



ASD and the teenage years – thinking about changes in mind and body.

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Why talk about the teenage years and adolescence? This fact sheet is about the stage of adolescence in relation to cognitive development (thinking) and physical development. If you understand the changes that are going on in the adolescent's thinking, it may well help you to understand him/her better. Also, knowing what stage of cognitive development the adolescent is at should help you to choose management strategies that suit their age and stage. Similarly it can be helpful to take time to think about changes to body (physical and sexual development) that adolescence brings to the young person. These changes can be both exciting and stressful for all teenagers and particularly for young people with ASD and their parents and teachers.

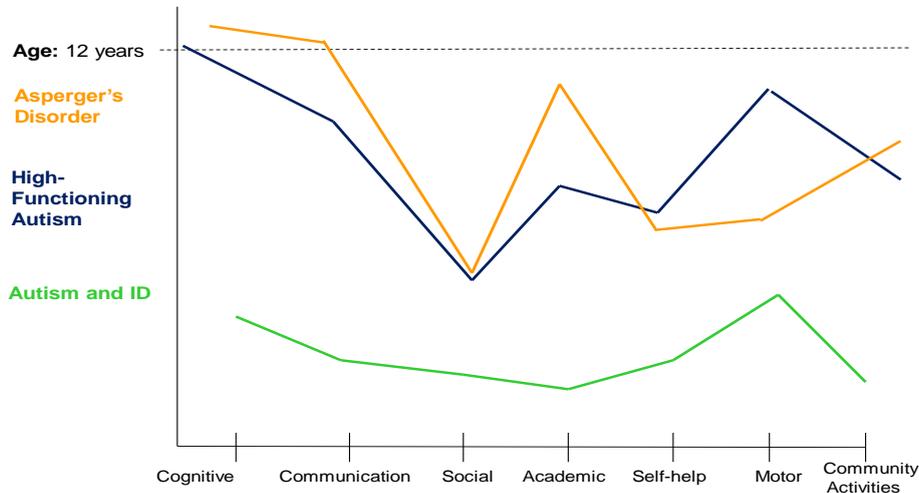
Adolescence – A time of change: the period and process of development from child to adult.

The word adolescent is derived from the Latin word *adolescere* to grow. Now we use the term adolescence when we refer to young people who are no longer children but are not yet adults. Adolescence begins at the time of puberty when sexual development begins, at around 11-14 years of age. It ends with the social transition to independence from the family but there is no clear marker of when that time is. In our society, some young people are not independent of their parents until their twenties.

Cognitive development

IQ scores on standardised tests of intelligence of children with autism typically show an unusual and distinctive pattern of performance with deficits in verbal sequencing and abstraction skills and better rote memory skills (Brereton, Tonge *et al*, 2009). Tasks requiring manipulative, visuo-spatial skills or immediate memory may be performed well, such as Block Design and Object Assembly. These skills may be the basis of "islets of ability" such as musical ability. Children diagnosed with Asperger's disorder may also have an uneven developmental profile with better language skills and poorer motor skills. High functioning adolescents often continue to have difficulties with social skills and accessing community activities. They may also have a discrepancy between their IQ score and their ability to

achieve academically at school because social and behavioural difficulties get in the way of learning and adapting to school life. The diagram below shows three learning profiles. One for an adolescent with autism and overall average intelligence (high functioning autism), one for an adolescent with Asperger’s disorder and one for an adolescent with autism associated with an intellectual disability.



Adolescence brings about changes in thinking in the young person. Piaget (1952) developed a cognitive-developmental theory to explain the development and functioning of the mind. The pre-adolescent thinks in a concrete way, speaking of specific people, events and objects. He/she cannot understand concepts such as the relationship between the individual and society. In most children thinking becomes more abstract between eleven to fourteen years of age. By fourteen years of age the adolescent can conjure up make believe situations, think about hypothetical possibilities, what might be, the future and the remote. For example an adolescent can think about what he/she is thinking about and reflect on his/her thoughts. As thought becomes more abstract, the adolescent begins to understand that a community of people is bound together by largely invisible rules and obligations (Hoffman *et al.*, 1988). This ability to deal with abstractions and logical possibilities was described by Piaget (1952) as the stage of **formal operations**, the final stage of cognitive development.

Stages in Piaget’s cognitive-developmental theory

Stage	Age	Major Characteristic
Sensorimotor	Infancy (birth -2 years)	
Preoperational	Preschool (2 – 7 years)	
Concrete operational	Childhood (7 to 11 years)	
Formal operational	Adolescence and adulthood (from about 11 years)	Formal operational thought is far more abstract than a child’s earlier thinking. Adolescents can think in terms of propositions such as “If.....then”, can now conjure up make-believe situations and think about hypothetical situations.

		Logical thought begins and the adolescent can devise a plan to solve a problem and systematically test possible solutions.
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Some adolescent feelings and behaviours arising from changes in cognition (thinking)

- Improved ability to use speech to express self
- Tendency to revert to more childish behaviour, particularly when stressed
- Mostly interested in the present, with limited thoughts of the future
- Rule and limit testing
- More consistent evidence of a conscience and sense of morality
- Realization that parents are not perfect
- Self preoccupation and tendency to take things personally (self reference)
- Inconsistent beliefs, ideas and behaviours from the general to the particular

You may find it helpful to think about this in relation to your son/daughter or the students you are teaching.

<p>Questions for parents and teachers:</p> <p>Which feelings and behaviours in the list above is the adolescent displaying at the moment?</p> <p>How am I currently dealing with or responding to them?</p>
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Thinking style of the adolescent	Parent and teacher responses & management
<i>Rigid thinking</i>	
<i>Difficulty accepting exceptions</i>	
<i>Poor understanding of irony, metaphor, sarcasm</i>	
<i>Difficulty understanding time</i>	
<i>Difficulty sequencing /organizing</i>	
<i>Obsessive and compulsive thinking</i>	
<i>Problems identifying own and others' emotions</i>	
<i>Focus on details</i>	

Physical development

Biological changes and physical maturation of the body involving growth in size and change in profile are probably the most obvious changes that we see in the maturing adolescent. Early adolescence is characterised by **puberty**, the process that changes the immature child into a sexually mature person. The reproductive glands (the ovaries in girls and the testes in boys)

together with the adrenal glands, the pituitary gland and parts of the brain switch on and interact to secrete sex hormones into the bloodstream. New hormone levels (more androgens in boys, more oestrogen in girls) lead to the dramatic outward physical and inward organ (including the brain) changes of puberty. It takes about four years from the beginning of this process for a child's body to change into an adult's body. Hormone secretion continues to increase throughout adolescence and peaks at about twenty years of age.

Children progress through puberty at different rates and times. For example, one girl may reach full breast development in a couple of years and another may take four years to reach the same development. Some body parts may initially be disproportionately large (usually hands and feet) and growth spurts occur at an uneven pace. For example, have a look at a photograph of the sculpture by Michelangelo of the youth David who slew Goliath with his sling shot.

Girls. From about the age of ten, girls grow taller, hips broaden, and they add normal body fat. This fat tissue which also is a store for oestrogen particularly gathers above the pubic area, hips and thighs. This growth usually peaks at about twelve years of age. Breast development starts at about ten and reaches full size about three years later. About the same time the uterus and vagina begin to mature and the voice lowers. Pubic hair usually appears when a girl is about eleven and underarm hair about two years later. Menarche (the first time a girl menstruates) may occur at any time from between ten and seventeen years. For girls, the reaction to their first period may depend upon how well they have been prepared for this event. Girls with autism are no different to others in this regard. The difficulty for parents will most probably be adjusting the type of preparation and the time needed for this according to their daughter's level of understanding. It is a time for simple and clear instruction. For some less able girls it is necessary to instigate a pad programme and picture system a couple of years before you anticipate her periods will start (perhaps as early as 8 or 9 years of age). For others who are more able, the sexual development classes at school, discussion with parents and simple, illustrated books may well suffice.

Boys. Boys usually begin their growth spurt later than girls and it usually peaks at about fourteen years of age. Most will reach their adult height by about sixteen but some may not begin this growth spurt until that age. Shoulders become broader, weight increases because of increased muscle (rather than an increase in weight due to increased oestrogen storing body fat for girls). From about twelve, the penis and scrotum become larger and will be a mature size in three to four years. About eighteen months after the penis has begun to grow, a boy is able to ejaculate semen, but even infant boys may have erections if their penis is stimulated. By the time a boy is about fifteen years old, his semen contains mature sperm. Pubic hair grows at the same time that the genitalia grow and underarm and facial hair appear about two years later. As the larynx becomes larger, the vocal cords lengthen and the voice becomes deeper after going through a period of fluctuation (voice breaking).

A rapidly changing body!

Physically adolescents grow more rapidly during puberty than at any other stage except in infancy which often leaves them looking and feeling awkward and different. Because visible body parts grow at differing times, the overall effect is one of a body that is different, ungainly, awkward, clumsy and hard to coordinate and strange. Head, hands and feet grow fastest and will reach adult size before the rest of the adolescent's body. Next to grow are the neck, arms and legs with the trunk being the last to grow.

For most adolescents the physical changes that they experience at this time have a significant effect on how they feel about themselves. Most will spend time looking at their bodies and be preoccupied with looking at themselves in a mirror. For example teenagers can usually recognize their own nose in a group of photographs of noses, but adults are mostly unable to do this. Some will feel proud of the changes in their body while others may be embarrassed or have a mixture of these feelings. Peer pressure about early or late maturation can affect the teenager's self esteem in either a positive or negative way. For example the boy who begins a growth spurt and is taller and more muscular than his peers may be proud of these obvious signs of physical change. On the other hand, a girl who has developed breasts earlier than her peers and begun to change from a slim pre-pubertal shape to a more mature shape with additional body fat may feel embarrassed and have negative feelings about weight gain.

Diet, exercise and sleep

Adolescence can be a time when parents and teachers are concerned about the young person's weight and eating habits. An overweight adolescent in most cases will become an overweight adult. Adolescents typically enjoy foods that are high in fat, sugar and salt and may eat beyond their needs at this time. The rules for a healthy diet are moderation, variety and balance and eating fresh food daily from the major food groups (Bennett and Rowe, 2003). Breakfast is important and should never be missed. Ideally, breakfast should comprise of a variety of foods such as milk, cereal, toast, eggs and fruit for a good start to the day and provide some of the calcium and iron needs. Growing bones need calcium during adolescence and good sources of this are milk, yoghurt and cheese. It may be easier to not have junk food and sugary drinks at home and at school if you have a teenager who has a passion for sugar, salt and fat.

 <p>Does the teenager eat daily from each of these food groups?</p>
bread, cereals, rice, pasta, noodles
vegetables, legumes, fruit
milk, yoghurt, cheese
meat, poultry, fish, eggs, nuts

At home it can be difficult to get teenagers moving! Typically, adolescents spend a lot of time watching TV, playing computer games and are often driven to destinations rather than have to walk. Inactivity will increase the likelihood of weight gain in this age group. There is no doubt that about 30 minutes of exercise a day (the sort that raises a sweat) will be of benefit to overall improvement in health.

Bennett and Rowe (2003) list the following benefits of regular physical exercise:

- effective muscle control will improve posture
- as physical endurance increases fatigue decreases

- exercise can be an effective way of coping with stress and anxiety because tension decreases with physical activity
- weight is more easily controlled
- can ward off strokes and heart attacks in later life (p.90)

 <p>Does the teenager do any of the following daily?</p>
play a team sport
jump on a trampoline
walk for more than 15 minutes
ride a bike
swim
go for a run
walk the dog
ride a scooter

Some adolescents with ASD have a history of poor sleeping. This may have settled during middle childhood only to return in adolescence. Adolescents who are going through their “growth spurt” may complain of tiredness and seem to need more sleep. Growth hormone is secreted during sleep and therefore your son/daughter may have literally grown overnight. You may have had a bedtime routine for your children when they were little. Adolescents can also benefit from a structured bedtime routine in which they go to bed to sleep so that they will settle more easily and have a good night’s rest.

Try these:

- Get homework finished about one hour before going to bed so that there is time to unwind
- Dim, or no lights
- Have some quiet music playing
- Listen to a story tape
- Read a favourite book
- Drink a glass of milk
- Do some relaxation exercises
- Do not watch a screen

References and further reading:

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