The Origin of personality types developed under selective pressures: Introducing Climatic-Adaptation Theory

Han-Gue Jo1 and Gi-Ho Jo2*

INTRODUCTION

Traditional Western and Oriental medicine have attempted to categorize people into different personality types through theoretical concepts such as Ayurveda, traditional Chinese medicine, the four temperaments theory, and four-constitution medicine1-3. Although various theories have been proposed over the centuries, they share a similar fundamental attitude that humans have a connection to nature. In addition, the characteristics of each personality type have many commonalities among theories regardless of culture4-6. Studies using psychological assessments have also shown similarities between categorized individuals and personality types through temperament theories7. These facts suggest that traditional temperament theories do not provide arbitrary categorizations of personality characteristics; rather, they may provide specific conditions for differentiating personality types.

Since Charles Darwin’s theory of evolution by natural selection, modern humans have been understood as the result of evolution from a common ancestor7. Genetic and archaeological evidence has shed light on the history of human settlement in the Late Pleistocene8-9. As modern humans spread over the globe from Africa, adaptation due to natural selection in different environments, especially climate conditions, played an important role in human survival8. Therefore, different personality types can be understood as resulting from adaptations to different environmental conditions throughout the history of human settlement.

In this study, we introduce a theory of the origin of personality types. This theory is based on the hypothesis that the migration of humans and their adaptation to various climate zones led to the formation of different personality types. This study aims to explain the traits of personality types based on adaptation to different climate zones and to compare these adaptive traits with the personality characteristics of temperament theories. In the next section, we explain the theory of climatic adaptation. We then compare it with the temperament theories and lastly discuss the present work.

KLIMATIC-ADAPTATION THEORY

From Africa, modern humans traveled all over the world and were confronted with differing climate conditions3. Through the process of adaptation, populations that moved into new climate zones and lived in new environments for extended periods gradually became better suited to these new habitats10. This climatic adaptation probably would have been more significant for populations that lived primarily by foraging in the wild. Adaptive traits may include body type, internal organs, and even personality.

Approximately 195,000 years ago, modern humans, Homo sapiens, lived in East Africa, where the climate is believed to have been hot and arid11. In such an environment, recycling ingested water might be the most crucial function for survival. Therefore, the climate may have forced the prioritization of a stronger urinary system over other organ functions. The function of detoxification may also have become important as a way to protect themselves from the many poisonous...
and venomous living things in tropical climates. We call this adapted phenotype the “Aw” type based on the Köppen climate classification, in which “Aw” indicates a tropical savannah climate. 

Wariness of predators in the widespread area of the open savannah grassland may lead people to develop a cautious, restrained, and reserved nature. As an adaptation to the hot and dry weather, these people may have a thin body frame, drink less water, and sweat less compared to populations that adapted to humid climates.

A group of humans moved southwest into Central Africa, a tropical hot and humid climate zone, approximately 195,000-135,000 years ago and adapted to their new environment. In a hot humid climate zone, detoxification might be crucial for survival among the many species of plants and animals with toxins. Therefore, detoxification might have become more important than other organ functions in that climatic environment. Additionally, the digestive system may also become more important than the urinary system of the “Aw” type because of sufficient water and toxic foods. We call this adapted phenotype the “Af” type, indicating a tropical rainforest climate. These people may have a quiet, enduring, and relaxed nature due to the need to be able to hide from predators nearby without moving in a rainforest environment. Because there is sufficient water in this climate zone, they might drink and sweat more than the type adapted in a dry climate zone.

Approximately 73,000 years ago, during the early Upper Pleistocene, very small human populations survived the eruption of Mount Toba, which caused a volcanic winter. After the devastation, climate warming occurred, and groups of humans were able to move north. During the mini ice age, approximately 52,000-45,000 years ago, the “Aw” and “Af” types moved to Europe and were confronted with a cold climate. This climate might have forced their cardiovascular system to grow stronger because the pumping mechanism of blood circulation plays a crucial role in maintaining temperature homeostasis. We call these phenotypes “Aw+” and “Af+”. As the names suggest, these people have characters similar to the “Aw” and “Af” types, respectively, but with moderate temperaments and a powerful cardiovascular system. The distal parts of their bodies may be warmer than the “Aw” and “Af” types.

Groups of humans moved north toward Central Asia, a cold arid climate zone, approximately 45,000-40,000 years ago. The cold and arid region of Central Asia is thought to have been a harsh and barren environment. Irregular meals that consisted of large quantities of meat at any opportunity may have led to the strengthening of the digestive system. In addition, because these people adapted to cold air, the function of their respiratory and cardiovascular systems might be strengthened. We call this phenotype the "Dw" type, indicating a cold continental climate with arid winters. In an environment with few predators, they had a wide range of space to perform activities, resulting in an extroverted, active, and unstable nature.

Approximately 40,000-25,000 years ago, humans moved to North Eurasia, a cold humid climate zone. The coldest ecumene, consisting almost entirely of snow and ice, caused adaptations that might have prioritized the functioning of the respiratory system and powerful cardiovascular systems. We call this phenotype the “Df” type. Raw meat and fish were their staple foods, and they hunted in snow-covered cold plains and on the arctic coast, resulting in an adventurous, progressive, and courageous nature.

When the “Dw” and “Df” types moved into hot climate zones and adapted to that environment or combined genetically with the “Aw” and “Af” types, they may have given rise to moderate temperaments and less powerful cardiovascular systems. We call these types “Dw+” and “Df+”, respectively. The distal parts of their bodies may be colder than the “Dw” and “Df” types.

These different personality types might have been mixed during recent global population movements. However, the character traits that they developed over tens of thousands of years are not likely to change in a short period of time.

**TEMPERAMENT THEORIES**

The descriptive characteristics of personality were identified by Hippocrates and Galen’s four temperaments theory, which identified the four personality types as Melancholy, Phlegmatic, Choleric, and Sanguine. These types share remarkable similarities with the Neurotic-Introvert, Stable-Introvert, Neurotic-Extrovert, and Stable-Extrovert types in Eysenck’s model and also with the Lesser-Yin, Greater-Yin, Lesser-Yang, and Greater-Yang types in four-constitution medicine. These common psychological characteristics are also connected with the personality types that adapted to different climate zones. Table 1 shows the relevance of climate-adapted personality types to the other temperament theories. Melancholy is associated with the personality type that adapted to the hot and arid tropical savannah climate. The Phlegmatic type resembles the personality type that adapted to the hot and humid tropical rainforest climate. The Choleric type can be regarded as the personality type that adapted to a cold and arid climate. Finally, the Sanguine type is similar to the personality type that adapted to a cold and humid climate. These similarities imply that different human psychological traits may be the result of psychological adaptations to different climate zones.

**The characteristics of body qualities in the four temperaments theory**; (see Table 2) may also be explained in climatic-adaptation theory. The dry or humid quality, one of the two personality dimensions, may reflect the environmental humidity in which the personality type developed. The warm or cold quality of personality may be associated with the temperature in the area in which the personality type evolved. Populations that adapted to cold climates may have “warm” characters and vice versa because of the need to maintain a constant body temperature. Therefore, unlike humid qualities, thermal qualities are presumed to reflect the inverse condition of the temperature in which the personality type adapted.

In the theory of four-constitution medicine, also called Sasang constitutional medicine, people are identified based on the characteristics of the four viscera: spleen,
Table 1. Characteristics of the climatic-adaptation theory and other temperament theories.

S indicates Stable; E indicates Extrovert; N indicates Neurotic; I indicates Introvert. The psychological features of three other models - Hippocrates and Galen, Hans J. Eysenck, and four-constitution medicine - refer to references 1 and 5.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Type</th>
<th>Aw</th>
<th>Af</th>
<th>Dw</th>
<th>Df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate (region)</td>
<td></td>
<td>hot, arid</td>
<td>hot, humid</td>
<td>cold, arid</td>
<td>cold, humid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(tropical savannah)</td>
<td>(tropical rainforest)</td>
<td>(cold grassland)</td>
<td>(artic region)</td>
</tr>
<tr>
<td>Strengthened functions</td>
<td></td>
<td>urinary detoxification</td>
<td>digestion</td>
<td>digestion</td>
<td>respiration</td>
</tr>
<tr>
<td>Personality traits</td>
<td></td>
<td>cautious, restrained</td>
<td>quiet, relaxed</td>
<td>extroverted, active</td>
<td>adventurous, progressive, courageous</td>
</tr>
</tbody>
</table>

| Hippocrates and Galen                |      | Melancholy: gloomy, pessimistic | Phlegmatic: sluggish, disinterested, unexcitable | Choleric: bad tempered, angry, irritable | Sanguine: cheerful, optimistic, passionate |
|                                      |      | N-I: moody, anxious, rigid, sober, pessimistic, reserved, unsociable, quiet | S-I: passive, careful, thoughtful, peaceful, controlled, reliable, calm, even-tempered | N-E: touchy, restless, aggressive, excitable, changeable, impulsive, optimistic, active | S-E: sociable, outgoing, talkative, responsive, easygoing, leadership, lively, carefree |

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DISCUSSION The personality types among temperament theories share similar characteristics regardless of culture and century. This fact leads to questions of why people have such different characteristics and whether categorizing people into several types could be a plausible endeavor. Although explanations for personality types lead to unsatisfactory interpretations due to a lack of scientific evidence, we should carefully consider the reasons for these attempts to identify personality types and the suggestion to tailor medical models to individual differences.

A number of theories have also been developed by psychologists to explain personality development, e.g. Freud’s psychoanalytic theory, Jung’s theory of psychological types, and Erikson’s theory of psychosocial development. However, they explain primarily personality development throughout one’s lifetime. In this study, we focused on inherent traits that may have formed under selective pressures. We presented climatic environments in the human journey that
may contribute to the formation of the genetic aspect of personality types but not to personality development throughout the lifetime.

Recent evidence may support the idea that cold environments have prioritized the strengthening of the respiratory system over detoxification, or that contrary functions have been strengthened in hot environments under different selective pressures. A strong respiratory system seems to be crucial for survival in cold climate zones because cold air is associated with increased risk of respiratory symptoms\(^5\). African-Americans who have origins in any of the black populations living in the hot climate zones of Africa are at greater risk for lung diseases than white populations\(^6\). A report also has shown an inverse association between African ancestry and pulmonary function\(^7\). In contrast, African-Americans may have more resistance to liver diseases than Hispanics or Caucasians\(^8\)-\(^10\). This resistance may be evidence for a strengthened detoxification function in tropical climate zones.

New scientific methodological approaches and evidence are needed to verify the proposed theory. One essential question for future research should be the connections between the functions of internal organs and psychological characteristics. The relationships between strengthened and relatively weakened functions, i.e. between detoxification and respiratory functions and between digestion and urinary systems, should also be verified in future studies.

Although the evidence for personality types that reflect the selective pressures in different climate zones remains insufficient, climatic-adaptation theory may suggest a new way to interpret the origin of personality types. We expect the theory proposed in this paper to open multiple avenues for future research on personalized medicine by facilitating the study of personality through the classification of individual differences due to climatic adaptation.\(^H\)

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**REFERENCES**


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**HYPOTHESIS**
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