CHAPTER 1 : THINKING CRITICALLY WITH PSYCHOLOGICAL SCIENCE

- INTRODUCTION
Definition : Scientific study how we think, how we behave
Scope : Super broad
: Every single aspect of human life is covered by psychology

Ⅰ. The Need for Psychological Science
A. Why?
A1. Limits of Intuition
: can cause serious judgement & misleading
A2. Limits of Common Sense
: does not generate new information : it develops as a result of having learn something
- Hindsight Bias
: People knew it all along phenomenon
: It' s an error in thinking but people do it.
: When people don' t know conclusion, it' s not obvious
A3. Overconfidence
: Tend to overestimate how accurate people knowledge is
: People are much more confident than people' s ability
: Tend to overestimate to predict and control
: More mistakes, less abilities
A4. Illusory Correlation
: Tendency to perceive relationship between two variable s when there is no relationship
- Effective
: Influence how people think, behave
: Pay more attention, disregard our all information
A5. Perceiving order in random events
: People are uncomfortable from uncertainty and random
: Make patterns to make more orderly

B. The Scientific Attitude
B1. Curiosity & Pattern
: Seek answers to the questions
B2. Open – mindedness
: Open to different ideas, perspectives
: Must be balance by skepticism
B3; Skepticism
: Ask, wonder
B4. Awareness of own bias, agenda
: Own theory, belief <* be careful>

B5. Humility
: Have to be humble
: No matter how smart people are, people make mistakes

SCIENTIFIC METHOD
- Science : Follow scientific method
- Everything begins with observation
- Casual observation must become systematic observation (ex. interview)
- Theory
: Is coming to help to organize, summarize and integrate observations
: Help to provide an explanation
: However, this is not a fact, it is an attempt to explaining something
- Hypothesis testing
: Extract hypothesis from people' s theory and use strict scientific methodology in order to test it
: Tentative prediction / Statement about the relationship between two variables
- Rule must follow
: People must operationally define people' s variables
: Researcher must state with clarity and precision (ex. how he measured his variables)
- Replication
: Essential in science
: People must repeat study with different sets of subjects. Because people want to make sure that people' s results are reliable
- Base on the results, people generate or refine existing questions

II. TYPES OF RESEARCH STUDIES
A. Descriptive Research
A1. Purpose
: The goal is to observe and describe
A2. Case Study
: Either one single person or a very small group of people. And the researcher will do the research in depth type of research
- Advantages
: The most in depth research people can do
: Great step when people know nothing about something
: Allows people to keep the records of rare cases that would otherwise be lost
- Disadvantages
: Researcher bias
: Researcher might hear what he wants to hear and see what he wants to see
: Collect and interpret the data through the researcher' s theory, expectation and assumption

: Sample is so small, can not generalize to the rest of population

A3. Survey

: Ask questions of large number of people. Topic of question the researcher is interested in

- Representative sample

: In order for the survey to be scientific, the sample that is used must be representative of population. Otherwise, not scientific

: Characteristics of samples must closely reflect the characteristics of population

- How do people get a representative sample?

: Random sampling : Every single person in population has an equal chance to be included in the research. And chance and only chance will determine who will participate

- Advantages

: Cheap, easy to administer, reach people who people do not usually reach in research (ex, disabilities people)

: Sometimes the only way to know something is asking questions

- Disadvantages

: Just because of asking, people may lie intentionally or unintentionally

: The words people use could significantly affect results and change the results

: Characteristic of person asking the questions could affect the results and change the results (ex. race, gender, age)

A4. Naturalistic observation

- Definition : The researcher goes out into the real world and does research outside of the lab

: The researcher must not interfere in any way shape or form

- Advantages

: It does not get more real than this

: Watch real behaviour in real time & world

: No artificial manipulation

: It may allow to discover information that people would not discover otherwise

- Disadvantages

: Researcher bias (multiple researchers are needed)

: Own presence as a researcher could interfere with results because when the subject realizes the observation they may change the behaviour. That is why the researchers must be blended

B. Correlational Research

B1. Purpose

: Observe, describe and predict

: To find out if there is a systematic and reliable relationship between two or more variables

B2. Three questions

: Do they covary?

: Is there a relationship between variables?

: Is one changes, the other one changes too?

B3. In what direction will it change?
: Do they change in same direction or opposite direction?
- Positive correlation
: Two variables change in same direction (↑ ↑, ↓ ↓)
- Negative correlation
; Two variables change in opposite direction (↑ ↓, ↓ ↑)
B4. To what extent?
: How strong is the relationship?
- Correlation coefficient
: Allow to know if there is a relationship, how strong it is and if correlation is positive or negative
- Value = -1 , 0 +1
: The closer to 1 is stronger and positive
: The closer to 0 is weaker
: The closer to –1 is stronger and negative
B5. Advantages & Disadvantages
- Advantages
- Excellent 1st step
: Before people do experiment, which is quite expensive and time consuming, let people find out if there is a relationship between two variables
: Great when no other option (The only option)
: Describe and predict
- Once people know that there is a correlation between 2 variables, then having information of one of them allows people to make predictions of the other one
- Disadvantages
: Absolutely can not say that one variable causes the change in another one. Even though there is a correlation, people can not conclude that it is a cause and impact the relationship

C.
C1.
- With experimental research, people will observe, describe, predict and explain
- Experiment is the only type of research that allows people to talk about cause and effect relationship
- The only one that allows people to say variable A causes change in variable B
- Why?
- It allows people to manipulate the independent variable and experiment / the researcher is going to manipulate independent variable the researcher is studying
- The researcher is going to control all other independent variables that could affect the results
- Independent variable (IV)
: Causes a change in another variable

: Affects and influences another variable
- Dependent Variable (DV)
: Variable that is being affected or changed by IV
: Variable that researcher is measuring
C2. Manipulate the Independent Variables
- Researcher is going to create at least two levels of independent variables
- Researcher is going to create at least two groups
: Experimental group will be exposed to independent variables
: Control group is not going to be exposed to independent variables
C3. Control all other Independent Variables
- Controlling other independent variables that could affect the results is an absolute must unexpected variables
- If people do not control, then people are not sure what cause the change in DV
- Some of them could be know or unknown
- Known IVs : Variables people know from research, knowledge, experience that could affect the result
- Unknown IVs : In order to control unknown IVs that could affect the results, people do random assignement to variable people
- Random Assignment
: Every single subject in study has an equal chance of being either in experimental or control group
: Chance & only chance will determine who will be in experimental or control group
- When people are researching, people must consider placebo effect
- Placebo effect
: Fake treatment, fake pill, has no therapeutic value
: Yet, when patients are given a placebo and believe it, they may end up feeling better base on belief
: There is a scientific evidence that placebo effect is for real
- Blind procedure
: Keep the subject blind
: Keep them in the dark as to the most important aspect of the research. Because if they know what the researcher is doing, that c affect their behaviour and results
- Double blind procedure
: Subject & Researcher in the dark
: For subject & researcher bias

III. STATISTICAL REASONING

INTRODUCTION
- Statistics are essential for scientific research
: Mathematical tools, allow the researcher to organize, summarize and describe their data
: Allow the researcher to draw conclusions, inferences from their data set

- Two major types of statistics
:Descriptive statistics, Inferential statistics

A. Descriptive statistics
A1. Purpose
: Allow researcher to summarize, organize and describe the data in clear and meaningful way
- Percentages, Histogram or Bar graph
● Check 1.8 text book
A2. Measures of central tendency
- Definition
: Allow researcher to have an ideal about typical score of data
- Three kinds of measures of central tendency
1. The Mean
- Mathematical average of a data set
- Calculation (평균값)
- Caution
: The mean is very sensitive to extreme scores
: It can be distorted by extreme scores
: It can be pull up or pull down artificially
2. The Median
- The scores that follows right middle of a data set
- Arrange from highest to lowest or vice versa
- 50^{th} percentile = 50% of scores are above it, and 50% of scores are below it
- Caution
: Loses a lot of information (sometimes)
: It does not reflect typical score
3. The mode
- The most frequently occurring score in a data set
- Caution
: Most frequently occurring is not necessary the most typical score
A3. Measures of variability
: Allow researcher to have an idea of typical difference
1. The range
- Take highest score and lowest score then subtract each other (100-20=80)
- Limitations
: It can lose a lot of data
: May not give a clear idea about typical difference in data set
2. The standard deviation
- Better measure of variability because it takes into consideration every single of score in data set and it takes into consideration the deviation of every single score from the mean.

- It gives an average of deviation / An average of the difference between score and the mean
- The more score cluster around the mean, less variability and smaller standard deviation
- The more score disperse around the mean, higher variability and larger standard deviation

B. Inferential statistics
- Purpose
: Allow researchers to draw conclusions from its data to make inferences
: To generalize from sample to population
: Allow to determine if results are statically significant
- Statistical significance
: It means there are not likely to be fluke, abnormally, due to chance. Rather, they are likely to reflect either real differences or real relationships
- Results
: Probability that they are due to chance must be very small
- P. Value
: Statistics that is going to let people know to give a probability that the result is due to chance
: Vary between 0 and 1
: How small? When the P.value is 5% or less, the results is going to be statically significant

CHAPTER 2 : THE BIOLOGY OF MIND
∑THE NERVOUS SYSTEM

Ⅰ. Function & Structure
- NS (nervous system) : CNS & PNS
- CNS : Brain + Spinal cord
- PNS : All the nervous of body outside of CNS
- Communication network
- Receives information from the environment both external and internal
- Analyze, organize, interpret and integrate
- Use the information to send out messages to muscles and glands producing behaviours, emotions and so on
- Creates conscious experiences
: Being aware of cells and environment

Ⅱ. Neurons
A. The Basics
- The basic unit of communication in nervous system

- 3 types
1. Sensory neurons : Collect informations from environment and send it to CNS
2. Interneurons : Only found in CNS, only communicate with other neurons, most complex job, the ones analyzing, organizing and integrating and so on
3. Motor neurons : Carry messages from CNS to muscles

A1. Basic structure
- Cell body
- Soma - find in DNA, manufacture everything neurons need to survive, function - Dendrites
: increase surface area of soma, receive informations from other neurons
- Axon : when neuron wants to communicate to other neurons, it fires, creates electrical impulse called action potential
: Carry electrical impulse
: Participation in communication process
- Axon branches
- Terminal buttons (Axon terminals) : where people find neurotransmitter
- Neurotransmitter : chemical that neuron uses to communicate with one and another
- Myelin sheath
: white fatty like substance, and it covers some of axons in nervous system
: provides insulation, speeds up transmission of information between neurons
- Synapse : where neuron needs to communicate, exchange informations
- Synaptic cleft or gap : little gap/distance between neurons and synapse
- Presynaptic neuron : neuron that is going to transmit messages
- Postsynaptic neuron : neuron that receives messages

B. Communication

B1. In a nutshell
- When a neuron wants to communicate with another neuron, it fires. It basically produces electrical impulse, called action potential
- Action potential leads to release chemicals called neurotransmitters
- Neurotransmitters are the ones that deliver the messages to other neuron
- Communication between neurons is a electrical chemical process

B2. Within a neuron
- Brain is 80% water (move like seawater)
- Dissolved chemicals (ex. Na+ sodium ions, Cl- Chloride ions, K potassium ions)
- Those ions are found in both inside and outside of neurons
- Found in different concentration
- Concentration will change depending on what is happening in neuron
- Neuron at rest (neuron is not firing)
: Inside : more – ions (negative), -70mv
: Outside : more + ions (positive)
: Membrane is polarized
- Even at least, neuron is consistently receiving messages

- Two types of messages

1. Inhibitory

: Instruct the neurons not to communicate, not to fire

: will change the concentration of ions

: Inside of neuron becomse more negative (-76 ~ -70mv)

: Hyperpolarized

: Make it less likely that neuron will fire

2. Excitatory message

: Instruct the neurons to fire, to communication, and do change concentration of ions.

: Inside becomes less negative, from –70 ~ -60mv

: Depolarized

: Neuron is more likely to fire

- When?

: When electrical charge reaches about –55 ~ 50 mv, neuron will fire (threshold of excitation)

- All or none phenomenon
- Every single time when neuron fires, action potential is same the strength
- The action potential travels down the axon in Domino like effect
- It does not travel like an aero

B3. Between neurons

- Presynaptic neuron fires → Action potential will travel all the way down the axon → Reaches terminal buttons → Inside terminal buttons → Synaptic vesicles (bags that contain neurotransmitters) → Attach to the membrane of neurons → Burst open → Release neurotransmitters in the synaptic gap → Cross the gap and attach to receptor sites and deliver the messages
- Fate of neurotransmitters → Deliver the messages → It has to be deactivated
- The neuron that releases the neurotransmitters will take it back in with reabsorb it and recycle it
- Degradation → An enzyme will break down the neurotransmitters
- Why?

: If neurotransmitter is not deactivated, it will deliver the message over and over again which could either overexcited, overinhibited

B4. Neurotransmitters

- Chemicals that neurons use to communicate with each other
- Variety of neurotransmitters
- Healthy levels of neurotransmitters are essential for healthy mental and physical
- Dopamine

: Good mood. motivated, good motor functions, known as a pleasure molecule

: Bad mood, depressed, lack of motivation, parkinson' s, no pleasure in life

● Check out table 2.1 + main text

● Midterm : Dopamine, neurotransmitter

C. Drugs & The Brain

- Synapse

: Interfere in communication process between neurons. They can do this in 3 levels.

1. Presynaptic neuron

: Enhance, reduce, or block the release of neurotransmitters

: Activity in the cleft – Degradation or reuptake either enhancing, reducing or blocking

2. Postsynaptic neuron

: Lock & mimics

: Drug molecules will attach to receptor sites and deliver messages

: Lock & Block

: Drug molecules will attach to receptor site, and block it. No messages

: Lock & Enhances or Diminishes

: Neurotransmitter can still attach and deliver messages. Drug molecules will either enhance or reduce the power of messages

- Drugs

: Agonists = Enhance or facilitate the activity of neurotransmitter

: Antagonists = Reduce, block, diminishes the activity of neurotransmitters

● Agonists, Antagonists

NEUROIMAGING TECHNIQUES

1. C6

- Xray technology so take significant image of the brain
- It does not allow people to see what brain is doing
- Shows structure

2. MRI

- Considered safe and no invasion
- People are expose to a power magnific field
- Tissues to emit electro magnetic
- Significant results
- Only shows structure of the brain

3. Pet Scan

- Brain consumes glucose, more active area of the brain will consume
- Radio active glucose so that they can tracks
- Helps them see the brain in action

4. Functional MRI (fMRI)

- Allow them to see activity of brain
- Powerful magnific field action
- Tracts blood flood to the brain
- More active in brain → more blood will flood

C. Tour of the Brain

C1. Lower Brain Structures

C1.1 Brain stem

- It connects brian to spinal core
- Relay station
- All informations coming or leaving the brain, it has to go through it
- Cross over point (ex. Information comes from right side of body when it reaches to brain stem, it crosses to left side of brain)
- Life centre of brain because it contains structure that control vital functions (essential for survival)
- Medulla controls breathing, heart beat, swallowing
- Reticular formation : Consciousness, sleep

C1.2 Thalamus

- Gateway to the brain
- All senses except smell are sending informations to thalamus. Thalamus releases to appropriate area in brain
- Receives informations from cortex and send it to lower area
- Filters and highlights what is important
- Regulates attention, motivation, aroused

C1.3 Cerebellum

- Called a little brain
- Controls voluntary movements, muscle tones, balance, ordination
- Involved in learning motor skills that become automatic (ex. Biking, writing)
- 1/10th / over 1/2 / 20X
- Cerebellum links, associates with high community functioning

C1.4 Limbic system

- Consists of variety structures
- Link, associate to variety functions
- Learning, memory, emotion, motivation
- Amygdala

: Linked, associated with emotions / productions / experience of emotions, perception of emotions (particularly fear), emotional memories

: Base on scientific research, it can pick up threatening stimuli in environment even though people may not be consciously aware of that

- Hypothalamus

: Size of a pee, yet it is so powerful

: Significantly affect brain and body

: Essential for survival

: Controls drive, hunger, sex, thirst

: Homeostasis = maintaining internal balance of body within a heathy range (ex. body temperature, blood pressure)

: Controls endocrine system, Autonomic system

: Pleasure centre
: Reward deficiency syndrome
C2. Cerebral cortex
Introduction
- The outer part / layer of brain
- Only 1/3 of it is visible, the rest of this is hiding
- Billions of neurons in cortex
- Billions of Glia cells or Glia
- Consider to be nanny of neurons
- They support, provide nutrients, clean after neurons, when they die they dispose of them
- Glia cells seem to be involved in higher community function, communication processes in brain
- 2 hemispheres
: Left controls right side of body, Right controls left side of body
- They are connected to each other via the corpus callosum
● Please see handouts C2.1./C2.2
C2.3 Brain reorganization
- Brain plasticity
: People' s brain are changeable/flexible
: People' s brain change with experience; everything people do and do not do well influence the brain
- Functional plasticity
: The brain can shift activity front damaged to healthy areas. An area of the brain can increase / decrease in activity
- Structure plasticity
: An area of brain can increase / decrease in size as a result of experience
- Neurogenetics
: The brains ability is make new neurons even at old age

D. Our divided brains
- Functional Asymmetry
: While the two hemispheres seem to have same function, similar ability, they seem to excel at different tasks
: Clinical observation, split brain patients, neuroclinical techniques
- Split brain patients
: Patients who had their corpus collusion cut off, (Bundle of fibres 2 hemispheres are to communicate with each other) As result of epilepsy
: People have a RT visual field and a left visual field
: Informations sent to RT visual will go to left hemisphere, vice versa
- Normal Brain
: When information is sent to only one hemisphere, the other will know about it
- Split Brain

: When information is sent to only one hemisphere, the other will not know about it
- L. Hemisphere : Language, right body
- R. Hemisphere : Left body
● Split brain experiment on exam
- Spinal cord (CNS)
: All information brain sends to the body must go through
: Damaged spinal cord may be devastated
- Rhythmic movements
: Pattern generates – Controlled by the brain; when activated by the brain they act and reform / repeat rhythmic movements
: Headless Chicken – The pattern generators continue to function, until it dies
- Spinal rhythm
: Essential to survival for reflexes to be controlled by the spine
: Innate antomatic, unlearned behaviour
- Peripheral nervous system (PNS)
: It connects CNS to the rest of body
: Main function to carry information between the two
: It consists of all the neurons + nervves of the body that are outside of CNS
- 2 divisions somatic, autonomic
1. Somatic NS
: Sensory functions, or sense collect info and send info via neurons to CNS
: CNS sends older to skeletal muscles via motor neurons (muscles attached o bones moving skeleton)
2. Autonomic NS
: Controls organs, glands, visceral muscles (Heart, eye, stomach muscle)
: Sympathetic = Energies the body, arouses, mobilizes the body' s functions to deal with a crisis. Fight or Flight
: Parasympathetic = Relaxes body and conserve energy, keeps body repair itself
- The Endocrine system
- Major communication network, consists of glands all over body, which release hormones into the blood stream
- Hormones
: Chemical messenger; deliver messagfes to rest of body, including brain.
: Homeostasis (Maintaining internal balance), Reproductive, Stress hormones epinephrine
- NS and Endocrine system
: Endocrine system affects body with msg including the brain, however brain centrals E.S.
: Pituitary gland = Master gland, centrals all the other glands. Controlled by the hypothalamus
: Affects behaviours

Ⅰ. Basic of sensation

- Detection/ Transduction / Transmission

A. Sensory receptors

: Highly special receptors

: Detect, Transduce, transmit

- Sensation

: A bottom up process

: People start with very basic element and build up (ex. scratch and build up)

B. Measuring the sense

B1. Psychophysics

- Scientific study of how the physical characteristics of environment translate into psychological experiences

B2. Absolute threshold

- Even people can detect energy, it has to be strong enough for people to detect it
- Minimum amount of energy/stimulation that must be there in order for people to detect it 50% of time (50% : minimum energy)

B3. Difference Threshold (JND : Just Noticeable Difference)

- Minimum change in stimulation / energy that must take place in order for us to detect 50& of time

● Webber' s law

B4. Signal detection theory

- According to this theory, people' s ability to detect stimulation / energy does not only depend on strength of the stimulation / energy. Rather, a variety of factors influence and affect this ability
- ex. Our motivation, mood, state of health, pressure, experiences, knowledge, and so on

B5. **Subluminal persuasion**

C. Sensory Adaptation

- Repeated exposure to stimulus that is not changing leads to sensory adaptation
- Sensory adaptation will become less sensitive, less respond or stop responding
- Value

: People are bombarded with physical stimulation and people should be able to tune it out. Otherwise, nervous will be hyperstimulated, overexcited and people will crash

: Attentional resources are limited, so people should be able to tune out stimulus that is not changing in order for people to pay attention to something more important in environment

- They are instancy where sensory adaptation is not allow to happen
- Intense pain

: People do not sensory adapt to it. Because it is a signal of serious injury or disease.

- Eyes
- Do not sensory adapt
- If they sensory adapt, the object will become invisible

II. Basic of perception

A. Introduction

- Brain is going to analyze the sensory information and organize, inteprete it in meaningful way
- Top – down processing

: People use pervious knowledge, experiences, belief, expectations in order to interpret the information

- Could people have sensation but not perception?

: Yes

- Prosopagnosia

: People who has perception but face blindness

- Is it possible perception without sensation?

: Yes

B. Influences on perception

B1. Perceptual set interpret

- Predisposition to events in certain way
- Shape by all of experiences, culture, religion, school, family, own thought etc
- Top – down processing

B2. Context effects

- Will influence and effect how interpret something

A. Stimulus

- There must be light
- No light, no sight

1. Light

- Type of electromagnetic radiation
- Travel in form of wave
- Part of electromagnetic spectrum
- 400 mm → 700mm

2. Two characteristics

- Wavelengths

: Physical characteristic

: Length of wave, distance between two peaks in a wave

- This physical characteristic translates into the psychological experience of hue / colour
- Colour does not exist in environment, only light waves exist
- Hue

: Long WL = red / Med WL = green / Short WL = blue

- Amplitude

: Another physical change

: Height of the wave

: Translate to physiological experience of brightness
- Brightness

B. The Eye
B1. Focusing light
- Light must enter eyes, must be focused on retina
- It goes through several structures, all work to focus the light of retina
● Check out Fig. 6.13
B2. Retina structure
- From innermost layer → Rodes & Cones are connected to bipolar cells. Bipolar cells are connected to ganglion cells. The axon of ganglion cells will cluster together to form optic nerve
- Blind spot
: No nerves cells to detect light
- Fovea
: Central of eyes, responsible for ability to see find details
B3. Rodes & Cones
- Are known as photoreceptors
- Detect, transduce and transmit
- Differ from each other in variety ways
- Shape, Number, more rodes than cones
- Function
: Rodes are super sensitive to light, allow to see black, white and grey
: Cones are not sensitive to light, for day vision, proceed colour, find details
- Location of Cones
: in the fovea (highest concentration of cones) and periphery
: No rodes in fovea
- Connection to bipolar cells
1. Cones : one to one connection
2. Rodes : Multiple connect to one bipolar cells

C. Visual Information Processing
- In order of increasing complexity
- Retina : ganglion cells (processing of information starts) → Visual cortex : Feature detectors (highly specialized nerve cells that respond to bery specific stimulates) → Parietal (where pathway) & Temporal (what pathway) Cobe → Parallel processing : Unconscious processing, Serial processing (people process one single step at a time), Multiple steps and different steps are processed at the same time,
- One group – colour, shape etc
- When they are done, we see the unified scene.

A1 I dont know
A2. Grouping
- Some of the rules
- Proximity
: Elements in a visual scene that are physically closer to another, will be proceed as a single unit
- Similarity
: Elements in a scene with a similarity will be proceed as a single unit
- Continuity
: Elements in a scene that seems to continue in a patter or flow in a same direction will be proceed in a single unit
- Connectedness
: Elements in a scene that are connected to each other will be proceed as a single unit
- Closure
: When elements in a scene are missing, brian will use its knowledge to fill it

B. Depth perception
- Definition : how far away
- Is it innate or required experience?
- Visual cliff (6 to 14 month)
- Partly innate
- Experience is must for proper development of perception
- 2 types of clues
B1, Binocular Depth cues
- Definition : Brain needs information from both eyes in order to determinate depth
- Convergence
: The degree to which eyes are going to rotate inward when focusing to object higher rotation (closer object)
- Retinal disparity
: Each eyes will have slightly different image
: higher retinal disparity = closer object is proceed
: smaller retinal disparity = farther object
B2. Monocular cues
- Information from one eye to proceed depth
- Relative size
: When object in a scene is roughly known to be same size, one which is larger will be proceed to be closer
- Interposition
: Object in a scene that seems to partially blocked to other object, will be proceed as a closer
- Relative clarity
: Objects in a scene that look clearer and crisper will be proceed to be closer than those

that look foggier and hazier
- Texture gradient
: The more detailed texture of object is the closer
- Relative height
: Objects in a scene that are higher up than a vision will be proceed to be farther away
- Relative motion (Motion parallelism)
: Proceeding depth while people are moving
- How fast is object moving, what direction?
: Object appears to be moving faster and in the opposite direction will be proceed as closer
: Object appears to be moving slower and in the same direction will be proceed as farther
- Linear perspective
: Two parallel lines that meet
: Object the point of meeting will be proceed further
- Light and Shadow
: Will object appear to be closer
: Object that cast a shadow on another object, will appear to be further away.

C. Motion perception
- Basic Assumptions
- Stroboscopic movement
: It is a brain that creating a movement
- Phi phenomenon
: Stationary light that appear to be moving with no movement / turn off rapidly

D. Perceptual Constancy
- Tendency to proceed, the size shape, colour of object as remaining the same in spite of changing sensory input
- Relative luminance
: According to the book, relative luminance is an explanation of colour consistency
: When the brain is accessing the colour of an object, it takes into consideration how much light is being reflected of the other objects in the environment
- Size – distance relationship
: Intertwined brain uses size information to see distance / distance information to determine size

E. Perceptual Adaptation with vision
- Brain ability to adapt / adjust to a world that has been artificially manipulated
- Upside down / Shift to side

F. Sensory Deprivation & Restore vision
- Most of life, people will blind, couldn' t see

- Would people have normal perceptual vision

: Later on / Colour perception will be ok, figure and ground perception is ok, motion perception will be somewhat ok, face, depth, shape perception will be problematic