

Kilbrandon's Vision

Healthier Lives: Better Futures

THE TENTH KILBRANDON LECTURE

Sir Harry Burns
Chief Medical Officer for Scotland

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Principal's Introduction

Professor Anna Dominiczak

Good evening Minister, ladies and gentlemen. I am Professor Anna Dominiczak, Vice Principal of the University of Glasgow. It gives me great pleasure to welcome you to the Kilbrandon Lecture, which this evening is being delivered by Sir Harry Burns, Chief Medical Officer for Scotland and a graduate of this University.

The Committee which Lord Kilbrandon established in 1960 led to the formation of Scotland's unique approach to care and justice for young people – the Children's Hearing's System.

Like its predecessors, the tenth Lecture in the Kilbrandon series is a joint venture between the Scottish Government and the Glasgow Centre for the Child and Society, which now forms part of the Glasgow School of Social Work.

There have been many distinguished lecturers over the past twenty years, including Donald Dewar, the First

Minister of the new Scottish Parliament and Professor Anthony Clare, the renowned psychiatrist and broadcaster.

It is a privilege to have with us Lord Kilbrandon's son, the Honorable Michael Shaw. We are also pleased to have with us Ms Angela Constance, Minister for Children and Young People, who is not only a Glasgow graduate but also former President of the Students' Representative Council.

We are joined too by representatives from local government and the voluntary sector. The Children's Panel, the Scottish Government and academic colleagues from across Scotland. We also have with us individuals actively engaged in the lives of children and young people in Scotland; panel members, social workers, health care workers, teachers, members of the legal profession and very importantly students and young people. You are all very welcome.

The title of tonight's Lecture is Kilbrandon's Vision: Healthier Lives, Better Futures. Sir Harry's focus on the social determinants of health will provide us with a distinctive contribution to our Lecture series.

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Sir Harry graduated in medicine from Glasgow University in 1974. He trained in surgery in Glasgow and developed a research interest in the metabolic consequences of illness and injury. He was appointed Honorary Consultant Surgeon and Senior Lecturer in Surgery in the University Department of Surgery at the Royal Infirmary in Glasgow in 1984.

Working with patients in the East end of Glasgow gave him an insight into the complex inter-relationships between economic status and illness. He completed a Master's Degree in Public Health in 1990 and, shortly afterwards was appointed Medical Director of The Royal Infirmary. In 1994, he became Director of Public Health for Greater Glasgow Health Board, a position he occupied until 2005.

During his time with Greater Glasgow Health Board he continued research into the social determinants of health and also worked on measurement of outcomes in a variety of clinical conditions, including cancer. In 1998, he took a part-time appointment with the Health Department in the Scottish Government and worked for three years as lead clinician in Scotland for cancer care. In the course of this work he developed Managed Cancer Networks and helped

re-organise cancer services in Scotland. He was appointed Chief Medical Officer in 2005 and was knighted in 2011.

It is with great pleasure that I call on Sir Harry to deliver the tenth Kilbrandon Lecture.

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Tenth Kilbrandon Lecture

Lord Kilbrandon was obviously a visionary. His idea that children should be judged by their needs, not by their deeds was way ahead of its time. If he were alive today, knowing what we know now about children, I wonder how much further he might take thinking in this regard.

What I am going to do tonight is try and explain to you some of the science that has emerged about the way children develop and some of the conclusions we have reached about what we should be doing in Scotland to revitalize Kilbrandon's vision that life for every child born in Scotland can be significantly better than it might otherwise be.

This quote appeared in a newspaper last week:

“50% of people in the United Kingdom believe that children are beginning to behave like animals.”

The good news is, however, that Barnardos did another study like this about three or four years ago and the figure then quoted was 50%, so at least it hasn't got any worse! This quote actually tells us more about the people who

were asked than about the children themselves. I believe it is really important to begin to question the attitudes that we have across the UK towards children.

I want to start off by showing you a picture of houses that used to be typical in the East end of Glasgow. When I was at the Royal Infirmary, I used to operate on people who lived in these houses. When you look at that picture, a couple of things come to mind. The first thing is that you know intuitively that the chap in the middle of the picture is likely to die ten years younger than he might have than if he had lived a few miles away in the affluent areas of Bearsden or Lenzie.

We also understand from living in the West of Scotland that poor social conditions are associated with and lead to poor health. As a doctor in the Royal Infirmary, however I never once wrote a death certificate that said the cause of death was living in a horrible house or unemployment. People die of molecular events, such as proteins coagulating in arteries and causing heart attacks and strokes. Yet, we know that poor social conditions lead to poor health and premature death. However, unless we understand the chain of events that link the social conditions to the

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molecular events occurring inside arteries and cells that lead to heart attacks or cancers, we can never be sure that our interventions will be effective in doing something about it. Observing this link in the East end of Glasgow was what started me off on a journey that leads me to conclude, that the way in which we nurture children, the way in which we bring children into the world, and the way in which we look after them in the first years of life is absolutely critical to the creation of physical, mental and social health.

The other question that always springs to mind when I look at this picture, is who on earth thinks that painting a mural of a corporation bus on a gable end of a tenement is going to change the molecular events that occur inside someone's arteries and cells. Civic art is good, and I am a supporter of it, but it might not be what the people in that area want and to put that kind of thing up might actually make life more difficult for them.

Finally, I have shown this slide many times, and I used to wonder what would happen if, one day, the chap in the picture was in the audience? Then, one day it happened. I was giving the lecture in a Business School, and put the

slide up, and immediately an eminent Professor sitting in the front row said:

“That’s Acre Hill Street in Blackhill I was born in those flats.”

Of course the obvious point is that he succeeded. Well, he succeeded if you think that being a Professor in a Business School is a success! But, the serious question must be, “what allowed him to succeed when so many of his contemporaries didn’t?”.

There is always someone who bucks the trend and understanding why that happens is really important. So I am going to wander through the evidence that, hopefully, will lead us to a better understanding of what we need to do to improve children’s lives.

Turning to this next slide. The detail of it isn’t hugely important. It is life expectancy in Western Europe over the past 150 years. The dark line through the middle is Scotland and you can see that 150 years ago, Scottish life expectancy was roughly about the middle of the European average. There were a few blips when there were wars.

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You can see towards the end of the graph that other Western European countries are pulling away from us, while the Scottish line has become a bit flatter than the rest of Western Europe. Fifty years ago, Portugal had ten years poorer life expectancy than us, but it has now overtaken us. Something is holding us back.

That divergence began to take place round about the late 1950s. You might be wondering what happened in Scottish society around this time. If you take male life expectancy specifically from the 1950s you can see a trend. The top line is the trend of life expectancy in the richest 20% of men and the bottom line trend is in the poorest and you can see the two lines steadily diverging.

If the poorest men in our society had seen their life expectancy simply maintaining the gap between themselves and the wealthy as it was fifty years ago, Scottish life expectancy would be three years higher than it is today and that would put us back into the middle to the Western European average. Fundamentally, the problem with Scotland's poor health is the health of the poor. Until we sort that out, until we understand why that is happening, then we will struggle to narrow the gap.

What was happening in the 1950s was the beginning of the end of heavy industry in Scotland, particularly in the West of Scotland. Shipyards began to close in the 1950s. In the early 1960s steelworks began to be run down, locomotive work in the East end of Glasgow also declined. Gradually huge numbers of men lost their jobs and those jobs were never replaced.

One of the studies that the Glasgow Centre for Population Health has done is to compare West Central Scottish life expectancy to that of other parts of Europe who have experienced the same kind of economic collapse. Comparisons have been made with areas such as Northern Ireland, Saxony and the Ruhr. All have done better than West Central Scotland. The three I want you to pay particular attention to are Saxony in East Germany, Moravia in the Czech Republic and Katowice in East Poland. Life expectancy in all three areas was stable until around 1990. Then, in 1992, life expectancy suddenly takes off like a jet aeroplane. We know what happened in 1990. The Iron Curtain collapsed. Who would have anticipated the dramatic impact of political change on life expectancy in Eastern Europe?

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When I asked my opposite number in Poland why Katowice had improved so rapidly, he referred to family values. What I think he meant was social cohesion. The strength of families, he said, was absolutely critical to the survival of Polish society. Add to that political and economic freedom and suddenly health improves. A political change had a huge effect on life expectancy. What this begins to tell us, is that creating health is more complex than we think.

One of the key issues that are always talked about here is poverty and inequality of income. Another study that the Glasgow Centre for Population Health has carried out is a comparison of Glasgow with two similar cities in the UK namely, Liverpool and Manchester.

They looked at the distribution of income in Glasgow by small data zones of around seven or eight hundred people. In looking at the distribution of wealth in Liverpool, Glasgow and Manchester they found that, in terms of mortality, Glaswegians have a 15% excess in mortality. Glaswegians are 12% more likely to die of cancer each year, 12% more likely to die of heart disease or a stroke, but 60% of the excess, premature mortality compared to Liverpool and Manchester is due to drugs, alcohol, suicide and violence.

The causes of this pattern of premature mortality are psychosocial and we are unlikely to fix them by conventional health improvement interventions, such as reducing the saturated fat content in the diet.

Diet is very important. Smoking is very important. Neither of these, however, adequately explains the gap between Scotland and other Western Europe countries. These are psychosocial causes of death and need psychosocial explanations and psychosocial remedies. So let's begin to tease this out.

I want to move on, but I need to tell you about population attributable risk first. Population attributable risk has been described as the reduction in incidence that would be observed, if the population were entirely unexposed, compared with its current exposure pattern. The population attributable risk for smoking and lung cancer is 92%. This means that if smoking disappeared from the population, then 92% of lung cancer would disappear. Similarly, not a lot of people realise that 40% of breast cancer is attributable to obesity and lack of exercise in women. This is quite significant. Get the running shoes on ladies! 11% of breast cancer is attributable to alcohol. Myocardial

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infarction (heart attack) has an attributable risk factor of 49% for smoking, 18% for hypertension and 20% for abdominal obesity. We need, however, also to note that 32% of heart attacks are attributable to psychosocial factors. What are these psychosocial factors? Well, they include domestic violence and physical and sexual abuse.

I want to look at this more closely. What happens to children when these psychosocial factors impact on their lives and, in particular, their early lives? What is the effect of drugs and alcohol misuse and violence on young children?

The Adverse Childhood Events (ACE) Study studied 17,000 American adults and assessed the relationship between adverse childhood experiences, such as abuse, witnessing domestic violence, and serious household dysfunction and a number of health and social outcomes. They counted the number of adversities in children's lives and saw what happened to children who experienced four or more adversities in their lives. They found that the children were seven and a half times more likely to become alcoholic than children who had no experience of these adversities. Alcoholism may be, to a large extent, driven by

these experiences in early life. It doesn't seem to matter what kind of adversity, they are all the same in terms of their impact. They are just cumulative. In terms of violence, boys who experience physical abuse during early life are eight times more likely as teenagers to beat up their girlfriends and three and a half times more likely to carry weapons.

Adversity in early life leads to many of the things we are seeing in greater prevalence in our community. In terms of teenage pregnancy, girls who experience five or more adversities are almost twice as likely to become pregnant teenagers. The more adverse experiences you have as a child, the more likely you are to have a heart attack. Seven or eight adversities examined in this study would lead to three and a half times increased risk of having a heart attack by a specific age. What happens to you in very early life predicts your chances of experiencing these psychosocial problems. It also predicts your risk of having a heart attack. What's going on here, what's the explanation for this? Going back to my original point, unless we can follow the evidence through from cause to effect, we cannot be sure we have the right strategies to improve matters.

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Let's look at the evidence, let's start to tease out what's going on here. In the course of my journey, there were a couple of eureka moments that I want to share with you.

The first is this study carried out by an American researcher called Susan Everson, who went to Finland to study men who were at high risk from premature heart disease. She lived in Finland for seven years and measured a huge range of things. One of the things she measured was hopelessness. She had a scoring system that allowed her to split men up into three groups; men who were very very hopeless, men who were moderately hopeless and men who were just a wee bit hopeless, being a woman she understood about men!

What she was actually measuring, I think, was negativity, pessimism about the future. She found that men who are most pessimistic about the future were four times more likely to die of heart disease and two and a half times more likely to die of cancer than men who were optimistic about the future. She couldn't explain this solely in terms of their smoking, drinking, substance abuse or obesity. She had such a large sample that she was able to adjust for those risk factors.

Hopelessness, a psychological condition, was found to be an independent predictor of poor physical outcome. The clever thing she did and the thing that caused my eureka moment was the fact that she measured the thickness of their carotid arteries and followed them up. She showed that the men in the most negative group, the most pessimistic group, fattened up their arteries faster. These men deposited fat in the lining of their arteries faster than those men in the most optimistic group.

She speculated in a subsequent paper as to why this might be. If you are negative and constantly pessimistic then perhaps this causes stress. The stress hormone she was interested in was called cortisol and one of the functions of cortisol is to mobilize fat in the blood stream. She wondered how many extra molecules of cortisol you need to secrete a day, over a forty year period, in order to thicken your arteries by a millimetre. It might be way below what we are able to measure.

This was the eureka moment for me because what a surgeon does is create acute stress in people. Acute stress response is what a surgical procedure does after a major operation. It causes the cortisol level to go up and it stays

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up for a few days until healing begins and then it returns to normal. It never dawned on me that you could have it elevated for forty years.

The other eureka moment occurred when reading a book written by a man called Aaron Antonovsky, an American sociologist, who spent the latter half of his career in Israel studying adults who as children had been in concentration camps. He traced many survivors from concentration camps and investigated their health. Seventy per cent were very unhealthy physically, mentally and socially. However, instead of trying to do what many would have thought to be the obvious thing, which would have been to find out what it was about the concentration camp experience that made you unhealthy he turned that around and he asked, "Why aren't they all unhealthy?" They all had the same horrible experience. He asked, however, what protected the 30%? He wrote several books about the work he did, but I've distilled the essence down to a paragraph for you. He concluded that the children who survived had developed what he termed was a "sense of coherence". He stated that: "The sense of coherence expresses the extent to which one has a feeling of confidence that the stimuli

deriving from one's internal and external environments in the course of living are structured, predictable and explicable. That one has the internal resources to meet the demands posed by these stimuli and, finally, that these demands are seen as challenges worthy of investment and engagement.”

According to Antonovsky, what protected these children was the fact that they could make sense of what was happening to them and were able to respond to the challenges they faced. I've now spoken to several children of holocaust survivors and they all say: “Yes, that's just what my dad was like. He really wanted to survive, he was able to work his way through that experience.”

He said that a sense of coherence consisted of three things. First, we experience the external environment as predictable and explainable and are able to make sense of it. Secondly, we feel we have the internal resources to rise to the challenge and, thirdly, we want to rise to the challenge. We want to meet those challenges and we want to overcome them. Antonovsky said unless you had a sense of coherence, unless you've found the world round about you comprehensible, manageable and meaningful

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you would experience a state of chronic stress. Those two words again!

He said that children who did not develop a sense of coherence interpreted all the events round about them as noise, rather than as information. I think thirty or forty years ago he was talking about what we now call ADHD. These are children who are overwhelmed by what is happening to them and who become stressed.

He had hard words for doctors. What he said to doctors was that we are obsessed with the causes of disease, a process known as pathogenesis, what we should be obsessed with are the causes of health. He coined the term salutogenesis for the process of health creation. What we should concentrate on are finding in children those resources and capacities, which impact positively on their health and explain why, in adverse circumstances, some stay healthy and others don't. Let's get out and create health and worry less about avoiding disease. Actually, the sensible thing is to do both. I would argue that we have spent a lot of time worrying about one and perhaps neglected the other.

If you look for evidence of chronic stress associated with social circumstances you can find it everywhere you look. We know from Canadian research into orphanages that, irrespective of the quality of care in orphanages, the longer a child is in orphanage care and the longer a child is away from a single significant adult, the higher his cortisol level grows. This is probably permanent.

Turning to occupational hierarchies, the Whitehall study found that higher grade civil servants have lower cortisol levels. This graph suggests that the least stressed person in any Government department is the permanent secretary. Why might this be? I think, it is because if a Minister asks you, as the permanent secretary, to do something you don't fancy you have options. You can give it to the next guy down the line, who gives it to the next guy down the line, who gives it to the next guy and then all the stuff that nobody wants to do lands on the desk of the Chief Medical Officer!

The key feature here is control. This is Antonovsky's second point, being able to manage what you're doing and being in control of what you are doing. If you don't have someone else to pass things on to, if you are at the bottom

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of the heap you can't dodge any of this, you're just swamped. You can even take that whole control argument up to whole country levels. Martin Bobak, a colleague in London, took a clip board round all the countries of the former Soviet Bloc and asked a large number of people, in each country, how much control they felt they had over their work and over their lives. Russians had the lowest level of control and highest death rate. Czechs, Poles and Hungarians had the highest levels of control and the lowest death rate. The Hungarians have a higher level of control and a higher mortality than the Poles and Czechs and that may be because the Hungarians have a tradition of distilling alcohol. I'm told that in the Autumn, they use local fruit to produce traditional home-brewed drinks.

Why have we got a stress response? Well, we have got it because we are hunter gatherers. Think of the Kalahari bushmen and their ability to run. Everything we would want to eat can run faster than us and everything that would want to eat us can run faster than us. So, how did we survive? Well we survive because, although lots of animals can run faster than us, we can run further than just about any other animal on the planet. This is because most

animals have fur and we don't, because we sweat and they don't.

When an antelope runs away from a Kalahari bushman it can only run a mile or so and then it stops to pant, to lose heat. The Kalahari bushmen, however, just jog on until they catch up with the antelope. Then it runs away again and they just keep jogging. It can take about twenty-five miles and four to five hours to run an antelope to death. Literally, its temperature rises and heats up to a point when its muscles don't work anymore. We are built to be persistence hunters and the hormone that enables us to do this by fuelling our muscles is cortisol.

Cortisol mobilizes fat from our abdominal fat deposits and allows our muscles to work for the four or five hours we need to catch our prey. There is an annual man versus horse race in the south of England which is twenty-five miles long. The leading man finishes within a minute of the leading horse. It is incredible but that's how we are built. The hormone is there to allow us to be successful, persistence hunters.

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There is another system that we have, as persistence hunters, which allows us to heal once we have been injured and this is the inflammatory system.

A number of my colleagues in Glasgow measured the activity of the inflammatory system in 5000 of West of Scotland men. They did this by measuring C-reactive protein levels in the blood. They found that CRP levels double as you go down the social scale. It also doubles if you smoke and it doubles again if you're obese with a body mass index of 30 or greater.

So, being a fat smoker, living in a poor part of Glasgow, you've got a CRP level which, on average, is about eight times greater than you would have if you were a skinny non-smoker living in an affluent part of Glasgow. The significance of this is that the inflammatory response is important in causing heart attacks and strokes. The cholesterol gets deposited in the lining of your artery and narrows the artery, reducing the blood supply. The cells lying over it are like Teflon and are designed not to be sticky. However, the process that makes them sticky is the inflammatory response. A whole range of inflammatory markers have been measured to show that it is the

inflammatory response system that causes those cholesterol plaques to rupture and a clot to appear in the lining of the artery.

Having a chronic inflammatory response is not good for you. Further, the inflammatory response is associated with increased risk of type 2 diabetes. You all think that abdominal fat just hangs there and wobbles don't you? Well, it is, metabolically, very active. The fat cells, particularly around the abdomen, produce the fatty acid that fuel the muscles that allow you to run. A high hip waist ratio encourages you to have heart attacks. We have developed this system because we have become hunter gatherers. Although, we don't chase our food round supermarkets anymore, because we no longer run and hunt to obtain our food we develop abdominal fat.

Do you know what we should do? You know these websites where you can go on and order your food from Tesco or Sainsburys or whatever, where the van comes and delivers to your house; we should get supermarkets to tell their vans not to stop. They will slow down outside your house and you will have to run after it and they will chuck the food out at you! That should help the obesity problem!

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We haven't adapted physically to our modern environment. We are still physiologically hunter gatherers and things are happening to us that elevate our stress responses. How do we link this back to children?

To explain to you what goes on, I should describe to you an experiment that I saw in a New York university within the Psychology Department. The experiment was on monkeys. It was all about making baby monkeys depressed. Baby monkeys when depressed turned away from mothers and ignored their siblings. Now how do they make the baby monkeys depressed?

It is all down to how they let mum feed the baby. In one half of the animal house there is a metal cart with slots in the side in which there is feed. Mum can play with her baby and she can also walk two yards, and get the food, and she is back with baby again. In the other half of the animal house they close off all the slots and all the mums have to fight with each other to get access to the food. So mum is away from baby a lot more and mum is very hassled by the process. If I were to ask you which group of babies were more likely to be stressed, the group where mum found it easy to feed the baby or where mum found it hard to feed

the baby? You would naturally say it was the one where mum found it hard to feed the baby wouldn't you? Well, you would be wrong.

When they measured stress hormones they found that it doesn't make any difference whether mum found it easy to feed the baby or whether mum found it hard to feed the baby. The most stressed monkeys were those who experienced inconsistency. When the feeding of the babies was changed, randomly, from one day to the next, it was found that inconsistency stressed the babies hugely. Not only does it stress the baby, it also produces a fat adult. We know the reason. Whenever you eat, the fat goes to your abdominal fat cells, starts to fill them up and they release a hormone called leptin that goes to the brain to switch off hunger. This is except when you have a high cortisol level. The cortisol blocks the entry of leptin to the hunger centres and it doesn't switch off hunger in the brain. The baby keeps eating. If you think about it, this makes sense. The baby is getting signals that its food supply system is inconsistent. So, it just eats more and stores it as fat.

The prefrontal cortex is the location of smart decision making. It is where you integrate new information and turn

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it into action. It is also the bit of the brain that suppresses inappropriate behaviour. What Bruce found was that the cells didn't connect nearly so effectively in the prefrontal cortex, it actually shrunk in baby animals exposed to stress. The hippocampus similarly shrunk. The significance of the hippocampus is that this is the bit that integrates new knowledge with old knowledge. Having a small hippocampus means you are less able to learn and, critically, the hippocampus is the bit of the brain that develops receptors for cortisol. These receptors don't appear to develop where babies experience stressful and inconsistent early lives. The baby is left unable to measure the level of cortisol and send signals to the adrenal glands to suppress its production.

The amygdala is the other bit that gets more cellular activity and the amygdala is the bit that regulates the emotional response. Aggression and anxiety is activated in these baby animals. When they become fearful they are less able to learn. When I speak to teachers about this, I see a lot of nodding in the audience at this point, because this is the kind of syndrome you often see in kids from difficult backgrounds. Now how does that happen? We think it

happens because of defective attachment. Think back to what Antonovsky said. Learning to make the world predictable and understandable and learning that you have control over it.

The first stress a baby feels after it is born is hunger. What does it do? It cries. What happens? Mum picks him up, cuddles him and talks to him. She feeds him, problem solved. The next stress is that the baby feels a wet nappy. Baby cries, mum picks him up, cuddles and talks to him, changes the nappy, problem solved. By the time that has happened a couple of thousand times, baby realises that if it feels something is not right and it cries, something nice happens. The problem goes away. I'm in control. The world is an understandable place. Cry and nice things happen. Any discomfort goes away.

Contrast this to the experience of a baby who cries and sometimes gets fed but sometimes doesn't. Perhaps this is because mum is drunk or under the influence of drugs. Maybe even sometimes, mum's boyfriend picks him up and shakes him and slaps him because he doesn't know how to handle a crying baby. He hasn't any experience nor does he understand attachment. You begin to see a pattern.

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Adverse events lead to subsequent poor behaviour in that child. The child is learning that he has no control and doesn't develop a sense of coherence. The stress response is such, that the brain growth pattern changes as a result.

The number of new connections being made between brain cells in a baby's developing brain is in the region of thousands per second. All of these connections are occurring in response to the environment. In a baby aged three or four months a considerable proportion of its energy expenditure is attributable to the brain. This is not sustainable into adulthood and so the bits of the brain that aren't being used get pruned back.

Developmental problems such as speech defects are commonly associated with some kind of neglect. Such problems should be a signal that something needs to be done. That's not to say we cannot repair damaged brain function later on in life. This is all relatively new science and the studies have not all been done to see how much progress can be made but we really should concentrate on ensuring a good start in life. In essence what we have been seeing happen is children who live in chaotic

circumstances are switching into survival mode, instead of developing proper executive functioning. The survival centres develop at the expense of the other bits of the brain. Chaotic and uncertain early years have a powerful influence on the full range of psychological and physiological systems. It takes longer to integrate new knowledge. It is harder for kids to learn if they have experienced this kind of uncertainty.

The other thing we noticed a few years ago, is that people, lower down the social scale, who smoked more than twenty cigarettes a day were more likely to die of lung cancer than those higher up the social scale who also smoked twenty cigarettes a day. We were interested in how DNA responded to this. Social conditions are a powerful driver of DNA damage, leading to increased propensity to cancer. Disadvantage penetrates right to the core of our DNA.

We can all see this. You can see it played out in big cohort studies. In one childhood adversity study that is being carried out in the South Island of New Zealand, in Dunedin. One thousand children were identified in the early 70s at age three. A sub-group were identified on the basis of their chaotic life circumstances. They were followed into their

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thirties. It was found that they were more likely to be unemployed, have criminal convictions, experience teenage pregnancy, more likely to be substance abusers and have high cortisol levels. Many are in a pre-diabetic state. Give them another ten years and they will be having heart attacks and strokes. This is playing out in all sorts of settings and I am quite sure it is playing out in our society as well.

What we want to achieve is a healthy society and low criminal conviction rate. The most recent data from the Dunedin cohort study highlights the importance of what they describe as self control. This is a measure of executive functioning. They found that higher the executive functioning and self control the lower the level of substance abuse, teenage pregnancy and adult criminal conviction. With self control comes increased income and better financial planning. There is absolutely no doubt in my mind that when you create stable environments for children you do away with lots of the adversity and lots of the poor outcomes that the Children's Hearings System has been set up to deal with.

We need to get far closer to the origins of these problems by dealing with the problem during pregnancy or even before pregnancy by teaching attachment and by teaching parents to be nurturing and supportive. Doing the same thing, all the time, and expecting different results is not a good strategy. We need to change what we are doing now.

What we are doing is focusing on the problems people have and trying to fix those problems for them. You are a smoker? We tell them to stop. We tell people they are unemployed and give them unemployment benefit. When it becomes inconvenient to call them unemployed, we label them incapable of work. What does this approach do to someone's sense of control? It is not the right way to do things. People become passive recipients of services rather than active agents in their own lives. We need to turn that around, and start thinking afresh. What are the positives that we can give folk struggling to raise their families in order to encourage them to become nurturing?

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Developing the assets that local communities have, which sustain and create health, will contribute to Antonovsky's concept of coherence. I would go further. I am a doctor, I have to talk about health but I would argue here that what we are talking about is not about health improvement. It is something more significant. It is life improvement. Health is just something that emerges from a fair and civilised society, where everyone looks after each other. Individuals who live in that society begin to learn how it works, begin to manage their place in it and begin to participate in the life within their community. They are likely to be in control and are likely to feel well. So this is about getting to the heart of what people are doing in Scotland to create that fair and civilised society. If we can't look after children and give them a proper kind of nurturing environment then we are far from being a civilised society.

I will finish off with a couple of quotes:

The former Glasgow graduate Adam Smith wrote a book that is getting a lot of bad press as all the markets disintegrate just now. His better book is *The Theory of Moral Sentiments*. In it, he said that:

“How selfish soever a man may be supposed, there are evidently some principles in his nature which interest him in the fortunes of others and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing.”

Adam Smith understood about social cohesion, he understood about society, it was about looking after each other, about people supporting each other.

The other Glaswegian I would like to quote is Jimmy Reid. When I go down South and I talk about this they say: “Oh you’re a supporter of the Big Society are you?”. At this point, I tell them of Jimmy Reid. It was amazing the number of people in England who hadn’t heard of him. I was a medical student in 1970s at this university and we elected him Lord Rector. His Rectorial address was reprinted in full in *The New York Times* which called it the

Children's Hearings System

single most important piece of public rhetoric since Lincoln's Gettysburg address. A communist, from Govan, being compared to Abraham Lincoln is a pretty good advertisement for a Scottish education I think!

It was all about alienation:

“Let me right at the outset define what I mean by alienation. It is the cry of men who feel themselves the victims of blind economic forces beyond their control. It's the frustration of ordinary people excluded from the processes of decision making. The feeling of despair and hopelessness that pervades people who feel with justification that they have no real say in shaping or determining their own destinies.”

Families that experience this kind of alienation turn to solutions like alcohol. Violence is common and affects the children who, in their turn, grow up to behave the same way. There is a cycle that needs to be broken in our society particularly in West Central Scotland. Unless we find ways of doing this, we are really just whistling in the wind. This

last quotation is not from a Glaswegian but from an author who was widely read in the 1960s and 1970s.

“Keep me away from the wisdom that does not cry and the philosophy that does not laugh and the greatness, which does not bow before children.”

(The Prophet, Kahil Gibran).

Unless we look after children, properly, nurture them consistently. Support them and their parents, who often don't know how to be parents, we will continue to fail and we will continue to reap the consequences in terms of criminality and poor health. It's time to break the cycle.

Thank you very much.

Sir Harry Burns

Children's Hearings System

Vote of thanks to Sir Harry Burns – Ms Angela Constance, Minister for Children and Young People

Ladies and gentlemen, Vice Principal, distinguished guests it is my pleasant task to thank Sir Harry Burns for presenting his Kilbrandon Lecture and providing us with a stimulating, lively and thought-provoking presentation. Sir Harry's determination to promote the health and welfare of children and young people is truly inspiring.

His presentation has provided us with both some stark messages, and an opportunity to better understand how a range of social factors impact on the lives of children and families in Scotland.

It is through holding events, such as these, that we are provided with an opportunity to really think about how we promote the wellbeing and welfare of children and young people both now and in the future.

On behalf of the Scottish Government, I offer my thanks for the continuing support that the University has given to the Kilbrandon Lecture series. I am also delighted to hear that there are plans to produce a publication compiling the first

ten Kilbrandon Lectures, and I look forward to seeing the final text early next year.

I would like to thank Raymond Taylor from the Glasgow Centre for the Child and Society for organising this evening's Lecture. I would also like to note my appreciation for the meticulous work of Fiona Donnelly and Claire Laidlow from the University of Glasgow for their input and also that of the University's academic, support and technical staff for their assistance.

Finally, can I convey my thanks to you, members of the audience, who have come to hear the 10th Kilbrandon Lecture, particularly those of you who are directly involved in the Hearing's System. You may be interested to know that the Lecture has been filmed and recorded and will be available on the University's website in the near future.

The Children's Hearing's System is a monumental achievement. It reflects our nation's distinctive values and culture.

Our integrated child-centred approach to ensuring welfare and justice for our young people, and our determination to focus on children's needs as a whole, continues to attract interest and admiration internationally.

Children's Hearings System

2011 marks the 40th anniversary of the first children's hearing which took place in April 1971 here in Glasgow, bringing to life the vision of Lord Kilbrandon and his Committee.

There have been a number of marked changes in the past 40 years. Before that first hearing, around 850 panel members had been appointed to local panels. Today, there are 2700.

In 1971, 4 in every 5 hearings cases were on offence grounds. Last year, children were referred on offence grounds in less than 1 in 3 cases.

The constant, though, has been the dedication and expertise of panel members and putting the needs of the child first. By doing so, Lord Kilbrandon's legacy is honoured and it remains the very cornerstone of the System.

As you know, the main aim of the new 2011 Act is to strengthen and modernise the existing System. Our shared focus is on improving outcomes for children and young people. We will secure that by addressing their needs and promoting their rights.

The creation of a national children's panel will improve consistency and standards. It will be supported by the National Convener and the new dedicated body, Children's Hearings Scotland. No matter where children live in Scotland, they will receive the same standard of service. The same applies to panel members who will continue to be recruited locally and to serve in their own communities.

The new arrangements will "go live" in September 2012.

Supporting the existing Children's Hearings System and ensuring continuity are also key priorities. This Lecture series is an important means of ensuring that the legacy of Lord Kilbrandon is celebrated. It is right that his vision of a more integrated child-centred system for Scotland's vulnerable children and young people is passed on to future generations. Sir Harry Burns' Lecture has served to keep this vision alive and we are very grateful to him for that.

Thank you once again Sir Harry for your Kilbrandon Lecture.

Goodnight.

Kilbrandon's vision:
Healthier lives, better futures

Glasgow University
7th November 2011

Thursday 3rd November 2011

- ◆ “Nearly 50 per cent of those questioned in a Barnardo's survey believe children are beginning to behave like animals, while more than two in five think they are "becoming feral"..”

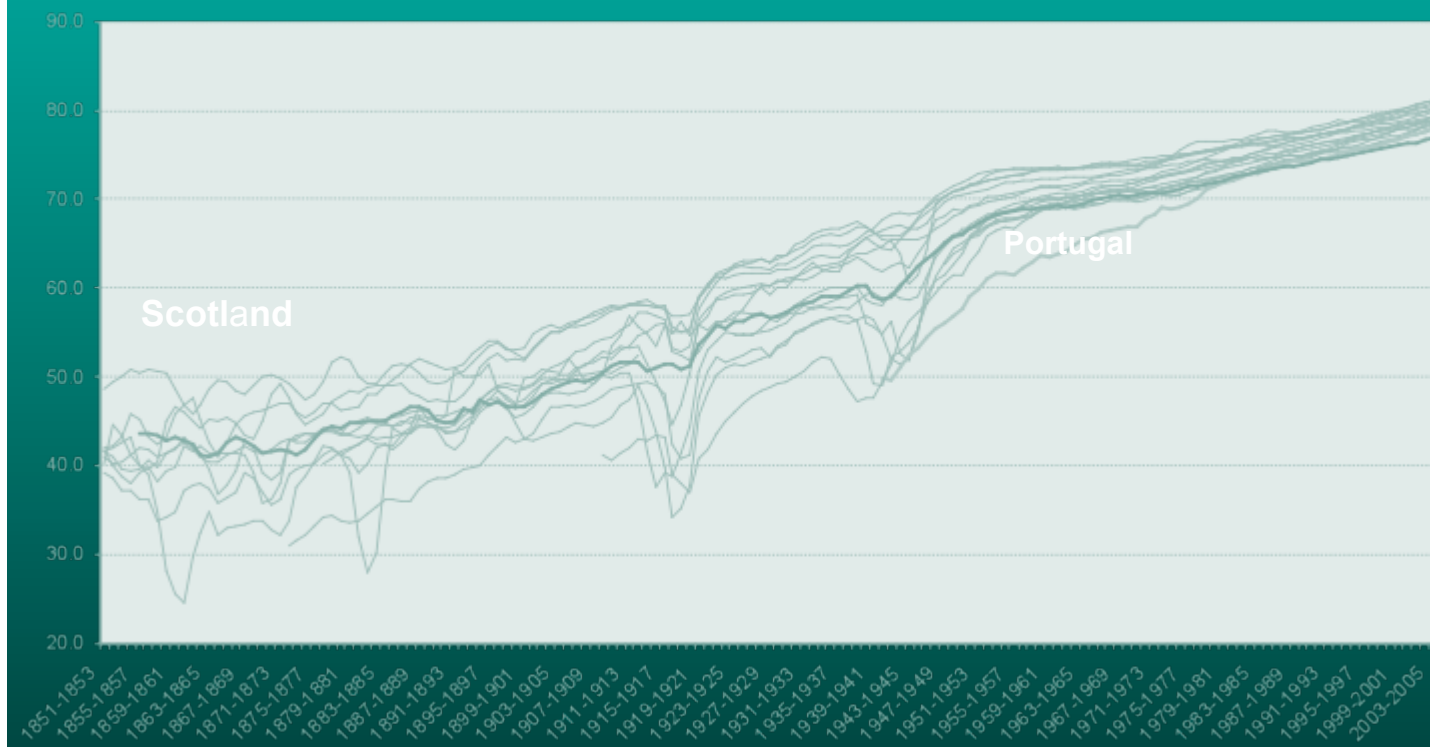
Social circumstances and health



Life expectancy trends

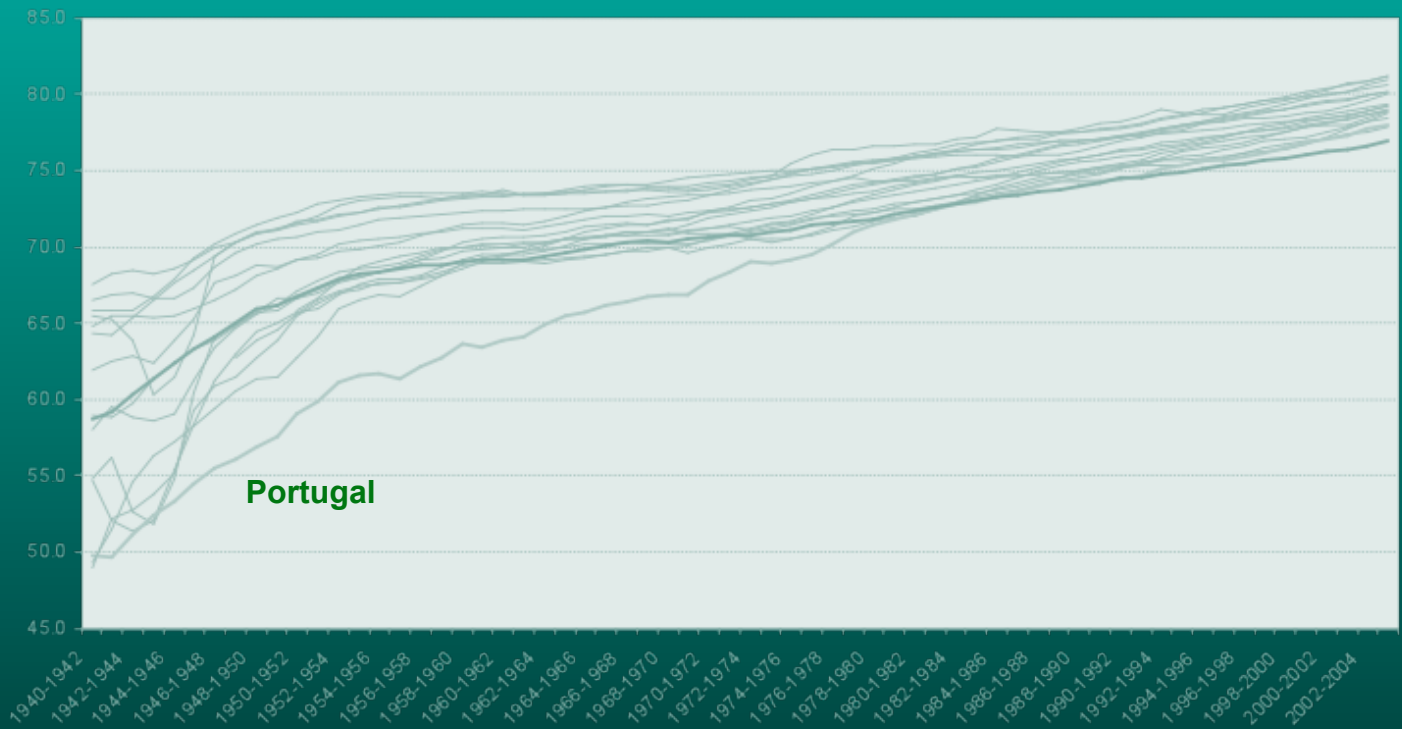
Life expectancy: Scotland & other Western European Countries, 1851-2005

Source: Human Mortality Database

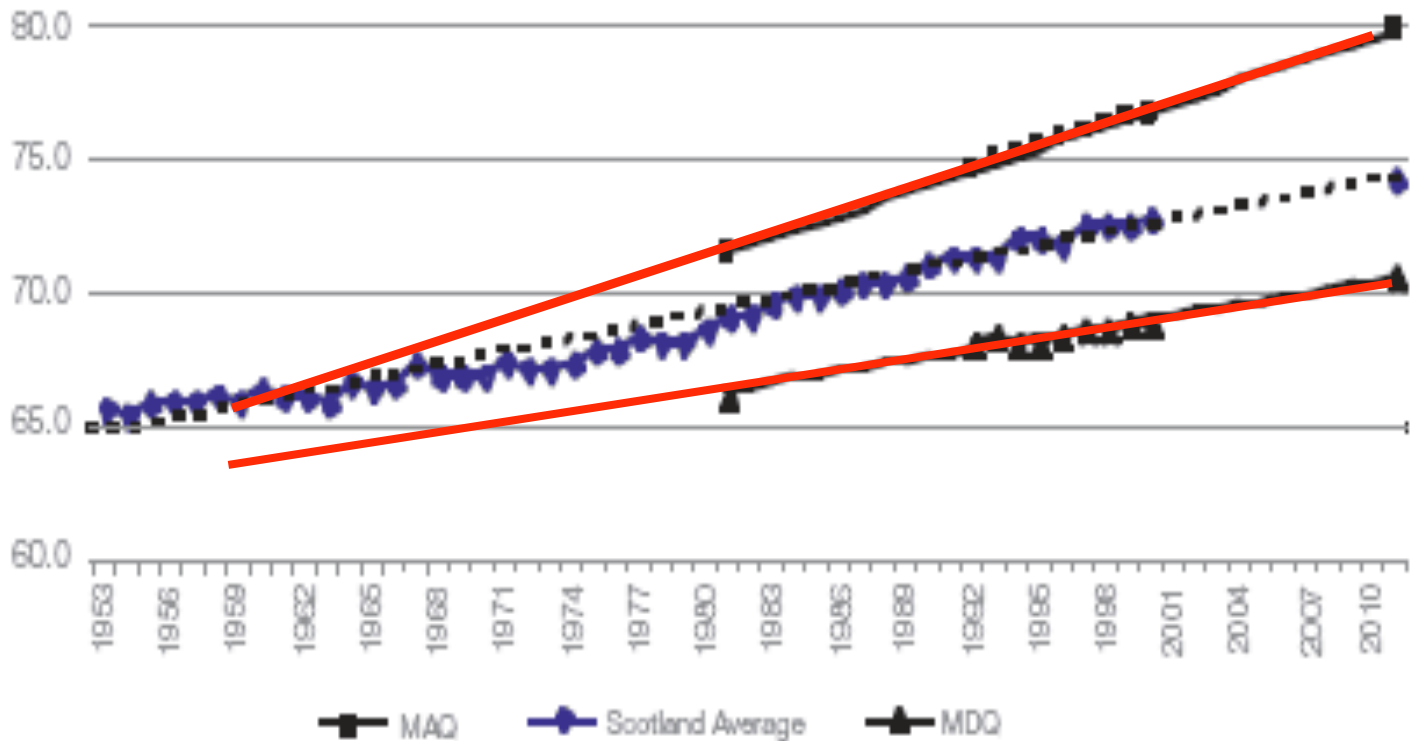


Life expectancy trends

Life expectancy: Scotland & other Western European Countries, 1940-2005
Source: Human Mortality Database



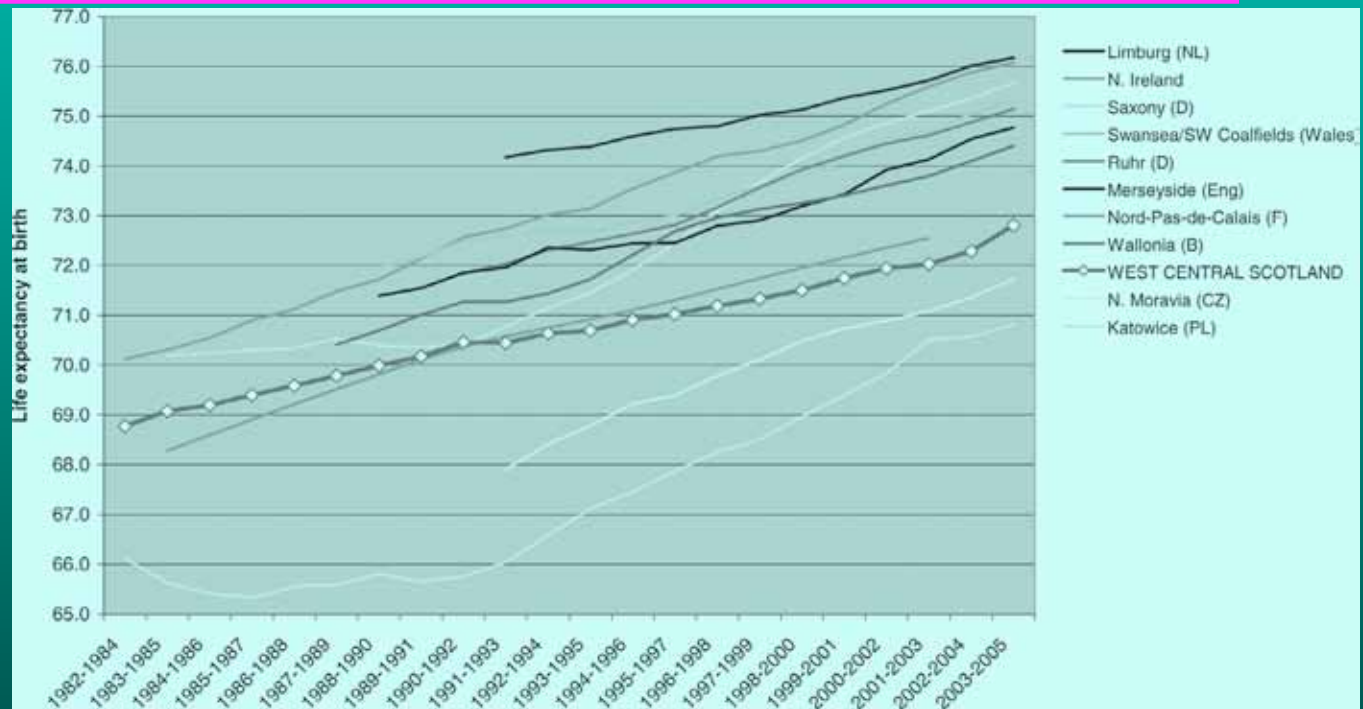
Trends in male life expectancy: Scotland



Post industrial regions of Europe

Male life expectancy at birth

West Central Scotland and 10 post-industrial regions



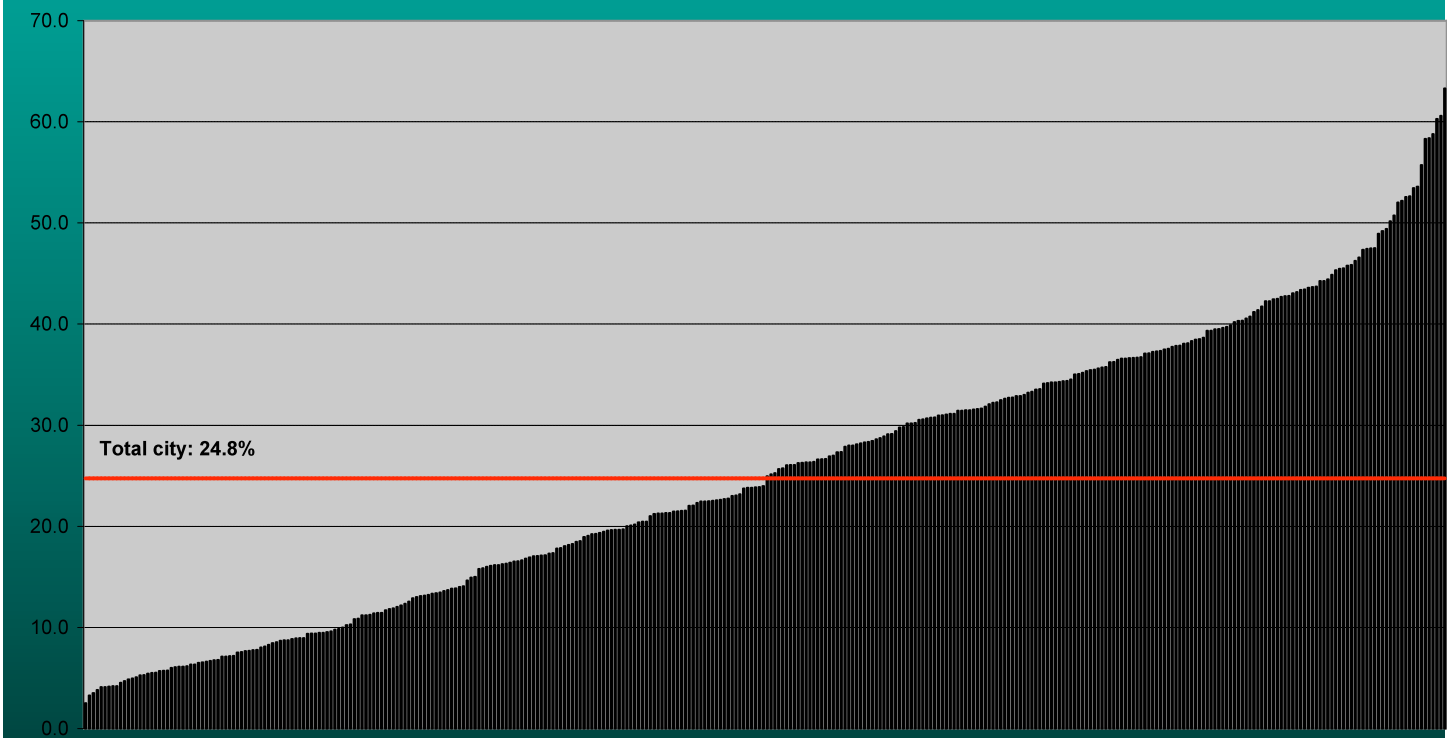
Walsh, D. et al. Eur J Public Health 2010 20:58-64; doi:10.1093/eurpub/ckp063

EUROPEAN JOURNAL OF
PUBLIC HEALTH

Income deprivation - Glasgow

Glasgow merged DZs: income deprivation distribution

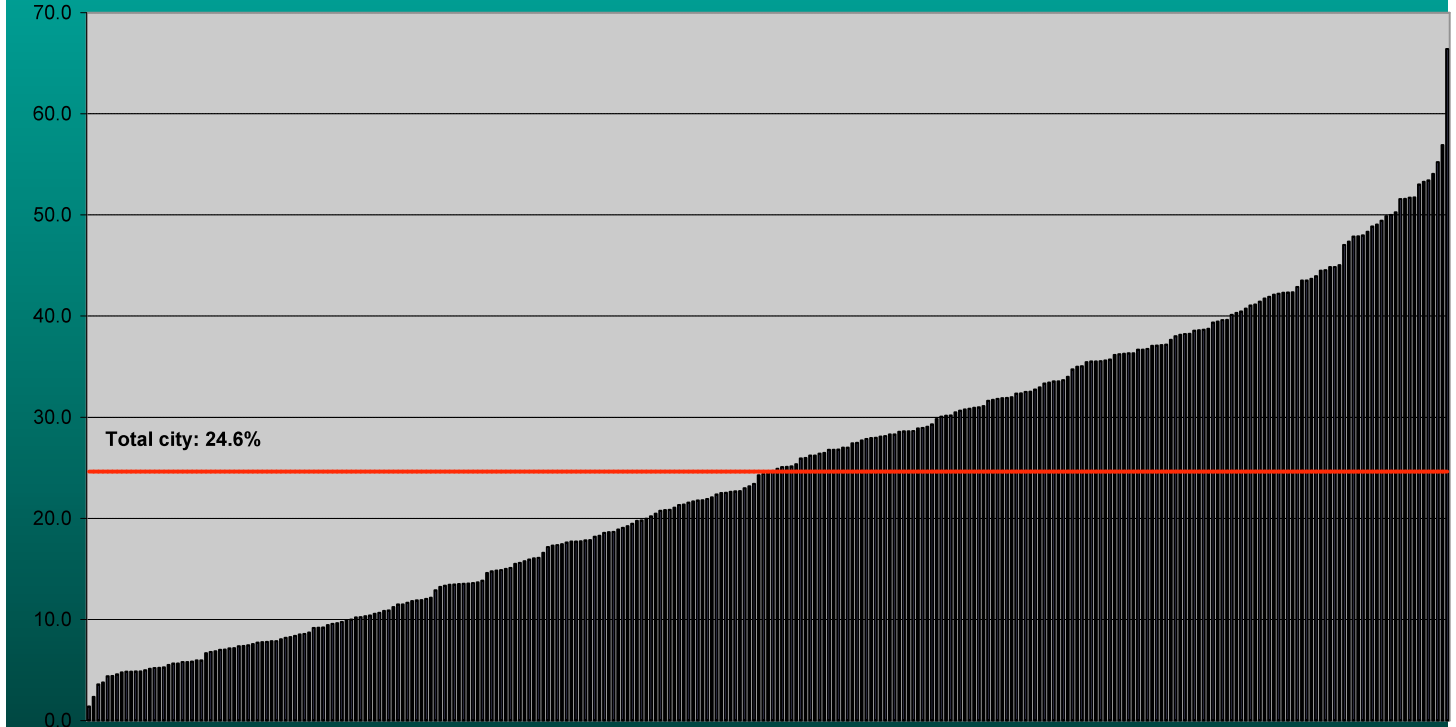
Source: GCPH, based on SIMD/DWP data



Income deprivation - Liverpool

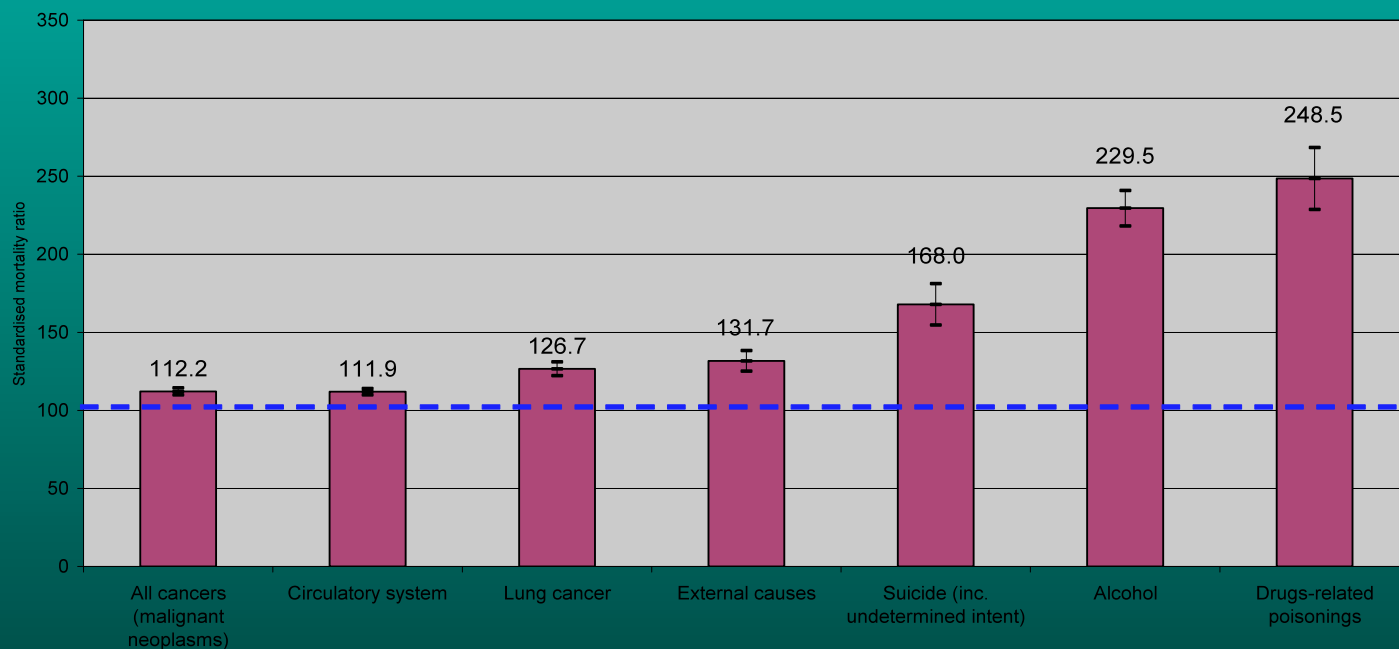
Liverpool LSOAs: income deprivation distribution

Source: DWP



Standardised mortality rates by cause, all ages: Glasgow relative to Liverpool & Manchester

All ages, both sexes: cause-specific standardised mortality ratios 2003-07, Glasgow relative to Liverpool & Manchester, standardised by age, sex and deprivation decile
Calculated from various sources



Source: Walsh D, Bendel N., Jones R, Hanlon P. It's not 'just deprivation': why do equally deprived UK cities experience different health outcomes? Public Health, 2010

Population attributable risk %

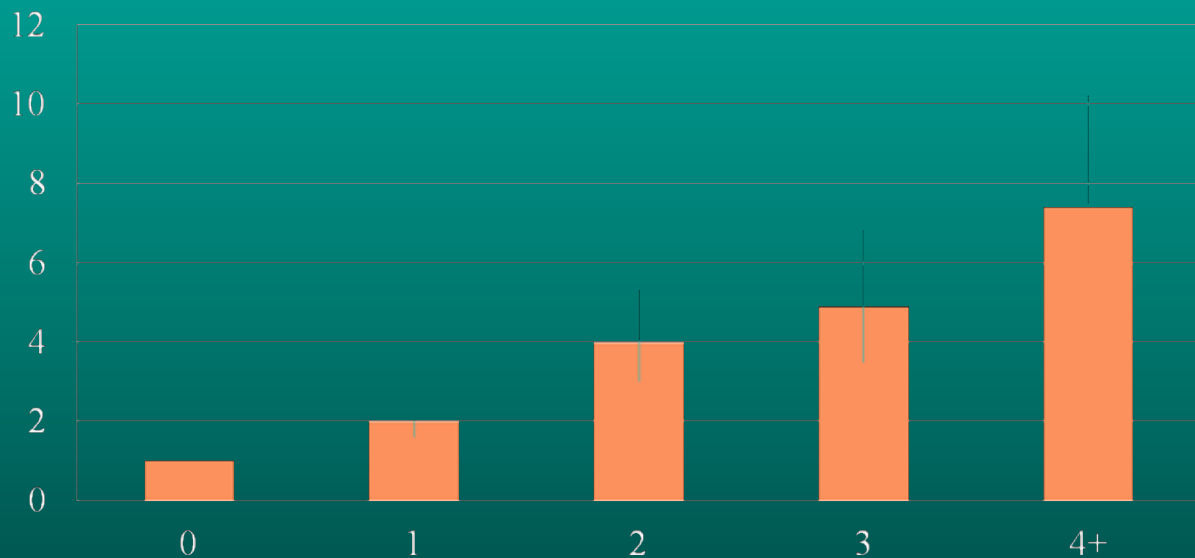
- ◆ Lung cancer - Smoking – 92%
- ◆ Breast cancer – Obesity, no exercise – 40%
Alcohol – 11%
- ◆ MI - Smoking - 49%
Hypertension - 18%
Abdominal obesity- 20%
Psychosocial factors 32%

Adverse childhood events study

- ◆ Physical/sexual/emotional abuse
- ◆ Neglect (physical/emotional)
- ◆ Domestic substance abuse
- ◆ Domestic violence
- ◆ Parental mental illness
- ◆ Parental criminality

Adverse childhood events risk of alcoholism

Odds ratio

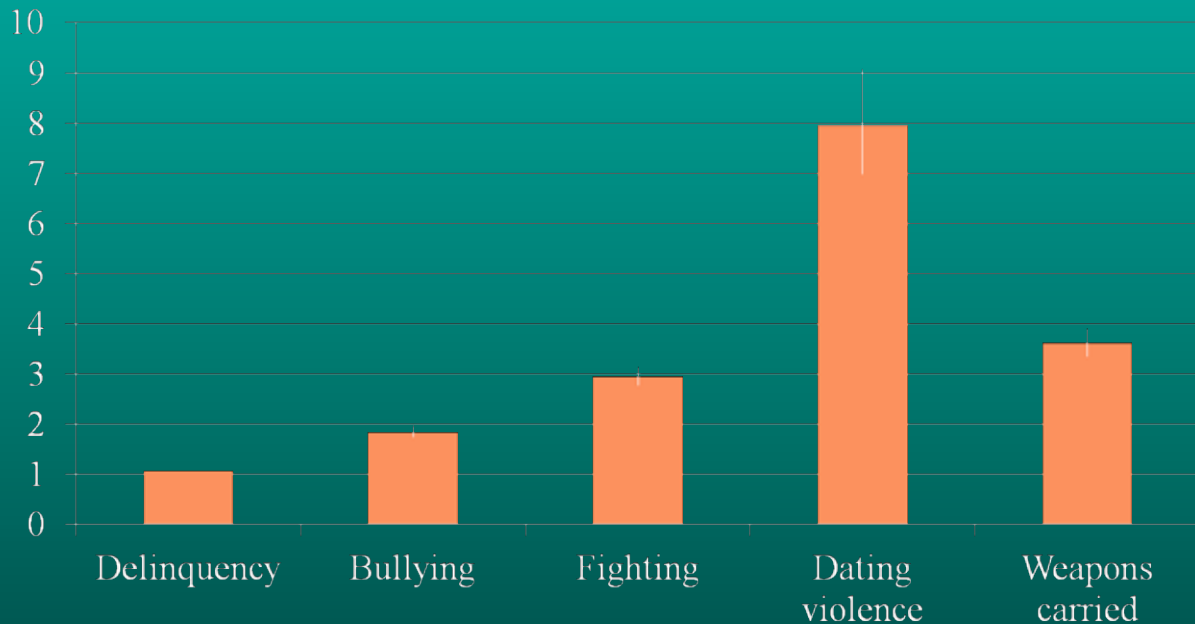


Hillis et al 2011

Adverse childhood events

risk of perpetrating violence

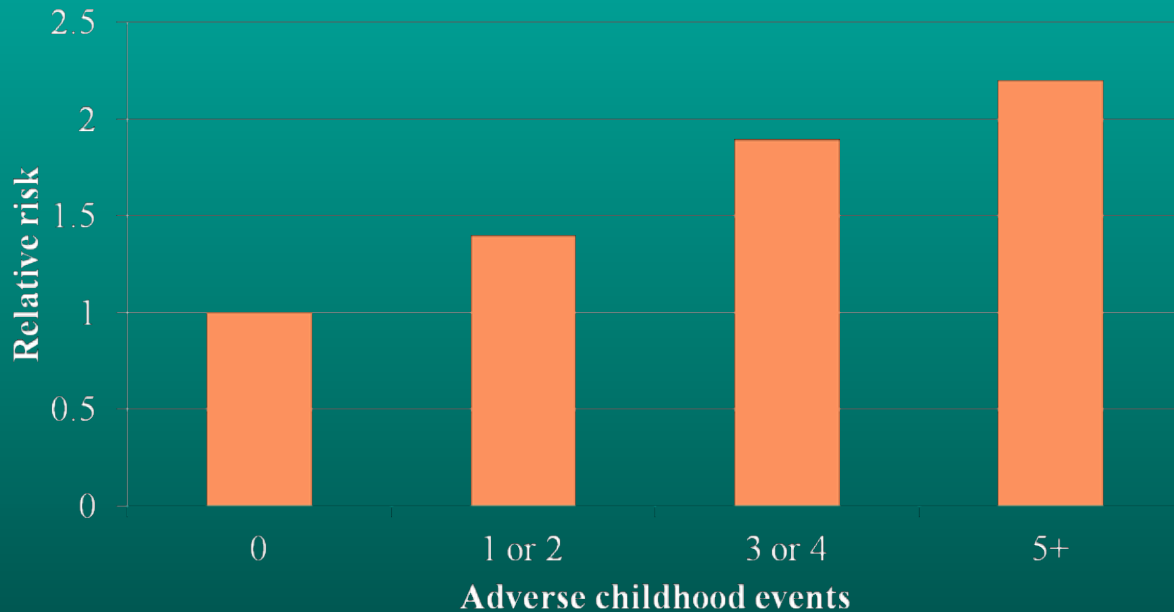
Boys experiencing physical abuse



Duke et al 2010

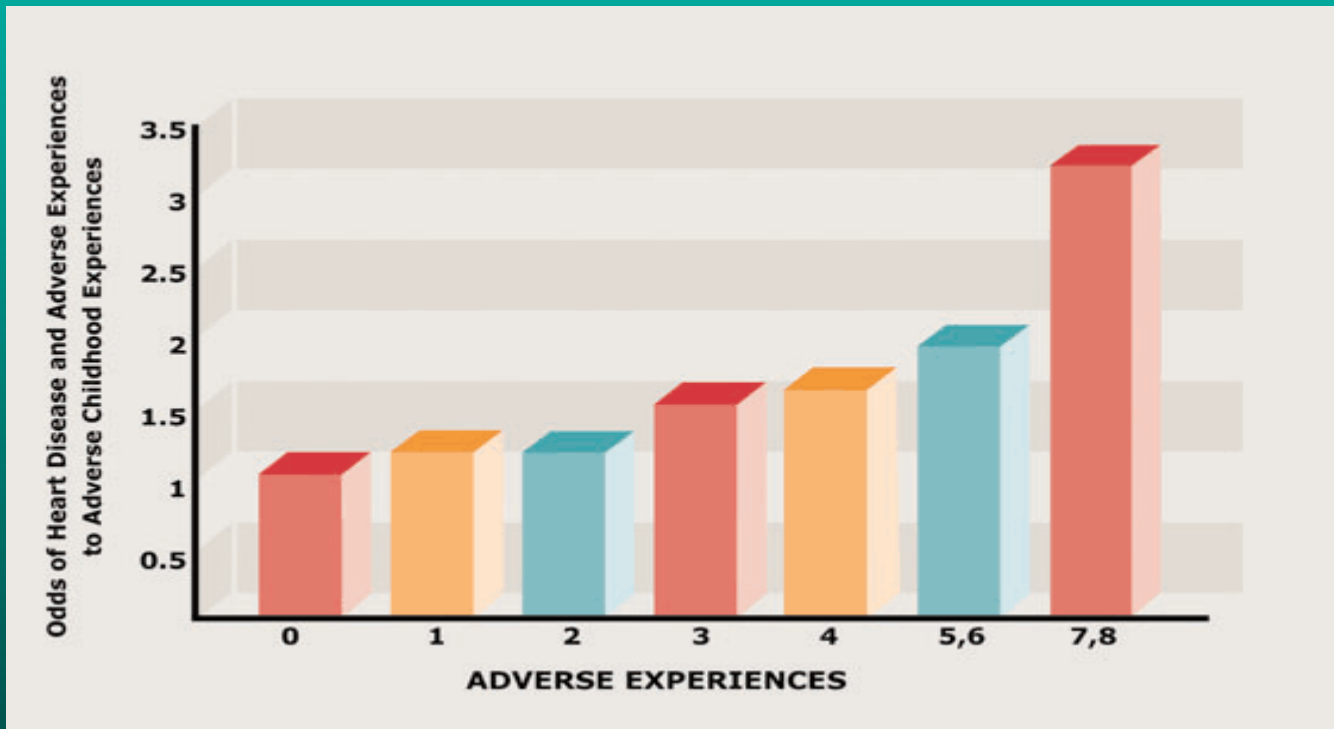
Adverse childhood events

-risk of teenage pregnancy



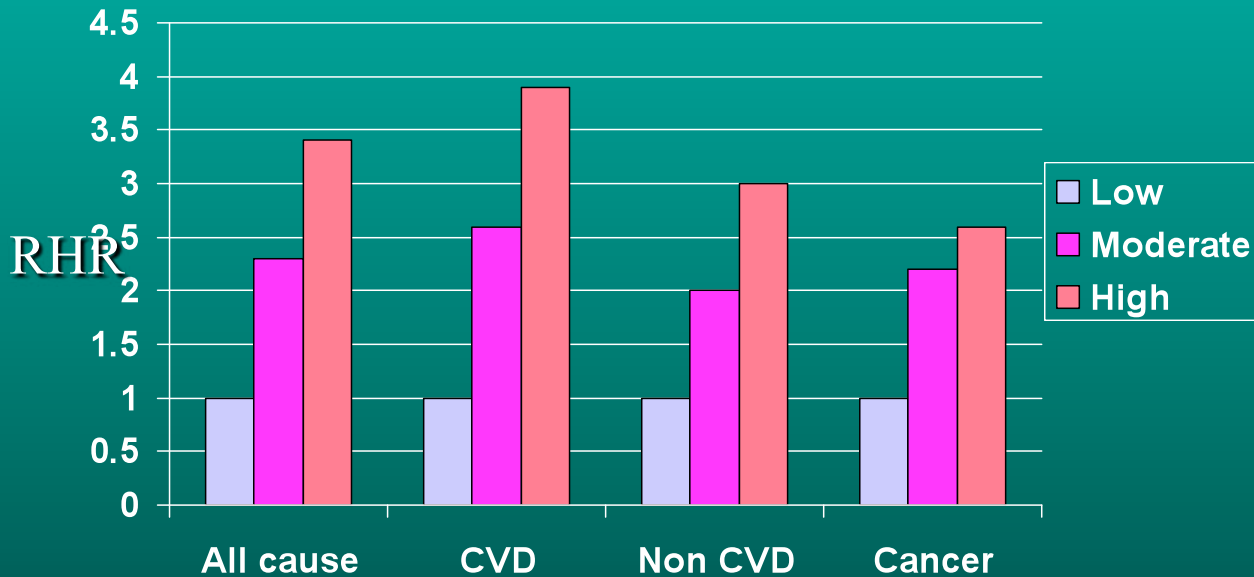
Hillis et al 2011

Risk of heart disease and early adversity



Risk of death

- by level of hopelessness



Everson et al 1996

Carotid artery thickening



Aaron Antonovsky 1923-1994



Sense of coherence....

“.....expresses the extent to which one has a feeling of confidence that the stimuli deriving from one's internal and external environments in the course of living are **structured, predictable and explicable**, that one has the **internal resources** to meet the demands posed by these stimuli and, finally, that these demands are seen as **challenges**, worthy of investment and engagement.”

For the creation of health....

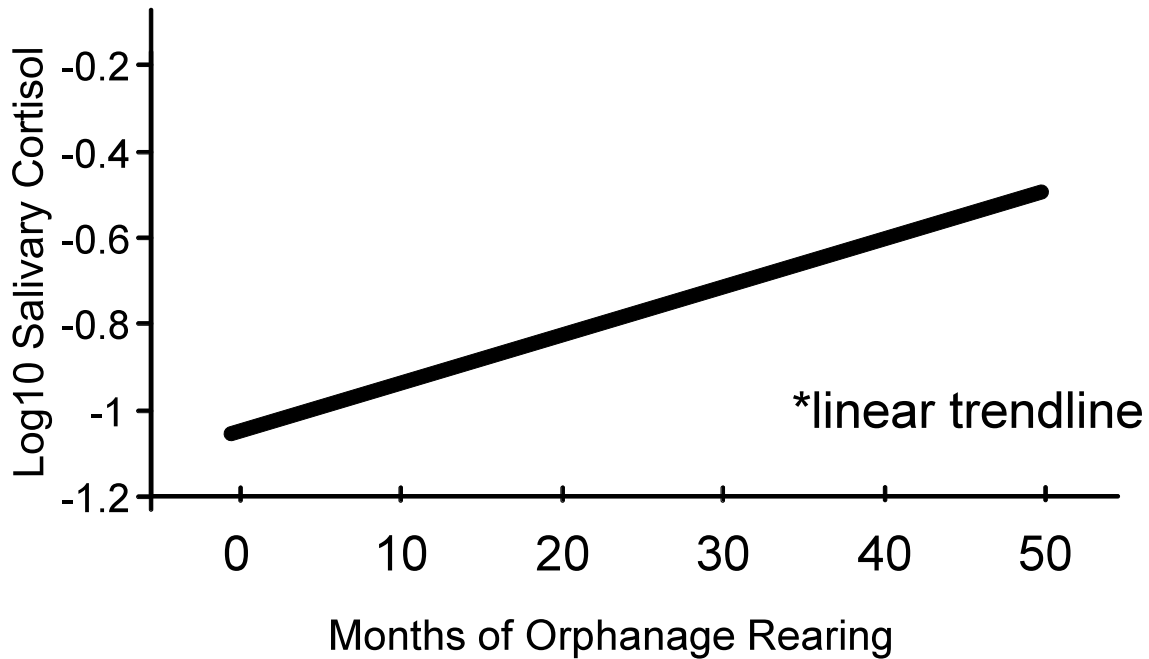
...the social and physical environment must be:

- ◆ Comprehensible
- ◆ Manageable
- ◆ Meaningful
- ◆or the individual would experience chronic stress

Salutogenesis....

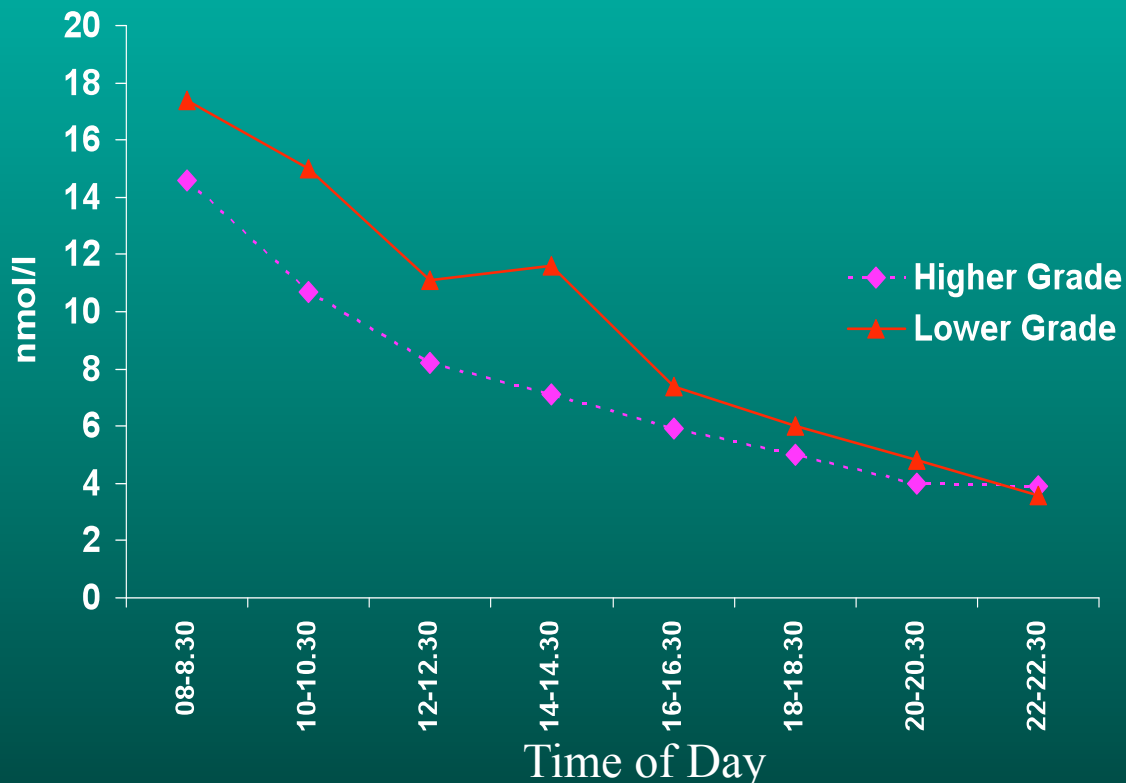
- Highlights factors which create and support human health rather than those which cause disease
- It focuses on resources and capacities which impact positively on health and aims to explain why, in adverse circumstances, some stay healthy and others don't.

Evening Cortisol Levels Increase with Months of Orphanage Rearing *



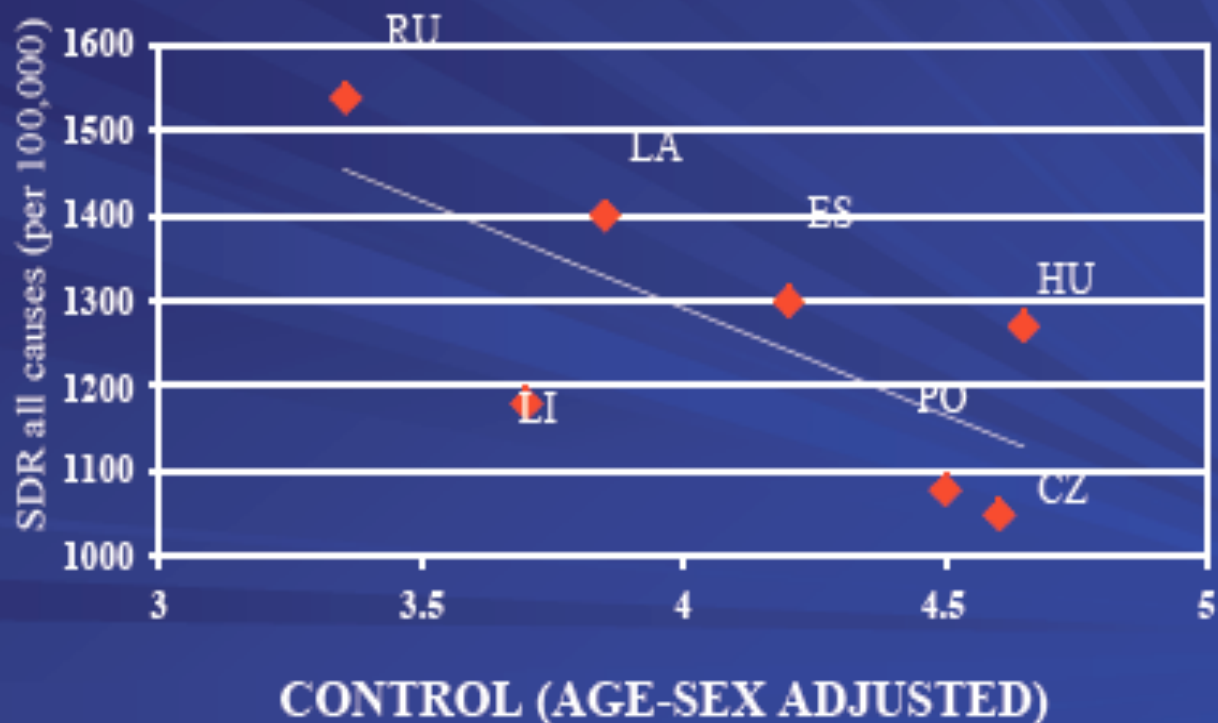
STRESS AND GRADE OF EMPLOYMENT: MEN

Salivary Cortisol



Step toe et al. 2003, Psychosomatic Medicine, 65, 461-470

PERCEIVED CONTROL IN NATIONAL SAMPLES AND ALL CAUSE MORTALITY



Pikhart, Bobak et al 2000

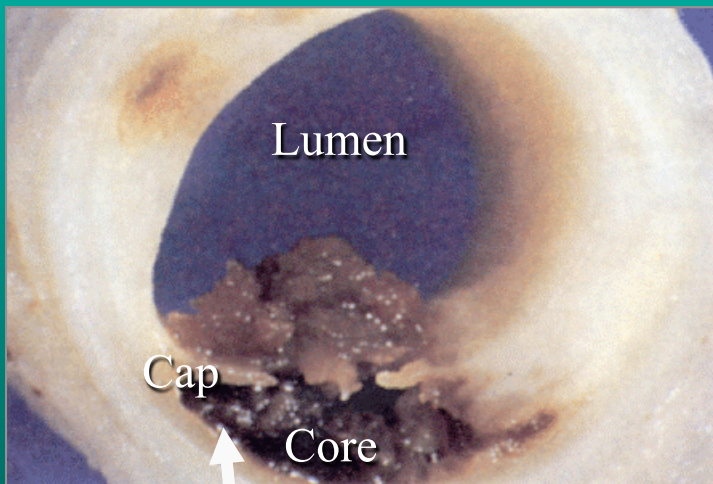
Persistence hunting



Environmental determinants of inflammatory status

	Depcat	% smokers	CRP (median) mg/dl	
			Never-smokers	Smokers
affluent	1	36.8	0.71	1.42
	2	35.9	1.00	2.34
	3	39.1	1.11	2.25
	4	44.1	1.21	2.44
	5	46.6	1.13	2.53
	6	49.3	1.25	3.07
deprived	7	55.5	1.48	3.29

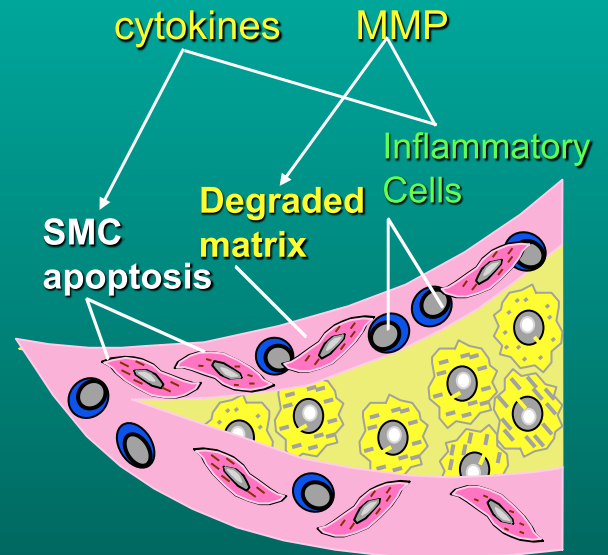
Inflammation in plaques



Inflammatory cells

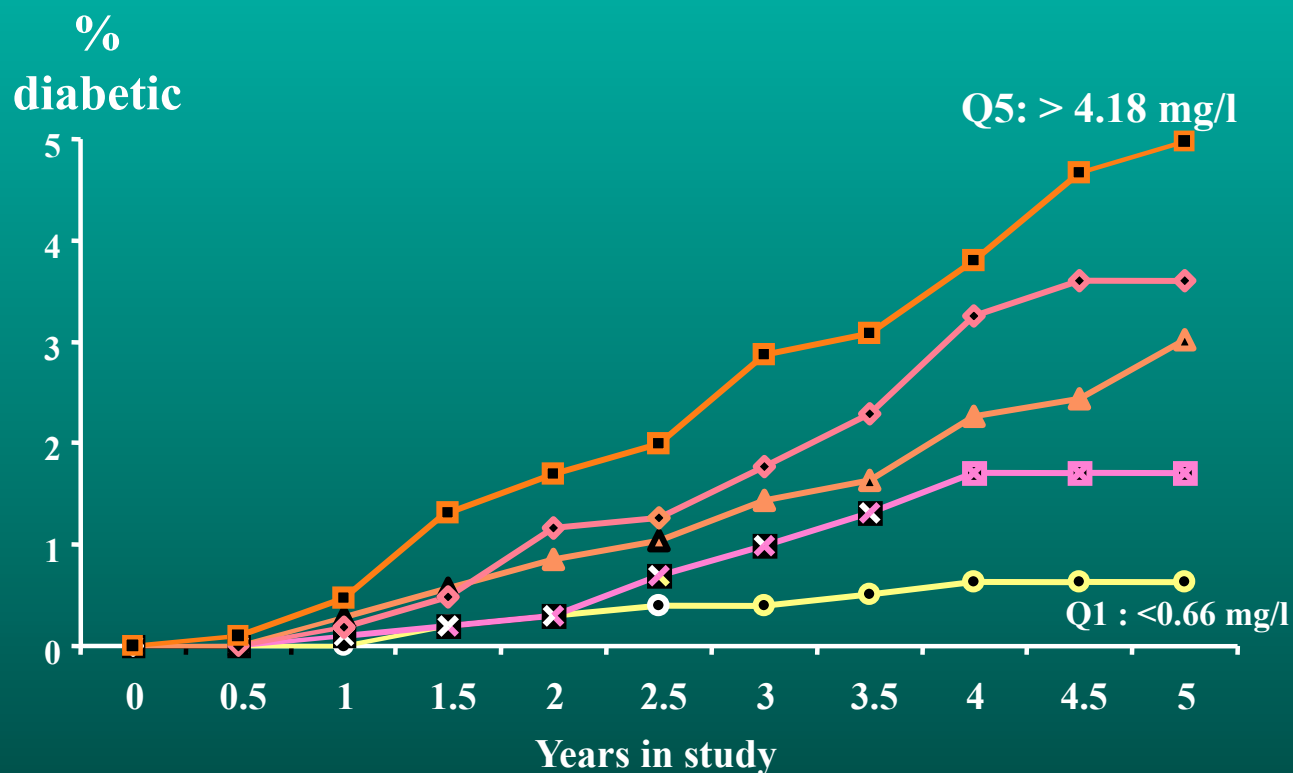


MMPs, IL-6,
IL-15, IL-18, CRP



Unstable Thin
Fibrous Cap

CRP and cumulative risk of type 2 diabetes



Freeman et al. Diabetes 2002;51;1596

Adipocyte programming

insulin resistance, inflammation and ALP

skeletal muscle

Insulin resistance

NEFAs

triglyceride↑

Atherogenic
Lipoprotein
Phenotype

Low HDL
small LDL

liver

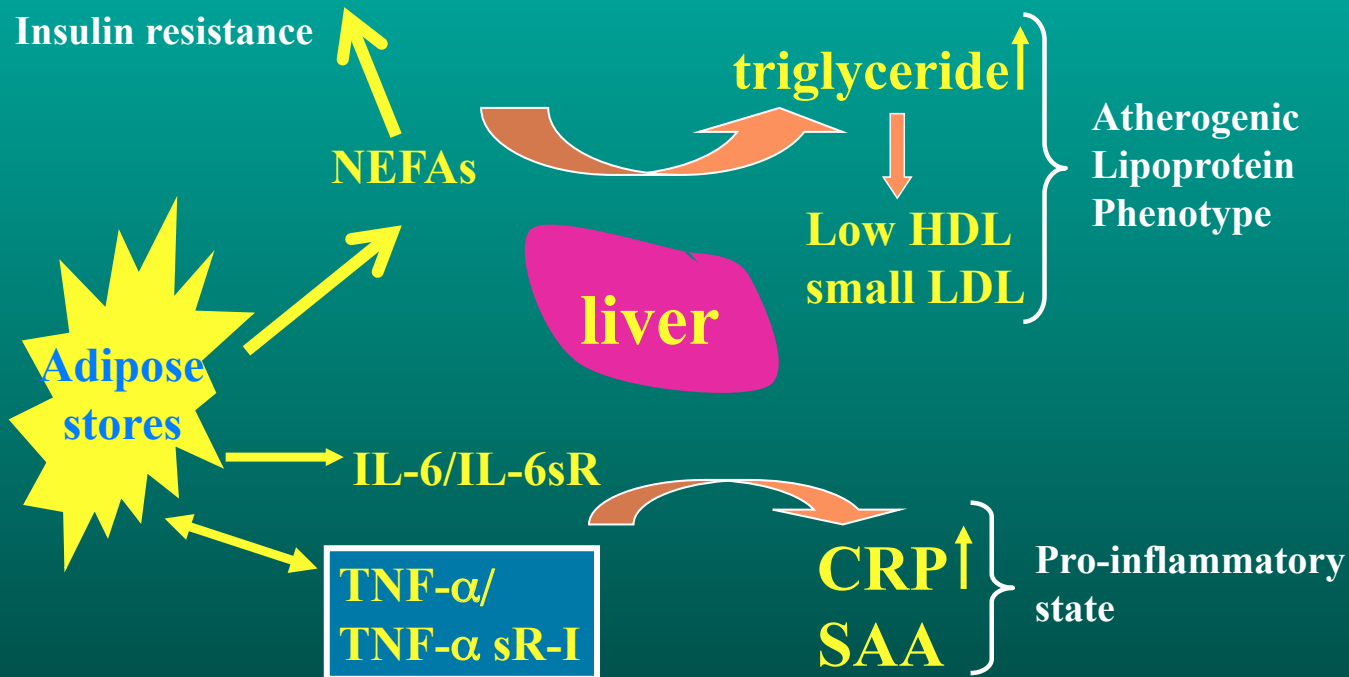
**Adipose
stores**

IL-6/IL-6sR

TNF- α /
TNF- α sR-I

CRP↑
SAA

Pro-inflammatory
state

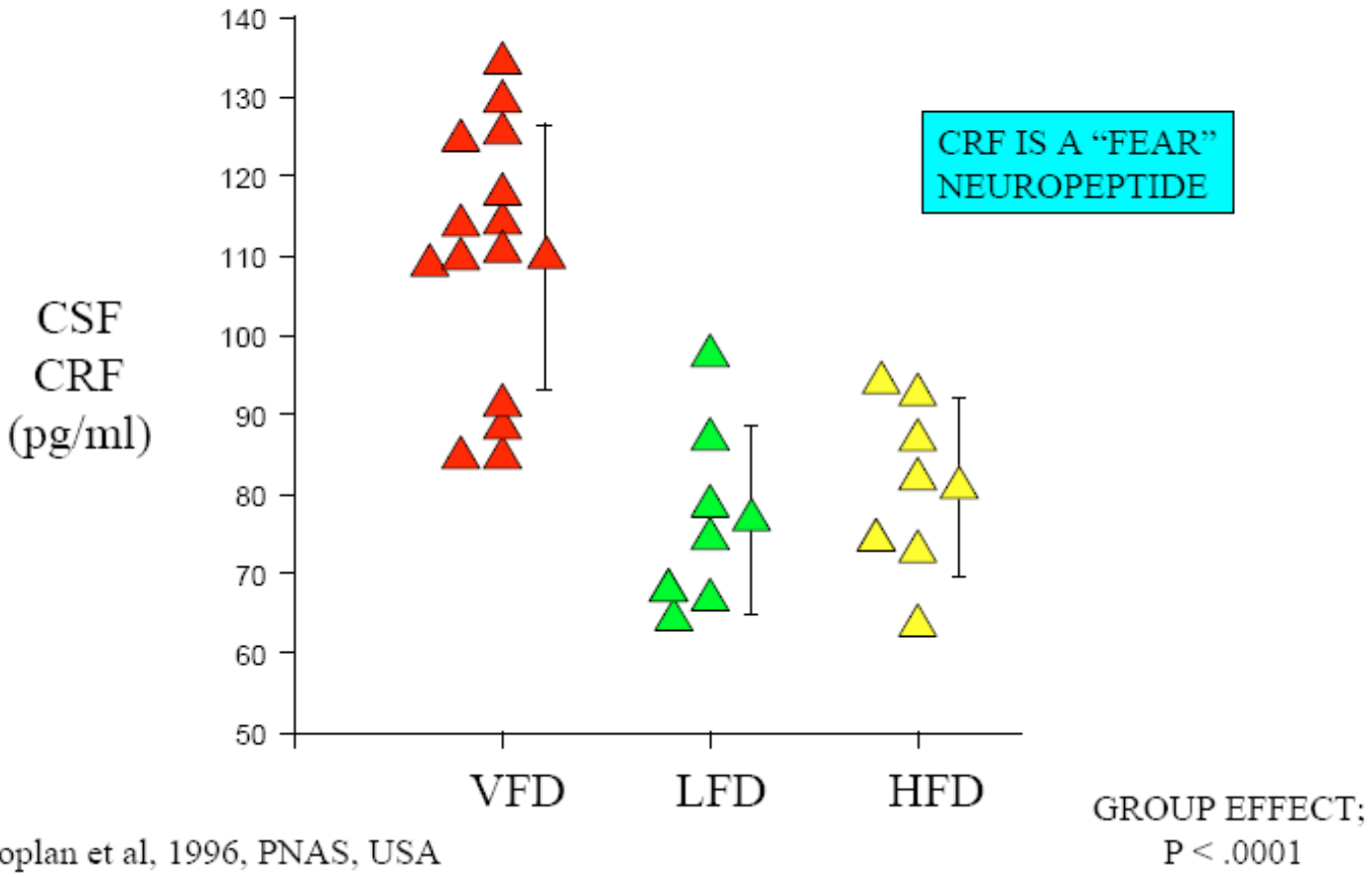








CSF CRF CONCENTRATIONS IN DIFFERENTIALLY-REARED JUVENILE PRIMATES:

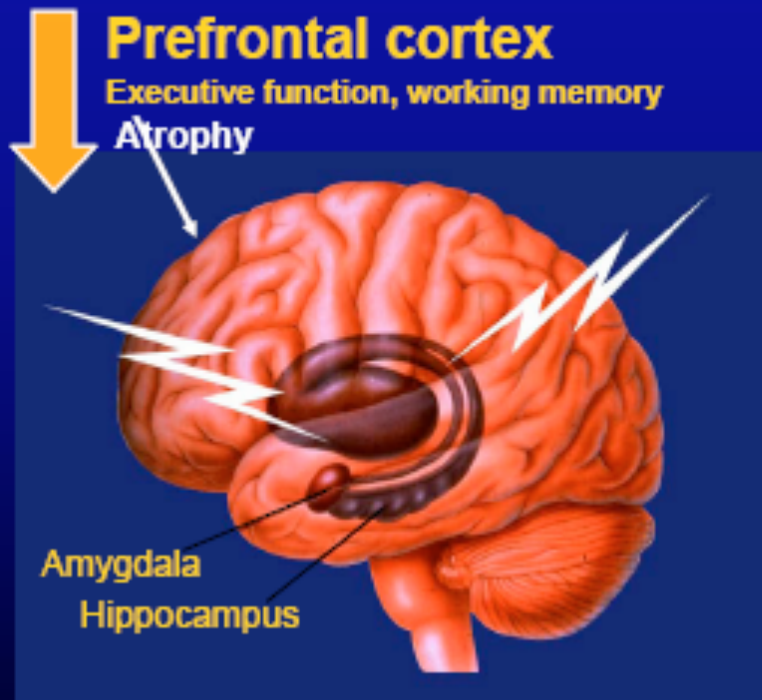


Coplan et al, 1996, PNAS, USA



72

The Human Brain Under Stress: key brain regions



Prefrontal cortex

Executive function, working memory

Atrophy

Hippocampus

Contextual, episodic, spatial memory

Atrophy

Amygdala

Emotion, fear, anxiety

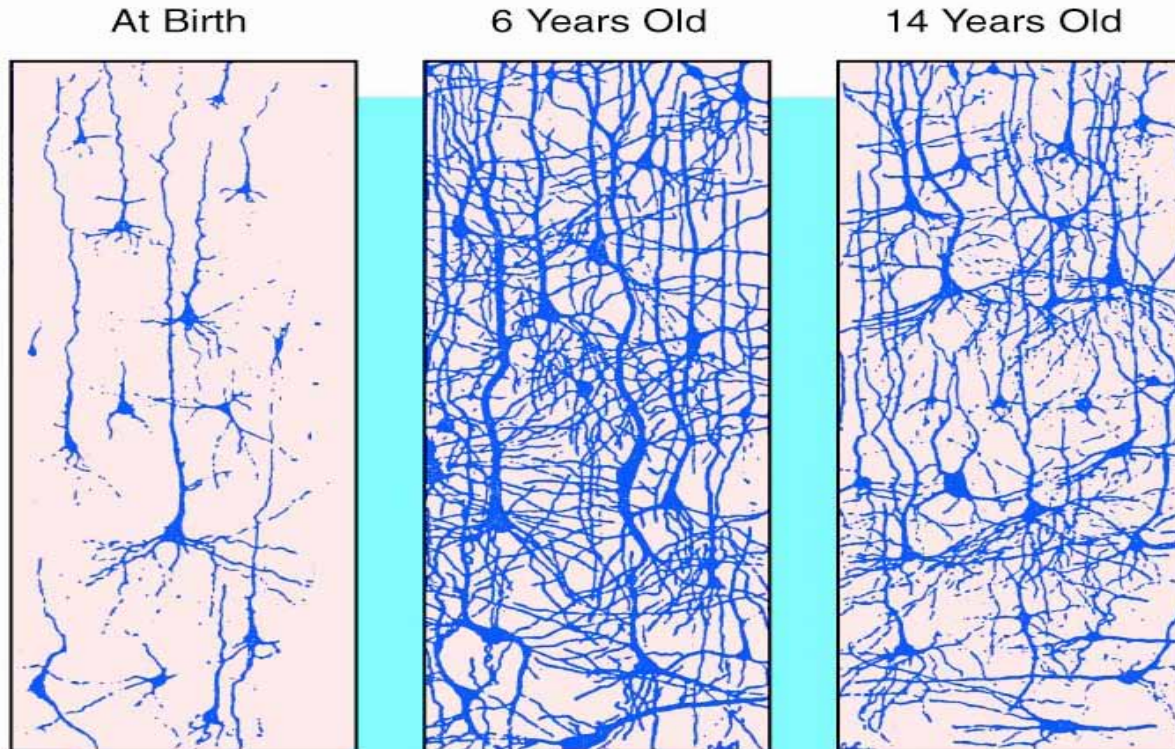
Hypertrophy.

later atrophy

Attachment theory

- Ainsworth
 - Deep emotional connection that infant develops with primary caregiver
 - Reflects an “internal working model” expressing the infant’s expectations of parental behaviour in meaningful situations
 - Basis for development of later relationships
- Increasingly recognised as determinant of later emotional, cognitive and social outcomes

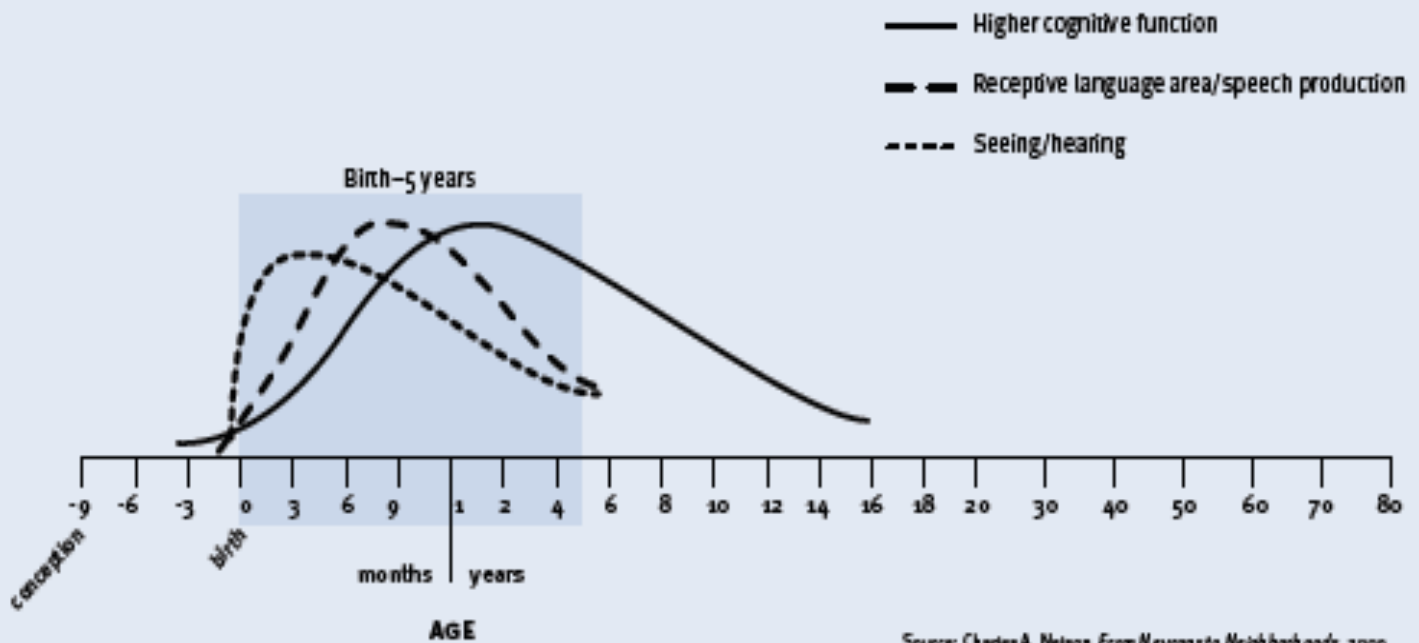
What happens during early brain development?



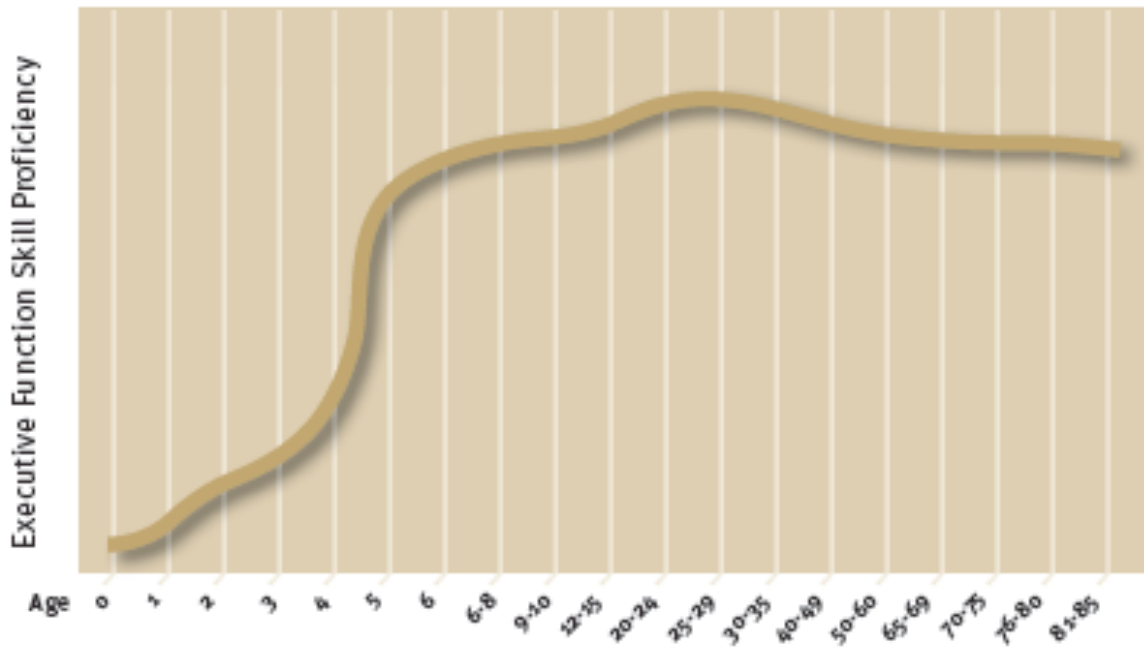
Reprinted with permission – Prof Peter Seeman

Proliferation and decline in synaptic connections in children

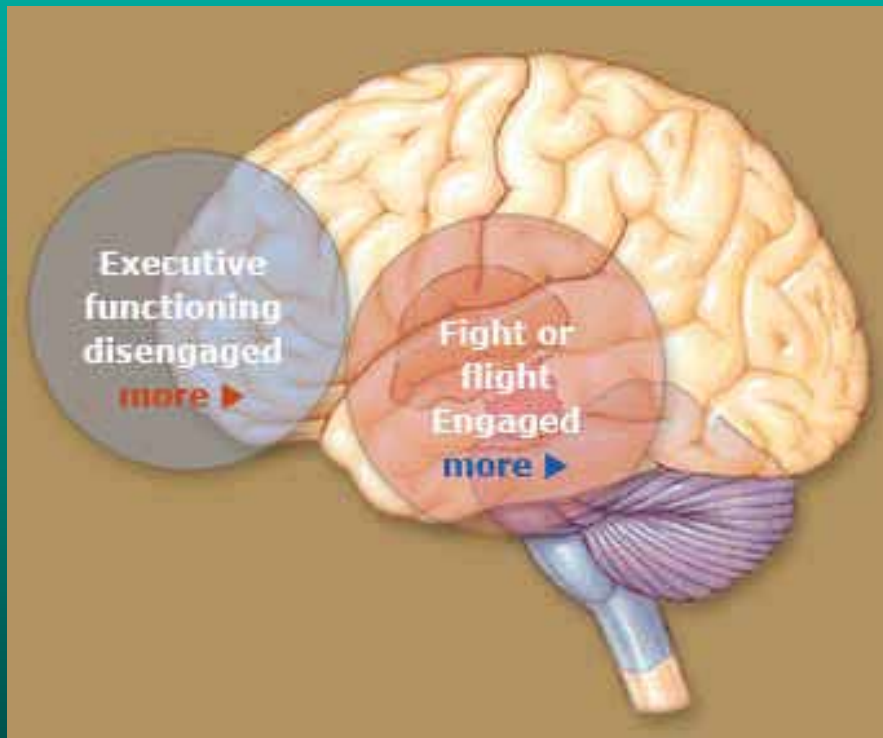
Synapse Formation in the Developing Brain



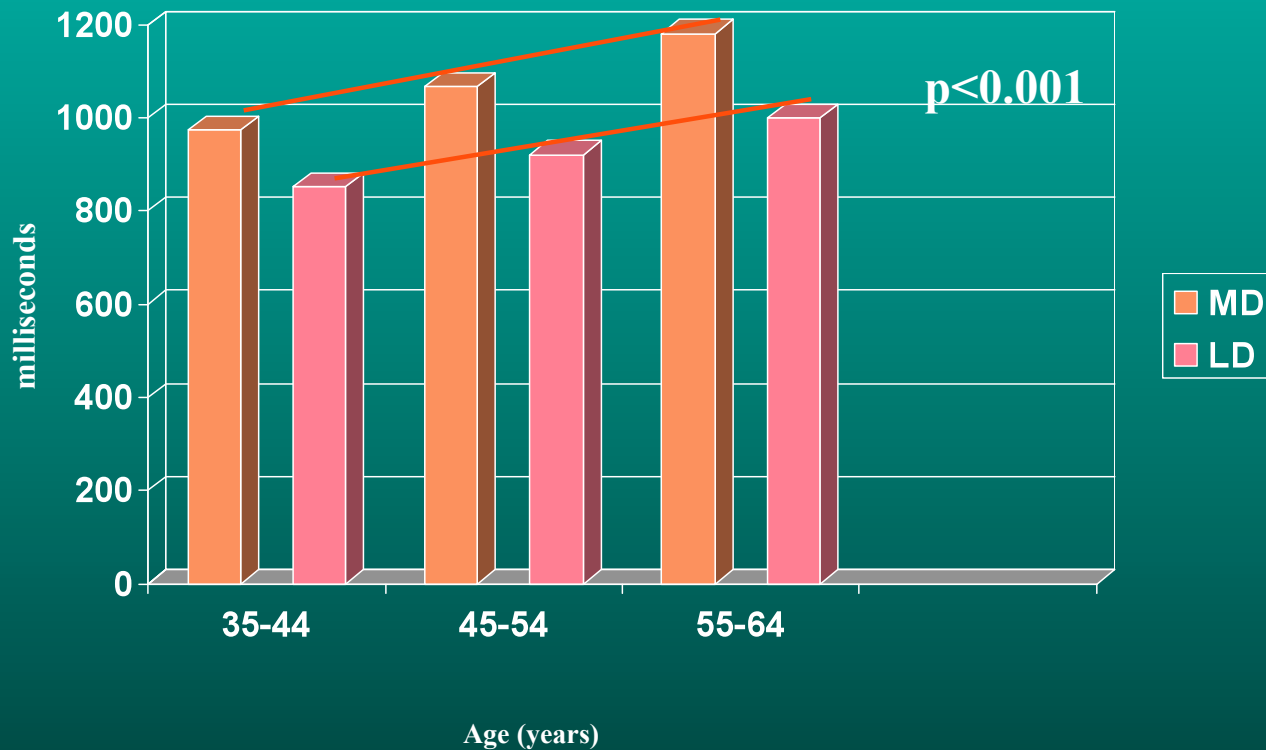
Executive Function Skills Build Throughout Childhood and Adolescence



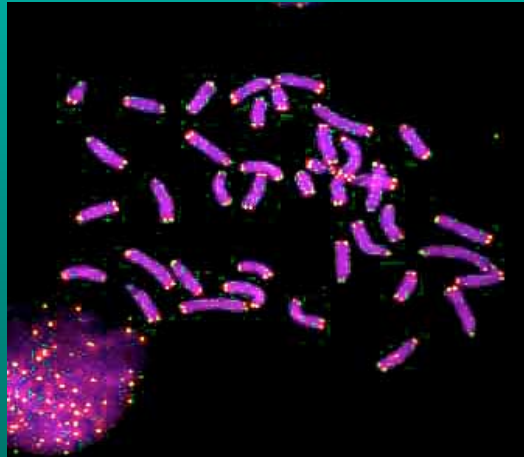
The stressed brain



Choice reaction time



Telomeres



- ◆ Ends of chromosomes
- ◆ Sense and signal damage
- ◆ Home of repair systems
- ◆ Integrate energy production and utilisation
- ◆ Anti-cancer
- ◆ Telomere length predictive for mortality

Telomere length in twins by occupation

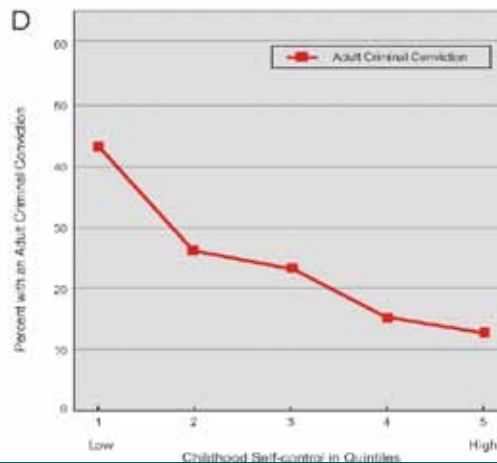
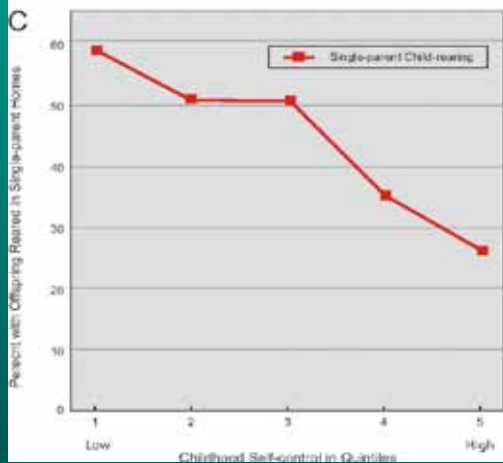
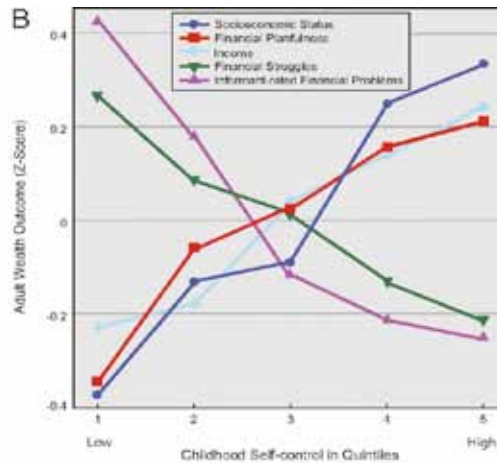
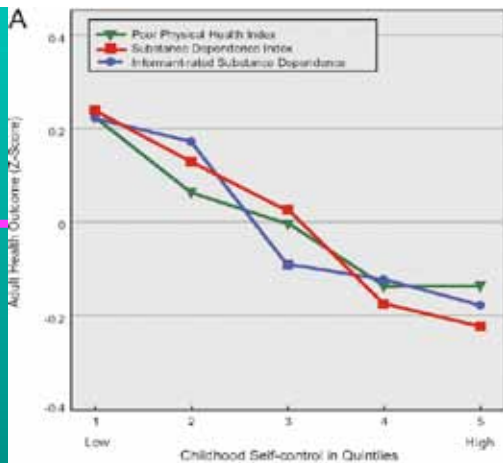


The Dunedin cohort

- 1000 children recruited in late 1972/3
- At age 3, “at risk” children identified on the basis of chaotic circumstances, emotional behaviour, negativity and poor attentiveness
- As adults, those “at risk” were more likely to :
 - be unemployed
 - have criminal convictions (especially for violence)
 - been pregnant as a teenager
 - have a substance abuse problem
 - exhibit signs of insulin resistance and metabolic syndrome

A common vision?

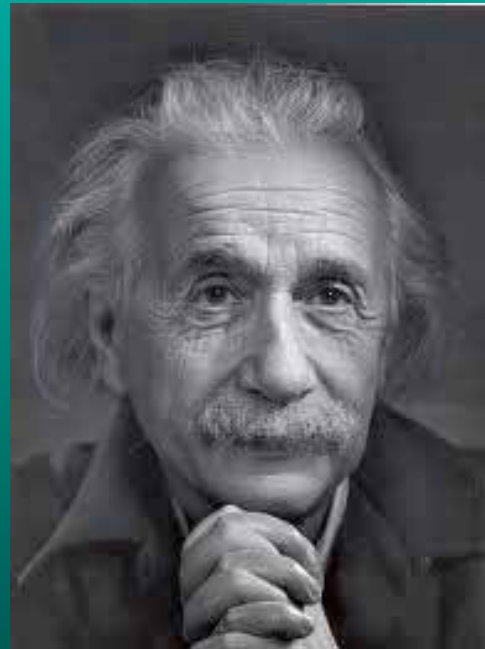
- ◆ A healthy society
- ◆ Low criminal conviction rate
- ◆ Low teenage pregnancy rate
- ◆ High educational attainment
- ◆ Economically active



Moffitt T E et al. PNAS 2011;108:2693-2698

Insanity as defined by Einstein

- ◆ “Doing the same thing all the time and expecting different results”



Health Deficits approach

- Focuses on problems, needs and deficiencies in a community such as deprivation, illness and health damaging behaviours.
- It designs services to fill the gaps and fix the problems. As a result, communities can feel disempowered.
- People become passive recipients of services rather than active agents in their own lives

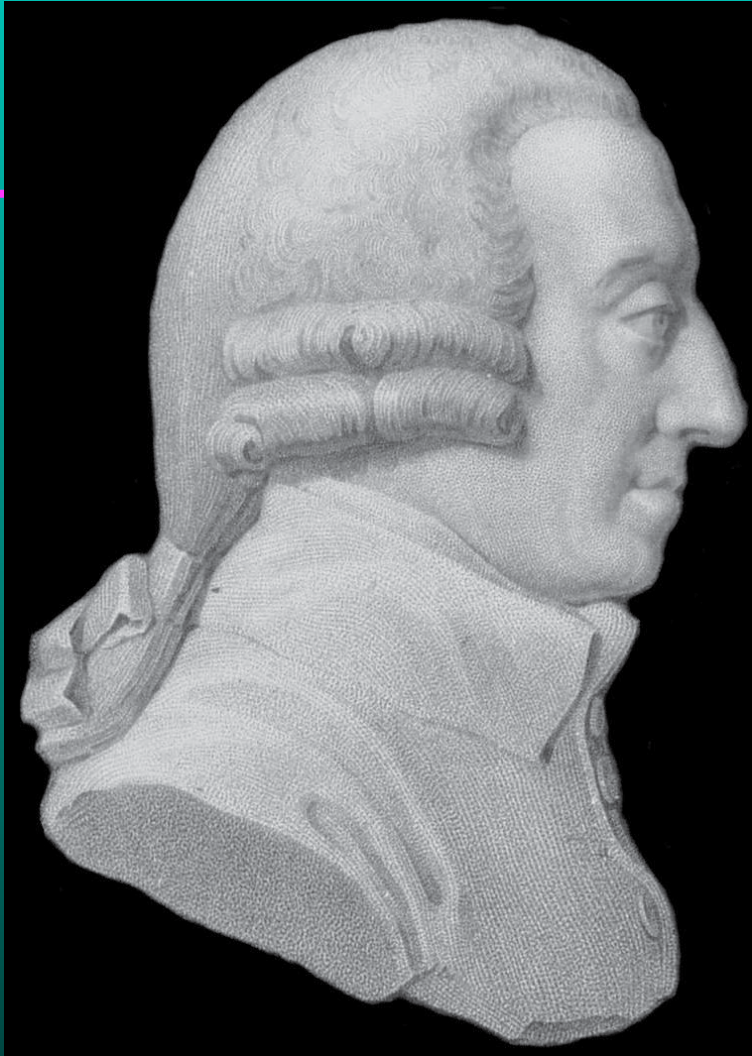
Health Assets

- A health asset is any factor or resource which enhances the ability of individuals, communities and populations to maintain their health and sustain wellbeing. The assets can operate...as protective and promoting factors to buffer against life's stresses

Morgan and Ziglio 2009

Health improvement or life improvement?

- ◆ Health is a characteristic which emerges in individuals living in a fair and civilised society.
- ◆ Individuals who live in such a society understand how it works, can manage the challenges they face and participate fully in the life of the community.
- ◆ Such individuals are likely to feel in control of their lives and are likely to be healthy and feel well.



Theory of Moral Sentiments

- ◆ “How selfish soever a man may be supposed, there are evidently some principles in his nature which interest him in the fortunes of others and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it.”
Adam Smith

Jimmy Reid 1971



Rectorial Address

- “Let me right at the outset define what I mean by alienation. It is the cry of men who feel themselves the victims of blind economic forces beyond their control. It's the frustration of ordinary people excluded from the processes of decision making. The feeling of despair and hopelessness that pervades people who feel with justification that they have no real say in shaping or determining their own destinies....”

-

Kahlil Gibran

- ◆ “Keep me away from the wisdom that does not cry, the philosophy that does not laugh and the greatness which does not bow before children”


The Prophet

Building on assets

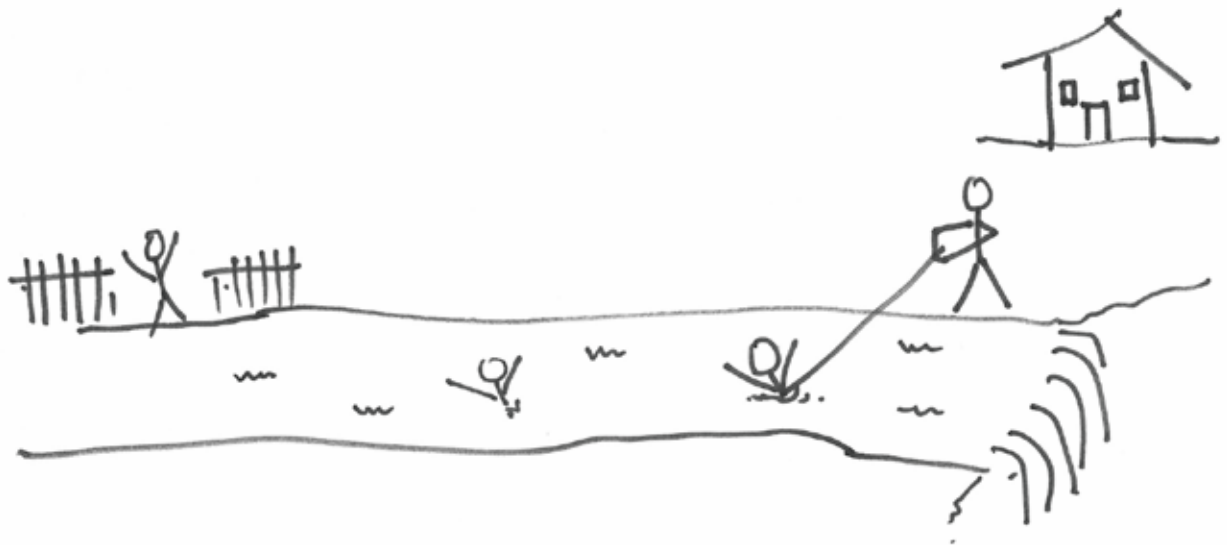
- Economic assets
 - Government and the private sector
- Environmental assets
 - Local government, community
- Social networks as assets
 - Community, 3rd sector
- Personal sense of control
 - Community, 3rd sector

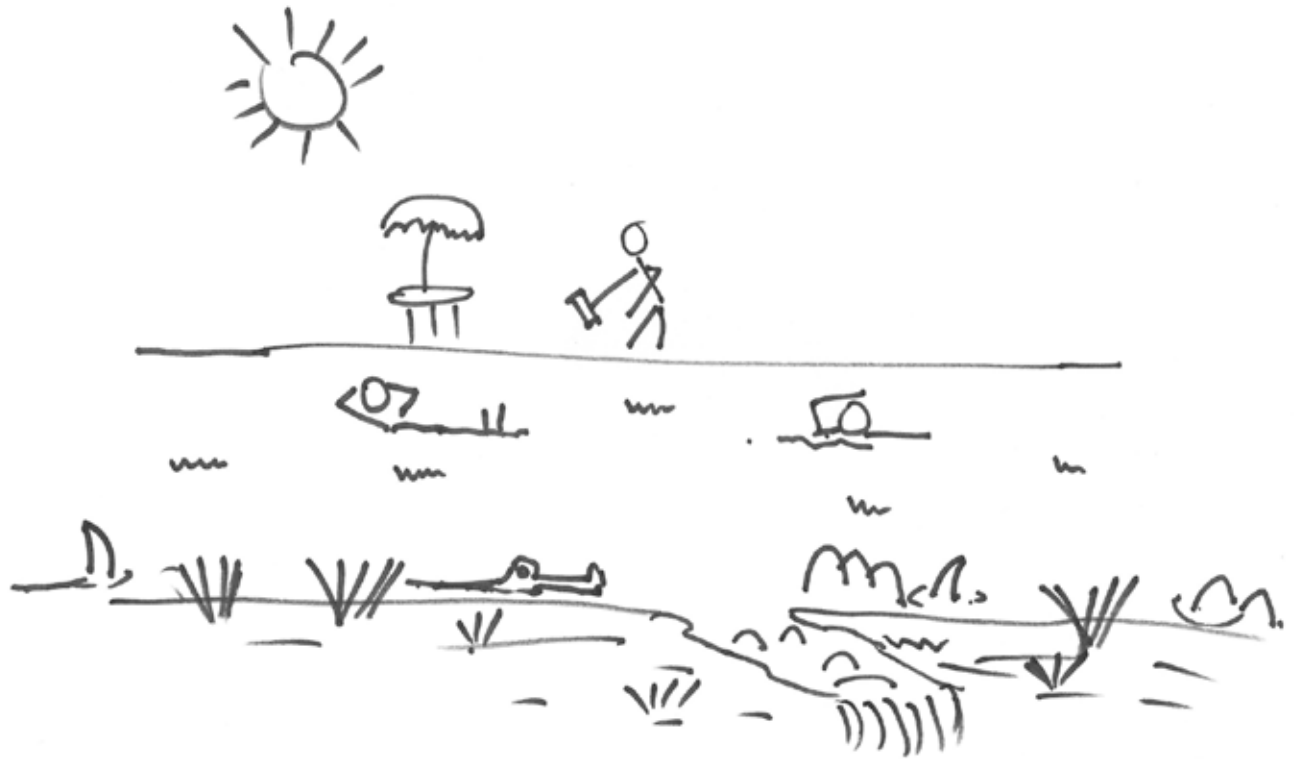
Building on assets

- Economic assets
 - Government and the private sector
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 - Local government, community
- Social networks as assets
 - Community, 3rd sector
- Personal sense of control
 - Community, 3rd sector



Relevance
to people





Transformative process

- Prolonged, non judgemental relationship builds trust
- Individual learns of alternative lifestyles
- Realises he is free to choose
- Supported while he realigns his life
- Supports others in turn
- Success lies in the quality of the interactions between the individual and his supporters

Fear and Anxiety Affect the Brain Architecture of Learning and Memory

PREFRONTAL CORTEX

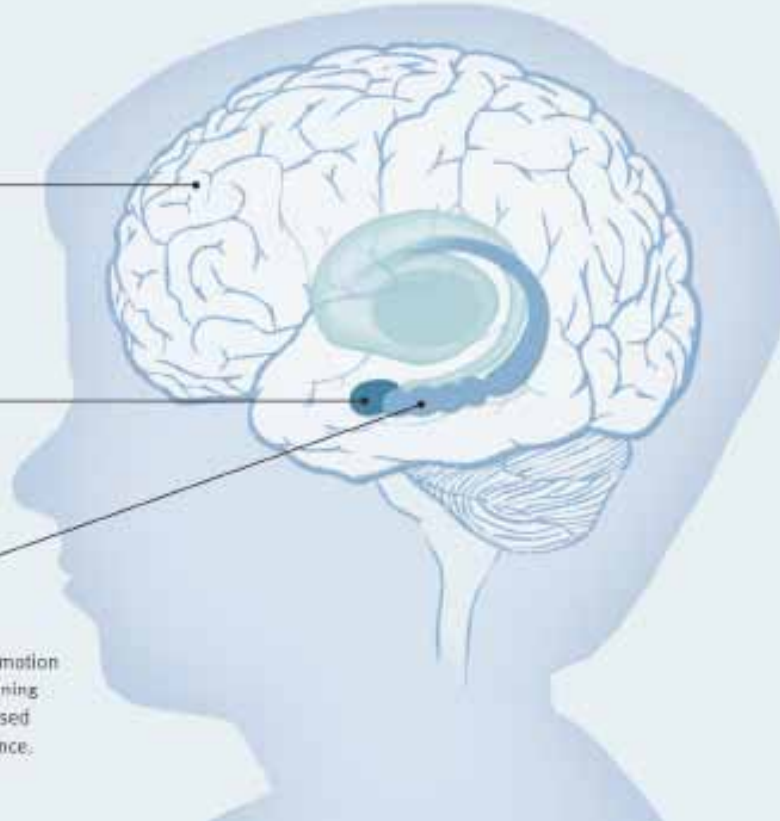
Center of executive functions; regulates thought, emotions, and actions. Especially vulnerable to elevation of brain chemicals caused by stress. Matures later in childhood.

AMYGDALA

Triggers emotional responses; detects whether a stimulus is threatening. Elevated cortisol levels caused by stress can affect activity. Matures in early years of life.

HIPPOCAMPUS

Center of short-term memory; connects emotion of fear to the context in which the threatening event occurs. Elevated cortisol levels caused by stress can affect growth and performance. Matures in early years of life.





**The Scottish
Government**

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APS Group Scotland
DPPAS13045 (06/12)

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