, in order to identify the factors, such as sex, age, religion and SES, associated with the prevalence with ADHD, multiple analyses was carried out by the logistic regression to obtain adjusted Odds Ratios which is equivalent to the relative risk using confidence intervals of 95%. The threshold of significance of the variables was fixed for alpha equal or lower than 0.05 and of exclusion with alpha = 0.10.

Chapter 4

Quantitative Results

4.1 Demographic Distribution

A total of 1746 questionnaires were available for the analysis. There were 779 (44.7%) boys and 963 (55.3%) girls. In the sample, the mean age was 7.8 years old (SD = 1.28): 19.0% were 5-6 years old, 22.0% were 7 years old, 27.6% were 8 years old, 21.1% were 9 years old and 10.3% were 10-11 years old. In terms of grade level, 3.4% were in kindergarten, 25.6% were in grade 1, 26.4% in grade 2, 25.9% in grade 3 and 18.6% in grade 4.

Most children in the sample were attending private schools (65.9%), some were attending semi-private schools (27.5%) and a small percentage attended the public system (6.6%). In terms of religion, approximately 29.5% of the sample was attending predominantly Christian schools, 42.1% of the children were from predominantly Muslim schools and 28.5% attended schools where both religious groups existed in the same proportion. As previously explained, estimation of the children's SES was based on the socioeconomic environment and clientele of the schools they attended. According to this estimation, 45.3% were considered to be in the low SES group while 54.7% were classified as being in the middle to high

SES range. No children were in the upper SES as the private schools in those areas refused participation due to reasons already mentioned in the methods section.

In terms of language of instruction at the schools, most of the schools had both English and Arabic equally (47.7%), some schools were mainly in English (36.1%), some had English, Arabic and French (10.4%) and a small proportion was solely in Arabic (5.7%). The choice of teachers when completing questionnaires varied in terms of language preferred (see Table 2). Although most teachers completed the questionnaires in English (65.9%), some preferred Arabic questionnaires (30.7%) and a minority chose French questionnaires (3.4%). Most of the teachers who completed the questionnaires had known their students for at least 3 months. 63.1% reported knowing their students moderately well, 33.8% knew them very well and 3.1% did not know their students very well.

4.2 Overall Prevalence Rates of ADHD in Lebanese children

The prevalence rate of ADHD symptoms in Lebanese children was assessed based on the obtained teacher ratings. The SNAP-IV instrument was used and DSM-IV criteria of types and number of symptoms were applied but not the criteria of impairment in functioning or age of onset. Accordingly, it was considered that a child fulfilled the partial DSM-IV criteria, if a score of 2 or 3 on at least 6 of the items of

the Inattention scale (ADHD-I) and/or the Hyperactivity/ Impulsivity (ADHD-HI) scales was obtained (see Table 3). It can be seen that 11.4% of the children were rated to have symptoms of Inattention only and 8.7% were rated to have symptoms of Hyperactivity/Impulsivity only. When both ADHD-I and ADHD-HI symptoms were considered (ADHD-C), 3.5% of the children were found to have met criteria in terms of symptoms for both Inattention subtype as well as the Hyperactivity/Impulsivity subtype. It should also be noted that 22.3% of the children in the sample showed symptoms of either Inattention or Hyperactivity/ Impulsivity or both combined.

4.3 Child Characteristics and Total ADHD scores

4.3.1 Age and Gender

The effect of different independent variables of interest, such as age and gender, on ADHD was examined with one-way analysis of variance. Means and standard deviations were calculated based solely on the total ADHD scores obtained on the SNAP-IV checklist, which is based on the DSM-IV (see Table 4). Analyses of variance were performed with age and sex as the independent variable and both the total ADHD score, as well as its subtypes as dependant variables. This allows us to determine if there is a link between inattention or hyperactivity/ impulsivity score (ADHD-I or ADHD-HI) as measured by the SNAP-IV tool and the characteristics of participating children.

In general, there were main effects of sex in teacher ratings for total scores, for Inattention and for Hyperactivity/Impulsivity subtype. On all measures, males were rated higher than females and there appears to be a main effect with the rise in the total average score of inattention and hyperactivity/impulsivity. Overall, the males have a higher average score than the females in the sample (13.2 versus 7.6 respectively, $p<0.001$).

In relation to the age factor, there were also main effects for age in teacher ratings for total ADHD scores. In addition, main effects of age in teacher ratings were observed for the Inattention subtype ($p<0.001$); however, this was not the case for the Hyperactivity/ Impulsivity subtype suggesting that there was no significant relationship with age on this dimension (see Table 5). In general, the average ADHD score increases as the age of the children increases, with the exception of children in the 9 years old age group. The group of children aged 5 and 6 have a lower average score than other groups, particularly the group aged 10 and 11 years old which has the highest average score (see Figure 1).

In Figure 2 it can be seen that males have an average ADHD score distribution that is higher than females in every age group. Both age and sex as independent variables yielded statistically significant differences on the overall ADHD score. ADHD symptoms appear to be

more frequent in the older children and in males. Age differences were significant and especially so for the Inattention type (see Figures 3 and 4).

4.4 Child Characteristics and Prevalence of ADHD subtypes

4.4.1 Age and Gender

Screening prevalence rates of ADHD based on Symptom Count varied with both age and gender (see table 6). Males had higher prevalence rates than females for all symptom categories. Age group differences were examined separately for each category and significant relationships were observed (see Figure 5).

4.5 Cross Cultural Comparison of Lebanese and American samples

A comparison of the Lebanese data, obtained in this study, was made with that of an American sample provided by Achenbach (1991). A more detailed description of this data can be found in Dr. Achenbach's 1991 manuals. Due to the fact that the participating students in this study were non-referred, an optimal cutoff point for the Lebanese children could not be found. Data from the 2 samples were compared to see if there were any statistical differences between them. The children in both samples were matched for age levels. In general, analyses of variance revealed for the majority of the dependant

variables, an interaction between the studied factors (sex, age and country).

4.5.1 Total Problem Score

Initially, one-way ANOVA was used in the overall comparison between the two samples. This was then followed by the Univariate General Linear Model (GLM) procedure to test the presence of an interaction. The GLM Univariate procedure provides regression analysis and analysis of variance for one dependent variable. In terms of the means of Total Problem score, it was found that overall Lebanese children had lower mean scores than American children (21.5 and 26.8 respectively, $p<0.0001$). This difference was found to be statistically significant and can be seen in Table 7.

The difference in means between the 2 countries remained when the gender variable was included in the analysis ($p<0.0001$). The average score of the females was significantly lower ($p<0.0001$) than that of the males in both countries (see Table 8). However, American children consistently had on average higher scores than the Lebanese, independent of sex.

Next, a comparison between the 2 countries was made while adjusting for the sex of children for each age group (see table 9). The results indicate that for the majority of age categories, the Lebanese children have on average lower scores than those of the American

children. The mean level of total problem score of Lebanese children of the age groups 6, 9 and 10 years, remains significantly lower than the American children of the same group of age. The difference between 2 countries is not observed in the groups of age of 7 and 8 years. In general, the difference in the mean level of the total problems score is statistically significant for sex regardless of country.

4.5.2 Externalizing and Internalizing Factors

A multivariate analysis, which simultaneously looks at the effect, of 2 or more variables was carried out. Using country, (Lebanon or USA), as the independent variable, while adjusting for the sex and age of children revealed an interaction effect between factors on the Externalizing Scale. In contrast, the same independent factor (country) revealed the absence of an interaction between factors on the Internalizing Scale.

More specifically, the result of the comparison between 2 countries for the Externalizing and Internalizing scale can be seen in Table 10. In general, the American sample has a significantly higher mean score on the Externalizing scale than the Lebanese sample (7.4 against 6.1, $p=0.005$). In contrast, the mean difference between the 2 countries on the Internalizing factor was not found to be statistically significant (6.9 against 6.3).

When the variables of age and sex of the children where introduced into the multivariate analysis for the Internalizing Scale, an interaction was observed. Due to the presence of an interaction between the variables sex and country, in order to compare scores of the 2 samples on the Internalizing subscale, separating the males and females was required. Based on the statistical analysis (MANOVA), while adjusting for age of the children, the scores of the 2 female samples was similar on the Internalizing Subscale (p=0.420). On the other hand, among the males, the American sample had a significantly higher score than the Lebanese sample (p=0.004), (see Table 11).

In terms of the Externalizing Scale, in addition to a statistically significant difference of the mean level between 2 countries, the effect of sex was also found to be significant (see Table 12); however, in spite of appearance (see table 13) the effect of age was not identified as being statistically significant (p=.0.76).

Finally we examined in a global way the level of scores, which reflect 8 problematic syndromes of behavior measured by the TRF. A Univariate General Linear Model (GLM) procedure was carried out to test the presence of the interaction. In general, the overall mean of the Lebanese children was found to be significantly lower than the American for 6 of the 8 syndromes. The latter include: Somatic Complaints Syndrome, Social Problems Syndrome, Thought Problems Syndrome, Attention Problems Syndorme, Delinquent Behavior

Syndrome and Aggressive Behavior Syndrome. On the other hand, the syndromes of behavior where there was no significant difference between the 2 countries included the Withdrawn Syndrome and the Anxious Depressed Syndrome (see table 14).

4.6 Analysis of the rating scales (SNAP-IV and TRF)

4.6.1 Correlation of SNAP-IV and TRF

Both the SNAP-IV as well as the TRF are rating scales that assess ADHD symptoms in children. The correlation between these 2 rating scales used in this study was measured to see if there was overall agreement between them. The correlation in the scores of both scales was 0.76, which is high.

4.6.2 Reliability Analysis

The Reliability Analysis procedure calculates a number of commonly used measures of scale reliability and also provides information about the relationships between individual items in the scale. Intra-class correlation coefficients can be used to compute inter-rater reliability estimates. The Alpha (Cronbach) based on the average of inter-item correlation was calculated for each scale and in both cases there appeared to be very good internal consistency (SNAP: Alpha=0.9445; TRF-DSM: Alpha=0.9043 and TRF-CIS: Alpha=0.9280).

4.7 Factor Analysis

4.7.1 SNAP-IV

The result of the Kaiser-Meyer-Olkin test (0.95) was adequate for performing factor analysis. This identified and confirmed the 2 factors of the SNAP with the data of this sample. The factors were submitted to an oblique rotation as to see the correlation between them. This turned out to be 0.48. The pattern of loading is close to what was expected. There is a clear Inattention factor and a clear Hyperactivity/Impulsivity factor (see Table 15). Items pertaining to ODD and CD were not used in the analysis.

4.7.2 TRF

Similarly, for the TRF-DSM, the result of the Kaiser-Meyer-Olkin test (0.93) was adequate for performing factor analysis. This identified and confirmed the 2 factors of the TRF-DSM with the data of this sample (see Table 16). The factors were submitted to an oblique rotation as to see the correlation between them. This turned out to be 0.44. For the TRF-CIS, 3 factors were extracted and identified with oblique rotation and the Kaiser-Meyer Olkin Test (0.95) but the relationship was not as clear (see table 17).

4.8 ADHD and Cultural Variation within Lebanon:

4.8.1 Environmental Effects on SNAP-IV Total ADHD score

ADHD and SES

Social characteristics such as SES and type of school, which define specific socio-cultural environments, also contributed to variation in the prevalence of ADHD in the sample. A significant link was noted between the ADHD score and certain characteristics of the children's school. Children attending schools with a lower SES were found to have on average a higher number of ADHD symptoms than the children from schools with a higher SES. Overall, there were main effects of SES in teacher ratings for total ADHD scores, Inattention subtype and Hyperactivity/Impulsivity subtype. On all measures, children of a low SES were rated higher than those of a middle SES, and there appears to be a main effect with the rise in the total average score of inattention and hyperactivity/Impulsivity. Overall, the children of a low SES have a significantly higher average score than those of a higher SES in the sample (11.9 versus 9.8 respectively, $p<0.001$). Although, there was no significant relation between the ADHD score and school type (i.e., public, private, semi-private) there was a .50 correlation between SES and type of school. This can be explained by the fact that the schools classified as public or non-public are not as clearly classified in terms of SES. Although most public schools were from a low SES not all the

semi-private or private schools were from middle SES and this could have affected the analyses.

ADHD and religion

Finally, religion and school language are factors that were found to be associated with ADHD symptoms. Overall, there were main effects of religion in teacher ratings for total scores and for both the Inattention subtype as well as the Hyperactivity/Impulsivity subtype. Children in schools that were considered to be multi-religious were rated as having significantly lower average scores than those in Christian or Muslim schools (8.8 versus 11.3 versus 12.1 respectively).

When comparing uni-lingual and multi-lingual schools, it was observed that children attending tri-lingual schools where English, French and Arabic is taught, have on average the lowest level of ADHD symptoms. On the other hand, children attending uni-lingual schools where only Arabic is taught, have on average the highest scores. This difference was statistically significant suggesting a main effect on ADHD.

4.8.2 Environmental Effects on the Prevalence of ADHD

SES and religion

A significant relationship was observed between the prevalence of ADHD symptoms and school characteristics. Overall, the prevalence

rate of ADHD in children attending middle SES schools was significantly lower than that of children attending low SES schools.

Religion was also linked to the prevalence of ADHD. Overall, it was found that the prevalence of ADHD-I is highest among children attending Christian schools (16.3%), followed by the students attending Muslim schools (12.9%) and finally children attending multi-religion schools (7.3%). On the other hand, the prevalence of ADHD-HI is most elevated in Muslim schools (13.4%), followed by the Christian schools (9.4%) and then by the multi-religion schools, which have the lowest rate (4.6%). However, when considering ADHD-C, it is noted that the proportion of the children belonging to that subtype is weakest in the multi-religious schools.

School type and language used

When considering the type of school and its effect on the prevalence of ADHD there was a significant relationship in some cases but not in others. For example it was found that the semi-private schools had a higher proportion of children with hyperactivity/impulsivity behaviors (ADHD-HI) when compared to children in other schools. On the other hand, no significant interaction was found between the prevalence of ADHD-I or ADHD-C and school type.

The relationship between the languages used in schools and the prevalence of ADHD was also examined. An interesting finding was

that in schools where Arabic was the sole language of instruction, the prevalence of ADHD was much higher for all 3 subtypes when compared to the lower rates of the trilingual schools (see table 18).

4.9 Multivariate Analysis on the Prevalence of ADHD

Previous research has shown a number of demographic factors that relate to child psychiatric disorders (Arnold, 1996; Graetz et al., 2002; & Scahill & Schwab-Stone, 2000). In order to determine whether or not independent factors in this study, such as sex, age, religion and SES, were contributing to the prevalence of ADHD, multivariate analysis was carried out. Odd ratios (ORs) for individual risk factors were estimated, using logistic regression analysis to see if they might be contributing to the occurrence of ADHD. Logistic regression coefficients were used to estimate these odd ratios for each of the independent variables in the model. The results demonstrated which factors are associated with the prevalence of behavioral symptoms of ADHD of Lebanese children while mutually controlling them.

Overall, both the age as well as the sex of children remains strongly related to the prevalence of ADHD behavior when we control the characteristics of schools that children attend (see Table 19). Boys were three times more likely than girls to develop ADHD behavior when adjusting for other variables in the model in comparison to girls (Males OR=3.1). In addition, children in the age group of 8 years (OR=2.2) as

well as age group of 10 and 11 years (OR=2.07) in this sample are twice as likely to have ADHD behavioral symptoms in comparison to children in the age group of 5 and 6 years. This relationship was not found in children belonging to the 7or 9 years old age group.

When examining school factors, we observed that children attending schools with a low SES (OR=2.1) are twice as likely to develop ADHD behavior as compared to those in middle SES schools. Similarly, children attending bilingual schools (English and Arabic; OR=2.2) were also twice as likely to have ADHD behavior when compared to children attending tri-lingual schools. Furthermore, we also noted that children that use only one language at school, either English (OR=5.5) or Arabic (OR=17.3), had a much higher chance of displaying ADHD behavior. In addition, children attending special classes (OR=4.4) are 4 times more likely to have ADHD behavior than children attending normal classes.

Finally, the effect of other school characteristics such as school religion or school type has been considered for all the characteristics in this analysis. These variables did not reveal any significant relationship on the prevalence of symptoms of ADHD behavior and to other factors in the model when other variables were considered.

Chapter 5

Qualitative Results

In order to better interpret the quantitative results describing prevalence and correlates of ADHD, this study also attempted to elicit some information about the explanatory models of professionals and parents regarding both general learning and behavioral difficulties, as well as ADHD, in children. An open-ended questionnaire based on the concept of the Patients Explanatory Models of Kleinman was used (Kleinman, 1988). All responses were analyzed based on Corin's (1992), model of sign (symptom), meaning and action (treatment). The interviewers included a total of 21 key informants representing different social positions (parents, professionals, community leaders). The goal of the interviews was to explore the local health beliefs that would help explain perceptions around general learning and behavioral problems and more specifically around ADHD. The content analysis focused on the identification of common themes in the description of problems, the meaning they were given and the proposed help seeking paths.

In this section, Lebanese explanatory models around learning and behavioral difficulties will be described for each type of informant (community, teachers, medical professionals). Next, the representations around the ADHD diagnosis and treatment will be

presented and the different perceptions of the key informants pertaining to the vignettes will be described.

5.1 Lebanese Explanatory Models Regarding General Learning and Behavioral Difficulties in Children

Explanatory models were elicited in 3 steps:

- Perception of Children with Learning and Behavioral Difficulties
- Meaning Attributed to Learning and Behavioral Difficulties
- Appropriate Action and Treatment Required in Dealing with Learning and Behavioral Difficulties in Children

5.1.1 Perception of Children with Learning and Behavioral Difficulties

Community Informants (total of seven parents and religious people)

In this group, which included, parents, nuns and religious Muslim parents there was a high level of agreement among community informants. Most parents and religious people (nuns and practicing Muslims) did not regard general behavioral or learning difficulties in children to be a serious problem. Religious people felt that such difficulties are the result of our modern society where parents tend to spoil children to compensate for the limited amount of time spent together as a family. Many parents did not have a label for such children but used common words such as 'naughty', 'stubborn', 'trouble-

maker' amongst others. A common perception was that not all children are born alike and some children are more difficult than others. However, a child was only considered as having a serious problem in situations of extreme behavioral difficulties. In such cases parents felt that they cannot control the child which they described as being 'evil' or 'possessed by the devil'. The majority of key informants in this group agreed that males tend to be more 'trouble' than females and that society has a lot to do with it because in Lebanon, boys are disciplined less than girls.

Teachers and School Professionals (total of 7 teachers)

When teachers were asked about learning and behavioral difficulties, they expressed more concern around learning difficulties, which according to them have become extremely common in Lebanon. Many teachers described the problematic children as being lazy and not wanting to focus or succeed. They felt that such children are not motivated and there is a general attitude of disinterest in the youth. In terms of behavioral problems, the most common issue was that children were hyperactive or 'nervous' and they just cannot remain still. However, the latter was not considered as serious as having a learning difficulty that impedes the child academically. Most teachers felt that males were more likely to have behavioral difficulties while females according to them usually presented more with learning difficulties.

Clinical Professionals (total of seven professionals)

In general the professionals, unlike parents, agreed that behavioral and learning difficulties in children are problems that warrant attention. Once again the sex of the child was associated with the type of difficulty where boys were reported as having more behavioral problems while girls had more learning problems. Most professionals agreed that in Lebanon the number one complaint of teachers pertains to difficulties in the area of attention and concentration as well the area of memory. However, it was stated that in Lebanon the field of psychology and psychiatry is still considered to be a taboo and not widely accepted by parents and the community. Furthermore, professionals stated that the taboo relates to a common perception that learning and behavioral disabilities are a personal weakness that cannot be addressed. Evidently, the professionals feel there is a lack of awareness with regard to identifying such disabilities, and a lack of knowledge of modern science's ability to treat the disabilities and minimize their effect on the child. Most professionals felt that children with difficulties are victims of parents, teachers and the educational system in Lebanon that is not prepared to deal with such children.

5.1.2 Meaning Attributed to Learning and Behavioral Difficulties:

Community Informants (parents and religious people)

The group of parents provided various explanations about the meaning of behavioral and learning difficulties. In many cases there was a common perception of the difficulty being considered as one's fate suggesting that it is 'God's doing' and something one needs to accept. This was true for both most parents as well as religious people. In addition, behavioral difficulties in boys were regarded as being normal and that boys are 'just being boys' when they act in a certain way in terms of being active or aggressive. On the other hand, learning difficulties, which were regarded as being common in girls, were considered as being permanent due to being born with a 'slower brain'. When parents were asked about the underlying causes of these difficulties, in some cases, learning difficulties were regarded as being the fault of the school that is unable to deal with the child and give them what they require to succeed. Furthermore, parents also blamed modern society and the influence of the west for such difficulties. More specifically, they regarded modern mothers as focusing more on their careers outside the home; thus, spending less time with their children. Many parents felt that children with learning or behavioral difficulties may not have been breast-fed as infants. Some parents also thought that difficulties in females were likely to be due to a problem in the mother-daughter relationship. Overall, although there was a general

acceptance by parents of such difficulties in children, there was also a great deal of blame placed on the parents.

Teachers and School Professionals

When teachers were asked about the meaning of learning and behavioral difficulties in children and their underlying causes, they underlined the influence of SES on these problems. Most teachers felt that children from low SES had learning or behavioral problems due to poverty or hopelessness whereas children from higher SES were spoilt and that similarly resulted in behavioral or learning problems. Although some teachers felt that there was a constitutional or genetic factor causing these difficulties in children they also believed that the environment and family were underlying causes. In terms of behavioral difficulties, common explanations included that children are exposed to a great deal of violence in society and that there is a lack of love and care at home. On the other hand, learning difficulties were considered by most teachers to have emotional underlying causes resulting in poor academic performance.

Clinical Professionals (Psychologists and Psychiatrists)

Within the professionals, learning and behavioral difficulties in children were considered, to a great extent, to be biological. Many believed that the child was born with these difficulties and attributed it to

factors in the development of the child's brain. Other explanations included social factors, like the effect of the war on children and their parents. Furthermore, learning difficulties in children were considered to be the result of repeated failure at school resulting in a lack of motivation. Overall, interplay of familial, societal and constitutional factors were considered as causes of behavioral and learning problems in children.

5.1.3 Appropriate Action and Treatment Required in Dealing with Learning and Behavioral Difficulties in Children

Community Informants (parents and religious people)

As mentioned above, parents did not consider most behavioral and learning difficulties to be a serious problem in children. Consequently, in cases where the child was experiencing some difficulty, the preferred action or treatment was to consult other parents and adults in the community. More specifically, in cases of learning difficulties, parents suggested trying to motivate the child to perform in school. In addition, changes in parenting styles were recommended such as providing more discipline in the home environment. In situations of extreme behavioral difficulties, which were considered a problem, parents would initially consult religious figures and traditional healers to treat the child. If the latter did not work only then would therapy or consulting a professional be considered. According to the

nuns and religious Muslims, praying as well as meditation was recommended and it was believed that difficulties could be solved in an environment based on love and religion. In general, medication was frowned upon by parents; clinical professionals were considered to be unnecessary and merely a product of the western world.

Teachers and School Professionals

Teachers provided a number of solutions in order to deal with learning and behavioral difficulties in children. One common response was that teachers needed to motivate the child to perform better academically as well as allow opportunity for a great deal of repetition in the classroom. Furthermore, many teachers believed that the parents required training on how to deal with their children and work with them at home. In cases where the child was repeatedly failing, the teachers recommended a change in school. Punishment was also suggested by teachers in order to teach children discipline in the classroom. Finally, teachers considered sending the child to a specialist for therapy and medication but confirmed that parents are unlikely to accept such a recommendation

Clinical Professionals (Psychologists and Psychiatrists)

According to this group, treatment of children with learning and behavioral difficulties consisted of different options. The traditional form

of counseling and therapy was regarded as being beneficial to the child but not likely to be accepted by the parents. Another solution was to provide changes in the child's environment both at school and home. This included a change in schools, more discipline at home and parent training. Medication was also recommended for children with serious behavioral difficulties. Finally, a simple acknowledgment by the parents that the child has a problem in a certain area was considered by most professionals to be sufficient in many cases.

5.2 Specific Learning and Behavioral Problems Presented by Vignettes

A total of five vignettes were presented to the key informants, each depicting a child with a specific learning or behavioral difficulty (i.e., learning disability, ADHD-Inattentive, ADHD-Combined, CD and ODD). Key informants were asked what they thought was wrong with the child and if they considered it to be a problem. Two of the five vignettes were based on ADHD and questions trying to elicit the key informants opinions and experiences regarding ADHD were asked. Questions related to causes of ADHD, applied labels, perceived severity of the problem, concerns and treatment.

5.2.1 ADHD diagnosis and treatment

Community Informants (parents and religious people)

What did parents call ADHD-like behavior?

None of the parents in the sample referred to the child in the ADHD vignettes as having a condition using a medical label. For the ADHD-C the majority of parents considered the behavior to be normal and they were accepting of such behavior, especially in boys. Most of the parents used a behavior problem label but did not consider the behavior to be negative or bad. They described the child as being 'wirrish' in Arabic, which translates to 'hyperactive' or 'rough' in English. Another term used was 'dammo hammy' which translates to 'hot blooded' and is endorsed with a rather positive meaning of masculinity. For the ADHD-I vignette, the child was labeled as being 'lazy', 'spoilt', and having a 'slow brain'.

What did parents think caused the ADHD behavior?

Many parents in the sample were unsure of what caused the onset of ADHD symptoms as described in the vignettes. None of the parents provided specific medical reasons or genetic causes. In general, responses always contained a sense of fatalism where religion and supernatural forces were considered as being important. Parents believed that God determines and controls the outcome. For the ADHD-C, two of the mothers suggested that modern society is likely to

be a cause for such behavior; today's children are usually not breast-fed nor properly disciplined at home. For the ADHD-I, again a sense of fatalism emerged where most parents believed that the girl was born with a slower brain and is not smart (female depicted in the vignette). An interesting observation is that a more constitutional approach was used with females than with males when explaining underlying causes of ADHD.

How severe do parents think the ADHD behavior is and how should it be treated?

None of the parents expressed concern over the ADHD behavior or considered it to be a serious problem. For the ADHD-C, most parents felt that the child will improve with age and is likely to succeed both academically as well as socially. Most parents suggested more discipline and punishment at home would improve the child's behavior. For the ADHD-I, parents felt that academically, the child needs to be motivated and requires more stimulation both at home and at school to perform better.

Teachers and School Professionals

What did teachers call ADHD-like behavior?

Similar, to the parents, none of the teachers in the sample referred to the child in the ADHD vignettes as having a condition using

a medical label. For the ADHD-C, most teachers used a behavior problem label and described the child as being 'hyperactive', 'spoilt' and 'nervous'. For the ADHD-I vignette, the child was mostly labeled as being 'depressed', 'lazy' and 'immature'.

What did teachers think caused the ADHD behavior?

Many teachers in the sample were unsure of the origins of the ADHD symptoms as described in the vignettes. However, unlike parents, none of the teachers used a fatalistic approach where religion and supernatural forces are important. For the ADHD-C, some teachers attributed the behavior to genetic origins suggesting that the child was born with ADHD or inherited it from the parents. Other explanations included the lack of discipline at home and poor parenting. For the ADHD-I, most teachers believed that the child's inability to focus and pay attention is the result of an existing emotional problem in the child's family. Examples of such problems included divorce, parent neglect, lack of love and a problematic mother-daughter relationship (child in the ADHD-I vignette was a female).

How severe do teachers think the ADHD behavior is and how should it be treated?

The teachers in the sample were concerned about the ADHD behavior and considered it to be a problem at school. For the ADHD-C,

most teachers felt that the child will improve with the use of punishment and greater discipline. Various treatments were recommended including music therapy to calm the child down, counseling and medication. For the ADHD-I, teachers felt that academically this was a more serious issue. Most teachers did not predict a bright future for the child and felt that such children in Lebanon do not receive the treatment needed. In addition, such children are likely to experience repeated failure resulting in dropping out of school.

Clinical Professionals (Psychologists and Psychiatrists)

What did professionals call ADHD-like behavior?

All the professionals were aware of the ADHD label and agreed that the child in both vignettes meets the diagnosis. However, many were cautious in using the term and preferred to deal with the symptoms rather than the syndrome. Most professionals felt that in many cases ADHD was loosely used in Lebanon for children with other primary difficulties mainly learning and emotional problems.

What did professionals think caused the ADHD behavior?

Professionals were likely to provide genetic explanations for the etiology of ADHD. Many believed that to a large extent the child was born with ADHD and is likely to have inherited it from their parents or other family members. Other explanations provided were related to

the child's environment such as an inappropriate school setting for the child, inexperienced teacher, parental stress and long-term effect of the war on children and their parents. Professionals felt that all these factors may result in symptoms consistent with the ADHD diagnosis.

How severe do professionals think the ADHD behavior is and how should it be treated?

Professionals agreed that ADHD is a serious problem that warrants attention. Unlike professionals in North America, some felt that it is not a lifetime disorder but that the child would eventually outgrow it. In terms of treatment professionals varied depending on their background and training. All professionals trained in North America believed that medication was necessary to deal with the behavior; however, they agreed that this was not the treatment of choice in the Lebanese culture. Professionals trained in Lebanon or Europe were less likely to recommend medication but tended to have a preference for behavior modification and child therapy. For the ADHD-C, most professionals recommended individual therapy to deal with the problem. On the other hand, for ADHD-I, both a change of schools that meets the child's academic needs as well as providing the child with a private tutor were encouraged. Finally, medication was also recommended for this ADHD subtype.

5.2.2 Learning Disability (LD), Conduct Disorder (CD) and Oppositional Defiant Disorder (ODD)

In addition to the ADHD vignettes, 3 other vignettes were presented to the key informants.

Community Informants (parents and religious people)

None of the parents in the sample used a specific medical label to describe any of the behaviors. Among the 3 vignettes the only one that was considered to be a serious problem and an area of great concern was CD. In this case, most parents described the child as being possibly sick; they believed that the child was inherently evil and was possessed by the devil. Other explanations provided for such behavior was the possibility of abuse in the family. In terms of treatment, parents considered seeking help from traditional healers in order to get rid of the evil spirit possessing the child. If the latter proved to be insufficient then parents agreed that the child required help from a professional in the form of therapy.

Teachers and School Professionals

Similar to parents, teachers did not use a medical label for any of the behaviors described by the vignettes. However, although most of the teachers regarded all three vignettes to be somewhat problematic, the LD vignette raised the most concern and was considered to be a

serious problem. A combination of both genetic factors as well as an underlying emotional problem was believed to be the cause of LD in children.

Clinical Professionals (Psychologists and Psychiatrists)

Professionals considered all three vignettes as being problems that warrant attention. Most of the professionals labeled each child in the vignette using the precise DSM terminology. Explanations for the etiology of these problems included both genetic as well as environmental factors. The child was not regarded as being inherently bad as believed by the parents. Proposed treatments included remedial academic help for the child with LD and both individual as well as family therapy for CD and ODD.

5.3 Conclusion

In summary, based on the information collected, most parents regard learning and behavioral problems (including ADHD) as not being problematic. They feel that the children would eventually outgrow these problems and such problems are common in the earlier years. There also seems to be a fatalistic approach that behavioral and learning problems are "the will of God and nothing can be done about it". Teachers see the problems in a more serious light, particularly when it comes to learning problems. They feel that both greater discipline at

home and at school as well as more specialized school services would address the difficulties. Finally, the clinical professionals see these problems as being serious issues that need to be addressed. They believe the problems are caused by genetic and environmental factors and feel medication, parent training and psychotherapy for the child are all needed to deal with these difficulties. However, professionals also recognize that these measures may not be acceptable to parents, and that the education of parents is necessary before any type of professional consultation will occur and treatment will be accepted.

Chapter 6

Discussion

The purpose of this research was to examine the prevalence of ADHD symptoms in a developing, Middle Eastern country like Lebanon. Lebanon provides an interesting base to sample a population, due to its high social, political and religious heterogeneity: urban and rural, conservative and liberal, as well as Christian and Muslim. No previous study has looked at the prevalence of ADHD symptoms in Lebanese children nor provided published data on this disorder from this country. Thus, the present study was largely exploratory in nature. In spite of this it provides the first epidemiological data on ADHD symptoms in Lebanese children and is the first to use a combination of qualitative and quantitative methods to explore the influence of culture on the identification and understanding of ADHD symptoms.

In this section, the obtained results and their implications will be discussed. In addition, the extent to which results from a developing country are similar to, or different from, what is already known about ADHD in developed countries will become apparent. Furthermore, the prevalence of ADHD symptoms in the Lebanese population, as well as the influence of both individual characteristics and culture on ADHD

symptoms will be discussed. Finally, concluding comments, limitations of this study and recommendations for future research will be made.

It is important to keep in mind that the results of this study pertain to ADHD symptoms and not the ADHD syndrome. This is due to the fact that, the diagnosis of ADHD based on the DSM-IV requires the fulfillment of other criteria besides the presence of symptoms. These include: symptoms present before the age of 7 years; symptoms present in two or more settings; significant impairment in functioning; and the ruling out of other disorders. The present set of data is limited to teacher ratings of symptoms of ADHD; thus, we can only talk about estimated prevalence of ADHD symptoms and not the actual ADHD syndrome. In the present research, the analysis of the data focused on the results from the SNAP-IV. This is a checklist directly based on the DSM-IV and helped determine the symptomatic dimensions conforming to the ADHD syndrome.

Some of the questions intrinsic to the design of this study included the following: (a) Does ADHD exist in a developing society such as Lebanon? (b) How is ADHD perceived, labeled, treated and dealt with by parents, teachers and professionals? (c) More importantly, do children display characteristics in the same way North American children manifest the disorder or are there certain features that vary with culture? These questions were addressed both by the qualitative as well as the quantitative data collected in this study.

6.1 ADHD in Lebanon

6.1.1 Overall Prevalence of ADHD symptoms in Lebanese Children

In this study the overall prevalence of ADHD symptoms obtained on the SNAP-IV was 22.3%, which is somewhat similar to that obtained in other studies. For example, in a study using elementary grade students from schools in Porto Alegre in Brazil, the prevalence of ADHD using teacher reported symptoms was 18% (Guardiola, Fuchs, & Rotta, 2000). Similarly, studies in Germany (Baumgaertel et al., 1995) and in the United States (Carlson, Tamm, & Gaub, 1997), reported prevalence rates of ADHD symptoms to be 17.8% and 18.9% respectively. Although the prevalence of symptoms in Lebanese children seems to be slightly higher at 22.3%, it is still comparable to the other studies.

It has been reported that prevalence rates in epidemiological studies based on the general population are always higher than the reported DSM-IV prevalence rate (Kurtzke, 1992; Pineda, D. et al., 1999). Furthermore, research has shown that, when only rating scales are used and teachers are the only informants, the overall prevalence rate of ADHD symptoms in children is also much higher (Barkley, 1981,1990; Shekim, W. et al., 1985). However, as more stringent criteria are used, including the age of onset and impairment in functioning, the prevalence rate decreases significantly (Scahill & Schwab-Stone, 2002). For example in studies using strict DSM-IV criteria, the prevalence of ADHD in Porto Alegre in Brazil (Rohde et al.,

1999) and in Australia (Graetz et al., 2001), was found to be 5.8% and 6.8% respectively. These prevalence rates are closer to the frequently cited prevalence of 3-5% by the DSM-IV. Overall, it can be seen that the prevalence of ADHD or ADHD symptoms seems to be similar in developing and developed countries when the same methodology is employed.

In terms of the different ADHD subtypes, it was found that symptoms consistent with the ADHD-I subtype were the most frequent whereas symptoms associated with the ADHD-C subtype were the least frequent in terms of overall prevalence. This result is consistent with other studies using DSM-IV criteria and teacher rating scales where ADHD-I was found to be the most common subtype in children (Baumagaertel et al., 1995; Gaub & Carlson, 1997; Nolan, Gadow, & Sprafkin, 2001; Wolraich, Hannah, Baumgaertel, & Feurer, 1998). In general, it has been found that in epidemiological studies done in the community, ADHD-I is the most prevalent among the three subtypes while in most clinic-based samples the prevalence of ADHD-C is the highest (Carlson, Shin & Booth, 1999; Graetz et al., 2001).

6.1.2 Child Characteristics and Prevalence of ADHD symptoms on the SNAP-IV

Gender

In this study, the effect of gender on the prevalence of ADHD was seen on all levels. Overall, there were a greater number of males than females who were regarded as having ADHD symptoms. Furthermore, teachers tended to rate males higher in terms of Inattention symptoms as well as the Hyperactivity/Impulsivity symptoms. However, for both males and females, the Inattentive symptoms were the most common and the Combined symptoms were the least frequent in terms of prevalence.

A male to female ratio of 4:1 is usually thought to be the case for ADHD (APA, 1994). In this study, 310 males and 77 females scored above the cut-off for ADHD symptoms, which gives us a ratio of 4:1. The latter is consistent with the literature and suggests that the gender ratio of ADHD in Lebanon is similar to that in North America. This indicates that cross-culturally there are no differences in the expression of such symptoms among the sexes. Rating scales have consistently shown higher mean ratings of symptoms of inattention and hyperactivity for boys than for girls and this appears to be cross-cultural similar even in developing societies (Arnold, 1996).

Regardless of culture, it is evident that males tend to show more problem behaviors than females. However, it has been suggested that ADHD is under-diagnosed in girls and overestimated in boys (McGee & Feehan, 1991; Pineda et al., 1999; Silverthorn, Frick, Kuper, & Ott, 1996). If this is the case, then the ratio of 4:1 often cited in the literature may be an overestimate of the true gender difference in ADHD prevalence rates.

Age

In relation to the age factor, there was a clear relationship between age and ADHD symptoms. In general, the overall prevalence of ADHD symptoms was found to increase with the age of children, with the exception of children in the 9 years old age group. Children in the age range of 5 and 6 years had the lowest prevalence whereas those aged 10 and 11 years old had the highest. One explanation could be that, young children in Lebanon are expected to be inattentive and hyperactive and so such behaviors are not considered as being 'abnormal'; thus, not rated by teachers. On the other hand, as children get older, teacher's expectations change and students are expected to behave in a certain manner. As a result, similar symptoms are less tolerated and reported more frequently by the teachers.

More specifically in the results, there was a significant relationship between the increase of the prevalence of Inattention

symptoms with the age of children. As age increased, there was an increasing proportion of children with inattentive behavior, with the exception of 9 year olds. However, it is interesting that in terms of the Hyperactivity/Impulsivity symptoms there was no significant relationship with age on this dimension. Although children were rated as being more hyperactive and impulsive, as they got older, the change in terms of prevalence was not significant. The latter could be explained by the fact that hyperactive behavior is common in children of all ages in Lebanon and as a result a significant increase in symptoms is not reported.

The above finding was further supported by the qualitative results and information obtained from key informants. For both teachers and parents when vignettes describing ADHD behavior were shown to try and elicit the local views, it was evident that hyperactivity was not labeled as being a problem but rather something common. There was a difference in how the behavior was labeled for the vignette describing ADHD-I and the one consistent with ADHD-HI. In terms of inattention, it was regarded as being a larger concern and the child was labeled as being 'lazy', 'slow', 'disinterested', 'anxious' and 'having a mind not made for school'. However, when the vignette describing ADHD-HI was presented both parents and teachers described the child as being 'active', 'smart', 'spoilt', 'hot blooded', 'boils with energy all the time' and 'naughty'. It is important to note that these traits with the

exception of 'naughty' in the local language are perceived as positive personality attributes. These results suggest that hyperactivity as a behavior is more accepted as being normal, whereas inattention was associated with more negative adjectives.

The results of this study, in terms of the age factor, are both consistent and inconsistent with other data in the literature. For example, in India it was found that ADHD prevalence rates increased with age from 5.2% in 3-4 years to 29.2% at ages 11-12 years (Bhatia, Nigam, Bohra & Malik, 1991). Similarly, in Germany, Baumgaertel et al. (1995), found an increase in prevalence rates with age, 9.6% at age of 5 years to 17.8% at age of 17 years. Furthermore, a recent study in a Swiss sample of school children also found that ADHD symptoms tend to increase with age (Pierrehumbert et al., 2006). These results are all inconsistent with the North American literature in which it is well documented that, overall ADHD symptoms particularly hyperactive-impulsive symptoms tend to decrease with age (Breton, Bergeron, & Valla, 1999; Cohen,P., Cohen, J., Kasen, et al., 1993; Scahill & Schwab-Stone, 2002).

One explanation for the above-mentioned results is that, in developing countries like India and Lebanon, as children grow and as the demands on them increase, the Inattentive behavior, if not addressed, results in greater impairment in functioning. It is very possible that the older children whom the teachers are rating as having

higher ADHD symptoms are also experiencing lower levels of school achievement. The teachers' ratings in this study may be in response to the academic difficulties the child is experiencing and this may explain the higher prevalence of ADHD symptoms pertaining to the Inattentive subtype. This was actually true of the children in the Swiss sample where the teachers reported greater ADHD symptoms with increasing age associated with lower levels of school achievement (Pierrehumbert et al., 2006).

Children in western countries are more likely to be diagnosed and treated early if ADHD is suspected; however, in developing countries like India and Lebanon, symptoms consistent with ADHD are less likely to be addressed promptly. Consequently, as children grow demands and expectations increase and the symptoms consistent with ADHD become more debilitating on their functioning. In Lebanon, it has been reported by the UN Children's Fund (UNICEF) and Lebanon's Central Administration of Statistics that, 45 percent of children drop out of schools. This may be due to various reasons among which poor academic functioning is one of them. It is very important to distinguish between primary ADHD symptoms that are increasing with age or other co-morbid difficulties such as learning difficulties that are resulting in symptoms consistent with ADHD.

In summary, there are three possible explanations for the increased rating of ADHD symptoms with age. First, symptoms

consistent with ADHD in younger and older children may actually be the same but are only regarded as being abnormal in older but not in younger children. Second, as children grow, they develop co-morbid conditions (e.g., anxiety, depression) that may result in greater impairment. Finally, as the demands in their environment increase, older children may begin to show greater impairment in functioning as a result of their ADHD symptoms (e.g., school failure).

6.2 Cross Cultural Comparisons

6.2.1 Factor Structure of ADHD

Factor analysis performed on the Lebanese data, identified and confirmed the presence of a bidimensional construct as suggested by the DSM-IV. There was a clear Inattention factor and a clear Hyperactivity/Impulsivity factor and this is consistent with several studies in the United States (Burns et al., 2001; DuPaul et al., 1997; Hartman et al., 2001; Healy et al., 1993; Lahey & Carlson, 1991,Wolraich et al, 2003). However, the bidimensional construct has also been supported in countries outside North America such as Brazil (Rohde et al., 2001) Taiwan (Yang, Schaller & Parker, 2000) and Germany (Baumgaertel, 1995). Based on the results of this study as well as others, there appears to be cross-cultural congruency of behaviors associated with ADHD. To the best of our knowledge, this is

the first study to evaluate the DSM-IV ADHD construct from an Arab culture in the Middle East.

In this study the role of culture was examined on two levels. The first level involved comparing the Lebanese data with that a US based sample. The second level looked at environmental factors such as SES and religion and how they interact with ADHD symptoms.

6.2.2 A comparison of US data and Lebanese data using the TRF

A comparison of the Lebanese data, obtained in this study, was made with that of an American sample provided by Achenbach (1991). It was found that, the Lebanese children, (matched for sex and age) have on average lower scores than those of the American children for both sexes. Overall, the Lebanese children are rated by the teachers as having average levels of problem behavior are lower than American children.

American males have higher Internalizing scaled scores than Lebanese in most age categories, with the exception of the 8 years old group. On the other hand, Lebanese girls have higher Internalizing scores than the American in 3 of the 5 age groups. As for the Externalizing scaled score, Lebanese children have lower scores than American children in all age groups, regardless of sex.

It was mentioned earlier that, males show more externalizing problems while females score higher on the Internalizing problems and

this is greatly supported and accepted in the literature (Crijnen, Achenbach & Verhulst, 1997). However, externalizing problems decline with age and internalizing increase with age. Furthermore, variations do exist in the extent of externalizing versus internalizing problems across cultures. For example, in countries like Puerto Rico and Jamaica, internalizing behavior is higher than externalizing and the reverse is true for American, German and Swedish individual. Differing norms and values indicates a cultural relativity of child behavior problems (Javo, Heyerdahl & Ronning, 2000).

The fact that, Lebanese girls had higher, although not significant, Internalizing scores than Americans and that Lebanese children have significantly lower Externalizing scores than American children in all age groups, regardless of sex, may indeed be a cultural difference. This may suggest a distinction in child-rearing strategies between the two countries. In Lebanese culture dependency, obedience and respect for adults is expected from children. Unlike children in North America that are encouraged to be independent and outspoken at an early age, these characteristics are not encouraged in the Arab culture (Wilson, 1996). Furthermore, females are socialized as being more passive and submissive in Lebanese society. Socialization may be playing a big role and traditional gender behavior is strongly promoted in this society. These child-rearing differences may be the reason behind the true difference in scores and may partly explain the lower

externalizing scores in the Lebanese sample compared to the American sample.

However, we should be very cautious with interpreting these findings. First, statistical differences may not always reflect clinically meaningful differences. Second, the two data sets are not comparable by design. In the American data set, teachers' ratings are independent where one teacher rated only one child in the data set. In the Lebanese data, a single teacher rated all the students in their classroom. Research by Achenbach (1991), suggests that such non-independence of teacher ratings significantly "suppresses" the average levels of reported behavior problems. Teachers tend to report higher levels of problem behavior for the first child they rate than for other children rated thereafter, as they quickly get burdened by having to fill out the same questionnaire more than once. This may have been the case in the Lebanese data and having one teacher complete rating scales on several students may have resulted in lower scores.

Differences in this study were obtained between the data from the SNAP-IV instrument and that based on the TRF. The fact that with the TRF, Lebanese scored lower overall than the Americans while with the SNAP, prevalence was higher or similar to North American rates is interesting. This disparity may indicate a difference in the type of information gathered by the different instruments. Although there was a high correlation in our study between the instruments, the difference

may be due to variations in the sample between this study and that by Achenbach (1991). As mentioned earlier, in the American sample one teacher rated only one child; however, in the present data the same teacher rated several students and this may have affected the results.

However, it is noteworthy to mention at this point, the difference between the dimensional and categorical approach in diagnosis. Checklists are considered as being dimensional as they identify children with the highest number of symptoms. On the other hand, categorical approaches such as the DSM-IV may be more useful in epidemiological studies in order to use independent diagnostic criteria to define ADHD. When using rating scales with a cut-off point, the validity is highly questioned if used in different cultures. This is due to the fact that a different cut off point may be more appropriate in different countries and by imposing a standard measure the risk of misdiagnosis is increased. Overall, the difference between the TRF scores for the Lebanese sample and that provided by Achenbach must be interpreted carefully due to difference in the sample and methodology.

6.3 Environmental factors and the prevalence of ADHD symptoms

6.3.1 SES

Environmental factors such as SES contributed to the prevalence of ADHD symptoms in the sample. In Lebanon, children attending schools in lower socio-economic areas were found to have on

average a higher number of ADHD symptoms than the children that attend schools in higher SES areas. This fact was true for both the Inattention as well as the Hyperactivity/Impulsivity symptoms.

The effect of SES on mental health has been seen in several studies (e.g., Esser, Schmidt, & Woerner, 1990; Graetz et al., 2001; Sugawara et al., 1999). It seems that the living conditions associated with low SES affects children in a many ways. Research has shown that the effect of family adversity on children's mental well-being can start as early as pregnancy. Smoking and poor nutrition have an adverse affect on the developing fetus. Furthermore, children from low SES environments tend to receive less stimulation at home, which can affect the development of their CNS. Finally, lower family income and the level of parental education have been found to be risk factors on the development of child psychopathology (Sugawara et al., 1999). Parents who lack proper education and work skills also have poor skills in child rearing and are less equipped to be able to deal with mental health problems (Hackett & Hackett, 1999). In general, the influence of SES on mental health has important implications for any developing country and for Lebanon, specifically, where more than a million people are living below the poverty line (Omar, 2004).

6.3.2 Religion

No other study has examined the effect of religion on prevalence rates of ADHD. The reason for this is that religion was never considered to be a major contributing factor when examining prevalence rates. However, in Lebanon religion plays an integral factor and most individuals strongly identify themselves based on their religious affiliation. The role of religion is so prominent that most Lebanese family names can reveal the person's religion. Furthermore, in Lebanon, religion is indicated on an individual's identity card and citizenship card. This is not common practice in North America or in most countries and asking about an individual's religion in many cases can be considered discriminatory.

In this study, religion was found to be associated with the prevalence rate of ADHD symptoms. The overall prevalence of ADHD symptoms was higher in the predominantly Christian or Muslim schools than in the mixed schools (i.e., both Christian and Muslim students). There are different hypotheses that may explain this finding. One explanation is that religious schools are more demanding in terms of their discipline and the teachers are less lenient in their ratings of behavior. As a result, behavior consistent with ADHD may be less tolerated and the threshold of teachers for such symptoms is relatively lower. The mixed schools had the lowest prevalence of ADHD and

these schools may not be as strict or as demanding in their discipline as the religious schools.

Another hypothesis to explain the reason why ADHD was higher in the religious schools is that, children that attend religious schools are usually sent there for a reason. It is common in Lebanon that parents are more likely to select such schools if they are concerned about their child's behavior or if they favor greater discipline. This became apparent during discussions with key informants. A parent that is having behavioral difficulties with their child is likely to send them to a religious school for more structure and discipline. Consequently, such schools may as a result have more students with behavioral difficulties than the other schools.

Both hypotheses were supported by the qualitative data collected. ADHD was labeled and considered by religious people in a unique way. When nuns and religious Muslim educators were asked about ADHD symptoms and how they viewed them, their responses often implied that for such children there was a lack of discipline at home. In addition, they felt that that in modern society both parents work outside the home and tend to spoil the child by providing them with too many distractions and not being strict enough at home. Nuns tended to be less tolerant of such behavior and would implement strict measures at school to deal with this behavior. They view the child as being a "mold that you could shape any way you want" and with a bit of

discipline and religion all the problems will disappear. Furthermore, in an interview with a nun, it was mentioned that parents were often surprised when they were told that their child has a behavioral problem and is problematic at school. The latter suggests that the tolerance for inappropriate behavior is much less in such settings and what is considered as being problematic varies in different settings. Finally, in interviews with mothers when asked what they would do if their child had a behavioral problem described as being ADHD, many responses had a similar theme: "I would send him to the nuns to be disciplined and they will take care of him" or "I would send him to a strict school".

The results obtained from the explanatory models of parents and religious people may help explain why overall prevalence of ADHD symptoms may be higher is religious schools. As a result, the role of religion in a country like Lebanon can be regarded as an important cultural factor, which can affect the reported ADHD symptoms.

6.3.3 Language of Instruction

The relationship between the languages used in schools and the prevalence of ADHD symptoms was also examined. An interesting finding was that in schools where Arabic was the sole language of instruction, the prevalence of ADHD symptoms was much higher for all types of symptoms (Inattention, Hyperactive/Impulsive) when compared to the lower rates of the trilingual schools. However, it is noteworthy to

mention that the schools, which taught primarily in Arabic are more the public schools and that this factor may have been the reason behind the higher prevalence rates. Furthermore, in Lebanon, there is a distinct difference between and public and non-public education and it can be safely generalized that the children attending the public schools have a lower socioeconomic status than children in the private sectors (Melzer, 2002).

6.4 Local Perceptions and Understanding of ADHD

ADHD symptoms were identified in Lebanon; however, whether or not a child with an emotional or behavioral problem will receive mental health intervention depends on a complex process. This process involves models that consist of health beliefs, help seeking behavior and access to care (Bussing et al., 1998). Parents' beliefs about illness affect the medical care obtained for children and this was found to be very true in Lebanon. The importance of qualitative research in interpreting many of the quantitative findings is evident in this study.

Based on our results, the explanatory models of ADHD in Lebanese parents differ from American parents in how they refer to the child's condition. Lebanese parents are less likely to use specific medical labels and instead tend to use more of a behavior problem label or imply that the child is "bad". Parents are also less likely to see

the problem as being permanent but rather perceive it as a temporary stage that the child will outgrow. This may be due to a lack of knowledge about ADHD. Parental responses as to why a child's condition started included explanations such as they were born that way or no explanation at all. Even though ADHD symptoms in Lebanon are similar to elsewhere the perception and understanding of these is very different.

6.4.1 Religious beliefs

The view on mental illness in the Lebanese culture is tied to religious beliefs and values. Attitudes toward mental health are defined by a firm belief in fatalism, or the acceptance of the will of God. This is true for both Christians and Muslims. This attitude that most things in life are controlled by God and fate has been referred to as the "IBM" syndrome: Inshallah (God willing), Bokra (tomorrow), and Malesh (never mind) (Lamb, 1987; Wilson, 1996). Those words are very common in everyday usage and the attitude that things are not in our control and don't matter or that tomorrow will take care of matters and God will decide what happens is part of Lebanese and most Arab culture. This was also evident in many of the responses of the key informants in an attempt to explain the causes of the child's difficulties. The belief that it is God's doing or God's will was very common; thus, the motivation to seek help from others was not common and was

regarded as being unnecessary in a culture with a strong belief in fatalism.

6.4.2 Child rearing practices

Differences between cultures may also be due to child rearing practices. In Lebanon, children are more dependent on their parents for a longer time and the structure of the extended family provides more support to children. Although parent information was not available for this study, it would be interesting to compare such information with that of teachers. In the qualitative phase, information from parents indicated a higher tolerance of and a more protective approach toward children. Parents tended to tolerate more problematic behavior in children and believed that it will improve and change. In the Lebanese culture parenting styles tend to be more authoritarian and over controlling. The current view of behavior disorders is that they are linked with bad manners and poor abilities of parents to discipline and raise their children.

6.4.3 Family structure and stigma of mental problems

In eastern cultures the family, not the individual, is the unit of society. Collectivity is valued more than the individuality. Most decisions are made at a familial level based on what is good for all concerned. Individuals in such a culture believe they should take care

of themselves and not go outside the family to seek help. A great deal of shame is associated with the Lebanese culture and many other cultures in the Middle East. The need to seek help implies that others are going to find out that this family has a mental illness in the family and, therefore, they will be labeled and considered different than the other normal families without any mental illness. The fear of this stigma is what prevents many parents from seeking help for their children or accepting that there is a real problem that requires attention.

The fact that the structure of the extended family in Lebanon provides more support to children may make change possible with time and thus parents may not see a need for intervention. Although the influence of the extended family in different cultures has been regarded as being a protective factor, in many cases in families where there is polygamy there can be more psychiatric problems and this is common in developing countries. A study by Bener, Al Qahtani & Abdelaal (2006) in Qatar found a significant correlation between a higher score of ADHD symptoms and the presence of multiple marriages.

6.5 Culture and Child Psychopathology: specificities of Lebanese Children's Symptoms Profile

Problem behaviors in young children have been studied across cultures. Even though the prevalence rates of problem behaviors varied, there appear to be similarities across cultures in terms of age

and gender differences. The latter was also evident in this study to a certain extent. Regardless of culture, males tend to show more problem behaviors than females and in general it has been found that younger children have more problems than older ones. However, the latter age generalization was not supported in our study on Lebanese children.

Furthermore, males have more externalizing problems while females score higher on the Internalizing dimension. This was evident in 12 cultures, which rated children between the ages of 6 and 11 years on the Child Behavior Checklist (Crijnen, Achenbach & Verhulst, 1997). It was found that externalizing problems decline with age and internalizing increase with age. However, there were cross-cultural variations in the extent of externalizing versus internalizing problems across cultures. This was also seen in the present study.

Difference in prevalence rates does not only apply to ADHD but to psychiatric disorders in general. The prevalence rate of any psychiatric disorder has been reported to range between 12.4% and 50.6% (Bird, 1996; Shaffer et al., 1996; Sugawara et al., 1999). Again this wide range is due to the wide variety of diagnoses and methods used in the studies. The importance of considering the DSM-IV criteria of impairment in diagnosis has been emphasized in the literature. A study by Canino et al. (2004) found that when the impairment criteria was taken into consideration, not only did it significantly reduce the

prevalence rates of disorders but it was also the best predictor of service use in Peurto Rican parents.

Although DSM-IV definitions are operationally defined there is a great deal of subjectivity in the process of evaluating ADHD in culturally different populations. In the DSM-IV, the definition of impairment is very vague (Rowland et al., 2002); thus, whether symptoms are considered to be serious enough to result in impairment is subjective and may vary as a function of culture. For example, Latin cultures tend to have children that are more expressive and talkative than children from Anglo-Saxon cultures (Rohde, 2002). To be able to decide whether or not symptoms are severe enough to be considered problematic one needs to be well aware of the culture and familiar with its standards and expectations.

There are significant cross-cultural differences in the perception of disruptive childhood behaviors. In ADHD, the issue of perceptual differences in symptom interpretation is essential. Differences in the way cultures perceive symptoms makes it hard to compare ADHD in different countries especially when rating scales are being used as the main diagnostic tool. For example, the prevalence rates of two different countries may be the same; however, if children from one country were to be rated by the other country would they still be regarded hyperactive? There are different cultural standards for what is considered as being acceptable in terms of childhood behaviors. This

was shown in a study by Mann et al (1992), where raters from different countries differed in their ratings of vignettes. Chinese and Indonesian professionals gave higher ratings than Japanese and American professionals for hyperactive behaviors.

Human behavior develops within a society and culture. By considering the society in which individuals live and the values it fosters, human behavior can be better understood. Identical behavior can be viewed differently in different societies; thus, judging whether a behavior poses a problem or can be considered pathological will greatly depend on the culture in which that behavior develops (Weisz et al., 1988).

Information pertaining to prevalence rates is important to help improve mental health services and provide prevention and treatment services for children. However, in order to avoid false-positive or false-negative cases, it is important to keep in mind that many children in developing countries like Lebanon are exposed to poor educational systems and may be living in deprived living conditions where even food is insufficient. As a result of such poor environments, symptoms consistent with ADHD may be high but may not in fact be ADHD. Research in Lebanon (Melzer, 2002) has shown that, children of a low SES weigh less and their rate of growth is behind those from a higher SES. It is well known that malnourished children are at risk from attention deficits (Rohde, 2002) and the fact that Lebanese children of a

low SES were rated as having a higher prevalence of ADHD symptoms supports this fact. However, it is also important to remember that many other conditions exist with low SES and these need to be taken into consideration in a country like Lebanon.

In conclusion, in order to ensure that a specific diagnosis is valid it is crucial to understand that diagnosis can differ cross culturally at many levels. When a clinician and a patient do not come from the same ethnic or cultural background it is possible to ignore symptoms that the patient sees important, or misunderstand the patient's fears, concerns and needs. Furthermore, the clinician and patient may also have different assumptions about what a clinician is supposed to do, how a patient should act, what causes the illness, and what treatments are available. It is inevitable that doctors see problems differently from patients and trying to understand one another's explanatory model and knowledge about the patient's culture is very useful. There has been the debate on imposing western diagnostic systems in different cultures. However, what appears to be more important is that the validity of a diagnostic system depends on whether it really helps the patient and not if it is universally applicable or culture specific. Cross-cultural psychopathology is still at a descriptive stage and all explanations of observed differences are still speculative (Magnusson, et al., 1999; Weisz & Eastman, 1995).

6.6 Limitations of the Study

Although this study is the first to use both qualitative and quantitative methods to look at the prevalence rate of ADHD symptoms in Lebanese children there are a few limitations. One major limitation of the study is that only one DSM-IV criteria of ADHD was analyzed. We looked at ADHD symptoms and not the syndrome. Behavioral problems in Lebanese children were identified by means of the TRF or SNAP-IV and not by a clinical diagnosis. These rating scales used are only screening instruments despite their validity and reliability. This renders the results much higher than the reported ADHD. If additional ADHD criteria were applied the prevalence would most probably decrease. A future study looking at the prevalence of ADHD as a syndrome in Lebanon is needed; however, including the criteria on impairment as well as ruling out any other co-morbid conditions that were not accounted for in this study is necessary.

Although the sample of this study was drawn from the general population it was limited to 2 of the 6 'mohafazats' in Lebanon. Whether the results could be extended to the whole Lebanese population needs to be further examined. It would be interesting to be able to collect data on children from all the 6 mohafazats in Lebanon and examine differences between them. Although Beirut is considered to be representative of the Lebanese population, the other mohafazats

of Lebanon are likely to have more distinct differences between them due to them being more rural and conservative. A study on all the 6 mohafazats in Lebanon will be interesting to further look at the effects of rural and urban life on mental illness.

An important limitation of this study is that, information on the child's behavior was collected from one source only. Different informants may view children differently; thus, getting information from only one source is insufficient. It would be interesting to compare parent information with that of teachers and examine the extent of agreement between the raters. In the qualitative phase, information from parents indicated a higher tolerance and a more protective approach towards children and whether that would lead to lower prevalence rates is interesting.

It is also important to mention the limited validity of the SES measurement used in this study. As mentioned in the method section, there was no formal measure of SES used and specific data on child and family information was not collected. Instead, school data was used as a proxy and SES was determined based on official city criteria.

Finally, in this study, the class teacher rated multiple students in their class and the burden of rating many children might lead to a bias of problem scores, which in turn may affect the results. A study in which each teacher rates only one or two students needs to be done in the future.

6.7 Conclusions

6.7.1 Research Implications

There is a great deal of research on ADHD; however, in order to reach valid conclusions, it is fruitless to compare studies with different age groups, using varying methodologies and diagnostic tools. The great inconsistency in the literature on prevalence rates is due the comparison among studies that are not equivalent. A review of the literature yielded a few studies using the same methodology of the present research. Their results were consistent in that the estimated prevalence rate among US elementary school children ranges from 16% to 18% with ADHD-I being the most common subtype (Gaub & Carlson, 1997; Wolraich et al., 1996, 1998). When these studies were compared with the Lebanese data similar results were obtained. This is a more valid comparison since the studies share the same methodological design. Based on that, it may be valid to suggest that the prevalence of ADHD symptoms exist in the Lebanese population to a similar extent using this methodology.

It is evident from the literature that, there remains a great deal of controversy regarding the diagnosis and treatment of ADHD both within the United States as well as in other countries. It has been suggested that ADHD may be a value laden social label rather than a true medical condition (Wolraich et al., 2003). A few researchers question whether

ADHD exists and consider it to be poorly defined and a 'catch-all' diagnosis (Rowland, Lesesne & Abramowitz, 2002; Weinberg & Brumback, 1992).

This position is somewhat extreme. However, one thing, which seems more plausible, is that in the present situation the diagnosis of ADHD consists of a heterogeneous population sharing the same cluster of symptoms (Denckla, 1992). The fact that symptoms consistent with ADHD are common in many other diagnoses renders them less unique to children with this disorder. As a result, the diagnosis of ADHD becomes a more complicated situation. It is possible that the children in the Lebanese sample may be showing symptoms consistent with ADHD but it is not pure ADHD, as other disorders have not been ruled out. The fact that, ADHD-I showed the highest prevalence rate and increased significantly with age suggests there may be other factors playing a role such as possible learning difficulties or environmental conditions resulting in such symptoms. This is an important finding and proper screening of children with learning or behavioral difficulties is needed at an early age to prevent problems from increasing at a later point.

The diagnosis of ADHD has been recognized in different countries. However, the validity of this disorder should be evaluated in different cultures. This becomes extremely important if one becomes cognizant of the fact that culture can alter the way behaviors are

manifested and perceived (Livingston, 1999; Reid, 1995; Rohde, 2002). It is very surprising that a limited number of studies used DSM-IV criteria to examine ADHD in cultures from developing countries. The latter, is extremely important even for countries like the United States where around a third of children in public schools are from culturally different backgrounds (Reid, 1995). Applying DSM-IV criteria of ADHD in a developing country may result in findings that are similar to, or totally different from, those found in developed countries.

Developing countries can be seen as sharing certain characteristics that differentiate them from developed countries. Overall, they are less industrialized; have limited resources for service development; populations are relatively young and mainly rural (Nikapota, 1999). Epidemiological data on the prevalence of childhood psychiatric disorders in developing countries is limited. The few controlled studies that have been done show that the rate of behavior problems in children is similar to that in developed countries (Fayyad, Jahshan, Karam, 2001). This present research is similar in that the prevalence rate of ADHD symptoms in Lebanon was found to be consistent with other developing and developed countries. Although child psychiatric symptomatology may be similar cross culturally, symptoms and behavior that lead to help seeking behavior may differ. The latter has very important implications for a country like Lebanon.

In general more studies combining qualitative and quantitative

methods are needed in cross-cultural psychiatry. Many studies have shown that mental illness exists internationally, but what is needed is a deeper understanding of how disease is understood by members of a certain culture. The latter can be facilitated if the researcher is from the actual culture they are studying and able to understand the local language and norms. In developing countries the goal of research is to both provide mental health services that are useful to that particular culture as well as build on up to date scientific knowledge. It is unbeneficial for research to propose interventions that would awake unrealistic expectations or generate family or social difficulties that will not benefit the patient.

6.7.2 Clinical Implications

Treatment characteristics: Using a family approach

In terms of interventions in Lebanon, treatments that involve the child only and not the whole family are unlikely to be successful. In fact western psychotherapy to be successful in the Middle East needs to be adapted in many ways taking into consideration local norms and values (Dwairy & Van Sickle, 1996). For example, increasing self-actualization and assertiveness are common goals in western psychotherapy; however, these values are in conflict with the values of a society that where the family is considered as the unit of society and dependence is greatly encouraged by family members. This is important to realize

when models of treatment imported from the west are being used in a different culture. In fact, in Arab culture the human interaction with the doctor is valued much more than the their actual ability or knowledge (Sartorius, Arboleda-Florez, & Ukashah, 2000). Success greatly depends on the extent to which the doctor respects the local culture norms and understands the family interaction. Specific explanatory models, such as believing that the child will outgrow the condition, may hinder access to care for affected children and this is true in the Lebanese culture. An attempt to directly address explanatory models of families can improve treatment.

Information about the condition

Based on all that has been mentioned, a first step in terms of intervention is that parents need to be provided with accurate information on ADHD. A basic understanding of the fact, that ADHD is a neurobiological disorder will remove all the blame from families. Individuals are not at fault for having the disorder, nor are their parents at fault because they are born with it. If left untreated in can affect overall functioning. Furthermore, children that have ADHD need to be reminded that they are not "bad", "stupid" or "slow" which is how parents described them. The need in Lebanon to increase awareness in the schools and community is recognized by the professionals in the field (Fayyad, Sadek & Cordahi, 2001).

Treatment Costs

It is important to mention that, access to services is limited in developing countries and the cost of treatment is usually an issue. Medical insurance and coverage is not common in such countries and the cost of treatment can place an additional burden on families that are already struggling to make end meets. The small budget available for health care in developing countries should be considered when recommendations for treatment are made. In terms of ADHD, although medication has been reported to be available in Lebanon, (Fayyad, Sadek & Cordahi, 2001) many are unable to afford it. In this case, alternative ways to treat ADHD need to be considered if families are to seek help.

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Tables 1 to 19

Table 1.

Number of children from each of the final 18 selected schools

Name of school	N	%
Total	1746	
Armenian (Dbayye)	178	10.2
Armenian Central High School (Ashrafieh)	104	6.0
Valley International School (Jourra)	44	2.5
Greater Beirut Evangelical School (Beirut)	92	5.3
Evangelical (Kfarchima)	66	3.8
Kobol Public School (Choueifat)	52	3.0
Ecole des Soeurs (Haddath)	39	2.2
Joint Christian Committee (Beirut)	34	1.9
Heritage School (Beirut)	37	2.1
Eastwood College (Mansoriyyi)	60	3.4
Eastwood College (Kfarchima)	128	7.3
Mansoriyyi Public School (Mansoriyyi)	27	1.5
Ahliah School (Beirut)	92	5.3
Hariri II (Beirut)	165	9.5
Hariri III (Beirut)	182	10.4
Makassed I (Beirut)	118	6.8
Makassed II (Beirut)	210	12.0
Makassed III (Beirut)	118	6.8

Table 2.

Characteristics of the sample

Characteristics	N	%
Total	1746	
Gender		
Male	963	55.3
Female	779	44.7
Age group		
5-6 years old	331	19.0
7 years old	384	22.0
8 years old	483	27.6
9 years old	368	21.1
10-11 years old	180	10.3
Grade		
Kindergarden	60	3.4
1	447	25.6
2	461	26.4
3	453	25.9
4	325	18.6
Language used at the school		
English	631	36.1
Arabic	100	5.7
English and Arabic	833	47.7
English, French and Arabic	182	10.4
Language questionnaires were completed		
English	1150	65.9
Arabic	536	30.7
French	60	3.4

Table 3.

Prevalence of ADHD symptoms in Lebanese children based on the [1]SNAP-IV

	N	%
Total	1746	
Inattention symptoms only (ADHD-I)		
Yes	189	11.4
No	1470	88.6
Hyperactivity/Impulsivity symptoms only (ADHD-HI)		
Yes	142	8.7
No	1489	91.3
Inattention and Hyperactivity/Impulsivity symptoms (ADHD-C)		
Yes	58	3.5
No	1623	96.5

[1] (SNAP-IV: Swanson, Nolan and Pelham. Swanson, J.M. (1992). School-based Assessments and Interventions for ADD students. K.C. Publishing. Irvine, California)

Table 4.

ADHD scores according to children characteristics based on the [1]SNAP-IV

Characteristics	Mean ADHD score (SD)	*p*
Gender		
Female (n=773)	7.63 (8.37)	<0.001
Male (n=958)	13.23 (11.78)	
Âge		
5-6 years old (n=329)	9.47 (9.23)	0.003
7 years old (n=381)	10.49 (10.14)	
8 years old (n=481)	11.30 (11.26)	
9 years old (n=364)	10.20 (11.27)	
10-11 years old (n=180)	13.18 (11.84)	
School SES		
Middle SES (n=951)	9.77 (9.62)	<0.001
Low SES (n=784)	11.91 (11.91)	
School type		
Private (n=1142)	10.53 (10.62)	0.530
Semi-private (n=480)	11.11 (11.45)	
Public (n=113)	11.27 (9.20)	
Religion		
Christian (n=415)	11.33 (11.02)	< 0.001
Muslim (n=606)	12.15 (11.99)	
Mixed (n=408)	8.80 (8.92)	
Language used in school		
English, French and Arabic (n=179)	8.45 (9.36)	<0.001
English and Arabic (n=831)	9.61 (9.98)	
Arabic (n=99)	17.47 (12.57)	
English (n=625)	11.83 (11.31)	

[1] (SNAP-IV: Swanson, Nolan and Pelham. Swanson, J.M. (1992). School-based Assessments and Interventions for ADD students. K.C. Publishing. Irvine, California).

Table 5.

[1]SNAP-IV scores according to age group

	Age (years)					
	5-6 (n=329) Mean (SD)	**7 (n=381) Mean (SD)**	**8 *(n=481)* Mean (SD)**	**9 (n=364) Mean (SD)**	**10-11 (n=180) Mean (SD)**	***p***
ADHD Total score	9.5 (9.2)	10.5 (10.1)	11.3 (11.3)	10.2 (11.3)	13.2 (11.8)	0.003
ADHD-I score	4.9 (5.4)	5.5 (6.3)	6.1 (6.6)	5.6 (6.4)	7.6 (6.7)	<0.0001
ADHD- HI score	4.6 (5.3)	4.9 (5.5)	5.3 (6.2)	4.6 (6.0)	5.6 (6.9)	0.23

[1] (SNAP-IV: Swanson, Nolan and Pelham. Swanson, J.M. (1992). School-based Assessments and Interventions for ADD students. K.C. Publishing. Irvine, California).

Table 6.

Prevalence of ADHD by gender and age group based on the [1]SNAP-IV

	Inattention			*Hyperactive/ Impulsive*			*Combined*		
	N	***%***	***p***	***N***	***%***	***p***	***N***	***%***	***p***
Gender			<0.001			<0.001			<0.001
Male	142	15.6		116	12.9		52	5.6	
Female	45	6.0		26	3.6		6	0.8	
Age group			0.002			NS[2]			NS[2]
5-6 years	18	5.7		19	6.0		5	1.5	
7 years	45	12.1		27	7.5		9	2.4	
8 years	63	13.9		45	10.0		20	4.4	
9 years	38	10.6		29	8.6		17	4.8	
10-11 years	25	15.8		22	15.5		7	4.1	

[1] (SNAP-IV: Swanson, Nolan and Pelham. Swanson, J.M. (1992). School-based Assessments and Interventions for ADD students. K.C. Publishing. Irvine, California).

[2] $p>0.05$

Table 7.

Total Problem Score based on the [1]TRF by country

Country	**Total Problem score Mean (SD)**
USA (N=613)	26.8 (27.3)
Lebanon (N=1479)	21.5 (21.1)
p	**<0.0001**

[1] (TRF: Teachers Report Form. Achenbach, T.M. (1991). Manual for the Teacher's Report Form and 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry).

Table 8.

Adjusted Total Problem Score based on the [1]TRF by country

Country	**Males Mean (SD)**	**Female Mean (SD)**	***P*[2]**
USA	32.4 (30.1)	21.9 (23.5)	<0.0001
Lebanon	25.0(22.9)	17.2 (17.8)	
p[3]		<0.0001	

[1] (TRF: Teachers Report Form. Achenbach, T.M. (1991). Manual for the Teacher's Report Form and 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry).

[2] Effect of country

[3] Effect of gender

Table 9.

Adjusted Total Problem Score based on the [1]TRF by country for each age group

Age	Country		Males Mean (SD)	Females Mean (SD)	P^2
6 years old	USA		32.6 (30.8)	19.3 (22.3)	**0.01**
	Lebanon		20.9 (17.2)	16.5 (18.0)	
		P^3		**0.003**	
7 years old	USA		29.1 (26.1)	17.0 (19.3)	0.56
	Lebanon		25.0 (21.6)	18.4 (16.8)	
		P^3		**<0.001**	
8 years old	USA		28.9 (30.2)	24.5 (26.8)	0.202
	Lebanon		30.1 (27.2)	17.6 (17.9)	
		P^3		**<0.001**	
9 years old	USA		32.0 (28.8)	24.2 (22.2)	**<0.001**
	Lebanon		22.6 (23.1)	24.2 (18.5)	
		P^3		**<0.001**	
10 years old	USA		39.5 (34.1)	23.1 (25.0)	**0.002**
	Lebanon		24.2 (21.7)	19.6 (18.4)	
		P^3		**0.002**	

[1] (TRF: Teachers Report Form. Achenbach, T.M. (1991). Manual for the Teacher's Report Form and 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry).

[2] Difference between the countries

[3] Difference between genders

Table 10.

Comparison between the 2 countries for the Externalizing and Internalizing scale on the [1]TRF

Country	Externalizing Scale Mean (SD)	Internalizing Scale Mean (SD)
USA (N=613)	7.4 (10.4)	6.9 (8.5)
Lebanon (N=1479)	6.1 (8.7)	6.3 (6.6)
p	**0.005**	0.109

[1] (TRF: Teachers Report Form. Achenbach, T.M. (1991). Manual for the Teacher's Report Form and 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry).

Table 11.

Adjusted mean scores on the Internalizing Scale of the [1]TRF according by country for males and females

Age	Males Mean (SD)			Females Mean (SD)		
	USA	Lebanon	p[2]	USA	Lebanon	P[2]
6 years old	8.0 (8.8)	5.9 (6.3)	0.175	5.9 (8.0)	6.6 (8.2)	0.456
7 years old	7.9 (10.5)	6.3 (5.6)		4.4 (6.0)	6.9 (5.9)	
8 years old	6.0 (8.1)	7.1 (7.1)		7.4 (8.4)	6.6 (6.3)	
9 years old	7.1 (7.2)	4.9 (5.4)		6.7 (7.4)	6.1 (7.2)	
10 years old	9.5 (12.0)	5.9 (7.3)		7.1 (7.4)	7.9 (7.1)	
P[3]	0.004					0.420

[1] (TRF: Teachers Report Form. Achenbach, T.M. (1991). Manual for the Teacher's Report Form and 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry).

[2] Effect of age

[3] Effect of country

Table 12.

Adjusted Mean scores on the Externalizing Scale of the [1]TRF by country

Country	**Males Mean (SD)**	**Females Mean (SD)**	*p*[2]
USA	9.6 (12.0)	5.3 (8.3)	<0.0001
Lebanon	8.2 (10.1)	3.6 (6.0)	
P[3]		<0.0001	

[1] (TRF: Teachers Report Form. Achenbach, T.M. (1991). Manual for the Teacher's Report Form and 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry).

[2] Difference between countries

[3] Difference between genders

Table 13.

Adjusted Mean scores on the Externalizing Scale of the [1]TRF for gender and age by country

Age	Males Mean (SD)		Females Mean (SD)		P^2<0.0001
	USA	Lebanon	USA	Lebanon	
6 years old	9.1 (11.7)	6.1 (7.2)	4.8 (8.0)	3.8 (5.8)	P^3=0.076
7 years old	8.0 (11.0)	8.3 (10.0)	4.4 (7.4)	4.1 (6.2)	
8 years old	9.2 (11.8)	10.2 (11.8)	5.6 (8.1)	3.5 (5.9)	
9 years old	10.3 (12.1)	7.6 (10.1)	6.7(9.3)	2.9 (6.0)	
10 years old	11.1 (13.1)	7.6 (9.9)	5.0 (8.3)	4.1 (6.1)	
P^4				**<0.0001**	

[1] (TRF: Teachers Report Form. Achenbach, T.M. (1991). Manual for the Teacher's Report Form and 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry).

[2] Effect of gender

[3] Effect of age

[4] Effect of country

Table 14.

Mean for the 8 Syndromes of the [1]TRF according to country

	USA Mean (SD)	Lebanon Mean (SD)	p
Withdrawn Syndrome	2.2 (3.1)	1.9 (2.8)	0.080
Somatic Complaints Syndrome	1.0 (4.0)	0.4 (1.1)	**<0.0001**
Anxious Depressed Syndrome	4.0 (5.0)	4.3 (4.4)	0.168
Social Problems Syndrome	2.4 (3.8)	1.9 (2.9)	**0.001**
Thought Problems Syndrome	0.9 (2.5)	0.4 (1.0)	**<0.0001**
Attention Problems Syndrome	8.3 (9.0)	6.5 (7.5)	**<0.0001**
Delinquent Behavior Syndrome	1.4 (2.6)	0.9 (1.6)	**<0.0001**
Aggressive Behavior Syndrome	6.0 (8.7)	5.2 (7.5)	**0.037**

[1] (TRF: Teachers Report Form. Achenbach, T.M. (1991). Manual for the Teacher's Report Form and 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry).

Table 15.

[1]SNAP-IV Scale. Factor Pattern Matrix of an Oblique Rotation

	Raw		Rescaled	
	Component			
	1	2	1	2
FACTOR 1				
snap2 S02 Sustaining attention	.796	-.048	.923	-.056
snap4 S04 Follow through	.787	-.074	.923	-.087
snap5 S05 Organizing tasks	.770	-.014	.900	-.016
snap6 S06 Engaging tasks	.738	-.082	.890	-.099
snap1 S01 Close Attention	.809	-.012	.882	-.013
snap9 S09 Forgetful	.614	.054	.788	.070
snap3 S03 Not listening	.574	.067	.734	.086
snap8 S08 Distracted	.574	.311	.597	.323
snap7 S07 Loses things	.436	.170	.582	.227
FACTOR 2				
snap17 S17 Awaiting turn	-.119	.788	-.137	.910
snap18 S18 Interrupts	-.074	.758	-.087	.895
snap15 S15 Talks	-.017	.767	-.019	.845
snap11 S11 Seat	.063	.659	.076	.794
snap12 S12 Runs	.065	.611	.085	.792
snap16 S16 Blurts	.042	.659	.050	.780
snap14 S14 On the go	-.049	.595	-.060	.728
snap13 S13 Playing	.150	.477	.202	.645
snap10 S10 Fidgets	.220	.498	.263	.594

Note: Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
a rotation converged in 7 iterations.

[1] (SNAP-IV: Swanson, Nolan and Pelham. Swanson, J.M. (1992). School-based Assessments and Interventions for ADD students. K.C. Publishing. Irvine, California).

Table 16.

[1]TRF-DSM-IV. Factor Pattern Matrix of an Oblique Rotation

	Raw		Rescaled	
	Component			
	1	2	1	2
FACTOR 1				
trf010 T010 hyperactive	.563	.049	.859	.075
trf093 T093 Talks too much	.567	.052	.837	.077
trf053 T053 Talks	.560	.096	.830	.142
trf067 T067 Disrupts	.491	-.022	.817	-.037
trf024 T024 Disturbs	.411	-.077	.720	-.135
trf041 T041 Impulsive	.360	-.146	.621	-.252
trf104 T104 Unusually loud	.228	-.013	.554	-.031
trf015 T015 Fidgets	.282	-.084	.536	-.159
FACTOR 2				
trf004 T004 Falls to finish things	-.084	-.608	-.127	-.917
trf008 T008 Concentration	.055	-.595	.078	-.845
trf100 T100 Fails to carry out	-.048	-.478	-.082	-.814
trf078 T078 Inattentive	.168	-.474	.242	-.682
trf022 T022 Directions	.136	-.411	.221	-.665

Note: Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
a rotation converged in 5 iterations.

[1] (TRF: Teachers Report Form. Achenbach, T.M. (1991). Manual for the Teacher's Report Form and 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry).

Table 17.

[1]TRF-CI. Factor Pattern Matrix of an Oblique Rotation

	Raw			Rescaled		
	Component					
	1	2	3	1	2	3
FACTOR 1						
trf061 T061 Poor work	.610	-.082	-.004	.938	-.126	-.007
trf049 T049 Difficult Learning	.534	-.064	.050	.838	-.101	.078
trf100 T100 Fails to carry out	.471	-.025	.002	.803	-.042	.004
trf092 T092 Underachieving	.484	-.017	.002	.766	-.027	.003
trf004 T004 Falls to finish things	.484	.017	.089	.741	.025	.136
trf060 T060 Apathetic	.384	-.042	.083	.703	-.077	.153
trf072 T072 Messy work	.435	.206	-.158	.674	.320	-.246
trf008 T008 Concentration	.406	.202	.123	.581	.289	.176
trf062 T062 Poorly coordinated	.297	.018	.069	.567	.035	.131
trf022 T022 Directions	.303	.204	.087	.497	.335	.143
trf078 T078 Inattentive	.316	.293	.074	.458	.425	.107
FACTOR 2						
trf010 T010 hyperactive	-.034	.583	-.115	-.053	.908	-.179
trf015 T015 Fidgets	-.032	.358	.065	-.062	.693	.127
trf002 T002 Hums or odd noises	-.004	.350	.025	-.008	.692	.050
trf041 T041 Impulsive	.144	.380	-.069	.254	.670	-.122
trf045 T045 High-strong	-.016	.201	.059	-.038	.462	.137
FACTOR 3						
trf017 T017 Daydreams	.010	.044	.426	.019	.083	.793
trf080 T080 Stares blankly	.046	-.002	.407	.088	-.004	.777
trf013 T013 Confused	.098	-.007	.394	.179	-.013	.717
trf001 T001 Acts too young	.057	.081	.096	.137	.194	.229

Note: Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
a rotation converged in 5 iterations.

[1] (TRF: Teachers Report Form. Achenbach, T.M. (1991). Manual for the Teacher's Report Form and 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry).

Table 18.

Prevalence of ADHD according to the characteristics of children based on [1]SNAP-IV

	Inattention (ADHD-I)		Hyperactivity/ Impulsivity (ADHD-HI)		ADHD-C	
	N	%	N	%	N	%
Sex						
Male	142	15.6	116	12.9	52	5.6
Female	45	6.0	26	3.6	6	0.8
p		*<0.001*		*<0.001*		*<0.001*
Age group						
5-6 years old	18	5.7	19	6.0	5	1.5
7 years old	45	12.1	27	7.5	9	2.4
8 years old	63	13.9	45	10.0	20	4.4
9 years old	38	10.6	29	8.6	17	4.8
10-11 years old	25	15.8	22	15.5	7	4.1
p		*0.002*		*NS*		*NS*
Type of school						
Private	126	11.6	83	7.8	36	3.3
Semi-private	52	11.2	53	11.4	22	4.6
Public	11	10.3	6	5.7	0	0
p		*NS*		*0.036*		*NS*
SES of school						
Middle SES	84	9.4	59	6.6	16	1.7
Low SES	100	13.7	81	11.5	42	5.5
p		*0.006*		*<0.001*		*<0.001*
Religion						
Christian	63	16.3	36	9.4	14	3.6
Moslem	71	12.9	72	13.4	33	5.5
Mixed	29	7.3	18	4.6	7	1.7
p		*<0.001*		*<0.001*		*<0.009*
School language						
English+French+ Arabic	12	6.8	7	4.0		
English + Arabic	74	9.6	57	7.5		
Arabic	23	23.7	19	20.4		
English	80	13.0	59	9.8		
p		*<0.001*		*<0.001*		*<0.001*

[1] (SNAP-IV: Swanson, Nolan and Pelham. Swanson, J.M. (1992). School-based Assessments and Interventions for ADD students. K.C. Publishing. Irvine, California).

Table 19.

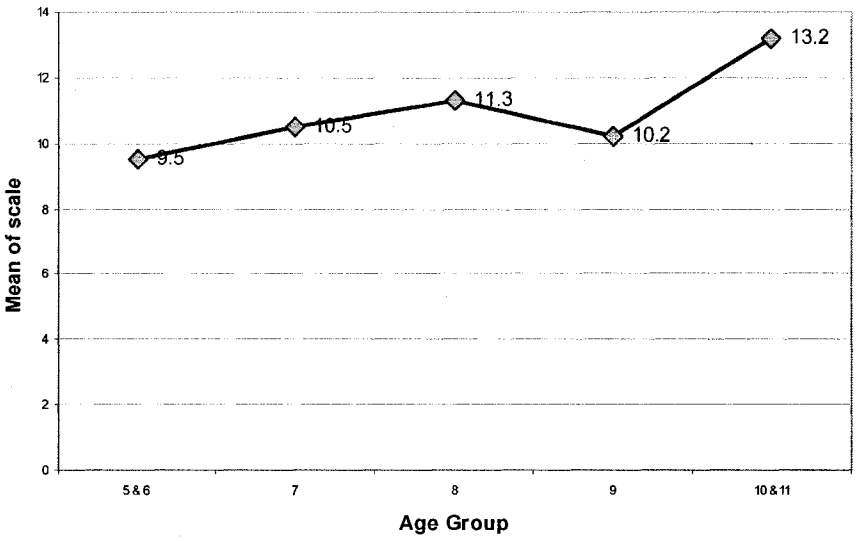
Adjusted odds ratios and 95% confidence intervals (CI) for ADHD according characteristics of sample of children in Lebanon

N = 1390	OR (95% CI)	p
Gender		
Female	1	
Male	3.1 (2.20-4.35)	<0.001
Age group		
5-6 years old	1	
7 years old	1.6 (0.96-2.68)	0.069
8 years old	2.2 (1.37-3.61)	0.001
9 years old	1.1 (0.63-1.89)	0.751
10-11 years old	2.07 (1.15-3.74)	0.016
SES		
Middle SES	1	
Low SES	2.1 (1.39-3.17)	<0.001
Language used at the school		
English, French and Arabic	1	
English and Arabic	2.2 (1.15-4.04)	0.017
Arabic	17.3 (3.23-92.51)	0.001
English	5.5 (2.56-12.02)	<0.001
Specials Services		
Center	1	
Refer	2.6 (1.58-4.41)	<0.001
Nothing	0.6 (0.13-2.97)	0.54
Special Class		
No	1	
Yes	4.4 (2.81-6.87)	<0.001

Figures 1 to 5

Figure 1:

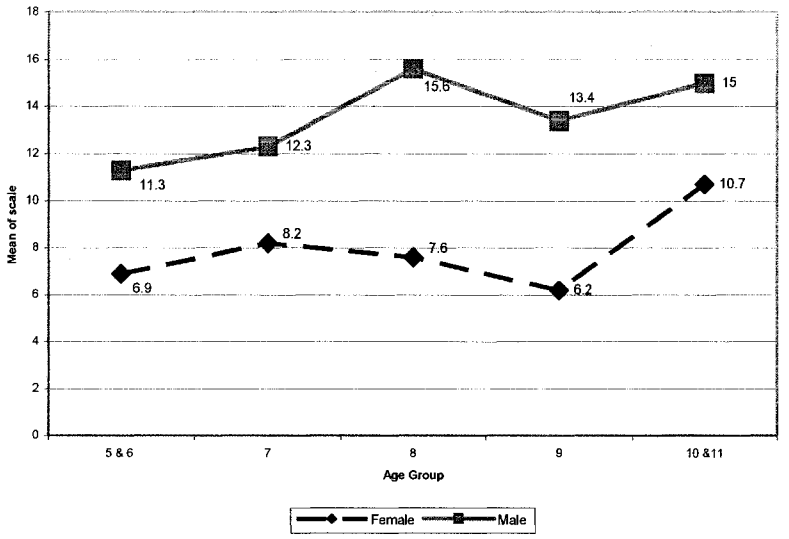
Mean of ADHD score by age based on the [1]SNAP-IV



[1] (SNAP-IV: Swanson, Nolan and Pelham. Swanson, J.M. (1992). School-based Assessments and Interventions for ADD students. K.C. Publishing. Irvine, California).

Figure 2:

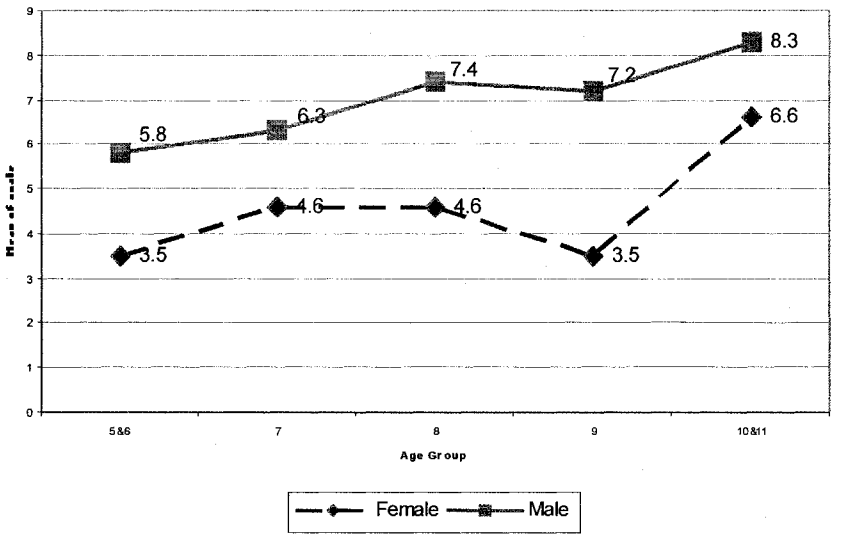
Mean of ADHD score by age and gender based on the [1]SNAP-IV



[1] (SNAP-IV: Swanson, Nolan and Pelham. Swanson, J.M. (1992). School-based Assessments and Interventions for ADD students. K.C. Publishing. Irvine, California).

Figure 3:

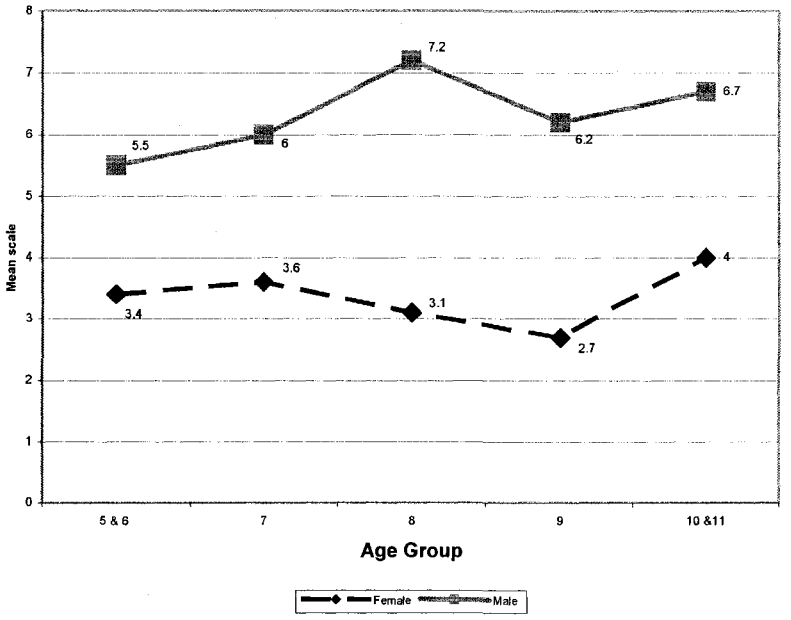
Mean of ADHD-Inattention scale by age group and gender based on the [1]SNAP-IV



[1] (SNAP-IV: Swanson, Nolan and Pelham. Swanson, J.M. (1992). School-based Assessments and Interventions for ADD students. K.C. Publishing. Irvine, California).

Figure 4:

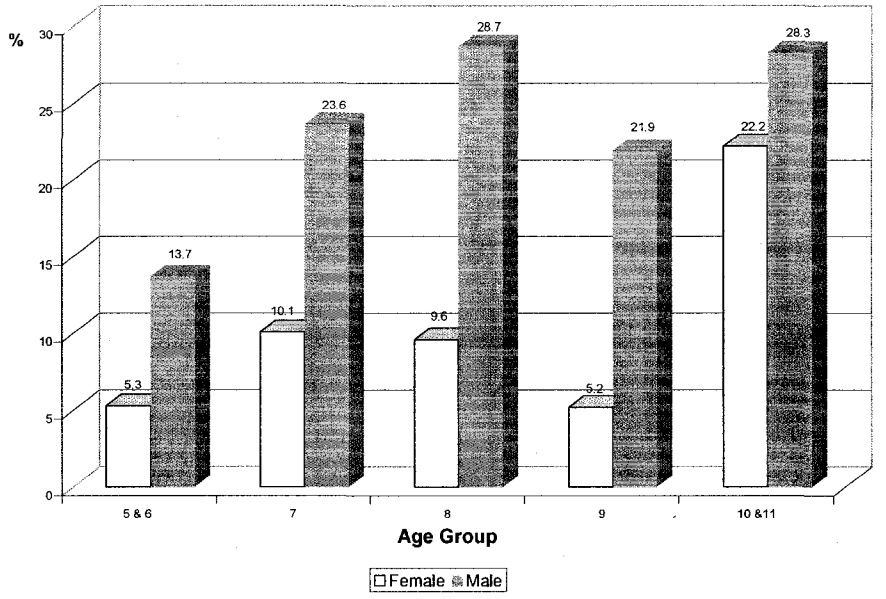
Mean of ADHD-hyperactivity/impulsivity by age and gender based on the [1]SNAP-IV



[1] (SNAP-IV: Swanson, Nolan and Pelham. Swanson, J.M. (1992). School-based Assessments and Interventions for ADD students. K.C. Publishing. Irvine, California).

Figure 5:

Prevalence ADHD according age and gender based on the [1]SNAP-IV



[1] (SNAP-IV: Swanson, Nolan and Pelham. Swanson, J.M. (1992). School-based Assessments and Interventions for ADD students. K.C. Publishing. Irvine, California).

Appendix A to J

Appendix D

Questionnaire used with key informants

Interview

The main purpose of the interview is to try and elicit parent/teacher/professional opinions and experiences in regards to behavioural and learning difficulties of children between the ages of 6 and 10 years. The interview will be adapted according to the type of informant and focus group. But the general information required will be based **on 3 broad questions** using Kleinman's explanatory model (sign, meaning, action)

1) What do you or your family call your child's difficulties?

   (Response Categories: Medical label, bad child label, child problem and other)

2) Why do you think it started when it did?

   (Response Categories: Genetics, medical, school, life events and other).

3) What is likely to happen? What do you think should happen?

Appendix E

More specific questionnaire used with key informants

MORE SPECIFIC AND STRUCTURED QUESTIONS TO ELICIT SPECIFIC INFORMATION

INTRODUCTION:

Today we will be talking about children and specific difficulties they may experience at various ages. Now children can have several types of difficulties but I am only interested in behavioural or learning difficulties. I will start off by asking you to tell me about such difficulties and sharing information based on your experience and knowledge. You do not have to give me any names when describing such children since I am only interested in understanding and knowing about their behaviour. These children can either be ones you know very well or children you know about from the community or from other people.

1) Do you know any children between the ages of 6 and 10 years (elementary school) who have behavioural or learning difficulties? These can be children that you know very well (in your family, your neighbours, relatives or in the school) or children that you don't know very well but have heard about from others.

2) How do people call these children? How do they refer to them? (elicit different names)

3) Can you tell me about these children and describe them to me? (ask for a description by category i.e., for each name provided in previous question).

4) What do *you* think about this child?

5) What do others think about this child or type of children and what do they call the difficulties?

Appendix E continued

More specific questionnaire used with key informants

6) Why do you think he/she is like this?

7) Why do others think he/she is like this?

8) Are there any other opinions? How would your parents or grandparents explain this?

9) What do you think will probably happen to this child?

10) What is usually done with these children who have the difficulties you mentioned?

11) Based on your experiences, what should be done to children with these type of difficulties?

12) What kind of help are they most likely to receive? Who are parents first likely to go to for help when they have children with this type of behaviour (extended family, religious persons, health services, healers, other)?

Appendix F

Questions related to the vignettes

I would know like to show you and read to you some examples of children with difficulties. After reading each one, I would then like to ask you a few questions about these children.

PRESENT EACH VIGNETTE TO THE INFORMANT OR FOCUS GROUP.

1. What do you think about this person?

   Nothing wrong
   Has a slight problem
   Has a serious problem
   Don't know
   Other response

2. How would you call this problem?

3. Why did it happen?

4. What will probably happen to this child?

   Get better soon
   Get better but after a while
   Stay the same
   Get worse
   Don't know
   Other

5. Do you think they will stay in school and succeed?

Appendix F continued

Questions related to the vignettes

6. How often have you seen or heard about such children?

7. What would you call such children?

   Medical label
   Psychological
   Bad child label
   Child problem
   Traditional
   Other

8. What do you feel such children need? What do you feel works best with these children?

9. Do you think that such children need help or support?

10. Do you know anyone like that? (look for differences that may exist in the symptoms between the child in the vignette and the ones they know).

Appendix F continued

Questions related to the vignettes

Vignettes for Key Informants or Focus Groups

Case 1

A child, in Grade 3 has always been reported to have difficulties at school. This child had to repeat Grade 1 and has never been able to learn things at the same rate of that of her peers. She is currently failing several of her academic subjects but is doing satisfactory work in Gym and Arts. Overall she performs better on an individual basis, with a lot of attention, rather than in a group setting. She is described as being a very friendly girl and has several good friends. *According to what others say* (or according to testing) she appears to have average intelligence although, academically, she is performing below her current grade level and is 2 years behind in some subjects.

Case 2

Child X, is 9 years old and creates difficulties in his class. He has been repeatedly suspended for misbehaving and has started to fall behind academically. The teacher describes him as a smart boy but complains that he never listens in class, is very restless and is always out of his seat. He is always roaming around the class, talking to other children and disturbing them while they are working. If asked to sit down, he constantly fidgets with his hands or feet and repeatedly drops things on the floor. He cannot pay attention for more than a few minutes, does not seem to listen to the teacher and never finishes his schoolwork. His mother also says that she has similar difficulties at home. According to her, he has been like this since he was 2 years old. He was always running around, climbing on things and had difficulty waiting for his turn. She reports that he often does not seem to listen when others talk to him and has to be repeatedly reminded to do things.

Appendix F continued

Questions related to the vignettes

Case 3

Child X is 8 years old and often gets into trouble for being disobedient and difficult to manage at school. He has always been a difficult child but his behaviour has become significantly more problematic this year. He was suspended this year for swearing at his teacher and has been caught on several occasions doing things he was not supposed to do. At school he often refuses to do what is asked from him and argues a great deal with authority figures. He is also described as being bad-tempered and tends to blame others for his mistakes. Despite these difficulties, he is doing well academically and his grades are good. In general, his concentration is good and he manages to complete his work. At home, he is sometimes rude to his mother, argues with her and loses his temper. Often he is mean with his younger brother and bothers him on purpose. Both his teachers as well as his parents are concerned about his attitude.

Case 4

Child X was suspended from school after having received several warnings. His principal reported that this child was always a problem from the first day he arrived at the school. He is mean with other children, he intimidates them and often gets into serious physical fights with them. As a result of his behaviour, he does not get along with his peers and does not have any friends. Furthermore, he also disobeys the school rules, defies his teachers and a few times has stolen from his peers and lied to get out of doing things. On a few occasions, he was caught being cruel to animals and causing them harm. He is not doing well academically, although his teachers report that he has the potential to succeed.

Case 5

Child X, has been described as being lazy and careless. Her difficulties were apparent since grade 1 and have become more obvious over the years. She is currently in Grade 3 and is not doing well academically. In her previous years, her performance was satisfactory, even though her teachers always commented that she could do better if she was more focused and paid attention in class. At home she tends to waste time when completing her homework, is very forgetful and disorganized. She appears to spend a great deal of time daydreaming both at home and at school. Her teachers describe her as being very forgetful, disorganized and gets easily distracted. She often forgets her materials and loses her things.

Appendix G

Introduction letter by McGill University to the participating schools (English version)

Centre universitaire de santé McGill
McGill University Health Centre

Le Centre universitaire de santé McGill (CUSM) comprend l'Hôpital de Montréal pour Enfants, l'Hôpital général de Montréal, l'Hôpital neurologique de Montréal et l'Hôpital Royal Victoria. Le CUSM est affilié à la Faculté de médecine de l'Université McGill.
The McGill University Health Centre (MUHC) consists of The Montreal Children's Hospital, The Montreal General Hospital, The Montreal Neurological Hospital, and The Royal Victoria Hospital. The MUHC is affiliated with the McGill University Faculty of Medicine.

To Whom It May Concern,

We are glad that you and your school have expressed an interest in the research project on: "The Behavioral and Learning Difficulties in School-Aged Children". Your interest in collaborating with us and helping making this project become a reality is very encouraging and re-assuring. Our initiative to work collaboratively with you and others in Lebanon appears to be a good opportunity to contribute simultaneously to the mental health of Lebanese children while questioning North American premises on their universal approach to health and illness and its validity in a non-western society.

You may remember hearing about this research study in the summer of the year 2001. This study is being carried out in collaboration with the department of Psychiatry at the Montreal Children's Hospital as well as the Division of Social and Transcultural Psychiatry of McGill University. A number of schools in Lebanon have agreed to participate and we would like to take this opportunity to provide you with some updated information on this research project.

In general, the project is looking at learning and behavioural difficulties in school-aged children. However, more specifically, it will be looking at Attention Deficit Hyperactivity Disorder (ADHD) in children between the ages of 6 and 10 years. ADHD is one of the most common psychiatric problems in school-aged children and accounts for the majority of all child referrals to mental health services. Great progress has been made in the understanding of ADHD over the past decade; however, this has been limited to Western societies. There is very limited information on this disorder and its prevalence in the Middle East. An awareness of culture and the role it plays is essential in understanding and treating disorders. Based on this fact, it is essential to examine if ADHD is as evident in a society such as Lebanon and if it can be diagnosed using the same methods used in other societies.

Both the department of Psychiatry at the Montreal Children's Hospital as well as the Division of Social and Transcultural Psychiatry of McGill University are looking forward to working on this project. The main **objectives** of this research are to examine the validity of the ADHD diagnosis in Lebanon and the magnitude of the disorder among school aged children between the ages of 6 and 10 years. A second aim will be to provide models of appropriate interventions for the management of this disorder. We are willing to participate in the different training sessions envisioned either directly, by sending members of our department and/or in the collaboration of the process and the content of these sessions.

L'HÔPITAL DE MONTRÉAL POUR ENFANTS • THE MONTREAL CHILDREN'S HOSPITAL
2300 rue Tupper, Montréal (Québec) H3H 1P3 Tél.: (514) 934-4400

Appendix I

Swanson, Nolan and Pelham questionnaire

(SNAP-IV; Swanson, 1992)

The SNAP-IV Rating Scale

James M. Swanson, PhD., University of California, Irvine

Name of Child_____ Date _____ Age ____ Sex ____ Grade ____ Rating Period ____

Completed by _____ Relation to Child: Mother____ Father____ Teacher ____ Other _____

Check the column which best describes this child:	Not at All	Just a Little	Pretty Much	Very Much
1. Often fails to give close attention to details or makes careless mistakes in school work, work, or other activities				
2. Often has difficulty sustaining attention in tasks or play activities				
3. Often does not seems to listen when spoken to directly				
4. 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)				
5. Often has difficulty organizing tasks and activities				
6. Often avoids, dislikes, or had difficulties engaging in tasks that require sustained mental effort (such as schoolwork or homework)				
7. Often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils)				
8. Is often easily distracted by extraneous stimuli				
9. Often forgetful in daily activities				
10. Often fidgets with hands or feet, squirms in seat				
11. Often leaves seat in classroom or in other situations in which remaining seated is expected				
12. Often runs about or climbs excessively in situations in which remaining seated is expected (in adolescents or adults, may be limited to subjective feelings of restlessness				
13. Often has difficulty playing or engaging in leisure activities quietly				
14. Is always "on the go" or often acts if "driven by a motor"				
15. Often talks excessively				
16. Often blurts out answers to questions before the questions have been completed				
17. Often has difficulty awaiting turn				
18. Often interrupts or intrudes upon others (e.g., butts into conversations or games)				
19. Often stares into space and reports daydreaming				
20. Often appears to be low in energy level, sluggish, or drowsy				
21. Often appears to be apathetic or unmotivated to engage in goal-oriented activities				
22. Often engages in physically dangerous activities without considering possible consequences				
23. Often shifts from one uncompleted activity to another				
24. Often fails to finish things he or she starts				
25. Has difficulty concentrating on school work or other tasks requiring sustained attention				
26. Has difficulty sticking to a play activity				
27. Frequently calls out in class or in other situations when silence is expected				
28. Needs a lot of supervision				
29. Moves about excessively (e.g., even during sleep at home or during quiet time at school)				
30. Often acts before thinking				
31. Often loses temper				
32. Often argues with adults				
33. Often actively defies or refuses adult requests or rules				
34. Often deliberately does things that annoy other people				
35. Often blames others for his or her mistakes or misbehavior				
36. Often touchy or easily annoyed by others				
37. Is often angry and resentful				
38. Is often spiteful or vindictive				
39. Often swears or uses obscene language				
40. Often manifests provocative behavior				
41. Often shows excessive stubbornness				

Appendix J

Teacher's Report Form (TRF; Achenbach, 1991)

TEACHER'S REPORT FORM

Your answers will be used to compare the pupil with other pupils whose teachers have completed similar forms. The information from this form will also be used for comparison with other information about this pupil. Please answer as well as you can, even if you lack full information. Scores on individual items will be combined to identify general patterns of behavior. Feel free to write additional comments beside each item and in the spaces provided on page 2.

Pupil's Name		PARENTS' USUAL TYPE OF WORK, even if not working now. (Please be as specific as you can--for example, auto mechanic, high school teacher, homemaker, dentist, shoe salesman.)
Pupil's Sex	Pupil's Age	Father Type of Work: _____ Mother's Type of Work: _____
Today's Date Mo. ___ Day ___ Yr. ___	Pupil's Birthdate Mo. ___ Day ___ Yr. ___	THIS FORM FILLED OUT BY: □ Teacher (name) _____ □ Counsellor (name) _____ □ Other (specify): Name: _____
Grade in School	Name of School	

I. How long have you known this pupil? _____ months

II. How well do you know him/her? 1. □ Not Well 2. □ Moderately Well 3. □ Very Well

III. How much time does he/she spend in your class per week? _____

IV. What kind of class is it? (Please be specific, e.g., regular 5th grade, 7th grade math, etc.)

_____

V. Has he/she ever been referred for special class placement, services, or tutoring?

□ Don't Know 0. □ No 1. □ Yes--what kind and when?

VI. Has he/she ever repeated a grade?

□ Don't Know 0. □ No 1. □ Yes--Grade and reason?

VII. Current school performance--list academic subjects and check column that indicates pupil's performance:

Academic subject	1. *Far below* grade	2. *Somewhat* below grade	3. At grade level	4. Somewhat above grade	5. Far above grade
1. _____	□	□	□	□	□
2. _____	□	□	□	□	□
3. _____	□	□	□	□	□
4. _____	□	□	□	□	□
5. _____	□	□	□	□	□

Appendix J continued

Teacher's Report Form (TRF; Achenbach, 1991)

Below is a list of items that describe pupils. For each item that describes the pupil now or within the past 2 months, please circle the 2 if the item is very true or often true of the pupil. Circle the 1 if the item is somewhat or sometimes true of the pupil. If the item is not true of the pupil, circle the 0. Please answer all items as well as you can, even if some do not seem to apply to this pupil.

0 = Not True (as far as you know) 1 = Somewhat or Sometimes True 2 = Very True or Often True

0 1 2 1. Acts too young for his/her age
0 1 2 2. Hums or makes other odd noises in class

0 1 2 3. Argues a lot
0 1 2 4. Fails to finish things he/she starts

0 1 2 5. Behaves like opposite sex
0 1 2 6. Defiant, talks back to staff

0 1 2 7. Bragging, boasting
0 1 2 8. Can't concentrate, can't pay attention for long

0 1 2 9. Can't get his/her mind off certain thoughts; obsessions (describe): _____

0 1 2 10. Can't sit still, restless, or hyperactive
0 1 2 11. Clings to adults or too dependent

0 1 2 12. Complains of loneliness
0 1 2 13. Confused or seems to be in a fog

0 1 2 14. Cries a lot
0 1 2 15. Fidgets

0 1 2 16. Cruelty, bullying, or meanness to others
0 1 2 17. Daydreams or gets lost in his/her thoughts
0 1 2 18. Deliberately harms self or attempts suicide
0 1 2 19. Demands a lot of attention

0 1 2 20. Destroys his/her own things
0 1 2 21. Destroys property belonging to others
0 1 2 22. Difficulty following directions
0 1 2 23. Disobedient at school

0 1 2 24. Disturbs other pupils
0 1 2 25. Doesn't get along with other pupils
0 1 2 26. Doesn't seem to feel guilty after misbehaving
0 1 2 27. Easily jealous

0 1 2 28. Eats or drinks things that are not food--don't include sweets (describe): _____

0 1 2 29. Fears certain animals, situations, or places other than school (describe): ____

0 1 2 30. Fears going to school
0 1 2 31. Fears he/she might think or do something bad
0 1 2 32. Feels he/she has to be perfect
0 1 2 33. Feels or complains that no one loves him/her

0 1 2 34. Feels others are out to get him/her
0 1 2 35. Feels worthless or inferior
0 1 2 36. Gets hurt a lot, accident prone
0 1 2 37. Gets in many fights

0 1 2 38. Gets teased a lot
0 1 2 39. Hangs around with others who get in trouble
0 1 2 40. Hears sounds or voices that aren't there (describe): _____

0 1 2 41. Impulsive or acts without thinking
0 1 2 42. Would rather be alone than with others
0 1 2 43. Lying or cheating
0 1 2 44. Bites fingernails

0 1 2 45. Nervous, high-strung, or tense
0 1 2 46. Nervous movements or twitching (describe): _____

0 1 2 47. Overconforms to rules
0 1 2 48. Not liked by other pupils
0 1 2 49. Has difficulty learning
0 1 2 50. Too fearful or anxious

0 1 2 51. Feels dizzy
0 1 2 52. Feels too guilty
0 1 2 53. Talks out of turn
0 1 2 54. Overtired

0 1 2 55. Overweight
56. Physical problems without known medical cause:
0 1 2 a. Aches or pains (not headaches)
0 1 2 b. Headaches
0 1 2 c. Nausea, feels sick
0 1 2 d. Problems with eyes (describe): _____
0 1 2 e. Rashes or other skin problems
0 1 2 f. Stomachaches or cramps
0 1 2 g. Vomiting, throwing up
0 1 2 h. Other (describe): _____

Appendix J continued

Teacher's Report Form (TRF; Achenbach, 1991)

0 = Not True (as far as you know) 1 = Somewhat or Sometimes True 2 = Very True or Often True

0 1 2 57. Physically attacks people
0 1 2 58. Picks nose, skin, or other parts of body (describe): _____

0 1 2 59. Sleeps in class
0 1 2 60. Apathetic or unmotivated
0 1 2 61. Poor school work

0 1 2 62. Poorly coordinated or clumsy
0 1 2 63. Prefers being with older children or youths

0 1 2 64. Prefers being with younger children
0 1 2 65. Refuses to talk

0 1 2 66. Repeats certain acts over and over; compulsions (describe): _____

0 1 2 67. Disrupts class discipline

0 1 2 68. Screams a lot

0 1 2 69. Secretive, keeps things to self

0 1 2 70. Sees things that aren't there (describe): _____

0 1 2 71. Self-conscious or easily embarrassed
0 1 2 72. Messy work
0 1 2 73. Behaves irresponsibly (describe): _____

0 1 2 74. Showing off or clowning
0 1 2 75. Shy or timid

0 1 2 76. Explosive and unpredictable behaviour
0 1 2 77. Demands must be met immediately, easily frustrated

0 1 2 78. Inattentive, easily distracted
0 1 2 79. Speech problem (describe): _____

0 1 2 80. Stares blankly
0 1 2 81. Feels hurt when criticized

0 1 2 82. Steals
0 1 2 83. Stores up things he/she doesn't need (describe): _____

0 1 2 84. Strange behaviour (describe): _____

0 1 2 85. Strange ideas (describe): _____

0 1 2 86. Stubborn, sullen, or irritable
0 1 2 87. Sudden changes in mood or feelings

0 1 2 88. Sulks a lot
0 1 2 89. Suspicious

0 1 2 90. Swearing or obscene language
0 1 2 91. Talks about killing self

0 1 2 92. Underachieving, not working up to potential
0 1 2 93. Talks too much

0 1 2 94. Teases a lot
0 1 2 95. Temper tantrums or hot temper

0 1 2 96. Seems preoccupied with sex
0 1 2 97. Threatens people

0 1 2 98. Tardy to school or class

0 1 2 99. Too concerned with neatness or cleanliness

0 1 2 100. Fails to carry out assigned tasks

0 1 2 101. Truancy or unexplained absence
0 1 2 102. Underactive, slow moving, or lacks energy

0 1 2 103. Unhappy, sad, or depressed
0 1 2 104. Unusually loud

0 1 2 105. Uses alcohol or drugs for nonmedical purposes (describe): _____

0 1 2 106. Overly anxious to please
0 1 2 107. Dislikes school
0 1 2 108. Is afraid of making mistakes

0 1 2 109. Whining
0 1 2 110. Unclean personal appearance

0 1 2 111. Withdrawn, doesn't get involved with others
0 1 2 112. Worries

113. Please write in any problems the pupil has that were not listed above:

0 1 2 _____
0 1 2 _____
0 1 2 _____

PLEASE BE SURE YOU HAVE ANSWERED ALL ITEMS.

UNDERLINE ANY YOU ARE CONCERNED ABOVE

Appendix J continued

Teacher's Report Form (TRF; Achenbach, 1991)

Compared to typical pupils of the same age:

	1. Much less	2. Somewhat less	3. Slightly less	4. About average	5. Slightly more	6. Somewhat more	7. Much more
1. How hard is s/he working?	☐	☐	☐	☐	☐	☐	☐
2. How appropriately is s/he behaving?	☐	☐	☐	☐	☐	☐	☐
3. How much is s/he learning?	☐	☐	☐	☐	☐	☐	☐
4. How happy is s/he?	☐	☐	☐	☐	☐	☐	☐

IX. Most recent achievement test scores (If available):

Name of test	Subject	Date	Percentile or grade level obtained

X. IQ, readiness, or aptitude tests (If available):

Name of test	Date	IQ or equivalent scores

Does this pupil have any illness, physical disability, or mental handicap? ☐ No ☐ Yes - Please describe

What concerns you most about this pupil?

Please describe the best things about this pupil:

Please feel free to write any comments about this pupil's work, behaviour, or potential, using extra pages if necessary.