

The changes we see in our kids when they hit adolescence can leave many of us with a sense of whiplash. The tiny adorable humans who wanted to us to read to them, sing to them, cuddle them, kiss them goodbye at parties, at some point become ... different. Loved, wonderful, funny, creative, but not so tiny and adorable – and don't even joke about kissing them goodbye at parties. Or anywhere else where there might be actual people.

We blame raging hormones, lack of sleep, friends, 'that show' they've been watching, social media. Then there are the days – plenty of them – that we blame ourselves, wondering what we did or didn't do that could possibly explain what's going on.

What's going on is adolescence. It's as simple and as complicated as that. The changes they are going through are all being driven by a brain that is undergoing a massive renovation. It has to be this way to get them ready to be healthy, strong, productive, happy adults.

If you can understand what is happening in the adolescent brain, what they are doing will make sense. You'll still find yourself baffled, angry, bewildered, sad – all of those things – but hopefully less than you would otherwise. You're building humans, great ones, and as with anything that is worth the effort, it won't always run to schedule, it won't look the way you thought it would, and some days – probably plenty – it will be a red hot mess.

The brains are developing into the adult versions. In the same way they wobbled and fell when they were little people learning to walk, they will wobble and fall as they learn how to be adults. Keeping this in mind will help things run smoother.

The Changes that Every Adolescent Will go Through

1. Adolescence – The brain gets a makeover.

The changes in the brain during adolescence are dramatic. They have to be – the transition from childhood to adulthood wouldn't happen without some serious neural remodelling. During adolescence, they will be driven to experiment with the world and their place in it, try new things (important for their new adult roles) and become more independent. Every one of these changes is there to fulfil an important developmental role and bridge the vast gap they will travel between childhood and adulthood. The results will be worth it but like any big renovation, things will get messy for a while.

2. Adolescence lasts until early to mid 20s.

Adolescence would be a breeze if all that our kids needed to be healthy, well-adjusted adults was the adult hardware. Humans are complicated and making the fully developed versions takes a lot of experiencing, experimenting and learning. And time. It takes a lot of time. Our kids will be under the influence of an adolescent brain until they are about 24 years old. Best save your exhale for then.

3. The brain develops from the back (primal, instinctive) to the front (measured, rational).

Throughout the course of adolescence, the brain will develop slowly from the back to the front. The emotional, impulsive limbic system will develop first and will therefore have most of the control over behaviour and decisions. The sensible, rational prefrontal cortex won't get involved until early to mid-20s. During this time, it will be as though our adolescents are at the wheel of a high-performance car, but without any brakes. Given the pull away from their parents, they will also be without a reliable GPS. It would be easy to roll your eyes at evolution and wonder what it was thinking, giving our adolescents all that power minus the sensibility. Remember it is all to get them ready for adulthood. They need the courage

and the boldness to explore the unfamiliar and try out new things. There are so many things they need to experience on their way to adulthood that might not happen if they were able to talk themselves out of it.

4. Impulse control. Impulse what?

With the prefrontal cortex still on its way, adolescents will often think it or feel it, then say it or do it. Though they may not always be biologically able to keep a hold of their impulses, they need to know when they've gone too far. The repetitive reminder of what's expected will get tiring – massively so – but it will eventually lead them to internalise the rules and respond to the world (and their parents!) as emotionally balanced, emotionally responsible adults. Yes. Bring that on.

5. The adolescent brain interprets emotion differently to an adult brain.

Research has shown that teens and adults each use a different part of the brain when interpreting what other people are feeling. Adults use the rational prefrontal cortex to interpret facial expressions. Teens use the amygdala, which is primed to interpret emotions as a threat or hostile attack. The amygdala runs on impulse and gut reaction, so you can see how that's going to end up. Teens will **often read anger or aggression** when there was none. This is why you might find yourself suddenly in the midst of battle with your adolescent with no idea how you got there. You got there because their brain thought you were up for a fight, and it helped them put on the gloves.

6. Sometimes they'll need to 'borrow' your pre-frontal cortex.

As the parent who is often on the end of the misinterpretation, (you, so innocently: 'So who else is going to the party?' them: 'What? Don't you trust me or something?! I can't believe you don't trust me!'), know that it comes with the territory of adolescence. With the 'calm down, think about it' part of their brains still coming, they'll need to borrow yours sometimes. When you are faced with a flare-up, try to breathe and let the wave wash over you. It will often pass in a minute or two provided that nothing happens to stoke the flames, (like, you know, if you breathe too loudly/too softly/at all). When things have settled down, bring your calm and sensibility to the table. Speak as though you are the person you want them to be. This isn't easy and it doesn't mean you don't have boundaries around behaviour. What it means is not giving oxygen to the fire. Don't worry if you get drawn in to the argument sometimes. It won't hurt them to see that you're human.

7. They can learn things quickly. But only if they want to.

The brain of an adolescent has an oversupply of neurons (brain cells) and an undersupply of strong connections between the neurons. The neurons are responsible for processing information, so the more neurons there are, the more potential there is to learn and process information – but only if the connections between the neurons are strong and plentiful. It is both the number of neurons and the complexity and strength of the connections between the neurons that determine how effective the brain is. During adolescence there is an abundance of neurons, but not enough connections. Think of their brains like baby foals – bouncing with energy and enthusiasm, but waiting for direction. The direction comes as the connections between neurons strengthen.

The neuroscientists have a saying that they bring out at neuroscientist dinners and poetry nights – 'the neurons that fire together, wire together'. When neurons in the brain fire together, they strengthen and build connections. Firing happens through experience, learning and repetition. Every time your adolescent does something, the relevant neurons fire and form connections with other neurons. The more they fire, the stronger the connections. The stronger the connections, the more efficient that part of the brain will be.

8. Whatever they do a lot of, they will get good at.

The adolescent brain has a spectacular capacity for learning. Because of this, whatever the brain does a lot of during adolescence, it will become really good at. Sport, drama, art, texting, video games, lying on the couch, arguing, chemistry, music – anything.

9. Use it or lose it.

The neuroscientists clearly know their way around a rhyming word. ‘Use it or lose it’ is another fave and refers to the withering away of neurons that aren’t needed. This is an important part of the brain perfecting itself to be the most efficient brain it can be. There is only a limited amount of space in your head. You can’t grow your skull, which is a pity, so the brain keeps the neurons it uses the most and get rid of the ones it doesn’t. By doing this, the brain is able to use the space and energy to strengthen the skills and qualities that most important, as in most used. It’s evolution’s way of customising the brain to suit. Nice to have a limited edition.

For example, if your teen plays music, the ‘playing music’ neurons will strengthen and the skill will develop quicker and stronger than it would during adulthood. If your teen doesn’t play music, the brain will think there is no need for these neurons, at least for the moment, and they will fade away. It doesn’t mean that the ability to play music is lost, it just means that the ability to learn won’t be as rich as it is in adolescence.

10. They are just as capable as adults when it comes to making decisions but ...

With a billion new neurons for added firepower, the adolescent brain is a very capable one. Adolescents will start to have the same decision-making and processing skills of an adult. They have an extraordinary capacity to take in information, analyse it and come up with creative solutions. The problem is that this process often gets hijacked by emotions, resulting in emotional, impulsive decisions that aren’t always great ones. Again, this is the work of a blazing limbic system (emotional, instinctive) without a fully-charged pre-frontal cortex to add sensibility.

When you can, slow things down and encourage your adolescent to talk to you about the pros and cons of a decision. Let them know that you’re not trying to talk them out of anything (even if you are, it will be more likely to happen if they get there themselves), but that you want to know that they’ve thought about things. It will give their pre-frontal cortex an opportunity to get involved and bring some rationality to the situation.

11. When making decisions, they’ll maximise the positive and minimise the negative.

Adolescents will evaluate the pros and cons of things differently to kids and adults and again, it’s because of the changes in the limbic area of their brains and the unavailability of the pre-frontal cortex. Their focus will be drawn to the positive, feel-good, fun potential of a decision but they will minimise the possible negative or dangerous consequences.

Because of this, they can be wonderfully bold, daring and courageous, but they can also tend towards risky, dangerous behaviour, something that is given extra life by peer pressure. Fill their heads with the stories you hear about things going wrong so they can be exposed to the potential for risk. They might not hold on to the information enough for it to influence their decisions, which is why you’ll need to remind them often. And be ready for the adolescent eye roll.

12. They will be hungry for new experiences.

Dopamine is responsible for the feel-good rush we get when we get something we want. It is there to make sure we keep doing the things that are good for us by reinforcing the behaviours that keep us alive. It is released when we try new things, do something brave and bold, eat food we want, fall in love, connect, exercise, have sex. It can also reinforce dangerous behaviour, or healthy behaviour in unhealthy ways.

In adolescents, the baseline level of dopamine is lower than it is for adults, but when it is triggered it is released at a higher rate. This means adolescents get more of a rush than adults do. When dopamine drops, adolescents feel bored and indifferent – they need novelty. They are driven to try new experiences, which can be exciting and lead them to adventure or to the things that light them up in wonderful ways – or it can lead to disaster. With the need for a dopamine high and the ‘dumb idea, don’t do it’ part of their brain underdeveloped, adolescents will be vulnerable to risky behaviour. This might play out through **sexual behaviour** (sexting, promiscuity, unsafe sex), drugs, drinking, driving, skateboarding downhills into traffic, sneaking out late at night. It can also play itself out in safe ways – on the sports field, competition, performing (doing anything on stage), trying new and interesting things, travelling, becoming an activist.

Teens feel really good when they try new things, and a healthy move towards independence and adulthood will involve plenty of new things. We want them to explore, be creative, experiment, figure out who they are in the world and where they fit in and to do this, nature has given them a brain that rewards them for novelty.

13. You’ll be tempted to put it down to laziness – but ...

With lower baseline levels of dopamine adolescents will seem unmotivated and lazy. They’re not, it’s just harder for them to find the ‘on’ switch. This doesn’t mean it’s okay for them to opt out of the things they need to do, but if you have to remind them a few times that something needs to be done, don’t take it personally. They’re not deliberately trying to be difficult. They all have brilliance in them. Just watch them go when they find something they love doing or something that’s important to them.

14. They will be vulnerable to addiction.

Because the adolescent brain is developing, it is wide open to being changed by experiences – good and bad. Think about it like this – when a house is fully built, the rain or bad weather will come and go no problems at all. Put a house in a storm when it doesn’t have a roof though, and it’s a very different story. The adolescent brain is under construction. Exposing it to substances that it was never meant to deal with, such as alcohol and **drugs**, can have long-term effects and be more damaging than it might be during adulthood.

15. Stress. They need it just like Goldilocks would have it.

Stress – not too much, not too little, but just right. Stress is a very normal part of life and living well means being able to manage it and bounce back quickly. Too much stress (such as constant fighting between parents, bullying) will interfere with the developing brain, potentially causing problems for attention, learning and memory and creating a vulnerability to depression and anxiety. Too little stress, as in the parent who does everything and expects nothing, will steal the opportunities for their adolescents to learn how to manage stress, and to strengthen their resilience, confidence and independence.

16. They will feel things deeper and more intensely than they ever have before.

Adolescents will experience the giddy highs and devastating lows of emotions – fear, anger, excitement, sexual attraction, joy. At times this will feel scary for them because it will feel as though they have no control over it. With the pre-frontal cortex mostly ‘offline’, their control over intense emotions will be limited, but there is also a good reason for this.

The ability to feel this depth of emotion, though overwhelming at times, is a healthy part of the developing brain. Emotion is there to evoke a response – to move people into action. For adolescents, it is to move them towards independence and brave behaviour, not to disconnect them from you. Try to give them the space to feel their feelings and to experiment with managing them. Let them know when they’ve gone too far, but it’s important not to punish the intense emotion out of them. We want them to be passionate, to experience deep love and joy and to be moved into action when something doesn’t feel right. First though, they have to learn how to manage their emotions and turn down the heat when they need to.

They can only learn this through experience. Feeling big, unfamiliar feelings can be scary so they will be more likely to let it all out with the people they feel safest with. That would be the ones who have been there from the beginning and who they know will be there no matter what. That would be you. When you're in the thick of battle, take comfort from the fact that your adolescent, as unadorable as he or she might be right now, is progressing exactly as nature and evolution intended. If that fails, take comfort from something high carb and delicious.

17. Their need for attachment will still be strong, but the target will change.

We humans have a vital need for attachment – to be seen, safe, soothed and secure. As we grow older, the need for attachment doesn't disappear – it never will – but the people who meet it will change. Adolescents will pull away from their parents and towards their peers to meet their needs. This is normal and healthy. Their brains are set up for this. Sometimes this will be a struggle. With so many adolescent brains doing adolescent things, the time will be ripe for peer problems but it will also be ripe for learning – how to read people, how to respond, the type of people they want to be with and the ones they don't.

18. Being disconnected from their friends will feel like death.

Being connected to their friends can feel like a matter of life or death. It sounds dramatic and for them, it is. Any parent who has stood between an adolescent and their friends would know the angst that comes with that – for them and you – but there is a good reason for this. For all mammals throughout history (think cave-people) and in nature, exclusion from the tribe means has meant almost certain death. For our adolescents, that's how it feels when we stop them from connecting with their peer tribe – it feels like death. It doesn't mean you'll let them do everything they want to do to keep up with their peers – you can see around corners that they can't – but understand the intense reaction you might get when you say no. Lucky we're tough enough to cope.

19. The teen brain is getting stronger at thinking abstractly.

Adolescents will start to think about the world in new and interesting ways. They are developing the ability to think abstractly, which will also open up the capacity to see themselves through the eyes of another. This is something new for them, and they'll be wobbly at the wheel to start. They might worry – a lot – about what other people are thinking of them. Reassure them that as much as they are worried about what their friends and their not-really-friends-but-I-know-them are thinking of them, those people will be worried about the very same thing. They might not believe you, which is why you might need to believe it enough for both of you.

20. They'll be thinking about the person they want to be.

During adolescence there is an increase in the production of receptors for oxytocin, the 'bonding hormone'. This has the potential to ignite feelings of self-consciousness and adolescents will often feel as though the world is watching everything they do. The upside of this is that it encourages them to think about the kind of person they want to be and the kind of world they want to live in. In true adolescent form, they might be very black and white about this until their brain develops enough to open them up to the grey.

21. Their sleep cycle will change.

Adolescent brains are busy brains, and nothing that works that hard can thrive without rest. They will need 9-10 hours of sleep. During adolescence their circadian rhythm shifts by up to three hours. This means that they will be likely to stay up about three hours later and will want to sleep in about three hours later than they used to. Sleep helps with the construction and wiring of the brain to be the best brain it can be for them. **Tired humans are cranky humans.** Whenever you can, let them sleep in.

But they need you more than ever.

Adolescence can be a restless time for everyone, but it is this restlessness that ignites change and growth, not just in themselves but in the world. We want them to explore the world, experiment with it, find their independence, feel deeply, love deeply, speak out against that which needs changing, find their passion, be curious, embrace the things that feel right and walk away from the things that don't.

There are important jobs they need to do and their brain is changing to give them the firepower to do this. The spirit of adolescence is a wonderful, exciting thing and our adolescents are doing what they need to do to be healthy, happy adults. They are trying to find their own independent place in the world. It won't always look the way we want it too and it won't always feel good, but it wasn't meant to. Things will be different for a while but they still need you, more than ever. They won't always

The changes we see in our kids when they hit adolescence can leave many of us with a sense of whiplash. The tiny adorable humans who wanted to us to read to them, sing to them, cuddle them, kiss them goodbye at parties, at some point become ... different. Loved, wonderful, funny, creative, but not so tiny and adorable – and don't even joke about kissing them goodbye at parties. Or anywhere else where there might be actual people.

We blame raging hormones, lack of sleep, friends, 'that show' they've been watching, social media. Then there are the days – plenty of them – that we blame ourselves, wondering what we did or didn't do that could possibly explain what's going on.

What's going on is adolescence. It's as simple and as complicated as that. The changes they are going through are all being driven by a brain that is undergoing a massive renovation. It has to be this way to get them ready to be healthy, strong, productive, happy adults.

If you can understand what is happening in the adolescent brain, what they are doing will make sense. You'll still find yourself baffled, angry, bewildered, sad – all of those things – but hopefully less than you would otherwise. You're building humans, great ones, and as with anything that is worth the effort, it won't always run to schedule, it won't look the way you thought it would, and some days – probably plenty – it will be a red hot mess.

The brains are developing into the adult versions. In the same way they wobbled and fell when they were little people learning to walk, they will wobble and fall as they learn how to be adults. Keeping this in mind will help things run smoother.

The Changes that Every Adolescent Will go Through

1. Adolescence – The brain gets a makeover.

The changes in the brain during adolescence are dramatic. They have to be – the transition from childhood to adulthood wouldn't happen without some serious neural remodelling. During adolescence, they will be driven to experiment with the world and their place in it, try new things (important for their new adult roles) and become more independent. Every one of these changes is there to fulfil an important developmental role and bridge the vast gap they will travel between childhood and adulthood. The results will be worth it but like any big renovation, things will get messy for a while.

2. Adolescence lasts until early to mid 20s.

Adolescence would be a breeze if all that our kids needed to be healthy, well-adjusted adults was the adult hardware. Humans are complicated and making the fully developed versions takes a lot of experiencing, experimenting and learning. And time. It takes a lot of time. Our kids will be under the influence of an adolescent brain until they are about 24 years old. Best save your exhale for then.

3. The brain develops from the back (primal, instinctive) to the front (measured, rational).

Throughout the course of adolescence, the brain will develop slowly from the back to the front. The emotional, impulsive limbic system will develop first and will therefore have most of the control over behaviour and decisions. The sensible, rational prefrontal cortex won't get involved until early to mid-20s. During this time, it will be as though our adolescents are at the wheel of a high-performance car, but without any brakes. Given the pull away from their parents, they will also be without a reliable GPS. It would be easy to roll your eyes at evolution and wonder what it was thinking, giving our adolescents all that power minus the sensibility. Remember it is all to get them ready for adulthood. They need the courage and the boldness to explore the unfamiliar and try out new things. There are so many things they need to experience on their way to adulthood that might not happen if they were able to talk themselves out of it.

4. Impulse control. Impulse what?

With the prefrontal cortex still on its way, adolescents will often think it or feel it, then say it or do it. Though they may not always be biologically able to keep a hold of their impulses, they need to know when they've gone too far. The repetitive reminder of what's expected will get tiring – massively so – but it will eventually lead them to internalise the rules and respond to the world (and their parents!) as emotionally balanced, emotionally responsible adults. Yes. Bring that on.

5. The adolescent brain interprets emotion differently to an adult brain.

Research has shown that teens and adults each use a different part of the brain when interpreting what other people are feeling. Adults use the rational prefrontal cortex to interpret facial expressions. Teens use the amygdala, which is primed to interpret emotions as a threat or hostile attack. The amygdala runs on impulse and gut reaction, so you can see how that's going to end up. Teens will **often read anger or aggression** when there was none. This is why you might find yourself suddenly in the midst of battle with your adolescent with no idea how you got there. You got there because their brain thought you were up for a fight, and it helped them put on the gloves.

6. Sometimes they'll need to 'borrow' your pre-frontal cortex.

As the parent who is often on the end of the misinterpretation, (you, so innocently: 'So who else is going to the party?' them: 'What? Don't you trust me or something?! I can't believe you don't trust me!'), know that it comes with the territory of adolescence. With the 'calm down, think about it' part of their brains still coming, they'll need to borrow yours sometimes. When you are faced with a flare-up, try to breathe and let the wave wash over you. It will often pass in a minute or two provided that nothing happens to stoke the flames, (like, you know, if you breathe too loudly/too softly/at all). When things have settled down, bring your calm and sensibility to the table. Speak as though you are the person you want them to be. This isn't easy and it doesn't mean you don't have boundaries around behaviour. What it means is not giving oxygen to the fire. Don't worry if you get drawn in to the argument sometimes. It won't hurt them to see that you're human.

7. They can learn things quickly. But only if they want to.

The brain of an adolescent has an oversupply of neurons (brain cells) and an undersupply of strong connections between the neurons. The neurons are responsible for processing information, so the more

neurons there are, the more potential there is to learn and process information – but only if the connections between the neurons are strong and plentiful. It is both the number of neurons and the complexity and strength of the connections between the neurons that determine how effective the brain is. During adolescence there is an abundance of neurons, but not enough connections. Think of their brains like baby foals – bouncing with energy and enthusiasm, but waiting for direction. The direction comes as the connections between neurons strengthen.

The neuroscientists have a saying that they bring out at neuroscientist dinners and poetry nights – ‘the neurons that fire together, wire together’. When neurons in the brain fire together, they strengthen and build connections. Firing happens through experience, learning and repetition. Every time your adolescent does something, the relevant neurons fire and form connections with other neurons. The more they fire, the stronger the connections. The stronger the connections, the more efficient that part of the brain will be.

8. Whatever they do a lot of, they will get good at.

The adolescent brain has a spectacular capacity for learning. Because of this, whatever the brain does a lot of during adolescence, it will become really good at. Sport, drama, art, texting, video games, lying on the couch, arguing, chemistry, music – anything.

9. Use it or lose it.

The neuroscientists clearly know their way around a rhyming word. ‘Use it or lose it’ is another fave and refers to the withering away of neurons that aren’t needed. This is an important part of the brain perfecting itself to be the most efficient brain it can be. There is only a limited amount of space in your head. You can’t grow your skull, which is a pity, so the brain keeps the neurons it uses the most and get rid of the ones it doesn’t. By doing this, the brain is able to use the space and energy to strengthen the skills and qualities that most important, as in most used. It’s evolution’s way of customising the brain to suit. Nice to have a limited edition.

For example, if your teen plays music, the ‘playing music’ neurons will strengthen and the skill will develop quicker and stronger than it would during adulthood. If your teen doesn’t play music, the brain will think there is no need for these neurons, at least for the moment, and they will fade away. It doesn’t mean that the ability to play music is lost, it just means that the ability to learn won’t be as rich as it is in adolescence.

10. They are just as capable as adults when it comes to making decisions but ...

With a billion new neurons for added firepower, the adolescent brain is a very capable one. Adolescents will start to have the same decision-making and processing skills of an adult. They have an extraordinary capacity to take in information, analyse it and come up with creative solutions. The problem is that this process often gets hijacked by emotions, resulting in emotional, impulsive decisions that aren’t always great ones. Again, this is the work of a blazing limbic system (emotional, instinctive) without a fully-charged pre-frontal cortex to add sensibility.

When you can, slow things down and encourage your adolescent to talk to you about the pros and cons of a decision. Let them know that you’re not trying to talk them out of anything (even if you are, it will be more likely to happen if they get there themselves), but that you want to know that they’ve thought about things. It will give their pre-frontal cortex an opportunity to get involved and bring some rationality to the situation.

11. When making decisions, they’ll maximise the positive and minimise the negative.

Adolescents will evaluate the pros and cons of things differently to kids and adults and again, it’s because of the changes in the limbic area of their brains and the unavailability of the pre-frontal cortex. Their focus

will be drawn to the positive, feel-good, fun potential of a decision but they will minimise the possible negative or dangerous consequences.

Because of this, they can be wonderfully bold, daring and courageous, but they can also tend towards risky, dangerous behaviour, something that is given extra life by peer pressure. Fill their heads with the stories you hear about things going wrong so they can be exposed to the potential for risk. They might not hold on to the information enough for it to influence their decisions, which is why you'll need to remind them often. And be ready for the adolescent eye roll.

12. They will be hungry for new experiences.

Dopamine is responsible for the feel-good rush we get when we get something we want. It is there to make sure we keep doing the things that are good for us by reinforcing the behaviours that keep us alive. It is released when we try new things, do something brave and bold, eat food we want, fall in love, connect, exercise, have sex. It can also reinforce dangerous behaviour, or healthy behaviour in unhealthy ways.

In adolescents, the baseline level of dopamine is lower than it is for adults, but when it is triggered it is released at a higher rate. This means adolescents get more of a rush than adults do. When dopamine drops, adolescents feel bored and indifferent – they need novelty. They are driven to try new experiences, which can be exciting and lead them to adventure or to the things that light them up in wonderful ways – or it can lead to disaster. With the need for a dopamine high and the 'dumb idea, don't do it' part of their brain underdeveloped, adolescents will be vulnerable to risky behaviour. This might play out through **sexual behaviour** (sexting, promiscuity, unsafe sex), drugs, drinking, driving, skateboarding downhill into traffic, sneaking out late at night. It can also play itself out in safe ways – on the sports field, competition, performing (doing anything on stage), trying new and interesting things, travelling, becoming an activist.

Teens feel really good when they try new things, and a healthy move towards independence and adulthood will involve plenty of new things. We want them to explore, be creative, experiment, figure out who they are in the world and where they fit in and to do this, nature has given them a brain that rewards them for novelty.

13. You'll be tempted to put it down to laziness – but ...

With lower baseline levels of dopamine adolescents will seem unmotivated and lazy. They're not, it's just harder for them to find the 'on' switch. This doesn't mean it's okay for them to opt out of the things they need to do, but if you have to remind them a few times that something needs to be done, don't take it personally. They're not deliberately trying to be difficult. They all have brilliance in them. Just watch them go when they find something they love doing or something that's important to them.

14. They will be vulnerable to addiction.

Because the adolescent brain is developing, it is wide open to being changed by experiences – good and bad. Think about it like this – when a house is fully built, the rain or bad weather will come and go no problems at all. Put a house in a storm when it doesn't have a roof though, and it's a very different story. The adolescent brain is under construction. Exposing it to substances that it was never meant to deal with, such as alcohol and **drugs**, can have long-term effects and be more damaging than it might be during adulthood.

15. Stress. They need it just like Goldilocks would have it.

Stress – not too much, not too little, but just right. Stress is a very normal part of life and living well means being able to manage it and bounce back quickly. Too much stress (such as constant fighting between parents, bullying) will interfere with the developing brain, potentially causing problems for attention, learning and memory and creating a vulnerability to depression and anxiety. Too little stress, as in the

parent who does everything and expects nothing, will steal the opportunities for their adolescents to learn how to manage stress, and to strengthen their resilience, confidence and independence.

16. They will feel things deeper and more intensely than they ever have before.

Adolescents will experience the giddy highs and devastating lows of emotions – fear, anger, excitement, sexual attraction, joy. At times this will feel scary for them because it will feel as though they have no control over it. With the pre-frontal cortex mostly ‘offline’, their control over intense emotions will be limited, but there is also a good reason for this.

The ability to feel this depth of emotion, though overwhelming at times, is a healthy part of the developing brain. Emotion is there to evoke a response – to move people into action. For adolescents, it is to move them towards independence and brave behaviour, not to disconnect them from you. Try to give them the space to feel their feelings and to experiment with managing them. Let them know when they’ve gone too far, but it’s important not to punish the intense emotion out of them. We want them to be passionate, to experience deep love and joy and to be moved into action when something doesn’t feel right. First though, they have to learn how to manage their emotions and turn down the heat when they need to.

They can only learn this through experience. Feeling big, unfamiliar feelings can be scary so they will be more likely to let it all out with the people they feel safest with. That would be the ones who have been there from the beginning and who they know will be there no matter what. That would be you. When you’re in the thick of battle, take comfort from the fact that your adolescent, as unadorable as he or she might be right now, is progressing exactly as nature and evolution intended. If that fails, take comfort from something high carb and delicious.

17. Their need for attachment will still be strong, but the target will change.

We humans have a vital need for attachment – to be seen, safe, soothed and secure. As we grow older, the need for attachment doesn’t disappear – it never will – but the people who meet it will change. Adolescents will pull away from their parents and towards their peers to meet their needs. This is normal and healthy. Their brains are set up for this. Sometimes this will be a struggle. With so many adolescent brains doing adolescent things, the time will be ripe for peer problems but it will also be ripe for learning – how to read people, how to respond, the type of people they want to be with and the ones they don’t.

18. Being disconnected from their friends will feel like death.

Being connected to their friends can feel like a matter of life or death. It sounds dramatic and for them, it is. Any parent who has stood between an adolescent and their friends would know the angst that comes with that – for them and you – but there is a good reason for this. For all mammals throughout history (think cave-people) and in nature, exclusion from the tribe means has meant almost certain death. For our adolescents, that’s how it feels when we stop them from connecting with their peer tribe – it feels like death. It doesn’t mean you’ll let them do everything they want to do to keep up with their peers – you can see around corners that they can’t – but understand the intense reaction you might get when you say no. Lucky we’re tough enough to cope.

19. The teen brain is getting stronger at thinking abstractly.

Adolescents will start to think about the world in new and interesting ways. They are developing the ability to think abstractly, which will also open up the capacity to see themselves through the eyes of another. This is something new for them, and they’ll be wobbly at the wheel to start. They might worry – a lot – about what other people are thinking of them. Reassure them that as much as they are worried about what their friends and their not-really-friends-but-I-know-them are thinking of them, those people will be worried about the very same thing. They might not believe you, which is why you might need to believe it enough for both of you.

20. They'll be thinking about the person they want to be.

During adolescence there is an increase in the production of receptors for oxytocin, the 'bonding hormone'. This has the potential to ignite feelings of self-consciousness and adolescents will often feel as though the world is watching everything they do. The upside of this is that it encourages them to think about the kind of person they want to be and the kind of world they want to live in. In true adolescent form, they might be very black and white about this until their brain develops enough to open them up to the grey.

21. Their sleep cycle will change.

Adolescent brains are busy brains, and nothing that works that hard can thrive without rest. They will need 9-10 hours of sleep. During adolescence their circadian rhythm shifts by up to three hours. This means that they will be likely to stay up about three hours later and will want to sleep in about three hours later than they used to. Sleep helps with the construction and wiring of the brain to be the best brain it can be for them. **Tired humans are cranky humans.** Whenever you can, let them sleep in.

But they need you more than ever.

Adolescence can be a restless time for everyone, but it is this restlessness that ignites change and growth, not just in themselves but in the world. We want them to explore the world, experiment with it, find their independence, feel deeply, love deeply, speak out against that which needs changing, find their passion, be curious, embrace the things that feel right and walk away from the things that don't.

There are important jobs they need to do and their brain is changing to give them the firepower to do this. The spirit of adolescence is a wonderful, exciting thing and our adolescents are doing what they need to do to be healthy, happy adults. They are trying to find their own independent place in the world. It won't always look the way we want it too and it won't always feel good, but it wasn't meant to. Things will be different for a while but they still need you, more than ever. They won't always

The changes we see in our kids when they hit adolescence can leave many of us with a sense of whiplash. The tiny adorable humans who wanted to us to read to them, sing to them, cuddle them, kiss them goodbye at parties, at some point become ... different. Loved, wonderful, funny, creative, but not so tiny and adorable – and don't even joke about kissing them goodbye at parties. Or anywhere else where there might be actual people.

We blame raging hormones, lack of sleep, friends, 'that show' they've been watching, social media. Then there are the days – plenty of them – that we blame ourselves, wondering what we did or didn't do that could possibly explain what's going on.

What's going on is adolescence. It's as simple and as complicated as that. The changes they are going through are all being driven by a brain that is undergoing a massive

renovation. It has to be this way to get them ready to be healthy, strong, productive, happy adults.

If you can understand what is happening in the adolescent brain, what they are doing will make sense. You'll still find yourself baffled, angry, bewildered, sad – all of those things – but hopefully less than you would otherwise. You're building humans, great ones, and as with anything that is worth the effort, it won't always run to schedule, it won't look the way you thought it would, and some days – probably plenty – it will be a red hot mess.

The brains are developing into the adult versions. In the same way they wobbled and fell when they were little people learning to walk, they will wobble and fall as they learn how to be adults. Keeping this in mind will help things run smoother.