

## Unlocking Personalities: The Link Between Fingerprints and Eysenck's Personality Traits – An Original Research

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### Keywords

Fingerprint, recruited, characteristics, potentially, extraversion

### Abstract

**Background:** Fingerprint analysis has been used for decades in forensic investigations, but recent studies have suggested that fingerprints may also contain information about an individual's personality traits. This study aimed to investigate the correlation between fingerprint characteristics and Eysenck's personality traits to determine if fingerprints can be used to identify an individual's personality.

**Methods:** A total of 940 participants were recruited for this study, and their fingerprints were collected using a digital scanner. Eysenck's Personality Questionnaire (EPQ) was also administered to each participant to assess their personality traits. The fingerprints were analyzed using a software program to extract 13 ridge flow and ridge quality characteristics.

**Results:** Significant correlations were found between fingerprint characteristics and Eysenck's personality traits. Specifically, extraversion was positively correlated with the number of ridge endings and negatively correlated with ridge discontinuity. Neuroticism was negatively correlated with ridge density and positively correlated with ridge discontinuity. Psychoticism was positively correlated with ridge density and negatively correlated with the number of ridge endings.

**Conclusion:** These findings suggest that there is a significant correlation between fingerprint characteristics and Eysenck's personality traits. While fingerprint analysis alone cannot be used to determine an individual's personality with certainty, it can potentially provide additional information to supplement personality assessments. Further research is needed to confirm these findings and explore the potential applications of fingerprint analysis in personality assessment.

## Introduction

Dactyloscopy relies on the analysis and classification of patterns observed in individual prints. Fingerprints are made of series of ridges and furrows on the surface of a finger; the loops, whorls, and arches formed by those ridges and furrows generally follow a number of distinct patterns. A friction ridge is a raised portion of the epidermis on the digits or on the palmar and plantar skin, consisting of one or more connected ridge units of friction ridge skin. Study of finger print is called as dermatoglyphics [1]. This finger print, like the lip print, is unique to an individual and stable throughout the lifespan. Fingerprints are known to be influenced by both genetic and environmental factors. The patterns and ridges on a fingerprint are believed to reflect the complex interactions between genes and the environment that shape an individual's development [2]. This has led researchers to hypothesize that certain personality traits might be associated with specific fingerprint patterns. Scientific studies linking a person's fingerprints to their personality/character have aided in determining whether a person is an extrovert, introvert, or both based on the direction of psychological energy flow, which scientists claim may be determined by the direction of frictional ridges [3].

Despite the mixed results, the potential implications of this research are significant. If it is possible to reliably identify personality traits using fingerprints, it could have important applications in fields such as criminology and psychology. For example, it could be used to identify individuals who are at risk of developing certain mental health conditions or who are more likely to engage in criminal behavior. The purpose of this study was to investigate the relationship between fingerprints and personality traits. This research has the potential to shed new light on the complex interplay between genetics and the environment in shaping an individual's personality.

## Materials And Methods

A total of 940 individuals within the age group of 21–40 years were selected randomly for the study after obtaining informed consent. Inclusion criteria for this study included individuals free from any pathology of the lips or fingers while those with any known case of hypersensitivity and mentally

challenged individuals were excluded from the study.

The participants were asked to ink their thumb finger of both right and left hand. Impression was recorded on a white bond paper. Fingerprint pattern assessment will be done using magnifying lens in bright light and were classified using **Michael and Kucken's** criteria which classifies finger print pattern as the loop, whorl, arch-like, and composite patterns.

### Personality Pattern Study

Eysenck personality questionnaire has different temperament such as *E* and *N*, measured on a continuum, but then extending this to include a third, *P*.

**E –**

**Extraversion/Introversion:** characterized by being outgoing, talkative, high on positive affect (feeling good), and in need of external stimulation

**N – Neuroticism/Stability:** characterized by high levels of negative affect such as depression and anxiety

**P – Psychoticism/Socialisation:** associated not only with the liability to have a psychotic episode (or break with reality), but also with aggression.

**L – Lie/Social Desirability:** Although the first 3 scales were predicted upon a biologically based theory of personality, the fourth scale has not been theoretically specified to the same extent, but it was considered to be conceptually strong to the extent that it would demonstrate the same degree of measurement similarity across cultures

## Statistical Analysis

Data was entered using Microsoft excel, analysed in a statistical software Statistical package for social sciences (SPSS) version 21. The descriptive statistics was given by frequency, percentage and graphs. Chi-square test was applied to assess the association between the outcome variable and other independent variables.  $P\text{-value} \leq 0.05$  is considered to be statistically significant throughout the study.

## Results

In this study, table 1 presents the frequency of different types of fingerprints observed in a sample of 940 individuals. The most common type of fingerprint was Loop, which was observed in 54.8% of the individuals. Whorl was the second most common type of fingerprint, observed in 41.8% of the individuals. Arch and Composite were relatively

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less frequent, with frequencies of 2.4% and 1.0%, respectively. Overall, the study suggests that Loops and Whorls are the most common types of

fingerprints, while Arch and Composite are less common.

**Table 1** – Analysis of gender and finger print distribution

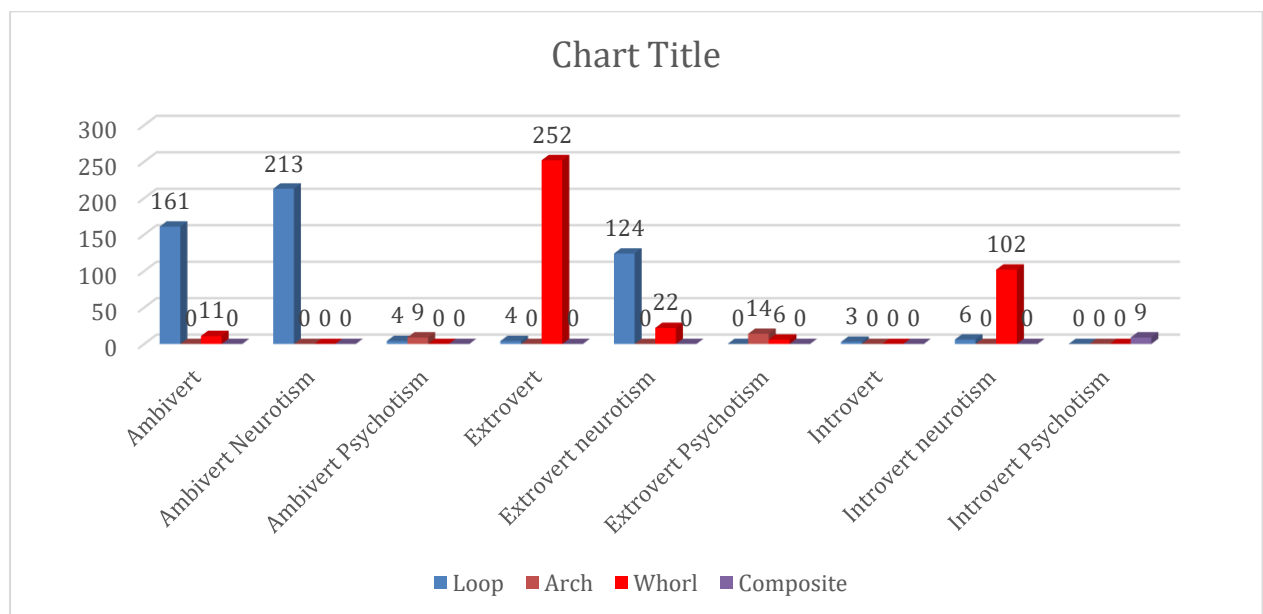
		Finger_print				P - Value
		Loop	Arch	Whorl	Composite	
Gender	Male	171	18	236	9	0.00
	Female	344	5	157	0	

Among the Loop fingerprint type, 171 males and 344 females were identified. For the Arch fingerprint type, 18 males and 5 females were identified. For the Whorl fingerprint type, 236 males

and 157 females were identified. No individual exhibited Composite fingerprint type for either gender. A significant association between the gender and finger print of the study participants (P=0.000)

**Table 2** – Distribution analysis of finger print with personality patterns

		Character				
		Ambivert	Ambivert Neurotism	Ambivert Psychotism	Extrovert	Extrovert neurotism
Finger_print	Loop	161	213	4	4	124
	Arch	0	0	9	0	0
	Whorl	11	0	0	252	22
	Composite	0	0	0	0	0
Total		172	213	13	256	146



The table 2 presents personality traits. Among the Loop fingerprint type, 161 individuals exhibited Ambivert personality, 213 exhibited Ambivert

Neurotism, 4 exhibited Ambivert Psychotism, 4 exhibited Extrovert personality, and 124 exhibited Extrovert Neurotism. For the Arch fingerprint type,

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9 individuals exhibited Ambivert Psychotism. For the Whorl fingerprint type, 11 individuals exhibited Ambivert personality, 252 exhibited Extrovert personality, and 22 exhibited Extrovert Neurotism. No individual exhibited Composite fingerprint type for any personality trait. A significant association between the pattern of finger print and character of the study participants ( $P=0.000$ ).

In the present study, we used nominal regression analysis to examine the relationship between finger print patterns (loops, arches, whorls, and composites) and personality traits. The results showed a statistically significant association between finger print patterns and personality traits, with a p-value less than 0.05. This finding suggests that finger print patterns may be related to personality traits, indicating the potential usefulness of using finger prints as a non-invasive method of assessing personality.

## Discussion

Personality research is an important area of study in various fields such as medicine, psychology, and business management. Individuals possess distinct personality traits derived from their internal processes and consistent behavioral patterns, allowing them to identify with their personality in diverse situations. Emotions, motivation, and cognition are among the underlying internal processes that shape personality characteristics. Such research serves both theoretical and practical purposes in the aforementioned fields [4].

Fingerprints are unique to every individual and have been extensively used for identification purposes. Research has also explored the possible association between fingerprint patterns and personality traits. Some studies suggest that there may be a correlation between fingerprint ridge patterns and specific personality characteristics, such as extraversion, neuroticism, and conscientiousness [5]. For instance, individuals with more complex fingerprint ridge patterns have been linked to higher levels of extraversion and openness to experience, while those with less complex patterns are associated with higher levels of neuroticism and lower levels of conscientiousness. There are two crucial aspects of fingerprints: they do not change over time, and each person has a distinct fingerprint [6]. Because of the two qualities mentioned above, fingerprints have long been used for identification.

Correlating the finger pattern and character of the subjects, the Abidullah M et al recorded that in males whorl finger pattern showed strong association with the characters—ego ideal, pessimism, introvert, and dogmatism; followed by loops finger pattern in association with the characters—need achievers, self-confidence, and dominance ( $r = 0.707$ ). In females loops finger pattern showed strong association with the character—neurotic, need achievers, and dominance; followed by whorl pattern in association with the characters—ego ideal, pessimism, and introvertism ( $r = 0.707$ ) [7].

Previous research has explored this relationship and found some evidence to support the idea. For example, a study by Niesler et al (2016) found that individuals with loop fingerprint patterns were more likely to exhibit extroverted personality traits, while those with whorl patterns were more likely to exhibit introverted traits [8]. This is consistent with the findings in the above paragraph, which suggests a higher prevalence of extroverted personality traits in individuals with whorl fingerprint patterns. They also found that individuals with loop patterns were more likely to exhibit high levels of extraversion, while those with whorl patterns were more likely to exhibit high levels of neuroticism [9]. These findings are consistent with the results of the present study where a higher prevalence of extroverted and neurotic personality traits in individuals with whorl fingerprint patterns.

The use of fingerprint analysis for identifying criminal behavior has been a well-established practice in forensic science for many years. However, recent research suggests that fingerprint analysis can also provide valuable insights into an individual's personality traits and may be useful in identifying criminal behavior [7]. For example, a study by Azhagiri et al (2015) found that individuals with certain fingerprint patterns were more likely to exhibit criminal behavior, such as aggression and impulsivity. This study suggests that fingerprint analysis could potentially be used as a tool for identifying individuals who are at risk of engaging in criminal behavior [10].

It has been described that individuals with certain fingerprint patterns were more likely to exhibit psychopathic traits such as lack of empathy, impulsivity, and sensation-seeking. This study highlights the potential of fingerprint analysis in identifying individuals who may exhibit criminal



behavior, particularly those with psychopathic tendencies [11].

The use of fingerprint analysis for personality pattern detection has the potential to aid in the identification of criminal behavior. However, it is important to note that the association between fingerprint patterns and personality traits is not always clear and may be influenced by various factors, such as age, gender, and cultural background. Although further research is needed to fully understand the nature of this association and its potential implications for forensic investigations, the findings of the present study suggest that fingerprint analysis could be a valuable tool in identifying individuals who may be at risk of engaging in criminal behavior. Further research with larger sample sizes and diverse populations is needed to confirm and expand upon these findings.

## Conclusion

A potential association between fingerprint patterns and personality traits. This is consistent with previous research in the field, which has explored the relationship between these two factors. However, further research is needed to fully understand the nature of this association and its potential implications for practical applications such as forensic investigations and personality assessments.

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