

Heredity and environment on the development of personality



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Personality is the varying behaviours of an individual that is unique from other individuals in the population. Eysenck's theory of personality emphasizes on the biological nature in the development of personality. It was explained that the introversion-extraversion trait dimension is biologically based in different levels of arousal of the brain (Eysenck, Eysenck & Barret, 1985). Twin studies also suggest that the shared environment play a minimal role in one's personality development. However, it does not mean that environment does not have any effect on the development of personality. In fact, both genetic factors and environment can play a part in developing an individual's personality. Through research, it is understood that the development of an individual's personality is the consequence of both environmental and genetic components respectively. To get a clearer view this, it is better to locate an example of a personality and from then, examine the role environment and genes play on it. Relation between maternal depression and antisocial personality, along with another study of suicidal behaviours, can clearly apprehend the role in which both genetic and environment factors play on the development of personality. Studies have suggested that personality characteristics are influenced by their genetic history, and one common way to test on the heritability of personality traits is by comparing identical twins with fraternal twins. Identical twins have a close genetic match while fraternal twins share half of their genes. Since identical twins are more genetically similar, it gives the closest possible relationship between two individuals in terms of genetic makeup, which is useful in studies personality. Thus, identical twins would be more similar than fraternal twins, if genes were to play a role in the

development of personality. Similar traits in identical twins would be hereditary, and what is different would be regarded as environmental. If identical twins were more similar in tests for personality traits, it implies that genetic factors take a considerable amount in accounting for personality traits. In the study of Loehlin, McCrae, Costa and John (1998), they came up with three different measures from questions used in the National Merit Twin Study and applied behaviour-genetic models to what the three measures have in common, and also to the differences. The results showed that Big Five personality traits were largely influenced by genes, with a small percentage consisting effects of unique individual experiences, temporary situations and gene-environmental interactions, as compared to shared family environment, which had minimal effects to the five dimensions of personality traits. Therefore, an individual's long-lasting personality is highly dependent on genes, and mostly independent of shared environment (Loehlin et al., 1998).

By targeting an example of a personality, one can compare environmental and genetic effects on how this personality was developed. For instance, in the case of antisocial personality, Kim-Cohen, Moffitt, Taylor, Pawlby and Caspi (2005) did a study to find out the relationship between maternal depression and children's antisocial behaviour. Twin pairs were tested during the first five years of life, and at age seven for antisocial personality which, by then, would be free from familial accountability. It was hypothesised that children's antisocial behaviour is due to the caregiving environment being affected by a mother's depression, presence of an antisocial personality in the mother, marriage with antisocial men, or inheritance of genes from

mother with an antisocial personality. Depressed mothers have a tendency to provide insufficient parenting, little interaction and stressful family circumstances that lead to behavioural problems for their children. This is evident by the significantly higher levels of antisocial behaviour at age seven, when the mother was depressed during the children's first five years of life (Kim-Cohen et al., 2005). Furthermore, maternal depression that happened after, not before, children's birth was deeply related to children's antisocial behaviour. Thus, this suggests that antisocial personality developed in children is caused by the family environment.

Also, it is reasonable to say that children of depressed mothers would express higher antisocial behaviour, as compared to children of nondepressed mothers, regardless of any antisocial personality disorder (ASPD) symptoms in the mother. Indeed, results from the study revealed that among children whose mothers had no symptoms of ASPD, children with a depressed mother had higher antisocial behaviour at age seven as compared to children of nondepressed mothers (Kim-Cohen et al., 2005). Moreover, after controlling maternal ASPD symptoms and biological father's ASPD symptoms in separate tests, maternal depression could successfully predict children's antisocial behaviour at age seven. Evidently, maternal depression during the children's first five years of life contributes to the development of children's antisocial personality. Independent of parental ASPD symptoms, maternal depression could predict a child's antisocial behaviour, implying that it is the environment that shapes an individual's antisocial personality. Next, depressed women are likely to marry and bear children with antisocial men. Antisocial fathers generally tend to be

aggressive or abusive, creating a disfavoured family environment. As both parents are affected by either depression or antisocial behaviour, this creates an impaired family environment for the children, and thus increasing the tendency of antisocial outcomes in the children.

Besides the family environment that causes antisocial behaviour of children, genetic factors can be responsible too. Research has shown that antisocial fathers transfer their genes for antisocial behaviour to children even when they are not in the children's lives (Sara, Moffitt, Caspi & Taylor, 2003). Also, adoption studies suggest that if biological mothers have the basis for antisocial personality, their children will also exhibit an antisocial behaviour when adopted and cared for in a different environment. Thus, this genetic liability in children of depressed mothers discredits the view that the children's antisocial behaviour is caused by poor caregiving environment.

In another example, people who have committed suicide, or attempted to suicide, have been found to exhibit hostile, neurotic, and aggressive personality (Wasserman, Geijer, Sokolowski, Rozanov, Wasserman, 2007). To analyse the contribution of genes and environment to these personalities, it is crucial to look into suicide studies, where environmental factors such as negative life events often contribute to suicidal behaviour. However, environmental factors do not entirely cause suicidal tendencies, since people who are exposed to the same negative environmental stress do not exhibit the same suicidal behaviour. Acknowledged causes of suicidal behaviours include mental illnesses, personality disorders and traumatic life events and these do not necessarily lead to suicide, or an attempt to suicide. Thus, it is

possible to say that there is a significant genetic component to hostile personality in suicidal behaviour.

To examine this possibility of genetic factor, Wasserman et al. (2007) have an on-going project, genetic investigation of suicide and suicide attempt (GISS), which aim to identify genes relevant to suicidal behaviour. It was discovered that a variant of human T-box 19 (TBX19) ultimately give an increased response with regard to adrenocortical hormones, explaining the relationship between the hostility trait and the genetic variation at the TBX19 locus (Wasserman et al., 2007). Replication of sample data used in the study meant that it was reliable to conclude that genetic variation at the human TBX19 locus is related to hostile personality. Therefore, genes do play a part in the development of personality. Furthermore, in family studies, relatives of people who already committed suicide or attempted to commit suicide are likely to have higher rate of suicidal behaviour as compared to those families that do not have any suicidal history (Brent et al., 2002). Also, twin studies show that identical twins have higher probability to successful and attempted suicide among them as compared to that among fraternal twins (Statham et al., 1998). Thus, one cannot neglect the role genes play in the development of personality.

In conclusion, both the environment and genetic configuration are essential determinants of an individual's personality. One also has to examine the interaction between genetics and environment for a clear understanding on personality development. Different people with certain genotypes tend to blend into an environment which they deem to be suitable or comfortable.

Therefore, it is possible to say that genes make the environment one will
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venture in. However, this can also be seen from a different point of view. Individuals, who are already born into a certain type of environment, unknowingly bring out or develop certain personality traits to blend in and fit into their environment. Thus, it is very difficult to determine the actual contributions of gene and environment to personality traits.