DP IB Psychology: HL

Health Problems

Contents

Biological Explanations of Stress

General Adaptation Syndrome (GAS)

- When we are under threat, our body immediately begins to prepare itself for either fighting the threat or running away: the **fight or flight response**
- The fight or flight response is an **inherited physiological** response designed to protect us from **danger**
- Hans Selye (1956) developed the **General Adaptation Syndrome (GAS)** to explain the fight/flight response, proposing that the body reacts in the same way to all **stressors**
- Selye experimented on **rats**, but GAS has been supported by research into human **stress**
- GAS is still used today to explain how stress leads to an **exhaustion** of the body's **resources**, leaving us **vulnerable to illness**
- **Stage 1 – Alarm**
  - the **hypothalamus** activates the **sympathetic nervous system (SNS)** and the **adrenal glands**
  - **corticosteroids** (**adrenaline, noradrenaline and cortisol**) are released into the **bloodstream**
  - **heart rate** and **blood pressure** increase in readiness for a physical fight-or-flight response
- **Stage 2 – Resistance**
  - if the stressor continues, the fight-or-flight response ceases but output of **cortisol** from the **adrenal cortex** continues and the adrenal glands may become enlarged
  - because one of the results of the activation of the SNS is the **suppression** of the **immune system**, the body is not able to fight off colds and flu during this time.
- **Stage 3 – Exhaustion**
  - if the stressor continues for a long time, the body's resources are reduced and **alarm signs**, such as increased blood pressure, may return
  - the immune system is **depleted**
  - it is in this stage that **major health effects**, such as **cardiovascular disease**, may be seen

Evaluation of the General Adaptation Syndrome

Strengths

- GAS was the first theory to explain the **physiological effects** of stress, influencing many later theories and a lot of research, especially into the **negative effects** of stress on health
- Research into GAS has had positive **implications** for helping people **cope** with stress, especially with its contribution to the development of **medicines**

Limitations

- Research **fails** to consider the effect of **psychological processes** on how we physically respond to stress, as it could be that those with more **resilience** respond in a different physiological way
- **Physiological measurements** of cortisol, blood pressure and **white cell** counts reduce the individual experience of stress to **simplistic** single-factor biological measurements.

Cortisol and stress

- **Cortisol** is a hormone which is produced in the **adrenal cortex** through the activation of the **hypothalamus-pituitary-adrenal axis** (HPA) when subject to a **chronic stressor**
- The **immune system** comprises mainly white blood cells, which travel through the bloodstream to defend the body against **antigens** like bacteria, viruses and cancerous cells
- Cortisol regulates the body's immune system to **suppress inflammation**, which ordinarily is a good thing
- However when too much cortisol is in the bloodstream for a long period, then the suppression of the immune system lowers **resistance** to illness
- So stress does not **directly** cause infections, but with **chronic stress** the immune system's ability to fight off antigens is **reduced** and **infection** becomes more likely
- This **reduction** in the immune system's ability to fight off infection when under chronic stress is thought to be why many people get a cold around **exam** time

Research which investigates the General Adaptation Syndrome and cortisol and stress

- **Kiecolt-Glaser et al (1984)** found that stress has a direct effect on the immune system by suppressing **natural killer cell** activity
- **Fernald et al. (2008)** found that **repeated exposure** to social stressors like **maternal depression** and **poverty** resulted in a reduced (exhausted) cortisol stress response in young children

Both Kiecolt-Glaser et al. (1984) and Fernald et al. (2008) are available as 'Two Key Studies of Biological Explanations of Stress'' – just navigate to the next section of the Biological Explanations of Stress topic

Two Key Studies of Biological Explanations of Stress

Key study one: Kiecolt-Glaser et al. (1984)

Aim:

- To investigate whether **stress** at **exam** time could lead to a **reduction** in **immune system function**

Participants:

- A **volunteer sample** of 26 female and 49 male first-year medical students from the Ohio State University College of Medicine

Procedure:

- This was a **natural experiment** with a **repeated measures** design
- A repeated measures design means that participants were **tested twice** for their levels of **natural killer (NK) cells** - a month before the exams and after they had sat their first two exams
- A low level of NK cells indicates a reduction in immune system function
- Before their first blood test they were given a **questionnaire** and on the results of that divided into two groups: **high** stress and **low** stress
- They were also asked about **loneliness**, and split into two groups on that measure as well

Results:

- There was a significant **decrease** in NK cell activity between the blood test taken before the exams and the blood test taken during the stress of the exams
- Participants in the **high-stress** group had **lower levels of NK cells** in both tests than those in the low-stress group
- This was also true of those in the **high loneliness** group, who had **lower NK cell levels** than those in the low loneliness group
- This finding means that stress experienced *before* the exams played a role in their immune systems' ability to **cope** with the stress of examinations
- The findings also demonstrate the role of **social support** as a **protective** factor for health, as loneliness was a predictor of a low level of NK cells

Conclusion:

- Stress has a direct effect on the immune system by suppressing NK cell activity

Evaluation of Kiecolt-Glaser et al. (1984)

Strengths

- The use of a repeated measures design eliminated the problem of **participant variability,** as each participant's second blood test was compared against their first **baseline** measurement
- The results of this **natural experiment** have high **ecological validity** as it is a study that has taken place in **real life** and not under **artificial conditions**

Limitations

- Some of the medical student participants may have had better coping **strategies** than others, which would affect their stress response
- The participants were all young first-year medical students and younger people usually have better immune systems than older people, which limits the **generalisability** of the findings

Key study two: Fernald et al. (2008)

Aim:

- To investigate the effect of **continued** stress on the cortisol levels of children with **low-income, depressed** mothers

Participants:

- 639 children (315 girls; 324 boys)
- Aged between 2 and 6 years old
- The participants came from **low-income** areas of Mexico.

Procedure:

- Households were identified in a house-to- house **survey** in low-income areas of **urban** Mexico
- All participating households were visited without prior appointment by a team of health **professionals**
- The mothers of the children were **interviewed** in their homes, with each interview lasting one hour
- The mothers also completed a **standardised depression scale**
- The children were given **cognitive tests** to complete
- The children's **saliva** was sampled for cortisol levels three times: on arrival of the researchers (**baseline** test), 25 minutes after arrival and 50 minutes after arrival

Results:

- The researchers found that the children of mothers who had **high** levels of depression had **low** levels of cortisol at baseline
- Higher levels of maternal depression was also associated with **less increase** in children's salivary cortisol in response to the arrival of the researchers and the cognitive testing
- Girls had some increase in cortisol levels in response to the researchers, but boys' levels showed no change at all
- This result is in direct **contrast** to previous studies which suggested **high** child cortisol levels go hand in hand with high maternal depression

Conclusion:

- Among very low-income families, high maternal **depressive symptoms** are associated with a **blunted cortisol response**, particularly in boys

Evaluation of Fernald et al. (2008)

Strengths

- The findings (which were **unprecedented**) could lead to **therapies** and **interventions** being implemented for those affected by chronic stress
- The children's cortisol levels were taken three times, allowing for **objective** measurement against a baseline, eliminating participant variability/**individual differences**

Limitations

- The researchers did not use a **control group** of children from higher-income families, which limits the generalisability of the findings to just this small **target** group
- The study did not control for possible **confounding variables**, such as food eaten, health problems, exposure to fighting between parents or current **post-traumatic stress disorder**

Worked Example

The question is: *'Evaluate one or more explanations for one health problem.'* *[22]*

This essay question is asking you to assess the strengths and limitations of one or more explanations for one or more health problems, using evidence to support your argument.

One health problem that is often viewed as a biological problem is stress. The 'stress response' is the activation of the HPA axis in response to one or more stressors, resulting in the release of the stress hormones adrenaline, noradrenaline and cortisol. While the first two hormones are involved in the instantaneous 'fight or flight' response, if the stress continues then it is cortisol that becomes the most relevant. It remains high for as long as the stress is present, or until the cortisol response becomes exhausted. High levels of cortisone in the body are associated with a reduction in immune system protection and illness, as it interferes with white blood cell activity and ability to fight off antigens like viruses and bacteria. This reduction in the immune system's ability to fight off infection when under chronic stress is thought to be why many people get a cold around exam time

*Kiecolt-Glaser's (1984) research into whether stress at exam time could lead to a reduction in immune system function was conducted on first-year medical students. The researchers tested participants twice for their levels of natural killer (NK) cells - once just a month before the exams and once after they had sat their first two exams. A low level of NK cells indicates a reduction in immune system function. Before their first blood test the medical students were given a questionnaire and on the results of that they were divided into a high stress and low stress group. They were also asked about loneliness, and split into two groups on that measure as well. Results showed that there was a significant reduction in NK cell activity between the first and second blood tests. Moreover, the students who had high stress and high loneliness, had lower baseline measures of NK cells in the first blood test. This shows that stress experienced **before** the exams also played a role in the immune system's ability to cope with the stress of examinations.*

Cognitive Explanations of Stress

Cognitive appraisal

- Lazarus (1966) developed his **cognitive appraisal model** to explain that it is the **appraisal** of the environmental stressor that leads to a stress response - or the lack thereof.
- In the cognitive appraisal model stress is perceived as the imbalance between the demands placed on the individual and the individual's resources to cope
- Lazarus argued that the experience of stress differs significantly between individuals depending on how they interpret an event
- When the situation first arises, there is a **primary appraisal,** and if it is
  - seen as threatening > stress
  - seen as a challenge > motivation
  - seen as of no concern > neither
- After this (or sometimes even at the same time) comes the **secondary appraisal**,
- The secondary appraisal is when the person decides on their **coping process** – what they are going to do about the situation
- This is often either
  - **emotion-focused coping** – changing the individual's emotional response to the stressor, or
  - **problem-focused coping** – trying to solve the stressful situation

Evaluation of cognitive appraisal

Strengths

- The cognitive appraisal model explains why people cope better with stress than others, through appraising it differently.
- Stress reduction programmes have experienced success by implementing strategies that involve re-appraising a perceived stressor as a challenge

Limitations

- The cognitive appraisal model does not explain why two individuals may appraise the same stressor differently
- The model does not really consider the physiological response to a stressor, which may play a role in the way we cope with a stress

The Cognitive Activation Theory of Stress (CATS)

- **The Cognitive Activation Theory of Stress (CATS,** Ursin & Eriksen, 2004) argues that arousal and stress are part of a beneficial system that is an evolutionary adaptation
- The term **stress** is used for four aspects of stress:
  - stress stimulus (i.e. stressor)
  - stress experience - depending on interpretation of the stressor
  - stress response - physiological, and depending on the interpretation of the stressor
  - **experience** of the stress response - how we feel
- **CATS** proposes that the **stress response** depends on our expected outcome of a situation
- CATS is in this way similar to cognitive appraisal theory, as both rely on the person's appraisal of the situation

- In CATS, **appraisals** are expectations (called **expectancies**) of what will happen, based on previous experience and they affect the **experience** of the stress response:
  - **stimulus expectancies –** the understanding that a particular stimulus (stressor) will lead to **another stimulus**, such as:
    - we fear injections, and the needle is the stressor (first stimulus)
    - we know through past experience we will feel some **pain** (second stimulus) that will stimulate our heart to beat faster
    - so, because of this stimulus expectancy our heart starts racing when we see the nurse
  - **outcome (response) expectancies –** the anticipation that the outcome of handling the stressor will or will not be successful, such as:
    - before we undergo surgery, we are experiencing the fight or flight response
    - we can interpret this as quite natural or as a sign of impending danger and harm
    - The first interpretation will calm the stress response; the second will increase it
- Thus CATS breaks down stress into steps and explains the experience of stress as being **mediated by** one of the following:
  - **coping** – the anticipation of being able to regulate one's stress and of a positive outcome to the situation
  - **helplessness –** lack of perceived control of the situation
  - **hopelessness –** the belief that all attempts to handle the stress around the situation will only make it worse.

Research which investigates cognitive explanations of stress

- **Gomes et al. (2013)** found that cognitive appraisal mediates the relationship between job stress and burnout
- **Jamieson et al. (2011)** found that participants instructed to reinterpret their stress arousal exhibited more adaptive cardiovascular stress responses

Both Gomes et al. (2013) and Jamieson et al. (2011) are available as 'Two Key Studies of Cognitive Explanations of Stress'' – just navigate to the next section of the Cognitive Explanations of Stress topic.

Two Key Studies of Cognitive Explanations of Stress

Key study one: Gomes et al. (2013)

Aim:

- To analyse the **mediating role** of cognitive appraisal in the relation between **occupational stress** and **burnout**

Participants:

- An **opportunity sample** of 333 academic teaching staff (129 males; 194 females; 10 gender not given) from a public university in Portugal
- Participants' ages were between 23 and 65 years old (mean age = 42.67 years)

Procedure:

- Participants completed the following **questionnaires**:
  - A **demographic** questionnaire (age, gender and employment details)
  - A stress questionnaire evaluating the teachers' sources of stress
  - A **cognitive appraisal scale** identifying **primary** cognitive appraisal:
    - **work importance** – how important participants felt their job was to them
    - **threat perception** – how difficult participants felt job their job was
    - **challenge perception** – whether or not the job was dull or stimulating
  - A cognitive appraisal scale measuring **secondary** cognitive appraisal:
    - **coping** – how well the participant felt they could cope with their work
    - **control** – how much control they felt they had over what they did in their job
- Responses were measured on a 7–point **Likert scale**
- **Participants who attached very little or no importance to their work were removed from the data (they would have been unlikely to experience stress from something they considered to be unimportant)**

Results:

- Stress was **positively correlated** with:
  - work overload

    - the need to increase **scientific productivity** (research and publication)
    - the home-work relationship (pressure at work affecting **quality** of home life)
    - threat perception
    - **emotional exhaustion**
    - **depersonalisation**
- All of the above were found to contribute to burnout
- Stress was **negatively correlated** with:
    - challenge perception
    - coping potential
    - control potential
    - **personal accomplishment**
- Even when the cognitive appraisals were taken into account, the positive correlation between stress and burnout was still present

Conclusion:

- The results demonstrate distinct sources of job stress and a relation between stress, cognitive appraisal and burnout
- Primary and secondary cognitive appraisals partially **mediated** the relationship between occupational stress and burnout at work, though they did not remove it

Stress is positively correlated with work overload and a feeling of not being able to cope

Evaluation of Gomes et al. (2013)

Strengths

- The results from this research could be used to identify ways for management to reduce job stress and for employees to increase **coping mechanisms** through modifying their primary and secondary cognitive appraisals
- The **quantitative** measurements of the stress, appraisals and burnout were **objectively** taken using the Likert scale, which increases the **reliability** of the findings

Limitations

- There may be a **bidirectional relationship** between stress and burnout, with burnout affecting stress levels rather than vice-versa; this would need to be tested using a **longitudinal design**
- The participants were all Portuguese university teachers, which limits the **generalisability** of the findings

Key study two: Jamieson et al. (2011)

Aim:

- To investigate whether reappraising **stress-induced arousal** could improve **cardiovascular outcomes** and decrease focus on **threat-related** information

Participants:

- A **volunteer sample** of 50 USA university students (25 male, 25 female) was recruited
- The **mean** age of participants was 21.88 years
- Participants were **pre-screened** to ensure they had no previously undetected heart problem

Procedure:

- Each participant underwent a 5-minute **baseline cardiovascular recording**
- Participants were **randomly assigned** to one of three **conditions**:
  - **reappraisal** – in which participants were instructed that **arousal** (i.e. some degree of stress) is **functional** and aids **performance**
  - **ignore** external cues – a distraction task
  - a 'no instructions' **control group**
- The **reappraisal** and **ignore** conditions began with **scripted instructions** about the benefits of **reappraising arousal** or **ignoring stress**, respectively
- Participants then read three summaries of **journal articles** (to match the message conveyed in each condition) on the computer
- Participants then completed a stressful **public-speaking task** while their cardiovascular responses were recorded
- The speech was followed by a test of **attentional bias,** measuring how long they spent stating the print colour of 100 threat-related words compared with stating the colour of 100 **neutral** words

Results:

- Participants in the reappraise arousal condition exhibited no attentional bias towards the threat-related words
- Participants in the other two groups showed significant attentional bias towards the threat-related words, which interfered with their speed in stating the colours
- Participants instructed to reappraise arousal also showed **improved** cardiovascular functioning compared to the other two groups

Conclusion:

- Interpretation of **bodily signals** impacts how the body and mind respond to **acute** stress
- This supports the CAT, as those instructed to reappraise their bodily responses to stress anticipated being able to **regulate** these signals and achieve a positive outcome

Evaluation of Jamieson et al. (2011)

Strengths

- The findings could lead to **interventions** being implemented for those affected physically by stress
- The three conditions and a **single-blind design,** where the researchers involved in the testing did not know the participants' groupings, increased the reliability of the findings

Limitations

- The study only conducted research into an artificially-induced acute stress situation and so the results may not apply to **chronic** stress
- The study should be **replicated** with an older and more **diverse** group of participants to test the **validity** of the theory with those who may be more **resistant** to reappraising the **physiological symptoms** of stress

Worked Example

The question is: 'Contrast two explanations of one or more health problems.' [22]

The command term "contrast" requires you to give an account of the differences between two explanations of one or more health problems, referring to both of them throughout. Here is a starting paragraph for guidance.

Two contrasting explanations for the health problem of stress are the biological explanation and the cognitive explanation. In this essay I will contrast Selye's General Adaptation Syndrome (GAS) with Lazarus's cognitive appraisal model as examples of the difference between these two approaches to stress. There are two main points of difference: the GAS model proposes a ***universal*** *physiological response involving three stages: alarm, resistance, and exhaustion. However, the cognitive appraisal model emphasises the* ***individual's*** *perception and interpretation of stress, suggesting that the same stressor can elicit varying responses depending on the primary and secondary appraisal. The second main difference is that the GAS model stresses the inevitability of reduction in immune system protection with prolonged stress, as this interferes with the body's ability to fight off bacterial infections and viruses. In contrast, the cognitive appraisal model explains stress is by no means inevitable, especially long-term stress. Lazarus's explanation of the role of appraisal suggests that individuals can control their interpretation of the situation to reduce the physiological response and avoid chronic illness. Therefore it is less deterministic than the biological explanation.*

Sociocultural Explanations of Stress

Social support

- **Social support** from friends and family is a **protects** health in several different ways that also link to the **biological** and **cognitive** explanations
- As Kiecolt-Glaser's (1984) study showed, the exam-taking medical students with social support had more effective **immune systems** than those who were without support
- Social support and social **contact** enhance the physical **benefits** of **oxytocin**, including a steadier **heart rate** (McGonigal, 2013)
- Social relationships **buffer** the **impacts of stress**, and reduce the short- and long-term health **consequences** of stress, as 'a problem shared is a problem halved'
- This sharing of problems with friends is connected to **secondary appraisal** of stress and our **perceived** ability and confidence to **cope** with it
- Often, just knowing there are people to whom we could turn if needed is enough to reduce stress, without actually using their support
- Social support does not always have to be in person, as it can also be provided through **social media networks** and talking on the phone, for example
- **Culture** can also be relevant to stress as research shows that **acculturative stress** among **immigrants** to a new culture is increased when there is a lack of social support (Lueck and Wilson, 2010)

Evaluation of social support

Strengths

- There is plenty of **empirical evidence** demonstrating the role of social support in reducing stress (see Kiecolt-Glaser,1984 for example)
- Both the cognitive appraisal model and the CATS model suggest that re-appraisal of the situation is vital for stress **management**, and research into social support shows how friends help with this

Limitations

- The idea that social support reduces stress does not account sufficiently for **negative** interactions with family and friends which could **exacerbate** or cause stress in the first place
- Social support does not account for **individual differences:** why do some people need and benefit more from social support than others?

Research which investigates sociocultural explanations of stress

- **Brunet et al. (2013)** found that establishing social support groups may help to reduce stress and promote an active lifestyle in adolescents and young adults treated for cancer
- **Cohen et al. (2014)** found that participants who received frequent hugs were less likely to get ill if deliberately infected with the common cold virus, and if they did, they had less severe symptoms

Both Brunet et al. (2013) and Cohen et al. (2014) are available as 'Two Key Studies of Sociocultural Explanations of Stress' – just navigate to the next section of the Sociocultural Explanations of Stress topic.

Two Key Studies of Sociocultural Explanations of Stress

Key study one: Brunet et al. (2013)

Aim:

- To examine if **social support resources** mediate the relationship between **stress and physical activity** in adolescents and young adults following treatment for **cancer**

Participants:

- 64 adolescents and young adults aged between 15 and 39 years (mean 28.8 years)
- Most of the participants were female, single and Caucasian (of white European background)
- They had either an undergraduate **degree** or higher degree from a university
- Most of the participants were **employed** either full time or part time.
- The mean time since their **diagnosis** was 2.9 years
- All participants had completed their cancer treatment

Procedure:

- An online **questionnaire** collected **data** on **demographic** and **cancer-specific variables** (type and stage of cancer, age at diagnosis, and types of **treatment**)
- Participants also completed:
  - a ten-item **perceived-stress scale**
  - questions on perceived social support and social support group involvement
  - questions on physical activity

Results:

- Stress was **negatively correlated** with perceived social support and also with social support group involvement
- Stress was also **negatively correlated** with **physical activity** for those not in a social support group
- There was **no correlation** between **stress** and **physical activity** for those in a social support group
- Perceived social support did not have the same effect on physical activity

Conclusion:

- Establishing **social support groups** may help to reduce stress and promote an active lifestyle in adolescents and young adults treated for cancer

Social support groups can reduce stress in young people after cancer treatment

Evaluation of Brunet et al. (2013)

Strengths

- Brunet et al's findings were based on careful **operationalisation** of 'social support' and therefore this research had **internal validity**, based on **construct validity**
- The results of this study can be **applied** to cancer care programmes, increasing support groups to help reduce the **negative impact** of stress and contribute to positive lifestyle changes

Limitations

- Data on the nature and **quality** of the support groups was not collected and so the extent the support they provided is unknown, lowering the validity of the results
- The **online-recruited volunteer sample** of mainly white females may not **represent** the **target population** of adolescents and young adults who have been treated for cancer

Key study two: Cohen et al. (2014)

Aim:

- To examine the role of perceived social support in the form of receiving **hugs** in **buffering against interpersonal** stress-induced susceptibility to **infectious disease**

Participants:

- A **volunteer sample** of 406 participants who were part of two earlier studies
- Participants were aged between 18 and 55 years (mean age = 33.5 years)
- The total sample was 46.3% female (53.7% male) and 38.4% non-White

Procedure:

- Before the study participants underwent:
  - a physical exam and **blood tests** for **baseline immunity** to the common cold **virus**, to exclude those who had high immunity from a previous cold
  - a questionnaire collecting demographic details of age, gender, general health
  - a telephone questionnaire completed each evening to measure perceived social support, **tension, stressors** and the number of hugs received daily
- Participants were exposed to the common cold virus via a **nose spray**
- 5 or 6 days later participants' virus levels were measured in **nasal secretions** to see if they had become infected
- One month later, more blood tests were taken: **antibodies** of four times or more the baseline measurement confirming infection

Results:

- 78% of participants became infected with the cold virus, and 31% of these met the criteria for **clinical illness**
- Participants perceiving low social support and few hugs had a higher **rate** of infection after the **viral exposure**
- Participants perceiving higher levels of social support, as shown through daily hugs, had a lower rate of infection
- The lower rate of infection with perceived social support remained even if participants also reported tension and stressors
- Those with perceived social support also had fewer cold **symptoms**

Conclusion:

- Perceived social support, especially in the form of physical hugs, can act as a buffer against stress and subsequent illness

Evaluation of Cohen et al. (2014)

Strengths

- The findings have important **implications** for understanding the **roles** of stress, support, and hugs in response to other viral illnesses
- This was a **well-controlled** study, as only participants with low levels of immunity to the cold virus prior to viral exposure were accepted, and so the findings have internal validity

Limitations

- Even though the participants were **quarantined** immediately after exposure to the cold virus, a third variable (such as their personal reaction to this isolation) could have increased or decreased likelihood of infection
- The study used **self-report measures** to identify tenson, stressors and number of daily hugs and so the data may have been subject to **social desirability bias**, reducing the validity of the findings

Worked Example

The question is: 'Discuss one or more sociocultural explanations for one or more health problems.' [22]

The command term "discuss" requires you to offer a considered and balanced review of the explanation that social support reduces the effects of stress. Opinions or conclusions should be presented clearly and supported by appropriate evidence.. Here are two paragraphs for guidance.

Medical professionals have been aware for some time that social support from family and friends tends to relieve the stress of illness, or just the stress of everyday life. For stress is itself a health problem, as well as also being responsible for other health issues, such as cardiovascular disease. Psychologists have operationalised social support differently, depending on the focus of their research. Brunet et al. (2013) separated social support into perceived social support from friends and family and social support groups, in order to identify if each of these played a different role for young people in recovery from cancer. The research examined whether each of these types of social support affected the stress levels and in turn also mediated the link between stress and physical activity. They found that both were negatively correlated with stress, with both perceived social support and engagement with a social support group being associated with lower stress levels. However, only attendance at the social support group meant that there was no significant correlation between high stress levels and a lack of physical activity. Those who engaged with a social support group were more likely to be physically active, regardless of their stress levels.

This would seem to be conclusive evidence for the benefit of social support, both perceived social support and support through engagement with a social support group. However, the research is cross-sectional, rather than longitudinal, so we do not know if this is a benefit that is maintained. Moreover, the quality of the social support offered by groups was not measured, so it cannot be assumed that all are equally beneficial. Also, most of the participants were young female Caucasian adults who had access to the internet and were self-referring and willing to complete an online survey. This limits the generalizability of the results to particular sex and ethnicity of adolescents and young adults treated for cancer who have access to a computer with a connection to the internet. Until these results have been replicated with other adolescents and young people their external validity remains in question

Prevalence Rates of Smoking

Prevalence of smoking worldwide

- **Prevalence** is the **measure** of the proportion of a **population** who engage in a specific behaviour e.g. **smoking**
- Prevalence may be reported as a **percentage** (5%, or 5 people out of 100), or as the **number of cases** per 10,000 or 100,000 people
- There are several ways to measure and **report** prevalence depending on the timeframe of the estimate:
  - **Point prevalence** is the proportion of a population presenting with the characteristic/behaviour at a specific point in time
  - **Period prevalence** is the proportion of a population presenting with the characteristic/behaviour at any point during a given time period, e.g. the past twelve months
  - **Lifetime prevalence** is the proportion of a population who, at some point in their life has presented with the characteristic/behaviour
- The **World Health Organisation** (WHO, 2024) collects data on **tobacco use**: their latest figures show:
  - in **2022**, 20.9% of the world's population over 15 years old smoked cigarettes
  - around 80% of the 1.25 billion tobacco users worldwide live in **low- and middle-income** countries
  - the worldwide prevalence of smoking is **decreasing** each year, except in a few countries (e.g., Egypt, Jordan and Indonesia) where rates of male smokers are still rising (Reuters, 2024)

Evaluation of prevalence data on tobacco use

Strengths

- Publishing regular prevalence figures allows governments to **assess** whether they are meeting **health targets**
- Prevalence data from a **reputable** source like the WHO is important for **educational campaigns**

Limitations

- The worldwide data can hide **regional trends** which need to be uncovered from the **statistics**
- The reports that are published are often very large and can be difficult to **interpret**, limiting the use of the **data** to those who have the time and skills for the task

Prevalence of smoking: age & gender

Gender

- 34.4% of men and 7.4% of women used tobacco in 2022 (WHO, 2024)
- In 2000, around one in six women (16.3%) aged 15 years and older were tobacco users
- In 2000, **three times** as many men as women used tobacco
- By 2022 the rate for males was more than **four times** the rate for females
- This increased **ratio** of males to females using tobacco reflects the faster decline in prevalence among females
- The gap between male and female tobacco use is expected to increase further to **five times** (as many males as females) by 2030
- This worldwide **trend** of women reducing their tobacco use does not account for **regional variations**
- In 2000, the **highest** tobacco use prevalence among **females** was 33% in the South-East Asia Region, but this had reduced to 10% in 2022
- In 2022, the **highest** prevalence among females is in the European Region (18%) and women in Europe are not stopping smoking as quickly as those in Asia

Age

- Approximately 13% of 15–23 year-olds and 13% of those over 85 years old use tobacco
- Prevalence rates for other age groups vary between 18% and 28%
- Most tobacco users are aged between 45 and 54 years old
- After the age of 54, the prevalence rate for tobacco use **declines**
- As tobacco users, especially cigarette smokers, get older they may be giving up due to the development of **health problems** e.g. **breathing** difficulties, lung and heart **disease**

Evaluation of prevalence data on tobacco use by age and gender

Strengths

- Gathering data on prevalence rates by age and gender allows for **targeted** health campaigns for specific groups, such as young males aged 15–24 years old, who are five times more likely to smoke than females of the same age
- Data on tobacco use by gender allows **anomalies**, like the slower rate of quitting by women in Europe, to be further investigated

Limitations

- **Quantitative data** does not reveal **why** trends happen; therefore more **qualitative** investigation is needed
- Prevalence data on tobacco use by age and gender does not consider **child** smokers nor those who are **passive smokers**

Research which investigates prevalence rates of smoking

- **Valente et al. (2005)** found that popular middle-school children were more likely to smoke
- **Strassman et al. (2022)** found that the nationwide indoor smoking ban in Denmark from 2007 had reduced smoking prevalence and improved lung function

Both Valente et al. (2005) and Strassman et al. (2022) are available as 'Two Key Studies of Prevalence Rates of Smoking' – just navigate to the next section of the Prevalence Rates of Smoking topic.

Two Key Studies of Prevalence Rates of Smoking

Key study one: Valente et al. (2005)

Aim:

- To investigate if **popular** students are more likely to start smoking and if the **association** between popularity and smoking varies by **gender** and/or **ethnicity**

Participants:

- 1,486 sixth and seventh graders (aged 12–14 years old) in 16 middle schools in southern California

Procedure:

- Three in-school student **surveys** were administered:
  - a **baseline**, measuring gender, ethnicity, age, grades, **susceptibility** to smoke, and smoking behaviour
  - a survey two months later, measuring **social networks**
  - a 1-year **follow-up** survey similar to the **baseline**
- **Susceptibility to smoke** was measured as a refusal to **commit** to not smoke in the future
- **Smoking** was defined as 'if you have ever taken a puff or smoked a cigarette'
- Students who were older, White, and had a parent who smoked were more likely to increase their smoking **risk**
- **Popularity** was the number of times a student was chosen as a **friend** by other students in the **sample**

Results:

- **Popularity** was associated with increased susceptibility to smoke and smoking, with the most popular students five times more likely to smoke than students who were averagely popular
- **Unpopular** or **isolated** students were also likely to be susceptible to smoking or had actually already started smoking
- The association was stronger for girls than boys, but present for all groups, and not **significantly mediated** by age, ethnicity or gender

Conclusion:

- Popular students are more **visible** and so they **contribute** more noticeably to the establishment of **social norms**, like adolescent smoking

- When popular adolescents start to smoke, it sends a **signal** to other adolescents that smoking is **acceptable** and even **desirable**
- Popular students are connected socially to a larger number of students and so they might contribute disproportionately to the process of peer influence on smoking
- Unpopular students' increased susceptibility may be due to friendships outside the school **social network**

The most popular students were most likely to be susceptible to smoking or to smoke

Evaluation of Valente et al. (2005)

Strengths

- Valente et al's **quantitative data** can be used to **inform** school **health programmes** of the need to create a **cultural climat**e in which smoking is not **perceived** as desirable
- This was a detailed **analysis** that looked at the possible effects of several **variables** in order to **identify** that it was popularity itself that was associated with smoking

Limitations

- The research was conducted in multi-ethnic schools in southern California and so the results may not be **generalisable** outside of this student **population**
- This is a **correlational study** and so the relationship between popularity and smoking has **bidirectional ambiguity** that needs a more **qualitative** approach to untangle

Key study two: Strassman et al. (2022)

Aim:

- To compare the **smoking prevalence** and **lung function** of Danish residents (indoor smoking ban since 2007) and Swiss residents (indoor smoking ban since 2010)

Participants:

- A **random sample** of 21,045 Danish adults from a sample **representative** of the general population
- A random sample of 12, 223 Swiss adults from a similar representative population sample
- The mean ages were 61 years for the Danish sample and 51 years for the Swiss sample
- Both samples were 50% female and 50% male
- Over the five years of the **experiment** over 62,000 Danish and nearly 32,000 Swiss were questioned and tested

Procedure:

- **Natural experiment** with a **quasi-experimental design**
- **Baseline characteristics** of the two groups were collected in 2005 and 2006, before either country had banned indoor smoking:

	Danish %	Swiss %
Never smoked	38	52
Ex-smokers	40	24
Still smoking	23	24
Lung function	Lower	Higher

Baseline characteristics of a representative sample of the participants before the Danish nationwide indoor smoking ban in 2007

- **Smoking prevalence rates** and **lung function** in a representative sample were measured each year between 2005 and 2010
- These measurements were taken to compare the **data** for Denmark and Switzerland before and for three years during the indoor smoking ban in Denmark that was introduced in 2007

Results:

- Along with **worldwide trends**, the prevalence of current smokers in both countries **decreased** between 2005 and 2010
- The decrease was **larger** in the Danish (experimental) group compared with the Swiss (control) group, in both males and females, especially after 2007
- Lung function improved in all Danish groups after 2007, even in those who had never smoked
- The Danish sample's lung function, which had been lower than the Swiss participants' lung function in 2005, was higher in 2010

Conclusion:

- A nationwide indoor smoking ban is associated with a **reduction** in smoking and an **increase** in lung function
- A nationwide indoor smoking ban also improves the lung function of those previously subjected to **secondhand smoke**

Evaluation of Strassman et al. (2022)

Strengths

- This large-scale study can be used as **guidance** for **policymakers** to make **evidence-based decisions** related to **respiratory health** in the general population
- The comparison with an appropriate **control group** suggests evidence for a **causal relationship** between smoking ban, prevalence and lung function changes

Limitations

- There was no **longitudinal** lung function data available, which would have allowed a **pre-post experiment comparison** within the **same individuals**
- The Swiss and Danish participants may have had unknown **differences in health** that affected the results, though with such large samples tested over five years, the chances of this making a significant difference are small

Worked Example

The question is: 'Discuss prevalence rates of one or more health problems.' [22]

The command term "discuss" requires you to offer a considered and balanced review of the significance of the prevalence rates. (It's not enough just to describe them). Opinions or conclusions should be presented clearly and supported by appropriate evidence. Here is a paragraph for guidance.

Prevalence rates are the frequency of a health problem within a certain population. Lifetime prevalence is the proportion of people in a population that have ever had a particular health problem, while point prevalence reports the proportion of a population that has a health problem at a specific point in time. Prevalence rates change over time and differ between populations. Prevalence is affected by the methods used to gather the data. This essay will discuss the prevalence rates of cigarette smoking. The World Health Organisation gathers data on tobacco use every two years and publishes it in order to publicise trends and inform government health initiatives. One such initiative was introduced by the Danish government in 2007, and by the Swiss government in 2010 - the nationwide ban on indoor smoking. This provided the perfect opportunity for research allowing comparison between two populations of similar demographic makeup, with one as a control group, where indoor smoking was still allowed and one as the experimental group, where the smoking ban was in place. Strassman et al. (2022) conducted a study to compare the smoking prevalence and lung function of these two populations, between 2005 and 2010.

Summary Table: Key Studies of Health Problems

Key Studies Summary of Health Problems

SUMMARY TABLE: KEY STUDIES HEALTH PROBLEMS	
Topic	Two Key Studies
Explanations of Health Problems (stress) - Biological ▪ Use both of these studies to answer a question on the biological explanation for stress ▪ Use Kiecolt-Glaser et al. (1984) to answer a question on protective factors and health, as social support was a protective factor against exam stress	Kiecolt-Glaser et al. (1984) Fernald et al. (2008)
Explanations of Health Problems (stress) - Cognitive ▪ Use both of these studies to answer a question on the cognitive explanations for stress ▪ Use both of these studies to answer a question on risk factors and health	Gomes et al. (2013) Jamieson et al. (2011)
Explanations of Health Problems (stress) - Sociocultural ▪ Use both of these studies to answer a question on the sociocultural explanations for stress ▪ Use Cohen et al. (2014) to answer a question on protective factors and health	Brunet et al. (2013) Cohen et al. (2014)
Prevalence of Health Problems (smoking) ▪ Use both of these studies to answer a question on the prevalence rates of tobacco use and smoking	Valente et al. (2005) Strassman et al. (2022)

How do I use these studies in an exam question on this topic?

- IB students have a *lot* of content to cover (particularly students taking Psychology at Higher Level) so the purpose of this revision resource is to slim down and streamline the number of studies you need per topic/exam question

- The exam question command term will be one of the following: 'Evaluate', 'Discuss', 'Contrast' or 'To what extent'
- Each command term requires you to answer the question in slightly different ways, using the content as shown in the summary table above i.e. specific studies per topic/question
- In order to slim down the content you need to revise you can see above how some of the studies can be used for more than one potential exam question
- Kiecolt-Glaser et al. (1984), Gomes et al. (2013), Jamieson et al. (2011) and Cohen et al. (2014) can be used to answer more than one potential exam question on Paper 2 content so you may decide to keep all of these studies and 'throw away' any studies which you find that you don't need to revise
- Remember that all Paper 2 questions are ERQs (Extended Response Questions) which are worth 22 marks, take an hour to write and need to be rich in critical thinking