

Personality

[Science](#), [Genetics](#)



“ Is an individual's personality determined by their biological nature or by their personal experiences (nurture)? ” When personality is analysed within the psychological field, the emphasis is placed on the ‘ individual’s characteristics, modes of thinking and feelings’(Ribeaux&Poppleton, 1978). With these three aspects that make up one’s personality differing in all individuals, it proves difficult to provide an all-encompassing definition of personality. Behavioural geneticists attempt to study this topic using three methods; family, twin and adoption studies. Research derived from twin studies made a consensus that five main determinants are necessary when describing personality including extraversion, neuroticism, conscientiousness, openness and agreeableness(Thomas J. Bouchard., Jr, 1994). This essay endeavours to analyse the two predominant arguments that focus on determining an individuals’ personality and therefore altering how they behave within society. It will highlight the complex dispute of which social scientists have thoroughly investigated to ascertain whether the development of personality is due to genetic inheritance(nature) or due to an individuals’ environment(nurture). According to the Oxford Dictionary of Psychology, the role of nurture on personality is “ the sum total of all environmental factors that contribute to the physical and psychological characteristics of an individual, including upbringing or rearing”(Andrew M. Colman, 2009). This suggests that scientists believe our personality, behaviour and modes of thinking are reflected by how we are taught in our formative years. This adopts the social learning theory which states that a child’s development is influenced by their tendency to imitate their role model’s behaviour. Therefore, when a child views a personality trait

displayed by their parents(role models), they are more likely to imitate the trait, adopting it and consequently forming part of their personality. However, for this to take place it is necessary that the child possesses certain characteristics such as motivation and attention to stimulate the process of imitation(Bandura 1971). Another theory devised by B. F. Skinner concentrates on the variables within the environment that influence the individual. He described personality as being ‘ overt behaviour’, comprehended by responses in environmental factors. At birth, children are born with a variety of innate capacities, but consequent personalities are understood as being learnt. Thorndike and the Law of Effect(1905) states that when behaviours are accompanied with satisfaction, they tend to be repeated; Skinner derived this preliminary definition as ‘ reinforcement.’ He emphasised that positive reinforcement is essential for the child to initiate and maintain desired behaviours. He believed that an individual’s personality is shaped during their development and changed whilst encountering different stimuli. For example, the mentality of a teenager that lives in the city suburbs is completely different to living in the city. A teenager engaging in a dangerous activity in the suburbs is socially acceptable, however once the individual moves to the city it is frowned upon and as a result he is likely to stop and adopt a different personality trait. Rebuttal to Skinner’s research, he conducted the majority of his studies on animals in artificial laboratory surroundings. This weakens the ‘ nurture’ argument by questioning Skinner’s results as they lack applicability and generalisability with regards to the richness of everyday life and humans. The other side to the debate is the role of ‘ nature,’ the theory stating that personality is inherited by children

from their parents. Using this idea, it is considered that the individual has no control over their behaviour, and they are born with certain sets of characteristics. When looking into the nature of personality, there are three elements that contribute to the theory of genetic inheritance, including specific genes, brain mechanisms and the notion of evolution. From this research, genes have been found to indirectly influence an individual's brain development, structure and chemicals. In previous years, researchers have specifically looked into the DNA to identify the genes that are connected to specific behaviours. The 'association method' used in studies allows molecular geneticists to determine whether the differences in a personality trait are correlated with differences in a particular gene across individuals (Benjamin, Li, Patterson, Greenberg, Murphy & Hamer, 1996). A specific gene known as D4DR in the dopaminergic system has been shown to have an association with personality traits novelty seeking and impulsivity (Munafo, Yalcin, Willis-Owen & Flint, 2008). Dopamine is part of the brain that responds to reward and psychologists have theorised that a shortage in dopamine may lead to individuals' craving extra stimulation. In addition to the findings, Charles Darwin expressed the notion that personality was a result of the evolutionary process. He advocates that the human species is inherited due to a complex interaction of genes. A term within the evolutionary theory that is important in determining personality is 'survival of the fittest', this notion explains organisms who are best able (fittest) to obtain and utilise resources. He stated "that these adaptations were not limited to physiology (body structures) but also included matters of the mind such as behaviours" (Sherry, 2004). Genes that enhance adaptation ensure

continuation into future generations. This supports the argument for nature and suggests that as individuals' evolve, they inherit certain behavioural traits that will allow social acceptance. In relation to the underlining of brain processes, Eysenck, a psychologist was particularly influential in this area. He suggested that extraversion and neuroticism(personality traits) corresponded with aspects of brain functioning. His theory is based on the brain structure known as the ' ascending reticular activating system(ARAS)', regulating the balance of the chronic level of physiological arousal or excitation. The structure controls the level of electrical activity in the brain's cortex. Extraverts are hypothesised to be drawn towards stimulating, novel activities due to lack of arousal levels. They tend to seek stimulation such as attending social events and become known as sensation seekers'(Zuckerman, 1984). Whereas introverts have a higher level of arousal, thus more inclined to stay with familiar, solitary activities. This is due to the ARAS opening up allowing the brain to receive a large amount of sensory input, and far more stimulation than necessary, resulting in loud events being avoided. Another structure potentially playing a key role in personality is the frontal lobes. Psychologists acknowledge that it is the most complex part of the brain relating to the expression of personality and language, planning of desired movement and action(Alberto, J Espay, 2009). For example, electroencephalography(EEG) studies suggest that the left frontal lobes are more active when a person experiences pleasant emotions, whereas the right lobe is associated with unpleasant emotions(Davidson, Ekman, Saron, Senulis & Frisesen, 1990). This suggests that an individual is born with certain brain structures that therefore determine personality,

supporting the nature argument. Further research into brain damaged patients support this conclusion by stating frontal lobes are important. The famous case study of Phineas Gage(1848), who suffered injury to his pre frontal lobe, was diagnosed as retaining his mental functioning but his personality changed considerably(Harlow, 1868, 1869). In addition, gun-shot victims (involving the frontal lobe) still functioned but were less excitable and emotional than prior to the incident(Brickner, 1936). This evidence focuses on the change of behaviour with these individuals, suggesting that this brain structure contributes to the determination of personality. All of these examples discuss the biological and genetic implications on the determination of personality, outlining that genes and brain mechanisms, as well as natural selection all contribute to the change in personality throughout our development. It highlights that levels of activity in the brain can affect personality traits and our behaviour within society, clearly supporting the nature argument. Behavioural Geneticists assess how both nature and nurture contribute to the development of personality. Gene-Environment interaction creates a link for this determination, with Bouchard(1997) suggesting that our emotions and motivations are not driven by our experiences alone but they are indirectly influenced by genes. This suggests that both the individuals' biology and environment play a key role in the way they think and behave, rather than one responsible determinant. A way in which genes and environment interact is through individuals' choice of environment(lifestyle). For example, a person who inherits a tendency towards the personality trait ' sensation seeking,' develops a need to seek excitement such as dangerous drugs. This could

involve them in a drug culture and affect their health; evidently having long term effects on their development of personality. Bouchard & McGue(2003) suggested that individuals who score high on measures of 'sensation seeking', tend to find themselves in more dangerous environments than people who score lower(as cited in Bouchard, 2004). This result is indirectly due to the inherited trait with the environmental activities that the person seeks out. Another way of interaction is that the same environment can affect individuals in different ways. For example, individuals may develop a mental illness in a stressful situation due to a certain genetic predisposition; however those without this predisposition are psychologically unharmed. There is evidence founded by Caspi, 2003(as cited in Bouchard, 2004) that state individuals who carry specific genetic variant are more susceptible to depression when exposed to stressful life events than individuals who do not carry the gene. After investigating both arguments to decide which element is responsible for determining one's personality, it is important to conclude that there is a vast amount of research to suggest that there is an interaction between genetic inheritance and environmental factors that influence individuals' personality traits. There is conflicting research for each factor that contributes to the development of personality. The main contributors that suggest genetic inheritance determines personality are different brain structures(ARAS, frontal lobe etc.), specific genes(D4DR) and evolution; whereas the main contributors that suggest environment factors are the determinants are learning and observations theories(B. F Skinner and Eysenck). References Bandura, A. (1971) Psychotherapy based on modeling principles. In A. E. Bergin & S. LI Garfield (Eds.), Handbook of psychotherapy

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