CHAPTER 04: PSEUDO-SCIENCE AND PSYCHOLOGY

Psychology is a scientific discipline that relies on empirical evidence—information that is obtained by observation, experimentation or experience. It uses established scientific procedures that involve the following steps:

- Identify the research question/problem
- Design the method
- Formulate a hypothesis and a prediction
- Collect the data
- Analyse and interpret the data
- Report the results in a reputable psychological journal, so that other researchers can repeat the experiment and confirm your findings.

It is impossible to apply the scientific method to approaches such as astrology, palmistry and numerology—past methods of attempting to explain human behaviour.

Key knowledge

Differences between contemporary psychological research methods and non-scientific approaches to investigating and explaining human behaviour.

[VCE Study Design 2012]
Psychology versus non-scientific approaches to exploring human behaviour

CHAPTER OVERVIEW

| Psychology versus non-scientific approaches to exploring human behaviour | Definitions
| --- | --- |
| Psychology versus non-scientific approaches to exploring human behaviour | Differences between psychology and pseudo-sciences
| Why have pseudo-sciences been successful? | Examples of pseudo-sciences
| Forer/Barnum effect | Palmistry
| Some popular pseudo-sciences | hand shape
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| | Phrenology
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Place both hands on your head. Feel the various lumps and bumps beneath your fingers. Can these lumps and bumps be used as a guide to your personality? According to phrenologists, they can.

Were you born between 23 June and 22 July? If you were, then you were born under the Cancer (crab) star sign, according to Western astrology. Astrologers believe that your personality and life’s destiny are affected by the overhead star patterns that occurred on the date and at the time of your birth.

Look at your hands. How would you describe their shape? Do you have long fingers? Is the palm of your hand square and broad or fine and thin? Turn them over and examine the palms. Can you see the different lines on the skin? Palmists (also
called palm readers or chiromancers) believe that the shape of your hands and the
lines on your palm can describe your personality and predict your future.

The discipline of psychology as a science has already been established.
Psychological researchers identify a research question, develop a hypothesis and
conduct controlled experiments. Psychological research is also transparent; in other
words, all procedures used and data collected during the experiment can be made
available so that other researchers can repeat the research using the same experimental
conditions. In this way they can either validate (support) or refute (reject) the findings.

![Image](https://via.placeholder.com/150)

**FIGURE 4.2** Can reading palms really tell your future?

Pseudo-sciences, on the other hand, are those systems or methods that try to
explain human behaviour in non-scientific ways. They are often also called false
or fake sciences. For example, palmistry, astrology, phrenology, numerology and
clairvoyance are all considered pseudo-sciences because they do not stand up to
systematic scientific experimental methods.

**TABLE 4.1** The signs of a pseudo-science

- Pseudo-sciences do not use a controlled scientific method to test and retest the causes and effects of their claims. For example, in phrenology, how could we test whether or not a lump on a particular region of their head indicates a depressive personality [effect]?  
- Pseudo-sciences are often selective with facts, presenting the results they want you to see.  
- Pseudo-sciences are vague in their statements and make untestable claims. For example, why should all people born under the star sign of Virgo be organised at some times, while relaxed at others?  
- Many pseudo-sciences are not open to having their claims tested by experts using conventional scientific methods.  
- Pseudo-sciences are quick to publish their results in the media instead of submitting their research work for peer review. Genuine researchers do not publish their results until those results have met all the scientific method requirements.  
- Some pseudo-sciences are potentially harmful to people, especially if they offer unproven ‘cures’. For example, a person’s life might be in danger if he or she consults an astrologer rather than a medical professional.  
- Sciences such as psychology must provide evidence that their theories work. However, people who believe in pseudo-sciences demand that sceptics [disbelievers] prove them wrong.  
- Practitioners of pseudo-sciences will attack the character of anyone who questions their claims—sometimes going as far as suggesting that their attackers are part of a conspiracy within the scientific community.  
- We should be suspicious of pseudo-science practitioners who charge large sums of money for their services or ‘cures’.  

![Image](https://via.placeholder.com/150)

**FIGURE 4.3** Clairvoyants believe they have paranormal and psychic abilities to ‘see beyond’ this world, but this is not accepted by the scientific community.

![Image](https://via.placeholder.com/150)

**FIGURE 4.4** There is no scientific proof that tarot cards can predict your future.
We have so far mentioned only a few of the vast variety of pseudo-sciences, which can be broadly grouped into the three areas shown in Table 4.2.

**Table 4.2 Examples of pseudo-sciences that fail to stand up to scientific examination**

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
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<tr>
<td>Alternative explanations for personality and behavioural traits; some of these claim to predict future events</td>
<td>Alternative explanations for personality and behavioural traits, as a basis for diagnosis of mental and physical conditions</td>
<td>Alternative explanations of physical and psychological phenomena</td>
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<td>Western astrology</td>
<td>Phrenology</td>
<td>Extrasensory perception (ESP)</td>
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<tr>
<td>Systems of understanding human destiny and personality, based on the relative positions and movement of stars and planets at the time of a person’s birth</td>
<td>The shape and the lumps and bumps on a person’s head are used to determine personality and to explain behaviours</td>
<td>The claim that humans possess a sixth sense that enables us to communicate directly with others using our mind. For example, clairvoyance, psychokinesis and precognition</td>
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<tr>
<td>Chinese astrology</td>
<td>Dianetics [scientology]</td>
<td>Psychokinesis</td>
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<tr>
<td>The same function as Western astrology, with predictions based on the ancient agricultural calendar; each year has a different birth title, and they form a cycle of 12 years based on the name of an animal; e.g. 2013 is the Year of the Snake</td>
<td>A system that claims to heal a person’s psychological difficulties through a process called ‘auditing’, using an E-meter</td>
<td>The ability to move objects with the power of the mind</td>
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<tr>
<td>Numerology</td>
<td>Psychic surgery</td>
<td>Clairvoyance</td>
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<td>A system of predicting the personality and future destiny of a person based on patterns in numbers instead of words; often, each letter of the alphabet is represented by a number</td>
<td>A type of medical fraud where practitioners make it look as if they are operating on a person and bringing out tumours with just their bare hands</td>
<td>The claim that some people can gain information about objects, events or a person’s thoughts directly by using the mind; psychics claim to be able to communicate with people who have died</td>
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<td>Tarot card reading</td>
<td>Crystal healing</td>
<td>Precognition</td>
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<td>The use of a set of decorated playing cards to determine a person’s personality and future</td>
<td>The belief that handling various crystals can give healing powers</td>
<td>The ability to foretell the future</td>
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<td>Palmistry</td>
<td>Iridology</td>
<td>Unidentified flying objects (UFOs)</td>
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<td>The reading of the lines and shape of a person’s hand as a guide to his or her personality and destiny</td>
<td>Making a medical diagnosis based on close examination of the patterns of the iris (coloured part of the eye)</td>
<td>The belief that aliens exist and visit Earth in spaceships, which we see as unidentified objects in the sky</td>
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<tr>
<td>Physiognomy</td>
<td>Urine therapy</td>
<td>Alien abductions</td>
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<td>The practice of reading a person’s character and temperament from his or her facial appearance</td>
<td>Drinking one’s own urine or massaging one’s own urine into the skin for treatment of a wide variety of diseases</td>
<td>People who believe that they have been abducted against their will and experimented on by aliens visiting Earth; these people often report unexplained gaps in their own sense of time</td>
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</table>
Despite an absence of any convincing scientific evidence in their favour, some pseudo-sciences, such as astrology, remain popular throughout the world. Many popular magazines have a horoscope (astrological chart) section. A quick search on the internet brings up thousands of astrology sites, each offering a range of services to predict a person’s future or determine the profession that suits somebody’s astrological birth sign.

Palmistry, astrology or phrenology all have something in common: they offer personality descriptions and predictions about the future in a vague, generalised way that is designed to make the listener feel positive and cheerful.

**TRUE BELIEVERS**

A report conducted in 2001 found that more than 25 per cent of the general public believes in astrology, 15 per cent said that they read their horoscope almost daily and 30 per cent occasionally.

Fifty per cent of the public believes in the existence of extrasensory perception (ESP) and 60 per cent agreed that ‘some people possess psychic abilities or ESP’.

Thirty-four per cent of respondents believed that ‘extraterrestrial beings have visited Earth at some time in the past’.

Another report, published in 2006, found that 56 per cent of Europeans believed that astrology was ‘rather scientific’.

*Based on data from National Science Foundation, Division of Science Resources Statistics*

**Why have pseudo-sciences been successful?**

Consider these statements:
- At times I am cautious about my decisions while at other times I am not.
- I have a tendency to worry when things don’t go to plan.
- I am going to meet a dark-haired person who will have an influence on my life.
- The planets are now in a prosperous position that will bring me great benefits.

What do any of these statements actually tell us? Not a great deal. Each one is vague, potentially beneficial to the person reading the statement, and could apply to anyone! This tendency to be vague and general is often referred to as the Barnum effect, named after the American showman and circus owner Phineas T. Barnum (1801–81). The success of his shows was based on ‘a little something for everyone’: performing animals, fake mermaids, the bearded lady, clowns and jugglers. Among a variety of acts, at least one of them would appeal to someone in the audience.

The Barnum effect, also known as the Forer effect, was first described by American psychologist Bertrand Forer in 1948. He gave his students a personality test, then told them that they would receive a personalised analysis based on their test results. After each student received his or her individual personality analysis, he asked them to rate the accuracy of the statements from 0 to 5 (poor = 0, excellent = 5). The average score was 4.26, indicating that his students found their personality analysis fairly accurate. At the end of the experiment, Forer informed his students that each had received an identical personality analysis. He had just demonstrated the Forer/Barnum effect.
The Forer/Barnum effect enables the various pseudo-sciences to remain popular with so many people. Despite the lack of scientific evidence for their claims, they maintain their presence around the world because they tell people what they want to hear. Therefore they generate sizable incomes for those who sell these theories: a little something for everyone.

1. Define the term 'pseudo-science'.
2. Name two key differences between psychology and the pseudo-sciences.
3. In your own words, explain the Forer/Barnum effect.
4. Why are astrology, phrenology and numerology considered pseudo-sciences? Explain your answer with reference to the Forer/Barnum effect.

Some popular pseudo-sciences

Table 4.2 briefly outlined several different pseudo-sciences. We will look at some of the popular ones in more detail.

Palmistry

Palmistry (chirodromancy), also known as palm reading, is thought to have first originated in China around 3000 years ago. It involves a close examination of the shape of a person’s hands and the lines that are found on the palm.

**HAND SHAPE**

Palmists consider the shape of the hand to be just as important as the lines on the palm. According to a nineteenth-century French chirodromancer by the name of Casimir d’Arpentigny, there are seven basic hand shapes that reflect the personality of a person. These are outlined in Table 4.3.

Which shape best describes your hand? Do you believe that the shape of your hand can influence or reflect your personality?

**TABLE 4.3** The ways in which palmistry claims to reflect people’s personalities.

- **The elementary hand**
  Bearers of this hand are clumsy, short-fingered, and large-palmed, and likened to an animal. They are also coarse-minded, focused on their brutal appetites, unintelligent and lacking in sensitivity, thought and feeling.

- **The square hand**
  This hand has a broad palm and moderately sized fingers. It is referred to as the ‘practical hand’ and indicates a person lacking in imagination but able to ‘bring order out of chaos’.

- **The conic hand**
  This cone-shaped hand has three types that reflect three different personalities. The first is flexible with a small thumb, and is known as the artistic hand. The second is large, the palm firm and fleshy, and is thought to reflect a sensual disposition. The third is a broader version of the artistic hand, and suggests a strong, ambitious personality who seeks wealth and fame.

- **The psychic hand**
  This is a long, slim hand with a slightly crooked little finger. A person with this hand is thought to be idealistic, a dreamer, a psychic and sometimes someone who can suffer from mental illness.
The spatulative hand
This hand has two types: firm and flabby. The shape for both tends to be crooked, with blunt fingers that look like spatulas. The firm spatulative hand indicates enthusiasm and energy, while the flabby spatulative hand reflects a personality that is restless and has difficulty concentrating.

The mixed hand
This is a short, squarish, spade-like hand that looks strong, with deeply marked lines on the palm. Often there are not very many lines, but the lines that are there are deep and noticeable. A person with this shaped hand is supposed to be masculine, adventurous, courageous and confident; but on the negative side can also be angry, violent and unpleasant.

The philosophical hand
This hand looks like a knotty tree trunk with large joints and knuckles. A person with this shaped hand is supposed to be intellectual, quiet and moderate.

LINES ON THE HAND
A palmist also considers the lines on the palm of the hand. After careful examination of the palm, the palmist claims to be able to determine a person’s health, and his or her mental capacity, longevity (how long will this person live?), medical history, and romantic past, present and future. However, as with any other pseudo-science, palmistry’s descriptions are vague, general and, in most cases, presented positively. They also do not stand up to scientific scrutiny.

FIGURE 4.5 Palmistry: what do the shape of your hands and the lines on your palms say about you?

PALMISTRY
Work with one or two people whom you know well.

1 Examine each other’s hands, taking note of the shape and the lines on their palms. You may wish to photocopy your hand for this activity.
2 Referring to Table 4.3, try to assess each other’s hands. Write down the description that best describes the other person’s hand. Include a description of:
   a the overall shape of the hand
   b the shape of the individual fingers.
3 Attempt to find the lines that are named in Figure 4.5.
4 Do you agree with the personality descriptions offered by palmists?

FIGURE 4.6 A palmist reading the lines of the hand
5 What flaws or problems did you face when you were deciphering each other’s palms?
6 Is palmistry a reliable method of identifying a person’s personality? Explain your answer in terms of the Forer/Barnum effect.
7 You will need access to a computer for this activity. Go to the online personality test on the BBC website. It should take approximately 15 minutes to complete. Work with a friend so you can compare your results.
a What did the questionnaire say about you? Write a brief overview under the different headings, such as Extroversion/Introversion, Confidence, Openness, Agreeableness or Conscientiousness.
b How accurately did the questionnaire describe your personality? Explain your answer with reference to the Forer/Barnum effect.
c Does the description accurately describe your partner? Explain your answer.
d Did you consider this personality questionnaire to be useful? If so, how?

Phrenology

BEGINNINGS OF PHRENOLOGY

Phrenology, which was first developed in 1796 by Franz Joseph Gall (1758–1828), was considered a legitimate science by many during the nineteenth century, despite the lack of empirical evidence (controlled experiments). Gall believed that mental abilities and personality were controlled by 27 specific brain organs, which were supposedly located on the surface of the brain. The size of each brain organ was determined by how much it was used. Phrenologists strongly believed in the concept of ‘use it or lose it’: areas of the brain that were used became larger, and areas that were not used shrank. The shape and size of the skull were also thought to change so as to accommodate the internal brain organ changes. By carefully examining the lumps, bumps and indentations of the skull, the phrenologist claimed to be able to determine a person’s character, intelligence and a range of other areas responsible for a variety of behaviours and functions.

The first 13 of the 27 brain organs, according to phrenology, were:
- instinct for reproduction
- love of one’s children
- affection and friendship
- instinct for self-defence: courage and tendency to get into fights
- tendency to murder
- cleverness, guile
- feeling of property, instinct to save food, tendency to steal
- pride, arrogance, haughtiness, love of authority
- vanity, ambition, love of glory
- circumspection
- memory of things, ability to learn
- spatial sense
- memory of people, sense of people.

FIGURE 4.7 Phrenology is a pseudo-science that states that a person’s personality and character can be determined by studying the shape of the skull. Certain areas of the skull are thought to be linked to specific characteristics.
The automatic electric psychograph was a device that measured the size and shape of the skull in order to provide a printout of the person’s personality. This machine was very popular during the 1930s, even though phrenology was already considered a pseudo-science.

**PSYCHOGRAPH**

In 1931, Lavery and White invented the psychograph, an electrically powered device that automatically measured the lumps and bumps on a person’s head. It had 32 probes and provided a personalised printout of one’s personality. Those who underwent the test and received their report claimed that it was ‘amazingly accurate’.

Were the results really accurate, or did people just like what was said about them in the report? Could the people be objective? These questions point to the problem with many other pseudo-sciences. If a personality description is worded in a positive and general manner, a person is more likely to believe it. After all, you would prefer to be described as ‘kind’ rather than ‘nasty’. This once again points to the Forer/Barnum effect: a little something for everyone.

Despite the doubt about the claims for phrenology’s status as a pseudo-science, phrenology furthered the idea that the human brain is responsible for personality, emotions, perception and intelligence, and that different areas of the brain are responsible for different functions. Interestingly, more recent research has also found that areas of the brain that are not used do indeed deteriorate. However, we now know that the shape and size of skull remains the same, no matter what changes take place in the brain.

**REVIEW 4.2**

1. Define phrenology in your own words.
2. What were brain organs, and where were they supposed to be located?
3. How many brain organs were thought to exist? Name three.
4. What was phrenology’s contribution to the physiology and psychology of the brain? Explain your answer.
5. Why did phrenology become very popular in the nineteenth and early twentieth centuries? Explain your answer in terms of the Forer/Barnum effect.

**Astrology**

The term ‘astrology’, which is derived from the Greek words *astron* (star) and *logia* (study of), is based on the idea that the position of celestial bodies (moon, sun, planets and stars) at the time of your birth can influence your personality and predict your future. Astrology has existed since 3000 BCE, and has played an important role in many cultures and religions, such as those of the ancient Greeks, the Egyptians, the Hindus, and Islamic and Chinese cultures.

Astrology is often confused with astronomy, because both study the stars. However, that’s where the similarity ends. Unlike astrology, which uses the position of the stars for predictions, astronomy gathers data about stars, planets, comets and galaxies and is interested in scientific ideas such as evolution, physics, chemistry, and the formation and development of the universe.
Are you a Scorpio, Leo or Virgo? Most of us know what our Western 'star sign' is, based on our birth date. Most of us also know that there are 12 star signs. Today, astrology continues to have a strong following worldwide, and is used by many cultures to check the compatibility of couples who wish to marry, their potential for financial prosperity, and sometimes the number of children they will have. You can check your daily horoscope (a supposed description of what's going to happen on that day, depending on your star sign) in newspapers or magazines or on the internet.

However, the scientific community does not accept astrology as a science because it is unable to verify its predictions and claims using systematic scientific methods. There have been numerous articles written suggesting that astrology may have scientific merit. However, the vast majority of scientists see no merit in it.

Many people who believe in astrology make interesting connections between a person's birth date and that person's likelihood of experiencing depression. One such author, Banfield (2000), believes that this link does exist, and that you can tell if a person was going to be depressed, introverted, shy and timid from his or her natal (birth) chart. Another astrologer, known as Angelfire (1999), considers depression is a result of too much influence from the planet Saturn.

Does your star sign description fit your personality? Does the personality description accurately describe a friend? Is it possible that 12 star signs can describe the personality of millions of people born within the same dates all over the world?

![The 12 star signs](image-url)
<table>
<thead>
<tr>
<th>STAR SIGN</th>
<th>PERSONALITY DESCRIPTION</th>
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<tbody>
<tr>
<td>Aries [the Ram]</td>
<td>Fiery and masculine. Can dominate in relationships, boisterous and extroverted. Outgoing, confident and can be chauvinistic (males).</td>
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<tr>
<td>21 March to 20 April</td>
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<td>Taurus [the Bull]</td>
<td>Slow but sure, stubborn and persistent. Material things are important, loves good food, luxuries and physical contact with the opposite sex. Can also be generous, hard-working and imaginative.</td>
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<td>21 April to 21 May</td>
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<td>Gemini [the Twins]</td>
<td>Expect the unexpected. Inconsistent but very good at arguing. Very intelligent but quick to change point of view and argue it effectively. Can be a trickster, but also capable of inspiring others. Sometimes unreliable.</td>
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<td>22 May to 22 June</td>
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<td>Cancer [the Crab]</td>
<td>A hard outer shell that hides a soft interior. May appear harsh and unsympathetic, but gentle and kind to friends. Loyal, devoted, friend, parent and partner. If wounded will withdraw and go back into a shell.</td>
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<td>23 June to 23 July</td>
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<td>Leo [the Lion]</td>
<td>A commanding personality, like the lion. The bully of the star signs; it likes to dominate. Extrovert, outgoing, sociable; loves to be the life of the party and centre of attention.</td>
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<td>24 July to 23 August</td>
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<td>Virgo [the Virgin]</td>
<td>Commonsensical, intelligent, perfectionist. Likes everything planned, neat, tidy and organised. Can sometimes be too clinical and lack a sense of fun.</td>
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<td>24 August to 23 September</td>
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<tr>
<td>Libra [the Balance]</td>
<td>Everything must be weighed and balanced. At a dinner, makes sure everyone pays what they’re supposed to pay. Life, love, work, eating and love are all balanced—not too much or too little of anything. Can be easily influenced.</td>
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<td>24 September to 23 October</td>
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<tr>
<td>Scorpio [the Scorpion]</td>
<td>Honest, rational, secretive. Can also be abrupt, strong-willed and very sexual. When in balance, these characteristics can give drive to get what a person wants out of life.</td>
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<td>24 October to 22 November</td>
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<td>Sagittarius [the Archer]</td>
<td>Happy-go-lucky, careless about consequence of actions, often throws away chances for success due to this tendency. Also considered the lucky sign, providing multiple opportunities. Loves freedom. Open, generous and kind.</td>
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<td>23 November to 22 December</td>
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<tr>
<td>Capricorn [the Goat]</td>
<td>Predictable and plodding, calm, intelligent. Can be very ambitious, but secretive about it. Patient and persistent in life.</td>
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<td>23 December to 19 January</td>
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<td>Aquarius [the Water Carrier]</td>
<td>Loves freedom, lucky, able to come out on top despite circumstances. Tactless or may lack diplomacy. Strong humanitarian interest, and idealistic. Can sometimes be eccentric and alternative.</td>
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<td>20 January to 19 February</td>
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As with phrenology and palmistry, the personality descriptions and predictions offered by astrology about future events are vague and general, which is why so many people continue to believe its claims.

People continue to place great importance on astrology as a method of fortune-telling, sometimes offering thousands of dollars to astrologers to try to find the answers to such questions as: ‘Will I find my perfect mate?’ or ‘What will be my profession?’

**1. What is astrology? Briefly explain what it is based on.**

**2. Where and when did astrology begin?**

**3. Why is astrology so popular?**

**4. Is there any relationship between astronomy and astrology? Justify your answer.**

**5. Why do you think people pay to have their stars read?**

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**ASTROLOGY**

Using the internet, find one academic article that supports the validity of astrology and one that does not. Write a critique comparing the two articles (approximately 500 words).

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**Numerology**

Do you have a favourite number? What is it about numbers that makes them special?

Numerology is another pseudo-science that was used for centuries to determine a person’s personality and predict his or her future by using an individual’s name and date of birth. Evidence of its existence has been found all over the world, in both Eastern and Western cultures. Even Pythagoras, the great mathematician of ancient Greece, developed his own numerical system for predicting a person’s personality and future.

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**FIGURE 4.10** Each letter of the English alphabet is assigned a number.
The most common numerological system is to assign each letter of the English alphabet (and other alphabets) to a number. One method of calculation is outlined in Figures 4.10 and 4.11.

In numerology, only two numbers can remain double digits: 11 and 22. In the previous calculation, note that if either the first or second name added up to 11, it would be added to the number of the other name, then reduced further: see Figure 4.13.

The date of your birth is of great significance to the numerologist, as it is thought to indicate your character and your destiny. This number can be calculated by adding together the date, month, and year (for example, 1995) and, using the same technique as with your name, reducing the numbers until you are left with one number. Don’t forget that you cannot reduce the numbers 11 and 22.

- If person is born on 22/11/1995 (22 November 1995), you add 22 + 11 + 1995 = 2028
- Then: $2 + 0 + 2 + 8 = 12$
- Then: $1 + 2 = 3$
- The birth number for this person is 3.

**BIRTH NUMBER**

Work with a partner for this activity.

1. Each person is to calculate his or her key number and birth number using the methods described in this chapter. Once you have established these numbers, look them up in Table 4.5 to find out what your number says about you.

2. Now read your partner’s personality according to numerology, and answer the following questions.
   a. Do you agree with your number’s description?
   b. Do you agree with your partner’s number’s description?
   Justify your answer for each question.

3. Numerology has existed for hundreds of years. Why do you think it has remained popular? Explain your answer in terms of the Forer/Barnum effect.

4. Complete a couple of online personality questionnaires, such as the ones found on the Team Technology or BBC websites.
   a. Write a description of the ones you completed, and what they were called.
   b. What did you think of the assessment? Did the descriptions accurately reflect your personality?
   c. In reading your assessments/reports, is there any evidence of the Forer/Barnum effect? Explain your answer.
### TABLE 4.5
This chart provides a brief explanation for each key number. This can also be used to give a reading for your birth number.

<table>
<thead>
<tr>
<th>1</th>
<th>The egotistical number. 'It's all about them'. Assertive, ambitious and single-minded. Make excellent leaders but do not take orders well. Negative: can also be selfish and self-interested. Leadership can become tyranny.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>The number of femininity. Kind, good-natured and placid. Males are not effeminate, but if a soldier or policeman, will be in a low position rather than in charge. Negative: can be too shy and may become secretive and deceitful. Often plays second fiddle in life.</td>
</tr>
<tr>
<td>3</td>
<td>The number of wholeness and completion. Likable, fast-thinking, versatile and sometimes brilliant. Outgoing, adaptable, good sense of humour. Make excellent actors, salespeople, teachers and demonstrators. Negative: can become boring with their desire for popularity.</td>
</tr>
<tr>
<td>4</td>
<td>Steady application and hard work. Drive, determination and hard-working. Often linked with Capricorn (astrology). Also likened to the tortoise, which is slow and steady. Negative: can be too slow to get things done or make decisions.</td>
</tr>
<tr>
<td>5</td>
<td>Number of the pentagram, associated with the occult and magic. Often fascinated by religion, philosophy and politics. Enjoy experimental music and the arts, may belong to strange cults. Lively, questioning, intelligent and adventurous. Negative: self-indulgent and eccentric.</td>
</tr>
<tr>
<td>6</td>
<td>Not as slow as 4, but more successful in the long run. Like familiarity, so friendships are important. Loving, kind, reliable and make lifelong emotional attachments. Negative: tendency to become almost too happy; considered conceited by others.</td>
</tr>
<tr>
<td>7</td>
<td>Mystic number with strange powers. Drawn to the occult and paranormal. Interested in philosophy, mystical studies and a desire to explore the inner self. Negative: can be intruiteded and too concerned with the inner life to the exclusion of others.</td>
</tr>
<tr>
<td>8</td>
<td>Material success and failure. Always anxious to achieve financial security, but only able to achieve at the cost of constant struggle. The worker: can be standoffish, hostile and suspicious. Negative: can be unfriendly, and in extreme cases, bitter, sarcastic and rude.</td>
</tr>
<tr>
<td>9</td>
<td>Number of completion and success in both material and emotional life. Achievers who get what they want. Genuine desire to help others. Can change partners, jobs frequently. Negative: can be nosy, dominant and try to help others in a domineering and interfering way.</td>
</tr>
<tr>
<td>11</td>
<td>Number of revelation and inspiration. Enthusiastic and visionary. Feminine, kind, idealistic, deep belief in truth and outgoing. Generally make a mark in life. An 11 person will only defer to those admired and trusted. Negative: can be so in love with ideals as to forget about the practical needs of others. A very desirable number.</td>
</tr>
<tr>
<td>22</td>
<td>The most desirable number. A genuinely great human being, with all the best qualities of all the other numbers. Energetic, harmonious, likable, brilliant, capacity for hard work, adventurous, reliable, rich imagination, idealistic and visionary. Negative: sometimes called 'the master black magician' who can take the road to moral perversion and evil.</td>
</tr>
</tbody>
</table>
The perceived dangers of pseudo-sciences

Are pseudo-sciences dangerous? According to neurologists, clinical psychologists and other medical and scientific academics, many therapies that are considered pseudo-scientific—such as scientology (dianetics)—are potentially harmful to vulnerable people. One of the biggest problems with these approaches is that they often undermine conventional, legitimate therapies and tend to spread incorrect information based on flawed theories.

Scientology (dianetics)

An example of one such pseudo-science is scientology; a movement (perhaps cult) developed by science fiction writer L. Ron Hubbard (1911–86) in 1952. Scientology promotes the belief that all humans have an ‘immortal alien spirit’ inside them, trapped on earth through multiple reincarnations. Hubbard also developed an alternative psychotherapy called dianetics, which claims the ability to treat a range of physical and psychological problems without the use of conventional medication and methods.

Scientology’s rejection of psychiatry and psychology makes it a potentially risky system of beliefs, as it refuses to allow patients access to the conventional and often necessary medication for disorders such as depression. Interestingly, the theories proposed by scientologists fail to stand up to scientific scrutiny, primarily because there is no empirical evidence to support their claims.

SCIENTOLOGY

1. ‘Scientology’ is considered both a pseudo-science and a religion. Using the internet, investigate why it is considered both.

2. Outline the basis of dianetics, and how the E-meter is used to ‘audit’ members.

3. Using the internet, research an individual who has left scientology. Write a short paragraph to outline their experiences.

4. Research two other health-related pseudo-sciences that can be potentially harmful to people who need conventional medical, psychological and psychiatric help. Write 500 words on the two pseudo-sciences, comparing them to psychology.
Alien Soul
Theory Is
No Cure For
Depression

The Telegraph’s
Trust Me I’m a
Junior Doctor
columnist, Max
Pemberton, takes
issue with the
actor Tom Cruise’s
renewed attack on
psychiatrists.

The problem with being a famous
film star is that people listen to what
you say. The other problem with being
a famous film star is that it’s unlikely
you can speak with much authority
about anything other than your latest
blockbuster.

This didn’t stop Tom Cruise from
criticising the actress Brooke Shields for
taking antidepressant drugs to manage
her postpartum depression, something
she’d spoken openly about.

While he was at it, Cruise embarked
on a wholesale condemnation of
psychiatry and said it should be
outlawed. I originally let it pass. He’s
ettled to his opinions, I thought, even
if they are a bit wacky, but no less
so than you’d expect from someone who’s
a committed member of the bizarre
science movement.

However, someone of Cruise’s
celebrity commands a global audience
and it worries me, as a doctor and
trainee psychiatrist, that people who
genuinely need psychiatric help might
actually be influenced by him.

In the past, society has demonised,
punished and tortured those with
mental health problems, usually out of
ignorance, desperation or contempt.
Nor was the medical profession innocent
of the abuse of such patients, and this
appears to be one of the main planks of
Cruise’s anti-psychiatry stance.

But to criticise current practice
because of past history makes no
sense. It ignores the fact that people,
like me, working in mental health do
so because they want to help others.
It also ignores the undeniable benefit
that people receive from mental health
professionals.

Given that the brain is the most
complex of organs, it is naïve and
simplistic to think that medication offers
all the answers. Research suggests that
the best way to cure depression is with
drugs and counselling combined.

In the spirit of investigative
journalism, I donned a fake nose and
moustache (well, not quite, but I did
part my hair slightly differently), and
went along to the central London
headquarters of the scientologists to find
out for myself.

As I was trying to work out the best
way to gain entry, someone actually
invited me in and offered me a free
’s TED talk’. Intrigued, I said yes. I was
asked to sit down and take hold of two
metal tubes, while a dial on screen in
front of me flickered madly. Sharon, the
woman who’d enticed me in, asked me
questions.

I told her I was feeling low and she
told me I was suffering from depression
and that it was likely to be caused by
someone near to me, possibly a friend
or member of my family. Alarm bells
were now ringing full volume. She
wanted to tell me more. The majority
of illnesses, she explained, including
diabetes, cancer, schizophrenia and
depression, were the result of our being
’suppressed’ by other people, but this
suppression could be cleared away by
scientology. Or I think that was what
she told me. Her words were cloaked
in impenetrable language, which I was
informed could be further explained, at
a price, on one of the courses run by the
centre.

Sharon wouldn’t elaborate further—
she wanted me to sign up for a course—
but I’ve since learnt that scientologists
believe depression is best alleviated by
removing the sufferer’s covering of tiny
disembodied souls of aliens dispersed
by the Galactic Federation leader Xenu.
Ah, yes, I think I missed that lecture at
medical school.
This is no joke, though. Scientologists are aiming their ‘teachings’ at people with mental health problems, some of the most vulnerable in society. Perhaps Tom Cruise should stick to what he knows best: getting paid vast amounts of money by the film industry to blow up buildings and be chased by aliens.

Adapted from an article by Max Pemberton, *The Telegraph* (London)

1. What is scientology (dianetics)?
2. Is it a science? Why or why not?
3. Is using an E-meter a scientific test of the truths of scientology?
There are significant differences between contemporary psychological research methods and non-scientific approaches to investigating and explaining human behaviour. The key difference is that psychology is based on empirical evidence (controlled experiments) and pseudo-sciences are not.

Pseudo-sciences provide some interesting belief systems for behaviour and mental processes and are often quite entertaining. However, they are not valid, and can be potentially dangerous in undermining conventional psychological, psychiatric and medical treatments.

You can identify a pseudo-science by the following characteristics:

- pseudo-sciences do not use controlled scientific method to test and retest the cause and effect of their claims
- pseudo-sciences are often biased, and present results they want you to see
- pseudo-sciences are vague in their statements and make untestable claims
- many pseudo-sciences are not open to having their claims tested by experts using conventional scientific methods
→ pseudo-scientists are quick to publish results in the media instead of submitting their research work for peer review.

→ sciences such as psychology are required to provide evidence for their theories; however, pseudo-sciences demand that the sceptics (doubters) prove them wrong.

→ pseudo-scientists will attack the character of anyone who questions their claims.

→ pseudo-sciences are often based on making money (Shuttleworth 2008).

→ The Barnum effect is named after the American showman and circus owner Phineas T. Barnum (1801–81). The success of his shows was based on ‘a little something for everyone’. The Barnum effect led to the American psychologist Bertrand Forer developing the Forer effect in 1948. Forer said that if a statement can be worded in a general, vague and positive manner, more people are likely to believe it, and consequently, more people can relate to it. Therefore pseudo-sciences have remained popular over the centuries.

→ Palmistry (chiromancy), also known as palm reading, is a pseudo-science that involves a close examination of the shape of a person’s hands and the lines that are found on the palm. This is supposed to give insight into the person’s personality and future.

→ Phrenology is a pseudo-science that states that a person’s personality and character can be determined by studying the shape of his or her skull. Certain areas of the skull are thought to be linked to specific characteristics. The theory of phrenology was proposed by the German physician Franz Joseph Gall (1758–1828).

→ Astrology comes from the Greek words astron (star) and logia (study of), and is based on the idea that the position of celestial bodies (moon, sun, planets and stars) at the time of your birth can influence your personality and predict your future.

→ Numerology is a pseudo-science that was used for centuries to determine a person’s personality and predict the future by using an individual’s name and date of birth. Each letter of the alphabet is assigned a number. Once the person adds up the numbers assigned to their first and second name, they reduce these numbers until they have a single digit. If they come down to either 11 or 22, they do not reduce any further.

→ According to neurologists, clinical psychologists and other medical and scientific academics, alternative therapies [considered pseudo-scientific]—such as Scientology (dianetics)—are thought to be potentially harmful to people who are vulnerable, because they are persuaded not to use methods that might help them in favour of cures that do not stand up to scientific scrutiny.
MULTIPLE CHOICE

1. Psychology is considered a science because:
   a. it relies on empirical evidence that uses established scientific procedures
   b. it gathers information using a variety of ways, then uses that data to draw conclusions
   c. it relies on evidence that is valid and systematic
   d. it gathers information about people and their behaviors using psychological techniques.

2. The scientific community (especially psychologists, biologists, and physicists) consider pseudo-science as:
   a. a science based on empirical evidence that is used to establish scientific procedures
   b. a fake science, because its evidence is not gathered using established scientific procedures
   c. a type of science, such as astrology, that looks at pseudo-phenomena
   d. a legitimate science that should have greater importance in the community.

3. Pseudo-sciences such as phrenology, astrology and numerology are not taken seriously by the scientific community because:
   a. they are often selective with facts, presenting the results they want you to see
   b. they will not allow their claims to be tested by experts using conventional scientific methods
   c. they are vague in their statements and make untestable claims
   d. all of the above.

4. The use of general and vague statements that apply to most people is known as:
   a. the Forer/Barnum effect
   b. the Favour/Bartlet effect
   c. the Barnum/Frame effect
   d. the Forer/Branum effect.

5. _____________ involves the close examination of the shape of a person’s hands and the lines that are found on the palm.
   a. numerology
   b. palmistry
   c. astrology
   d. phrenology.

6. The reason why pseudo-sciences are so popular all over the world is because:
   a. they use clear and specific statements that only apply to the individual
   b. they are easily accessible on the internet and in magazines
   c. they use vague and general statements that apply to most people
   d. they make ridiculous claims that people find amusing so they come back for more.

7. According to a phrenologist, your brain is made up of _____________ brain organs, and the size of these can influence your personality and character.
   a. 22
   b. 57
   c. 13
   d. 27.

8. Astrology is a discipline that dates back approximately 5000 years and can be found in different forms all over the world. Western astrology is based on:
   a. the lumps and bumps on your head being a guide to finding out personality and predicting your future
   b. the concept of lunar animals: if you were born in 2013, you are a “snake”
   c. the idea that the position of celestial bodies (moon, sun, planets and stars) at the time of your birth can influence your personality and predict your future
   d. the ancient Greeks and Nostradamus.
9 Which of the following is not correct about some pseudo-sciences? Some pseudo-sciences are:
   a. based on belief systems whose aim is to make money
   b. based on belief systems that try to help people with their problems
   c. based on the idea that aliens are reincarnated in the human body over many generations
   d. based on carefully gathered empirical evidence which has shown that their beliefs are correct and true.

10 Regina George was keen to find out about her romantic future with one of the boys at her school. She wanted to see if their numbers were compatible. Regina decided to use for this:
   a. numerology
   b. astrology
   c. phrenology
   d. palmistry.

11 Many psychologists, psychiatrists and medical and other scientific professionals who deal with physical and mental health believe that some pseudo-sciences are:
   a. potentially dangerous
   b. great alternatives to conventional methods
   c. a bit of fun that people can explore without any problems
   d. none of the above.

12 Scientology is often mentioned in the media. Which famous actor has received criticism for promoting it?
   a. Johnny Depp
   b. Tom Cruise
   c. Kevin Rudd
   d. Jeremy Irons.

13 Scientologists are against:
   a. psychologists, psychiatrists, and the use of antidepressants and other medication that is prescribed for a range of mental illnesses
   b. doctors who perform operations and give medication
   c. all of the medical profession, and believe that aliens will help us
   d. everyone who is not a scientist.

14 Dianetics is a system for treating the ‘reactive mind’ using a process called:
   a. editing
   b. evolution
   c. auditing
   d. accounting.

15 During auditing sessions, a scientist’s responses are measured by a device called:
   a. A-meter
   b. B-meter
   c. C-meter
   d. E-meter.

16 What is a pseudo-science? Explain, using examples.

17 Outline three differences between psychology and pseudo-sciences (approximately 200 words).

18 Why do you think that practitioners of pseudo-science are reluctant to allow other researchers to validate (confirm) their claims through scientific methods? Explain your answer in detail.

19 Many pseudo-sciences are quick to use the media to promote their latest findings (for example, you will often hear a famous astrologer making predictions about the career of an incoming prime minister of Australia). Why do you think they do this? Explain.

20 Why do you think that when a pseudo-science (such as astrology or numerology) is attacked for lacking scientific validity, the practitioner of the pseudo-science often attacks the character of the person making the initial criticism?

21 What is the Forer/Barnum effect?

22 Explain why the Forer/Barnum effect is useful in understanding the success of pseudo-sciences. Use one of the pseudo-sciences discussed in this chapter to illustrate your explanation.

23 What is palmistry? How does it claim to be able to determine a person’s personality and future?

24 A hundred years ago, phrenology was still considered a serious science. What is phrenology?