The Saudi Arabian Perspective on the Misidentification Issues of Challenging Gifted Learners and the Development of the Four Misses Model of Giftedness and AD/HD

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Students are tomorrow's citizens and tomorrow's parents. This is the true wealth of the nation. So, we must do all we can to give students of today the best and fairest treatment, and the best education possible.
- A mother of a gifted child

The behaviour of a gifted child could be a puzzle! Managing and understanding the behavioural characteristics of gifted children in a regular classroom is often a challenging task. Gifted children by virtue of their natural characteristics differ from their average peers. It seems that the emphasis on gifted education has shifted away from a period of maximising focus on intellectual abilities and IQ scores towards an emphasis on emotional, social, and personality development in gifted children. Researchers have embraced these developmental characteristics as an object that helps to understand the complex behaviours of gifted children and identify the strengths and challenges commonly viewed in these children. Knowledge of the diverse characteristics of gifted children has great importance for making correct decisions about their behaviours. It has been argued that teachers' ability to interpret the behavioural manifestations is a significant component for the accurate identification of gifted children.

It is evident that gifted children are advanced learners and often *develop asynchronously* (Silverman, 1997). Psychologists and educators are increasingly concerned about the manifestations of advanced development in gifted children. A major concern is that these manifestations may be misunderstood and suspected of being psychological disorders. One of the disorders that most commonly is suspected in gifted children is Attention Deficit/Hyperactivity Disorder (AD/HD) (Webb, Amend, Webb, Goerss, Beljan, & Olenchak, 2005). Assigning this disorder in gifted children is questionable and presents unique challenges to parents, educators, and psychologists. Tucker and Haferistein (1997) convincingly argued that AD/HD-like behaviour in gifted children can be effectively perceived as a result of their developmental potential, not psychological disorders. Many investigators have recently turned to study the causes of the misidentification problems.

In recent years, there is a limited but increasing amount of attention given to the need of exploring the issue of diagnostic confusion between giftedness and AD/HD. A growing body of recent research and publications (e.g. Edwards, 2009; Eide & Eide, 2006; Flint, 2001; Hartnett, Nelson, & Rinn, 2004; Lawler, 2000; Lovecky, 2004; Rinn & Nelson, 2009; Ruf, 2005; Webb et al., 2005) has highlighted the importance of understanding the similarities and differences between these two conditions. Despite the emphasis among educators in addressing this issue, research in this area appears to focus more on theoretical musing rather than empirical research. In contrast, I believe, as do Goerss, Amend, Webb, Webb, and Beljan (2006), the shortage of empirical evidence would not indicate that the problem of misidentification does not exist.

This chapter will look at the Saudi perspective on the issue of misidentifying gifted children as having AD/HD. Moreover, international perspectives on this issue including experts' opinions are considered. In particular, this chapter has three objectives: first, to briefly overview the critical challenge of giftedness and AD/HD in the literature; second, to highlight the influences of the misidentification of challenging gifted learners as having AD/HD in a Saudi Arabian primary school; and finally, to explain the components of the Four Misses Model of Giftedness and AD/HD (4MsMGAD/HD) in the Saudi context.

The issue that will be discussed in this chapter is universal and is not just an isolated case that is applicable to the Saudi educational setting. In other words, what was observed in the Saudi context could also be applicable in many cultures. Even though this chapter does not aim to provide empirical evidence about the issue of misidentification of giftedness and AD/HD, the Saudi perspective can be seen as a direction for addressing this issue empirically in further research whether in the Saudi context or other educational contexts. It would be valuable to establish more empirical studies on this area. The chapter will also show how the Saudi perspective connects to the international perspectives regarding this issue.

In Saudi Arabia, some primary schools offer a pull-out program for school-identified gifted students within the resource room. These students come to this room part-time during the school day in order to participate in the gifted program supervised by a specialist teacher in gifted education. Gifted students in Saudi primary schools are generally taught with their average peers in the regular classrooms with the regular curricula and mainstream teachers. The special needs and abilities of gifted learners are often neglected in the regular classrooms. Instead of offering differentiated curriculum and pedagogy for gifted children in the regular classrooms, most Saudi primary schools depend on the pull-out programs as a provision for educating such children.

Referrals of AD/HD for challenging gifted learners in Saudi primary schools are becoming an emerging issue. During my recent professional experience of working with gifted children in Saudi primary schools, I observed that teachers often complain about gifted children's behaviours that bother them such as hyperactivity, daydreaming, interrupting classmates and being distracted. Teachers view these behaviours as disruptive. The disruptive and problematic behaviour can be defined as 'challenging behaviour'. Therefore, the challenging behaviour of gifted children is

frequently misinterpreted as AD/HD-type behaviour. This is the main problem that some Saudi schools encounter. Teachers' judgements on the behavioural manifestations of the challenging gifted learners are controversial. I also noticed that the challenging behaviours of such students often seem to dissipate following their placement in the pull-out gifted program.

Although the issue of diagnostic confusion between giftedness and AD/HD has been, and continues to be widely discussed, there is a dearth of research studies in this area in the Saudi Arabian context. Resulting from the unprecedented research on the phenomenon of giftedness and AD/HD in the Saudi Arabian context (Alamiri, 2009), it is evident that the diagnostic confusion between these two conditions has existed among regular classroom teachers. This matter is consistent with evidence from international research in this area (Baum, Olenchak, & Owen, 1998; Cramond, 1995; Eide & Eide, 2006; Freed & Parsons, 1997; Hartnett et al., 2004; Lawler, 2000; Lind, 1996; Lovecky, 2004; Moon, 2002; Ramirez-Smith, 1997; Ruf, 2005; Silverman, 1998; Webb & Latimer, 1993; Webb et al., 2005). As a result, a combination between such professional evidence provided by many experts and researchers in Western cultures, and Saudi experience in primary schools signifies that this issue deserves further discussion.

The critical challenge of giftedness and/or AD/HD

It is generally accepted that giftedness could cause some behavioural challenges in children, specifically when their special needs are not sufficiently met. Undoubtedly the most relevant to this argument, Clark's (2002) research indicates that gifted children could show some problems that actually relate to their typical strengths. Table 1 demonstrates an example of some gifted characteristics and the potential associated problems. The problematic behaviours linked to the strengths of gifted children can be misunderstood, and therefore these children can be erroneously misidentified with AD/HD (Webb, 2000).

The relationship between giftedness and AD/HD has generated a debate among professionals. This debate often focuses on Gifted, AD/HD: Either or Both? This question has been investigated by a number of researchers (Flint, 2001; Kaufman, Kalbfleisch, & Castellanos, 2000; Mika, 2006; Webb et al., 2005). A critical challenge of this question is whether the diagnostic confusion between giftedness and AD/HD exists or not. A group of researchers and experts support the existence of the possible misidentification of gifted children as having AD/HD (e.g. Baum et al., 1998; Cramond, 1995; Flint, 2001; Freed & Parsons, 1997; Hartnett et al., 2004; Kutner, 1999; Lawler, 2000; Lind, 1996; Lovecky, 2004; Ruf, 2005; Silverman, 1998; Webb et al., 2005).

Particularly, psychologist James Webb, who has extensive experience in the misdiagnosis issues, asserts, "some gifted children surely do suffer from AD/HD, and thus have a dual diagnosis of gifted and AD/HD; but in my opinion, most are not" (2000, p. 5). Mika (2006), however, dispels the belief that potential confusion between giftedness and AD/HD exists, and views this confusion as "a myth that should be put to rest" (p. 242). One of her arguments is that the co-existence between giftedness and AD/HD is not supported by empirical evidence.

Table 1. An example of the characteristics of gifted learners

Differentiating Characteristics	Examples of Related Needs	Possible Concomitant Problems
Extraordinary quantity of information, unusual retentiveness	To be exposed to new and challenging information of the environment and the culture, including aesthetic, economic, political, educational, and social aspects; to acquire early mastery of foundation skills	Boredom with regular curriculum; impatience with "waiting for the group"
Advanced comprehension	To be given access to challenging curriculum and intellectual peers	Poor interpersonal relationships with less able children of the same age; adults consider a gifted child "sassy" or a "smart aleck"; a dislike of repetition of already understood concepts
Unusual varied interests and curiosity	To be exposed to varied subjects and concerns; to be allowed to pursue individual ideas as far as interest takes them	Difficulty in conforming to group tasks; overextending energy levels, taking on too many projects at one time
Unusual capacity for processing information	To be exposed to ideas at many levels and in large variety	Resentment of being interrupted; perceived as too serious; dislike of routine and drill
Accelerated pace of thought process	To be exposed to ideas at rates appropriate to individual pace of learning- often accelerated	Frustration with inactivity and absence of progress
Flexible thought processes	To be allowed to solve problems in diverse ways	Perception by other as disruptive and disrespectful to authority and tradition
Comprehensive synthesis	To be allowed a longer incubation time for ideas.	Frustration with demands for deadlines and for completion of each level prior to standing new inquiry.

Source: adapted from (Clark, 2002, p. 57)

In fact, the trend in misidentification of giftedness and AD/HD has become upwards leading, and posed a challenge for practitioners in the field of gifted education. According to Webb et al. (2005), "we are convinced that misdiagnosis of gifted children and adults is not only a very real phenomenon, but also one that is very widespread" (p. xxiv). Similarly, Gates (2007), in relation to her discussion of this issue in American context, laments that "one of the greatest tragedies of our time is the misdiagnosis of children whose gifted behaviours are misidentified as ADD/ADHD" (p. 109).

What makes the potential confusion of giftedness and AD/HD?

The research study in the Saudi primary school aimed to explore contributions to the possibility of misidentification of giftedness and AD/HD based on the perceptions of teachers and parents. In particular, the study sought to determine the nature of this problem. The participants of the study were three mainstream teachers, who taught school-identified gifted students with their average peers in the regular classrooms,

the specialist teacher in gifted education, who teaches gifted students within the pull-out gifted program, and the parents of three gifted students. All participants' views centred on the behavioural manifestations of three gifted male students, aged between 9 and 12, and whom their regular classroom teachers mistakenly observed with AD/HD-type behaviour.

Based on the results of this study, teachers' and parents' perceptions were quite different in their responses to the challenging behaviours of these gifted children. In other words, mainstream teachers tended to misunderstand gifted children's behaviour more than parents did. Both the specialist teacher of gifted children and the parents had more positive attitudes towards children' behaviour than did mainstream teachers. Table 2 briefly highlights the key indicators of participants' descriptions about the behavioural manifestations of these children.

Table 2. The key points of teachers' and parents' descriptions about the case studies

Case studies	Teachers' descriptions (Regular Classrooms)	Parents' descriptions (Growing up / Home)	The specialist teacher of gifted students (Gifted Program)
Case 1	Movement, distraction, inattention.	Naturally grew up, personal traits (i.e. leadership, hard-headed, competitive, desire, intention, challenge).	Different behaviours (positive); interests, creativity, task commitment, leadership.
Case 2	Hyperactive, talkative, a mischief maker, movement.	Gifted, likes movement, is curious, likes asking questions.	
Case 3	Hyperactive, abnormal, high movement, intelligent, a mischief maker, distracts his peers.	Early ear infections, eardrum had burst, hyperactive behaviours, inability to understand the instructions, problem solver, taken Ritalin, then improvement in learning and behaviours.	

Similarly, the results showed the challenging behaviour of gifted children in different situations; regular classroom, gifted program placement, and home (see Table 3).

Five major factors were found to influence the misidentification of challenging gifted children as having AD/HD in the Saudi primary school. These are:

1. the lack of clarity about the diagnostic concept of AD/HD in the Saudi Arabia, and classroom teachers' lack of knowledge of AD/HD;
2. classroom teachers' self-reported lack of knowledge on how giftedness and AD/HD interweave, as well as their misunderstanding of how 'challenging behaviours' they notice in some gifted children may be a result of being gifted, creative, overexcitable, temperamental, or bored.

Table 3. A summary of comparisons between regular classroom, gifted program placement, and home regarding the challenging behaviour of gifted children

Regular Classroom	Gifted Program Placement	Home
Challenging behaviours increase as a result of inappropriate academic environment (i.e. curricula and teaching strategies)	Challenging behaviours decrease as a result of appropriate academic environment, and programs designed to specially engage these students.	The incidence and extent of challenging behaviours are less evident as reported by parents as a result of appropriate environment and parental support.
Challenging behaviours are often misunderstood.	Gifted behaviours (i.e. creativity, task focus and commitment, leadership, interests) increase and are understood, and appreciated by the specialist teacher.	Challenging behaviours perceived to be less of a problem by parents. Whatever problem behaviours were reported they seem better understanding and accepted in their child.

3. the lack of appropriate evaluation and assessment approaches (i.e. measures, diagnosticians, parental assessment);
4. some inappropriate classroom teaching practices; and,
5. the traditional classroom discipline associated with large numbers of students.

The four misses model of giftedness and AD/HD is a way of dealing with these factors.

The Four Misses Model of Giftedness and AD/HD

The updated version of the Four Misses Model of Giftedness and AD/HD (4MsMGAD/HD) emanated from the outcomes of the research study in the Saudi context as well as the related literature (see Figure 1). This model reflects the five major factors previously mentioned. The model is designed to show how gifted children displaying challenging behaviour in the regular classrooms could be educationally misidentified as having AD/HD. This model essentially concentrates more on the educational matter of the potential confusion between giftedness and AD/HD rather than the clinical matter. As can be seen from the Figure 1, the model is divided into two major components: Giftedness (G) and Attention Deficit/ Hyperactivity Disorder (AD/HD).

The model is also subdivided into three categories: lack of knowledge (LK), lack of assessment and evaluation (LAE), and unstimulating learning environment (ULE). The five factors of the potential confusion are embedded into these three categories. Basically, the model indicates the long-term process of the four sequential misses of these two components and how the confusion can be generated. The model will be discussed around two themes: (1) the common characteristics whereby giftedness and AD/HD overlap and (2) the factors influencing the misidentification in Saudi

context and how these factors inform the four sequential misses. In fact, the prime purpose of this model is to describe both the international perspectives and the Saudi perspective on the problem of misidentifying gifted children.

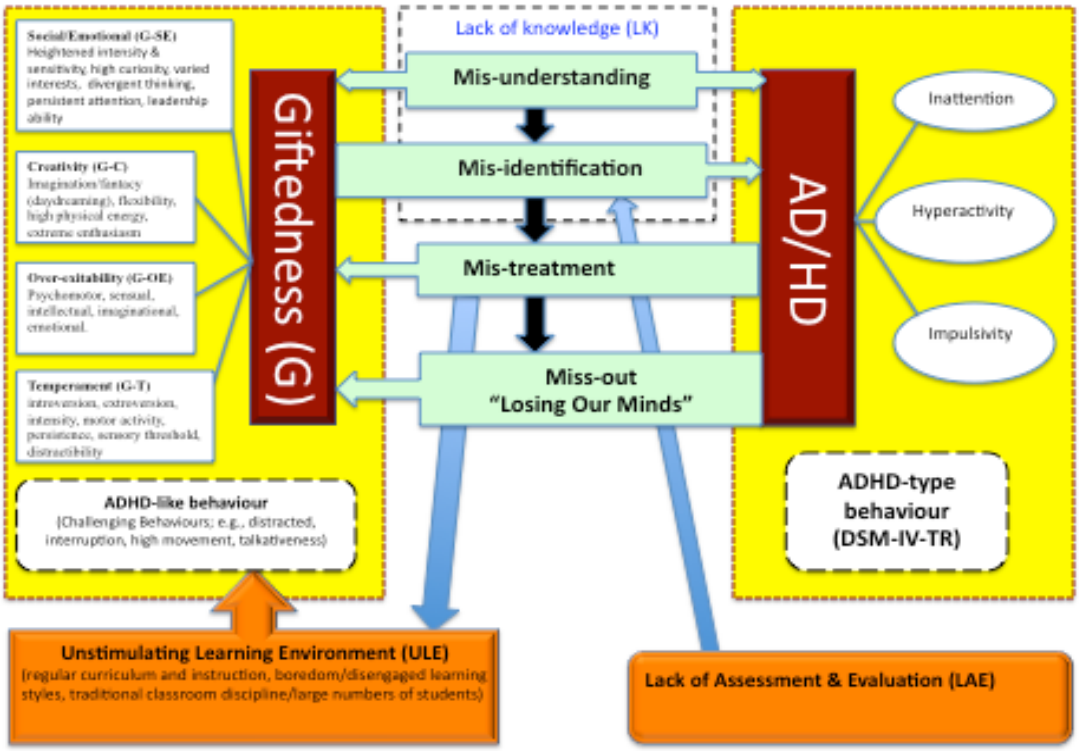

Figure 1. Alamiri's Four Misses Model of Giftedness and AD/HD

1. Giftedness and/or AD/HD

Borrowed from the related literature, the component of giftedness (G) represents the four groups of the characteristics that may be seen in gifted individuals: social and emotional behaviours (G-SE), creativity (G-C), over-excitability (G-OE), and temperament (G-T) (see Figure 1). Each group includes an example of some characteristics as being shown in different sources. These characteristics may warrant an AD/HD diagnosis in gifted children in different ways. To illustrate, these characteristics may be associated with the three major criteria of AD/HD, which are inattention, hyperactivity and impulsivity, and on the basis of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) (American Psychiatric Association, 2000).

Social and emotional (G-SE)

Gifted individuals by virtue of their natural characteristics and some environmental factors have the potential to be seen with problematic behaviours. Webb et al. (2005) summarised some social and emotional behaviours of gifted children:

- Unusually large vocabularies and complex sentence structure for their age.
- Greater comprehension of subtleties of language.
- Longer attention span; persistence.
- Intensity and sensitivity.
- Wide range of interests.
- Highly developed curiosity and limitless questions.
- Interest in experimenting and doing things differently.
- Tendency to put ideas or things together in ways that are unusual, not obvious, and creative (divergent thinking).
- Learn basic skills more quickly, with less practice.
- Largely teach themselves to read and write as preschoolers.
- Able to retain much information; unusual memory.
- Have imaginary playmates.
- Unusual sense of humor.
- Desire to organize people and things, primarily through devising complex games. (p. 4)

Webb et al. (2005) argue that these characteristics could correlate with the area of misdiagnosis and dual diagnosis. They also indicate that gifted individuals with some of these behaviours are more likely to be misidentified as having behavioural problems than gifted children with intellectual or creative abilities. In relation to the overlap between giftedness and AD/HD, Webb and Latimer (1993) and Webb et al. (2005) highlighted the behaviours associated with AD/HD and the behaviours associated with giftedness (see Table 4).

Table 4. Similarities between ADD/AD/HD and Gifted Behaviours

Behaviours Associated with AD/HD (Barkley, 1990)	Behaviours Associated with Giftedness (Webb, 1993)
Poorly sustained attention in almost all situations	Poor attention, boredom, daydreaming in specific situations
Diminished persistence on tasks not having immediate consequences	Low tolerance for persistence on tasks that seem irrelevant
Impulsivity, poor ability to delay of gratification	Judgment lags behind intellect
Impaired adherence to commands to regulate or inhibit behaviour in social contexts	Intensity may lead to power struggles with authorities
More active, restless than normal children	High activity level; may need less sleep
Difficulty adhering to rules and regulations	Questions rules, customs and traditions

Source: adapted from Webb, Amend, Webb, Goerss, Beljan, & Olenchak (2005, p. 45)

Table 4 illustrates that the similarity between giftedness and AD/HD could generate confusion for teachers and parents. The study of Hartnett et al. (2004), and its extended study by Rinn and Nelson (2009) have provided empirical evidence to the existence of potential confusion between giftedness and AD/HD.

Creativity (G-C)

A number of authors (Cramond 1994, 1995; Flint, 2001; Guenther, 1995; McCluskey, & McCluskey, 2003) provided evidence on how creative characteristics can overlap with AD/HD characteristics. In particular, Cramond (1994; 1995) clearly mentioned

that behaviours that are often seen in creative individuals such as daydreaming, high energy, and impulsivity could be associated with the essential characteristics of AD/HD (inattention, hyperactivity and impulsivity). As a result, the creatively gifted individuals are more likely to be suspected of AD/HD.

Over-excitability (G-OE)

The concept of over-excitability (OE) stemmed from Dabrowski's theory of positive disintegration (1964; 1972), which is referred to, by some researchers in the field of gifted education, as the theory of emotional development (Piechowski, 2006; Silverman, 1993). The concept of OE is an essential element of Dabrowski's theory (Gallagher, 1985; Mika, 2006; Piechowski & Colanglo, 1984). A number of authors (e.g., Piechowski & Colangelo, 1984; Tucker & Hafenstein, 1997) employ Dabrowski's theory to address the developmental potential of gifted children. Dabrowski (1972) determined five areas of over excitability: psychomotor, sensual, intellectual, imaginational, and emotional. Many writers (e.g., Bouchard, 2004; Tieso, 2007a; 2007b; Tucker & Hafenstein, 1997) have administered the characteristics of over-excitability as an instrument to identify gifted individuals.

It is argued that gifted children who possess OE may be mistakenly referred for AD/HD, due to the complexity between giftedness, OE, and AD/HD. For example, many researchers agree that gifted individuals with psychomotor OE or imaginational OE have the potential of being misidentified as ADHD or ADD, because of the similarity between psychomotor OE and hyperactivity on one hand, and the similarity between imaginational OE and inattention on the other (e.g. Flint, 2001; Hartnett et al., 2004; Piechowski, 2006; Silverman, 2002; Webb et al., 2005). This argument was supported by Montgomery (2003) who proposed that when family and educators misunderstand the OE of gifted children, those children may erroneously be identified with behavioural and emotional difficulties.

Temperament (G-T)

Kristal (2005) summarised the nine characteristics of temperament originated by Thomas, Chess, and Birch (1968) (see Table 5).

Table 5. Characteristics of Temperament

Sensory threshold describes the level of stimulation necessary to evoke a response. **Activity level** is the child's general level of motor activity when awake and asleep. **Intensity** is the reactive energy of a response, whether happy, sad, or angry; how expressive a child is. **Rhythmicity** determines the predictability of bodily functions such as appetite, sleep/wake cycle, and elimination patterns. **Adaptability** describes how easily a child adjusts to changes and transitions. **Mood** is the basic quality of disposition. It may be more positive (a happy or cheerful child) or more negative (a cranky or serious child). **Approach/withdrawal** is the child's initial response to novelty: new places, people, situations, or things. **Persistence** describes the ability to continue an activity when it is difficult or when faced with obstacles; "stick-to-it-iveness." **Distractibility** is the ease with which the child can be distracted by extraneous stimulation; the level of concentration or focus.

Source: adopted from (Kristal 2005, p. 15)

The majority of researchers in the field of temperament (e.g., Kagan & Snidman, 2004; Keirsey & Bates, 1984; Kristal, 2005; Thomas, Chess, & Birch, 1968) have shown that temperament impacts upon individual personality, behaviour, and learning. Moreover, it is argued that there is an overlap between individual temperament style and AD/HD characteristics (Fischer, Barkley, Fletcher, & Smallish, 1993; Keogh, 2003; Kristal, 2005; Talay-Ongan, 2004). In particular, the characteristic of temperament in children might be misinterpreted as AD/HD (Keogh, 2003; Kristal, 2005). This case is consistent with Silverman's (2002) presentation. She shows evidence on how the confusion between extroversion, introversion and AD/HD can occur (see Table 6).

Table 6. Extroversion and Introversion

Extroversion	Introversion
Distractible	Capable of intense concentration
Impulsive	Reflective
Are risk-takers in group	Fear humiliation; quiet in large group

Source: adapted from (Silverman, 2002, p. 219)

In addition, the behavioural problems of children with temperament styles can be attributed to inappropriate environment (Kagan & Snidman, 2004; Keirsey & Bates, 1984; Keogh, 2003; Kristal, 2005; Oakland, Faulkner, & Bassett, 2004; Prior, Sanson, Smart, & Oberklaid, 2000). In relation to gifted learners, it has been suggested that temperament has a significant impact on the learning styles of gifted children (Faulkner, 2009; Mills, 2003; Oakland, Joyce, Horton, & Glutting, 2000). To illustrate, Faulkner (n.d.) examined the overlap between temperament and giftedness based on his research study in rural schools in Australia. He found that temperament affects not only the identification of children's behaviour, but also the relationship between teachers and students. His research suggests that extroverted students who prefer cooperative activities may present challenging behaviour to introverted teachers who use individual activities. As a result, gifted children exhibiting temperament styles may be seen as being prone to problematic behaviours, especially when they are disengaged with teaching practices.

2. Influences of the potential confusion and the four misses in the Saudi context

As indicated, the aforementioned factors of the potential confusion of giftedness and AD/HD can be classified into three categories: lack of knowledge (LK), lack of assessment and evaluation (LAE), and unstimulating learning environment (ULE) (see Figure 1).

Teachers' Lack of Knowledge (LK)

In Saudi Arabia, it is likely that the training programs for the primary school teachers have neglected to consider the issue of potential confusion between giftedness and AD/HD. Furthermore, the Western psychiatric concept of AD/HD has been translated to Saudi culture. It would appear that the use of the term AD/HD is not uncommon among teachers, but the clinical diagnosis criteria of AD/HD are less known. 'AD/HD' as a descriptor for some children with problematic behaviours has gained increased currency in the Saudi primary schools among teachers and parents.

In addition to the concept of AD/HD, the concepts of giftedness, over-excitability and temperament are often unknown among primary school teachers. Additionally, it has been observed that teachers in Saudi primary schools have a narrow perspective about the concept of giftedness and the diverse characteristics of gifted children. For instance, creative, social and emotional characteristics are more likely to be overlooked by classroom teachers in teaching gifted children.

Teachers interviewed consistently reported that they have no knowledge on how over-excitability, temperament, and creativity could associate with the behavioural manifestations of gifted children, behaviours that might be suspected of AD/HD. For this reason, teachers were unable to differentiate the various characteristics of gifted children from the characteristics of AD/HD. As a result, distinguishing between AD/HD-type behaviour and AD/HD-like behaviour is a formidable task that teachers face in Saudi schools.

According to the literature, the possibility of misidentifying gifted children's behaviours as AD/HD can be ascribed to the lack of knowledge about gifted characteristics and AD/HD characteristics and how these two components overlap (Baum et al., 1998; Hartnett et al., 2004; Lovecky, 2004; Neihart, 2003; Piechowski, 1991; Webb, 1993; Webb et al., 2005). Silverman (1998) clearly points out that there is a shortage of training programs for school employees on how they can differentiate giftedness from AD/HD. This statement concurs with the results of Hartnett et al's. (2004) empirical study. They found that due to insufficient training, school counsellors seemed to be unconcerned about the interaction between giftedness and AD/HD, and this could lead them to misinterpret gifted children's behaviour as AD/HD.

Lack of Assessment and Evaluation (LAE)

There are some critical challenges in providing accurate assessments and evaluations to distinguish between behaviours associated with giftedness and those associated with AD/HD. And these have often been overlooked in the Saudi primary school. Teachers' judgments on the challenging behaviours of gifted students were merely based on their regular observations without using a particular type of evaluation or assessment. Moreover, communication between mainstream teachers and parents with respect to the challenging behaviours of gifted children seemed to be underemphasised. Therefore, teachers and parents expressed different perceptions on the behavioural manifestations of gifted children. Similarly, teachers did not often engage with the school counsellor or diagnostician, nor did they seek advice about the behavioural problems of gifted and non-gifted children.

How can teachers and parents know whether the AD/HD-like behaviours of children are indicative of their giftedness, or their true AD/HD? Leroux and Levitt-Perlman (2000) assume that the obstacles in distinguishing between giftedness and AD/HD, as well as the complexity in identifying when both behaviours co-occur, could contribute to the misdiagnosis. Lind (1996) also claims it is unsuitable to identify a child with AD/HD before using inclusive diagnostic evaluation whereby one can discriminate between AD/HD-type behaviour and AD/HD-like behaviour.

It has been suggested that IQ tests, achievement tests, neuropsychological tests, personality tests, and teacher and parent assessments may be useful for making a precise decision about whether a gifted child has AD/HD or not (e.g., Lovecky, 2004; Webb & Latimer, 1993). Although IQ tests are used as a prime criterion in identifying gifted students in Saudi primary schools, teachers who misidentify gifted children with AD/HD do not often consider this criterion on their judgements of the gifted children's behaviours. In addition, it is important to look at the environmental factors that could help distinguish between giftedness and AD/HD. For instance, it is significant to compare the AD/HD-like behaviour of gifted children and their circumstances, such as between school and home (Baum et al., 1998; Lovecky, 2004; Webb & Latimer, 1993). In order to differentiate giftedness from ADD or AD/HD, there are several questions that need to be considered before generating a diagnostic determination:

1. Are the ADD/AD/HD behaviours present in most or virtually all settings?
2. Is there great inconsistency in the quality of the child's work in almost every setting?
3. Does the child's behaviour significantly change when the novelty of a situation wears off?
4. Is the child's behaviour improved when more structure is given?
5. When the child is interrupted, how rapidly is he [or she] able to return to a task or able to shift tasks?
6. Can the child engage in solitary activity for long periods of time quietly? (Webb et al., 2005, p. 59)

These questions are useful because they present some ways whereby one could determine whether a gifted child has AD/HD or not. Webb et al. (2005) strongly comment "as many as half of the gifted children who have received the diagnosis of ADD/AD/HD do not have the significant impairments that are required by the DSM-IV-TR" (p. 59). Consequently, some problematic behaviours exhibited by gifted children "can be better explained by their giftedness and its implications. In short, they are simply incorrectly diagnosed as ADD or AD/HD" (Webb et al., 2005, p. 37).

Regrettably, aforementioned practices of evaluation and assessment supported by many researchers have not been offered in the Saudi primary school. Although there has been an increasing amount of attention given to the importance of recognising the similarities and differences between giftedness and AD/HD in many cultures, it would appear that teachers and parents are rarely provided with a practical guide that would effectively enable them to understand the overlap between these two components.

Unstimulating Learning Environment (ULE)

In Saudi Arabian primary schools, curricula are often designed to serve average students rather than gifted students. In other words, regular classroom teachers tend to disregard the value of differentiating curriculum and instruction for gifted children. In fact, it seems that teacher-training programs are not adequately focused on this matter. The important question that arose from the literature is: "Do AD/HD behaviours dissipate when educational programs are carefully designed to meet the needs of individual students?" (Baum et al., 1998, p. 103). The Saudi experience

presents evidence that links to this question. To illustrate, the problematic behaviours that regular classroom teachers observed in the gifted children reduced in the gifted program placement and home (see Table 3). Furthermore, the traditional discipline of the regular classrooms combined with the large numbers of students in one class had an impact on increasing the challenging behaviours of gifted children on one hand, and teachers had a difficulty in managing the diverse behaviours of all students on the other.

As a result, gifted children tended to manifest challenging behaviours, which resemble AD/HD, as an expression of being bored and disengaged with the classroom environment. As was mentioned previously, inexperienced teachers misread these behaviours and frequently misidentified gifted children with AD/HD-type behaviour. This is the most likely reason for the potential confusion between giftedness and AD/HD in the Saudi primary school (see Figure 1). This situation is clearly relevant to Ruf's (2005) argument. She claims "[s]ome gifted children are suspected of having learning disorders like ADHD or ADD, when in reality, these children are simply in an environment that doesn't keep them engaged" (p. 263).

Inappropriate classroom practices can be seen as a major source for the potential confusion between giftedness and AD/HD. This argument has been acknowledged by a number of the best-known researchers in the field (e.g., Baum et al., 1998; Eide & Eide, 2006; Freed & Parsons, 1997; Hartnett et al., 2004; Lovecky, 2004; Moon, 2002; Tucker & Haferistein, 1997; Webb & Latimer, 1993; Webb et al., 2005). Despite the diagnostic criteria of AD/HD in DSM-IV-TR, the effect of the educational environment on the diagnostic confusion is acknowledged. "Inattention in the classroom may also occur when children with high intelligence are placed in academically unstimulating environments" (American Psychiatric Association, 2000, p. 91).

The Four Misses of Giftedness and AD/HD

Figure 1 shows the four sequential misses of giftedness and AD/HD. The four misses briefly reflect the three major areas in which there is potential confusion between giftedness and AD/HD and the consequences. Because of teachers' *misunderstanding* of how giftedness and AD/HD intersect, gifted children whose challenging behaviours are a result of being profoundly gifted, creative, bored, and intense are more likely to be *misidentified* as having AD/HD. Teachers' misunderstanding and misidentification are affected by the teachers' lack knowledge on the concepts of giftedness and AD/HD. What heightens the problem of misidentification is the lack of assessment and evaluation processes. In other words, assigning AD/HD among gifted children depends on teachers' regular observations of the behaviours that bother them.

In addition, when teachers misidentify gifted children as AD/HD, they not only misidentify their challenging behaviours, but also misidentify their academic needs. Rather than providing gifted children with teaching modifications that enhance their potential, these children continually receive traditional and inappropriate instructions that cause the boredom and frustration of a gifted child. This can lead to children exhibiting behaviour that looks like AD/HD.

Consequently, children's gifts become educationally mistreated in regular classrooms. They become 'left behind' learners and miss their educational rights to raise their

exceptional abilities. This statement can be reinforced by a case study presented in the previous research in Saudi primary schools (Alamiri, 2009). The study demonstrated a striking story of a gifted child who was diagnosed early with AD/HD (see Table 2, case 3). This child was mistreated by his first school's personnel. They made a decision to expel him from the school because they viewed him as abnormal and unable to learn, despite the mother's demand and belief in the ability of her son to learn. Surprisingly, when this child moved to another school, which offered a pull-out gifted program, he was selected as one of the top ten gifted students, and participated in the gifted program. The advisor of this program identified him as an 'exceptional child'. The child's treatment in his first school illustrates how the school can 'lose great minds'.

In hindsight, and based on 4MsMGAD/HD, it would be important to examine how many gifted students with inappropriate behaviours may be excluded from a gifted program. It might be anticipated that some regular classroom teachers do not nominate a challenging student for a gifted program because they are merely bothered by inappropriate behaviours of the student, and do not notice his or her intellectual abilities and special needs. This potential problem can be maximised when the teachers' nominations are used as a prime criterion for the identification of gifted students on one hand, and teachers lack the knowledge and misunderstand the challenging behaviours of gifted children. The negative attitudes of teachers towards the challenging behaviours of gifted children could contribute to increasing misidentification. In accordance with Flint (2001), "[m]isdiagnoses can cut some students off from services that they may need" (p. 68).

Having discussed this model, it is interesting to see that the Saudi perspective adds to the international perspectives on the existence of confusion between giftedness and AD/HD. Despite the cultural and educational differences between Saudi Arabia and Western countries, there are clear consistencies in relation to the misidentification issues in both contexts. There is an opportunity to apply this model to other cultures, because it includes some critical issues that can be found in many educational settings. In particular, the three areas influencing the confusion between giftedness and AD/HD can be viewed as universal issues. Therefore, the need for effective professional development in these three areas was a matter brought to light by the model. The model implies that improving teachers' knowledge on how they distinguish between giftedness and AD/HD plays a key role in alleviating the problem of the potential confusion. In addition, this model could encourage researchers to provide more empirical studies about misidentification problems.

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