

Stress as a bodily response

Body's response to stress

The body's response to stress can be 1) HPA-axis or 2) SAM-axis

Both involve the adrenal glands (A gland secretes hormones). The adrenal gland is located above the kidney and is made of 2 sections:

- Adrenal medulla (centre of kidney)
- Adrenal cortex (outer-part of kidney)

These 2 sections secrete different hormones and each one is controlled by a different pathway (HPA or SAM)

a. Hypothalamic-pituitary adrenal axis (HPA) [chronic stress e.g. debt]

- When you are in a stressful situation, the hypothalamus is activated
- This stimulates the pituitary gland to release a hormone called Adrenocorticotrophic hormone
- ACTH travels to the adrenal cortex by the bloodstream and stimulates the release of a hormone called Cortisol

+ Quick burst of energy, lower sensitivity to pain

- Higher BP/HB, lowered immune system

b. Sympathomedullary axis (SAM) [acute stress e.g. chasing bus]

Autonomic nervous system (ANS): Network of nerve pathways running from the brain out to organs of the body such as the heart, various glands including the adrenal medulla. The ANS consists of two branches: SYMPATHETIC and PARASYMPATHETIC

- When you are in a stressful situation, the hypothalamus is activated
- This activates the SYMPATHETIC branch of the autonomic nervous system (ANS)
- This causes the adrenal medulla to release adrenaline into the blood

Adrenaline causes HR/BP to increase and prepares you for fight or flight

Stress related illnesses

Acute vs Chronic

Acute stress involves a survival strategy - fight or flight so there are no problems here.

With chronic stress, increased HR/BP can cause hypertension (constantly high BP) which leads to the lining of blood vessels to wear away. Stress leads to an increase in glucose levels in the bloodstream (for the quick bursts of energy), which may lead to clumps blocking blood vessels (this is called atherosclerosis)

a. Stress and heart disease

William's study into CHD and stress

Aim: Conducted a study to see if anger was linked to heart disease

Procedure: 13,000 people completed a 10-question anger scale, including whether they got hot-headed or if they wanted to hit someone when angry. None of the P's suffered from heart disease before.

Findings: After 6 years, it was found 256 P's experienced heart attacks. Those who scored highest on the anger scale were 2.5x more likely to have a heart attack than those with lower anger scale ratings. People who scored "moderate" in anger ratings were 35% more likely to experience a coronary event

Conclusion: This suggests anger could lead to cardiovascular diseases. William's concluded 'individuals who find themselves prone to anger might benefit from anger management training'.

Friedman and Rosenman's Type A/B personality study (important!)

Aim: See if type A (stressed personality - these people tend to be highly active, competitive, multi-tasking, aggressive, hostile) is linked to CHD

Procedure: 3,000 P's aged between 39-59 assessed for personality type (type A or B (laid back, easy going)) via observations, interviews and health records. P's were followed for 8.5 years

Findings: 257 out of 3,000 P's had developed CHD - 70% of the 257 were previously classified with type A personality. The effects were significant even when lifestyle risk factors (e.g. obesity and smoking) were controlled

Conclusion: Those with a high type A personality are more vulnerable to heart disease

Evaluation:

- ⊗ Classifying everyone into two groups (type A or type B) is far too simplistic as some people may be both
- ⊗ This was a correlation study and so there is an issue of cause and effect (e.g. other factors may be involved such as genetic link which was not taken into consideration during the experiment)

- ⊖ Uncertain about which aspect of A personality is most strongly linked to CHD e.g. is it that someone is fast-talking or just aggressive? We do not know as type A has many characteristics
- ⊖ Later studies found no correlation between personality type and CHD. This questions the reliability of the results

b. Stress and the immune system

Immune system - collection of specialised cells which protect our bodies from disease. White blood cells come as lymphocytes (or T-cells, which mature in Thymus gland) or phagocytes (or B-cells, which mature in the bone marrow)

Kietcolt-Glaser's examination study

Aim: Natural experiment to investigate whether stress of short term stressors (important examinations) had an effect on immune system functioning in medical students

Procedure: Blood samples were taken one month before (low stress) and during the exam period itself (high stress). Immune system functioning was assessed by measuring Natural killer (NK) cell activity in the blood samples.

Findings: NK cell activity was significantly reduced in the second blood sample compared to the sample taken a month before.

Conclusion: This suggests that short term; predictable stressors reduce immune system functioning, increasing vulnerability to illness.

Kietcolt-Glaser's wound study (important!)

Aim: Investigating whether there is a link between stress and the immune system

Procedure: There were 2 groups:

- 1) One were a group of **Caregivers** who were women looking after a relative with Alzheimer's disease (considered to be a stressful task)
- 2) **Control group** (matched women in age and family income)

All participants were given a small incision and these wounds were assessed to see how long they took to heal. This was done to assess how effective immune systems were (e.g. an effective immune system would mean that the wound would heal faster)

Findings: The time taken for wound to heal took **significantly longer** for the **caregivers** than for the controls.

Conclusion: So high levels of stress can **damage** the **functioning** of the **immune system** e.g. weaken it

Evaluation:

- ☺ All P's were given same wounds this therefore made the test a fair test and therefore allowing a true comparison to be made between the two groups to see how stress effects stress has on the immune system
- ☹ Some caregivers may have been on medication e.g. for depression and this could have affected their immune system so therefore questioning the validity of the results
- ☹ Small sample only 13 participants per group and even then only females therefore the sample is not representative and the results cannot be generalised

Stress in everyday life

Stress and life events

Certain events in life require us to make adjustments e.g. getting married, moving houses and so on.

'Life events may require a person to make adjustments in their lives, the more adjustment that is required, the more stressful the event is thought to be - the more stressed a person is the more likely they are to suffer from stress-related illnesses e.g. CHD

Some research has focused on these life events and whether they are indeed linked to development of illnesses

The Social Readjustment Rating Scale (SRRS)

This is basically an attempt to measure how many life events someone has gone through and therefore helps predict the likelihood that someone will suffer from a stress related illness (on the basis of a person's score on this scale).

Holmes and Rahe were the creators of this scale. The actual scale consists of a list of 43 major life events which they created on the basis of an analysis of 5000 patient records (e.g. these are events which seemed to be common when looking at the 5000 patient records).

In order to establish how stressful each of these life events were they got 400 P's to assign a numerical value to each life event in regards to how much 'adjustment' would be required. The numerical values that P's gave were totalled and averaged to produce life change units (LCU). So basically if someone wanted to calculate their SRRS score they would have to see how many life events they have experienced over a specified period of time (e.g. a year) and then calculate their LCU (e.g. if they had been married that would be a score of 50 LCU and also pregnant that would have an LCU of 40 so in total that persons SRRS score would be 90).

A score over 150 is classified as a 'life crisis' and this is thought to increase the chances of someone experiencing a stress-related illness by 30%.

A score over 300 is classified as a 'major crisis' and this is thought to increase the chances of a stress-related illness by 50%.

Most of Holmes and Rahe's studies were retrospective. This meant P's were required to recall previous information which may have been unreliable.

However, Rahe carried out a prospective study (follow up a sample on a later date). This means that P's LCU were assessed and then they were followed up to see if they had experienced any illnesses.

Evaluation of the SRRS

☹ Certain events are not stressful for some people (individual differences) e.g. marriage may be stressful to some but not to all

☹ Causality: The relationship between LCU and stress related illnesses are correlated thus we cannot determine the cause e.g. did depression cause the life change (divorce) or did the divorce cause the depression

☹ Positive life events: some people argue that some of the events were positive e.g. marriage or changing houses may not be so stressful

☹ Some psychologist have suggested that the SRRS is unreliable because P's are required to recall events that may have happened a very long time (retrospective data)

☹ Also, many major life events tend to be rare so therefore the daily hassles and uplifts scale may be better

☹ First attempt to try and quantify stress levels

☹ Rahe's study supported the SRRS scale as it found a small positive correlation between SRRS scores and stress-related illnesses

→ **Rahe et al's sailor study (supports the SRRS)**

Aim: To find out if scores on the Holmes and Rahe SRRS correlated with the subsequent onset of illness

Procedure:

- 2500 male American sailors were given SRRS to assess how many life events they had experienced in the previous 6 months. The total score of each P was recorded. Then, over the following six month tour of duty, detailed records were kept of each sailor's health.

Findings: There was a positive correlation of +0.118 between the scores and illness scores. Although the positive correlation was small, it did indicate there was relationship between the scores and health. As

Evaluation:

☹ Male, US navy personnel used so gender and culturally specific so cannot be generalised to other people or c cultures (ethnocentric)

☹ Correlation study so cannot determine cause and effect easily (e.g. genetic link was not taken into consideration)

Daily Hassles and Uplifts

Remember this is the alternative to the SRRS so make sure you use it as an evaluation

Daily hassles and uplifts - This is another scale that attempts to measure the link between stress and illness.

Lazarus proposed that daily hassles were more significant for health than major life events (as proposed by the SRRS). The hassles (which is something that annoys a person) scale had 117 items and it could be modified for special groups such as students. Lazarus proposed that life also contained positive events - uplifts (anything that makes you feel good) and that these could cancel out the negative effects of daily hassles. The uplift scale consisted of 135 positive items.

High scores on the hassles scale correlate with stress-related problems, especially depression and anxiety. De longis et al - found that there was a greater positive correlation for scores on hassle scales and health outcomes than life events and health outcomes (this suggests that daily hassles is better than the SRRS score in determining the link between stress and life events).

Stress and Personality

There are two types of personalities you should be PROPER familiar with and that is Type A personality and Hardiness personality. Refer back to Friedman and Rosenman's study on Type A/B personality study. Essentially their study suggested that those with a type A personality are more likely to be stressed than e.g. a person with a type B (laid back) personality; and as a result they were more likely to suffer from stress-related illnesses - as shown in the Type A - CHD study.

Thus having a type A personality seems to enhance (boost) the negative effects of stress.

HARDINESS PERSONALITY

In contrast a hardiness personality (proposed by a woman known as Kobasa) refers to a personality which seems to buffer (protect) someone against the negative effects of stress. People with a Hardiness personality believe that they are in control of their lives, are committed in everything they do e.g. be it work or a relationship; also they see changes in life as a challenge as opposed to a threat. Essentially they see things in a positive manner and as a result are less likely to experience the negative effects of stress.

Kobasa found indeed that those who scored high on a hardiness scale were less likely to suffer from stress related illnesses - although there were sampling issues e.g. only men were used.

Stress and the Workplace

There are many factors which seem to lead to an increase in stress levels and as a result increase the chances of someone suffering from a stress-related illness.

1) a. WORK OVERLOAD - BUELL LIGHT INDUSTRY STUDY

Buell investigated the workload of workers from the light industry.

Found that those who worked over 48 hours a week were twice more likely to develop CHD than workers who worked 40 hours or less.

2) b. WORK OVERLOAD - JOHANSSON'S SWEDISH TIMBER MILL STUDY

Johansson et al carried out a study investigating employees from a Swedish timber mill. The sample consisted of people who were either in a high risk job 'Finishers' or a low risk job e.g. 'maintenance or cleaner role'. The finishers were responsible for the final stages of the timber preparation process. The rate at which these individuals completed their part of the job determined the overall productivity of the mill and therefore EVERYONE else's wages.

Results: The 'high risk group' was found to have higher illness rates and also higher levels of adrenaline in their urine than the 'low risk group'. This is evidence that work overload can cause someone to experience stress and possibly lead to the onset of illness.

Evaluation:

- ⊗ Issues regarding the sample e.g. not representative
- ⊗ Also the finisher's job also tended to be less flexible in terms of hours and dull these may have partly responsible for the results as opposed to just work load alone.

2) LACK OF CONTROL - MARMOT'S STUDY

Aims: To investigate if there is a link between having low control in ones job and the risk of developing CHD (and other stress-related illnesses).

Method: The sample used consisted of male and female civil servants aged between 35-55 in London. Participants were given a questionnaire initially and again 5 years later asking questions in regards to their perceived level of control in their jobs as well as a check up on their health - these were self-reports. Participants were also given a doctor diagnosis to determine if any heart problems had arisen.

Also participants were grouped into one of 3 categories according to their job roles - administrators (high control), executive officers and office support staff (lowest level of control).

Findings: The results showed that men and women in the lowest grade jobs (those who had least level of control e.g. office support staff) were 3 times more likely to develop CHD than those in the highest job grades.

Conclusions: This therefore suggests that a person who lacks control in their job is more likely to feel stress and as a result more prone to suffering from stress-related illnesses.

Evaluation:

⊖ Issue concerning sample - only civil servants and as a result lacks population validity, also some of the health reports were actually self-reports and as a result are likely to be unreliable.

3) ENVIRONMENTAL FACTORS - BELL

Bell found that high noise levels in factories were linked with hypertension and headaches.

EVALUATION OF WORKPLACE STRESS

⊖ Difficult to pin point specific sources of stress and separate them from other factors which may contribute to stress. For example, noise in the workplace has been linked to stress BUT people who work in noisy environments often tend to have low-income, low skill they often tend to work long hours and have little control over their work, the same could be said for the Finishers in Johansson's study, or those in the low control jobs in Marmot study and so on.

⊖ Also individual differences all about how a person perceives the workload e.g. a person with a hardiness personality is less likely to feel stressed when having work overload - they may see this as a challenge as oppose to a threat.

Coping with stress and stress management

Emotion-focused and problem-focused approaches to coping with stress

The syllabus says that you need to be able to distinguish (tell the difference between) emotion-focused and problem-focused methods of coping with stress.

Emotion focused coping strategies

This is when you try to deal with the emotional impact of stress. There are two types of emotion focused coping:

- 1) Cognitive emotion focused coping - This involves defence mechanisms such as denial (pretend the issue is not happening), avoidance (avoid the issue e.g. rent) or repression.
- 2) Behavioural emotion focused coping - This may involve venting out frustration, drinking, smoking or seeking social support from family and friends.

Problem focused coping strategies

This is a coping style which actually targets the causes of stress in a practical/active way. For example if the stressor is an exam a problem focused coping would involve creating a revision timetable and revising.

(A02) Research into coping styles

- Research suggests that both emotion and problem focused coping can be used simultaneously
- Also if one strategy failed the other would soon be adopted - so we are able to alter.
- Research has also shown that women who have been diagnosed with breast cancer tend to adjust more to their diagnosis if they deny the incident first.

However the type of coping style we use depends on various other factors for example...

- 1) The stressor itself: It was concluded that problem-focused coping was used more often with work problems. Emotion-focused coping was used when there were problems with personal relationships.
- 2) Stressor uncontrollable or not: Folkman suggested that people use more problem-focused coping when they see a situation as controllable, and use emotion-focused when they see a situation as being out of their control. Problems at work and examinations could be seen as more controllable than life threatening illness. In fact research has shown that people diagnosed with breast cancer tend to experience denial and this seems to help them adjust to the condition.
- 3) Gender may be a factor: some findings suggest that women use more emotion-focused strategies and men use more problem-focused, but others found no difference between the genders in coping styles.

Stress Management

For your exams you need to be able to outline and evaluate physiological and psychological methods of stress management.

Physiological involve 2 drugs: Benzodiazepine and Beta-blockers

Psychological involve 2 types of Cognitive Behavioural Therapy (CBT): Stress Inoculation Therapy (SIT) and Hardiness training

PHYSIOLOGICAL

1) Benzodiazepine

GABA (natural stress relief system) is a neurotransmitter found in the body. It reduces the activity of other neurotransmitters and as a result it makes you feel relaxed. Benzodiazepines increase the action of GABA which as a result makes you feel relaxed.

2) Beta-blockers

Beta-blockers do not enter the brain; instead it reduces the activity of the SYMPATHETIC nervous system and adrenaline. In reducing the level of adrenaline in the blood a person is less likely to experience an increase in heart rate and blood pressure. So therefore reducing the effects of stress.

Evaluation of drug therapy

- ☺ Very effective way of combating effects of stress e.g. Kahn gave some patients (suffering from anxiety) BZ whilst others had a placebo (a substance with no effect). Those who received BZ experienced a reduction in anxiety in comparison to the placebo drug.
- ☺ Ease of use - drugs require little effort from the user in comparison to psychological methods
- ☹ Addiction e.g. People who use BZ tend to experience withdrawal symptoms this is even when they have taken small doses
- ☹ Side effects - e.g. increased aggressiveness or impairment of memory and even risk of diabetes
- ☹ Treating the symptoms rather than the problem - so it only deals with the problem in the Short term unlike psychological methods where people learn long term strategies

PSYCHOLOGICAL

The syllabus states that you must know a form of Cognitive behavioural therapy (CBT) and that this aims to try and change the way that **people think** about themselves and their lives; and as a result affect their behaviour.

1) Stress Inoculation therapy (SIT)

Meichenbaum believed that negative thinking leads to negative outcomes and positive thinking leads to positive outcomes.

He proposed three stages that would help a client combat stress, SIT consisted of 3 stages:

1. Conceptualisation Phase

In this stage the Therapist and client establish a relationship (so that the client feels comfortable). Here the client is taught to view a stressful situation as a problem to be solved - to help a client do this they are told to break down an issue into components that can be coped with.

2. Skills acquisition phase

Coping skills are taught and practised in a clinic and then gradually rehearsed in real life. Skills include positive thinking, relaxation, social skills and so on. Skills are both cognitive (e.g. make person think differently) and behavioural (e.g. make the person act in new more adaptive ways).

3. Application phase

Clients get the opportunity to apply their new skills to different situations. Various techniques may be used e.g. role playing and clients may even be asked to help others train.

2) Hardiness training

The aim of the hardiness training programme is to increase self-confidence and sense of control - essentially just increase a person's level of hardiness. This too has three stages:

1. Focusing

Client is taught to recognise the physiological signs of stress (e.g. increased heart rate) and identify sources of stress.

2. Reliving stress encounters

Here the client is made to assess their current Responses to stressful situations e.g. so they have to analyse what was good and bad about.

3. Self-improvement

Now the client is taught to focus on seeing stressors as challenges that they can take control of, rather than problems that they give in to.

*****Evaluation of CBT*****

☺ Horan carried out a study in which law students (stressful course) were given 4 weekly sessions of SIT each lasting 90 minutes.

Results: All participants that received SIT displaced experienced lower levels of anxiety.

☺ Hardiness training was effective in helping Law students at Utah University.

☺ Also SIT and hardiness training give client skills and confidence to help cope with future problems - unlike drug therapy which only deals with issues in the short term.

☹ Both methods are time consuming and require high motivation on the client's behalf and money on the client's behalf. Also such therapies do not work for everyone.

☹ Also Hardiness training is rather problematic in that it attempts to change people's basic habits / and personality which in reality can be very difficult.