CONTENTS

CHAPTER ONE – THE BIOLOGICAL LEVEL OF ANALYSIS

Paper 1 – core topic

Our cognitions, emotions and behaviors are products of our nervous and endocrine systems. **Biological issues of interest to psychologists include:**

- Different areas of the brain carry out different functions.
- Synapses (gaps) exist between nerve cells. Different neurotransmitters carry different neural transmissions (messages) from one synapse to another, according to our psychological functioning.
- The role of hormones in our psychological functioning.

The biological level of analysis thus emphasizes that cognitions, emotions and behaviors are products of our nervous and endocrine systems.

New brain imaging technologies (for example, CAT (computerized axial tomography), PET (positron emission tomography), and fMRI (functional magnetic resonance imaging), have made it possible to study living brains in action as various tasks are performed. This makes it possible, for example, to correlate specific areas of brain damage with specific changes in a person's personality or cognitive abilities. The key word is correlate. We know relatively little of the actual changes that take place within the brain. We do not have the capacity to view a piece of brain tissue and read the knowledge contained therein.

Advances in psychopharmacology (the study of medicine that addresses the balance of chemicals in the brain) have led to the development of new medications for conditions such as depression, and eating disorders. These are considered in the option: 'Abnormal Psychology'.

The biological perspective incorporates the theory of the evolutionary process. It takes into account the survival of the fittest. Indeed, those who adapt to environmental changes and challenges are those who get the best opportunities to mate and pass their adaptive genes to the next generation. The rest tend to die out.

Behavioral genetics considers that behavior patterns can be inherited. It applies biological analysis to understand and explain differences in individual people's conduct.

METHODS USED IN THE BIOLOGICAL LEVEL OF ANALYSIS INCLUDE:

1. Laboratory experiments (exemplified by Baumgartner 2008 below, on the role of oxytocin on economic decision making). This involves a test sample and a control sample to determine the acceptance or rejection of a hypothesis. The conditions are the same except that the IV (independent variable) is different in the test sample. The control sample may use a placebo**:** where the control participants are deceived in being told that they are in the experimental condition, where in fact they are not (e.g. given tonic water and told that it contains vodka, and then tested for driving reactions after that drink). The main criticism of the placebo or any type of blind condition is ethical: deception at various levels is involved. The ethical issues may be reduced by debriefing the participants at the end of the study.

2. Correlation studies, exemplified by Perry 1997 below, on the effect of deprivation on neuro-plasticity). Based on brain scans, he found a positive correlation between the size of the brain and child neglect. The ethical issues are reduced by the child neglect having been in the past.

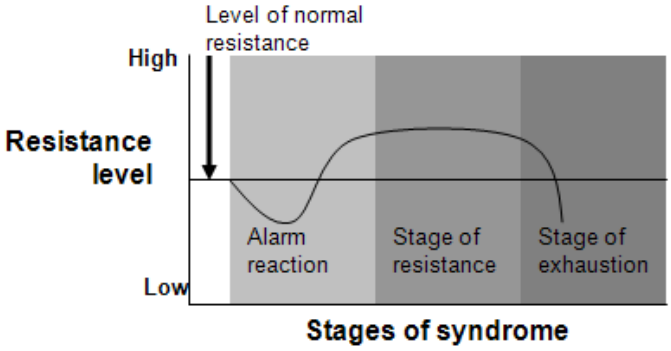
The maximum stressor score went to the most stressful event normally occurring in life – death of a spouse (100). Divorce came in at 73, marriage at 50, dismissal from work at 47, outstanding personal achievement at 28, and Christmas, 12. The higher the score, the greater the stress, with a 12-month-accumulated 150 points being a candidate for stress-related illness, and a score of 300 being a high risk for stress-related illness.

Discuss physiological, psychological and social aspects of stress

Physiological (biological) aspects of stress

Physiologically (biologically), the sympathetic nervous system and endocrine system prepare the individual to either confront (fright, fight) or run away (fright, flight) from the source of stress. These systems combine. Through increased levels of adrenaline, they increase blood pressure and glucose levels in the muscles. These energize the body to confront or quickly get away from the threat.

Selye's (1956) experimentation with stressors on laboratory rats suggests that they (and humans) have a dealing-with-stress mechanism called the **general adaptation syndrome (GAS).** The body reacts in three phases to a stressor (see diagram). In the first phase – **alarm** – the body mobilizes to confront the threat which temporarily expands resources to cope – fright/flight/fight. The stress brings an initial lowering of resistance (feeling of shock), but then gains in resistance to confront the stressor. In the second stage – the **resistance** stage – the body is actively coping/resisting on a much higher than the normal level of functioning, and at the same time reversing the effects of the alarm stage – coping with the stressor without the initial lack of confidence. The third stage is **exhaustion** – after prolonged coping with stressors, the body is no longer able to cope any further.



Many students report that they cannot write their exam response in the first few minutes even if they know their material and can apply it to the question. (The five-minute reading time that the IB gives you should help you to handle that one.) After that, they go up to a 'high' and write a much better answer than if they were doing it at home in their own study. Once the exam is over – collapse!

Strengths of GAS:

(a) It explains the fatigue that people suffer after prolonged stress – like your struggle to get back to the changing room after a particularly exciting soccer match.
(b) It does help to account for the interaction of environmental (as opposed to organic) stressors and physiological (biological) responses.

Weaknesses of GAS

(a) It focuses on fight/fright/flight. It does not readily accommodate the use of other methods of dealing with stress (such as whacking a punchbag, telephoning a friend).
(b) It does not readily account for how people suffer stress by merely thinking about stressful events.