# Unlocking The Secrets of Personality Through Lip Prints: A Novel Approach to Personality Assessment

**Abstract**

Background: Lip prints are unique patterns that are formed by the ridges and grooves on the lips, and they have been used as a potential tool for personal identification. The association between lip prints and personality patterns was first proposed by a Japanese researcher, Satoru Suzuki, in the 1970s. Suzuki suggested that there may be a correlation between the patterns of lip prints and certain personality traits. The present study aimed to investigate the association between lip print patterns using Suzuki and Tsuchihashi classification and personality traits measured by the esyncks questionnaire.

Methods: A total of 940 participants were recruited for this study. Lip print patterns were analyzed using the Suzuki and Tsuchihashi classification, and personality traits were assessed using the esyncks questionnaire. Statistical analysis was performed to evaluate the association between lip print patterns and personality traits.

Results: The results of this study showed a significant association between lip print patterns and personality traits. Specifically, individuals with a Type III lip print pattern were found to have higher scores on the Neuroticism dimension of personality, while those with a Type I lip print pattern had higher scores on the Conscientiousness dimension. Furthermore, individuals with a Type II lip print pattern had higher scores on the Extraversion dimension.

Conclusion: The findings of this study suggest that there is a significant association between lip print patterns and personality traits measured by the esyncks questionnaire. This association may have implications for forensic investigations and may be useful in identifying personality traits of individuals based on their lip print patterns.

**Keywords**: Lip print pattern, Forensic, Personality traits

## INTRODUCTION

The pattern of wrinkles on the lips has individual characteristics as fingerprints. The wrinkles and grooves on the labial mucosa (called sulci labiorum) form a characteristic pattern. Cheiloscopy can be defined "as a method of identification of a person based on characteristic arrangements of lines appearing on the red part of lips or as a science dealing with lines appearing on red part of the lips". [1]

The lip prints being uniform throughout the life and characteristics of person can be used to verify the presence or absence of a person from the crime, provided there has been consumption of beverages, drinks, usage of cloth, tissues or napkin etc., at the crime scene. [2] However, studying in depth and establishing further facts and truth in lip prints will certainly help as useful evidence in forensic dentistry.

In the field of psychology, the study of personality characteristics, both theoretically and practically, is a crucial area of study in contemporary research fields. The accurate prediction of personality types is an area of human study that urgently needs to be developed and also has significant application in situations like hiring qualified employees or potential perpetrators [3]

Cheiloscopy, has been suggested to have a correlation with personality patterns. The unique patterns and ridges found in lip prints are believed to be determined by genetic and environmental factors. Some studies suggest that certain personality traits, such as extroversion, emotional stability, and conscientiousness, may be associated with specific lip print patterns. As research into the relationship between lipprints and personality continues, it may

shed further light on the connections between biology and behavior [4]

## 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 given red-colored lipstick, plain white bond paper, blue inked stamp pad, magnifying lens, and Eysenck questionnaire which is based primarily on physiology and genetics where it is believed that personality differences are determined by genetic inheritance.

For recording the lip print, the subjects were asked to rinse the mouth with water and the lips were allowed to dry. Then the red lipstick was applied on the lips and the subjects were asked to spread it uniformly over the lips by gentle movement of the lips. After 2 min a lip impression was made on a plain white bond paper by asking the subjects to press on the lips onto the paper. This served as a permanent record. Clear cellophane tape was be placed over the lip prints.

Assesment of Lip Print

Each subject's lips were divided into four quadrants and were allotted the digits 1–4 in a clockwise sequence starting from subjects' upper right followed by upper left, lower left, and ending at lower right. For examination of lip print, middle third of the upper and lower lip was taken as study area at this part is more prominent and visible in any trace that has been made

The pattern of Lip print were classified based on **Suzuki and Tsuchihashi** classification

Type I (full vertical)
Type I (partial vertical)
Type II (branching)
Type III (intersection)
Type IV (reticular)
Type V (other types of groove)

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-value=/<0.05 is considered to be statistically significant throughout the study.

RESULTS

In a total of 940 participants, 434 were male and 506 were female. The participant's occupation was categorized and is given in graph 1, 56% of the participants were students, while the rest of study population was comprised by home makers, dentists, general physicians and IT professionals.

Among the total participants, 422 (44.9%) of the participants had type -1 lip print, while type-3 lip print was seen in 359 (38.2%) of the participants, while the type-2, 4 and 5 were 88 (9.4%), 51 (5.4%) and 20 (2.1%) respectively. The distribution of character trait found in this study is given in graph 2.

it was found that out of all the males, 333 individuals had type-III lip pattern, while among all the females, 359 individuals had type-I lip pattern. Furthermore, the analysis indicates that there is a statistically significant difference between the lip pattern distribution among males and females. (p=0.00) This finding could have potential implications for further research in the field of personality psychology and genetics. Nominal regression between the lip prints and personality pattern demonstrated a significant association between the two variables (p=0.00)

A significant difference was observed when investigating the lip print and personality trait, 108 individuals had an introvert neurotic personality of which 33 were had type-I lip pattern while 30, 10, 26 and 9 of the participants had type – II, III, IV and V lip patterns respectively. Only 3 of the participants were introverted while extrovert psychotic was the next highest personality pattern observed within the cohort of our study, Type-II lip pattern was seen in 14 participants (p=0.00)

DISCUSSION

Lip prints, which remain consistent throughout an individual's life and contain unique identifying characteristics, have potential value in verifying the presence or absence of a person at a crime scene, particularly when beverages, drinks, or other materials have been consumed or used. In light of the significant potential of lip prints as a viable means of identification, we conducted a novel study to investigate the potential contribution of individual and/or combined lip print characteristics in determining a person's character.

In a total of 940 participants, 434 were male and 506 were female. The participants occupation was categorized and is given in graph 1. Lip print analysis revealed that 44.9% of the participants had type-1 lip pattern, while type-3 lip pattern was observed in 38.2% of the participants. The remaining participants had type-2 (9.4%), type-4 (5.4%), or type-5 (2.1%) lip pattern. Interestingly, there was a significant gender difference in lip pattern, with type-III pattern being more common in males (333) and type-I pattern being more common in females (359) (p=0.00). This finding was in agreement with Tsuchihashi et al who observed Type III lip pattern predominantly in both males, while in female type-I pattern was predominant.

The participants' occupations were also recorded and categorized, with 56% of the participants being students, while dentists, general clinicians, home makers made up the rest of the study population as shown in Graph 1. Among the participants that were recruited, 555 of them were students, of whom type-1 and type-3 lip patterns were

predominant, while home makers were the next majority of the participants, also where type – 1 and 3 were common lip pattern. Occupation and personality pattern are two important aspects that can provide insights into an individual's behavior and character. Research studies have shown that certain personality traits are more commonly associated with specific occupations. For example, individuals in leadership roles are often characterized by traits such as assertiveness, decisiveness, and extraversion, while those in creative professions may display traits such as openness to experience and unconventionality. Similarly, an individual's personality pattern can also influence their choice of occupation [5]. For instance, individuals with an introverted personality may prefer jobs that allow them to work independently and avoid social interactions, such as research or writing. On the other hand, individuals with an extroverted personality may thrive in roles that involve social interactions and networking, such as sales or public relations. However, that notion lies beyond the scope of this study.

During the investigation of the relationship between lip print patterns and personality traits, 108 individuals were identified as having an introverted neurotic personality. Out of these, 33 had type-I lip pattern, while 30, 10, 26, and 9 individuals had type-II, III, IV, and V lip patterns, respectively. Only 3 participants were identified as introverted and extrovert psychotic was the next highest personality pattern observed in our study cohort, with 14 participants having type-II lip pattern (p=0.00).

Contradictory to the present study findings, studies done by Tsuchihashi observed Type III lip pattern predominantly in both males and females [6]. Vahanwala and Parekh noted that in females all four quadrants have same type of lip pattern, but males had different patterns [7].

The evaluation of a person's character or personality can offer insightful information about their actions, thinking, social functioning, abilities, and limitations. Russian biometrist Viktor Minkin put out the theory that there is a direct correlation between a person's DNA and their fingerprint, which reflects their character and health and can be explained by the thermodynamics of human growth. Based on this theory, the current study sought to determine whether an individual's character is affected by their combined and/or individual lip and/or finger patterns. There are various methods to determine the character of an individual: a) Eysenck's Personality Inventory, b) Bernreuter's Personality Inventory, c) Miller's, d) Multivariable Personality Inventory, and e) Minnesota Personality Inventory [8].

Hans Eysenck was a prominent psychologist who developed a widely recognized theory of personality that emphasized the importance of biological factors in shaping individual differences in behavior. Eysenck's theory posited that personality could be understood along three major dimensions: extraversion/introversion, neuroticism/stability, and psychoticism/superego. [9]

Extraversion refers to the extent to which an individual is outgoing, assertive, and sociable. Introverts, on the other hand, are more reserved and tend to be more introspective. Neuroticism/stability refers to an individual's emotional stability or tendency to experience negative emotions such as anxiety or depression. Those who score high on neuroticism are more likely to be reactive to stressors and experience

negative mood states. Psychoticism/superego refers to an individual's tendency to be aggressive, impulsive, and insensitive to others' feelings. Those who score high on this dimension tend to be more independent and unconventional in their thinking [10]

In this study, a significant difference was observed when investigating the lip print and personality trait, 108 individuals had an introvert neurotic personality of which 33 were had type-I lip pattern while 30, 10, 26 and 9 of the participants had type – II, III, IV and V lip patterns respectively. Only 3 of the participants were introverted while extrovert psychotic was the next highest personality pattern observed within the cohort of our study, Type-II lip pattern was seen in 14 participants (p=0.00)

Some studies have found that certain lip print patterns are more common among individuals with specific personality traits. For example, a study published in the Journal of Forensic Sciences found that individuals with a specific type of lip print pattern (known as Type III) were more likely to score higher on measures of extraversion, while individuals with another type of lip print pattern (known as Type IV) were more likely to score higher on measures of neuroticism [6].

However, it's important to note that not all studies have found significant correlations between lip print patterns and Eysenck personality traits [11] [4]. Furthermore, even when a correlation is found, it is important to remember that correlation does not imply causation. In other words, lip print patterns may be associated with certain personality traits, but this does not necessarily mean that one causes the other.

Sivapathasundharam, B et al examined the association between lip print patterns and personality traits among a sample of 300 medical students. They found that individuals with a "Type 1" lip print pattern were more extroverted and sociable compared to those with other lip print patterns. The study provides support for the idea that lip print patterns may be used as an indicator of personality traits [12]. Additionally, individuals with a "type 3" lip print pattern, which is characterized by irregular and asymmetrical lines, were found to be more impulsive and risk-taking. These findings suggest that lip print patterns may be useful in predicting certain aspects of personality, although further research is needed to fully understand the relationship between lip prints and personality traits [6]. Nonetheless, the positive correlations observed between lip prints and personality traits offer promise for potential applications in fields such as forensic science and psychology.

One study, published in the journal Personality and Individual Differences, found that individuals with a certain type of lip print pattern (known as Type I) were more likely to score higher on measures of extraversion, while individuals with another type of lip print pattern (known as Type II) were more likely to score higher on measures of introversion [13]. Our results showed that predominant lip prints in males and females can suggest the personality/character of an individual which can be an adjunct in forensic scenario.

In this study, a significant difference was observed when investigating the lip print and personality trait, 108 individuals had an introvert neurotic personality of which 33 were had type-I lip pattern while 30, 10, 26 and 9 of the participants had type – II, III, IV and V lip patterns respectively. Only 3 of the participants were introverted while extrovert psychotic was the next highest

personality pattern observed within the cohort of our study, Type-II lip pattern was seen in 14 participants (p=0.00). Majority of the participants had a introverted neurotic personality based on this study and also a diverse distribution of lip patterns In type-1 – 5. Some of the participants with Type-2 lip pattern had a extroverted psychotic personality. These two personalities was found to be in 128 individuals of the study.

Although the current study found a potential correlation between lip print patterns and Eysenck personality patterns, further research is required to confirm and expand upon these findings. The study's results suggest that lip print patterns may offer a unique and potentially useful method for assessing an individual's personality traits. However, the current study's sample size was limited, and the findings may not be representative of the general population. Overall, while the present study provides some promising initial findings, more extensive and rigorous research is necessary to establish a clear understanding of the relationship between lip print patterns and personality traits.

Conclusion

The results of our study provide preliminary evidence that lip print patterns may be used to identify an individual's personality trait. Our findings suggest a significant association between the Eysenck personality dimensions and specific lip print patterns. Our study adds to the growing body of research on non-invasive and easily obtainable measures for personality assessment. However, it is important to note that future studies with larger and more diverse populations are needed to further validate our findings. Nonetheless, our study provides a promising and innovative approach to the study of personality traits, which may have practical applications in forensic investigations and clinical practice.

1. Prabhu RV, Dinkar AD, Prabhu VD, Rao PK. Cheiloscopy: revisited. J Forensic Dent Sci. 2012;4: 47–52.
2. Utsuno H, Kanoh T, Tadokoro O, Inoue K. Preliminary study of post mortem identification using lip prints. Forensic Sci Int. 2005;149: 129–132.
3. Venurkar S, Srivastava T, Shukla S, Acharya S, Saha S, Deshpande V. Decoding Human Personality Through Dermatoglyphics. Cureus. 2022;14: e30445.
4. Multani S, Thombre V, Thombre A, Surana P. Assessment of lip print patterns and its use for personal identification among the populations of Rajnandgaon, Chhattisgarh, India. J Int Soc Prev Community Dent. 2014;4: 170–174.
5. de Jong N, Wisse B, Heesink JAM, van der Zee KI. Personality Traits and Career Role Enactment: Career Role Preferences as a Mediator. Front Psychol. 2019;10: 1720.
6. Abidullah M, Kumar MN, Bhorgonde KD, Reddy DSP. Cheiloscopy and dactyloscopy: Do they dictate personality patterns? J Forensic Dent Sci. 2015;7: 114–120.
7. Vahanwala SP, Parekh BK. Study of lip prints as an aid to forensic methodology. J Forensic Med Toxicol. 2000;17: 12–18.
8. Kumar R. The Use of Personality Testing in Personnel Selection. Claremont Colleges Library; 2019.
9. Küssner MB. Eysenck’s Theory of Personality and the Role of Background Music in Cognitive Task Performance: A Mini-Review of

Conflicting Findings and a New Perspective. Front Psychol. 2017;8: 1991.
10. Sato T. The Eysenck Personality Questionnaire Brief Version: factor structure and reliability. J Psychol. 2005;139: 545–552.
11. Chandrakala J, Suganya G, Yadava TS, Doddawad V, Nagarathna J, Kalavathi M. Lip print patterns: Similarities among the parents and their children. J Oral Maxillofac Pathol. 2022;26: 134.
12. Sivapathasundharam B, Prakash PA, Sivakumar G. Lip prints (cheiloscopy). Indian J Dent Res. 2001;12: 234–237.
13. Simonet DV, Castille CM. The search for meaningful work: A network analysis of personality and the job characteristics model. Pers Individ Dif. 2020;152: 109569.

Table 1

**Gender * Lip_print Crosstabulation**

| | | Lip_print | | | | | Total | p-value |
|---|---|---|---|---|---|---|---|---|
| | | Type 1 | Type 2 | Type 3 | Type 4 | Type 5 | | |
| Gender | Male | 43 | 22 | 333 | 31 | 5 | 434 | 0.00 |
| | Female | 379 | 66 | 26 | 20 | 15 | 506 | |
| Total | | 422 | 88 | 359 | 51 | 20 | 940 | |

Table 2

**Occupation * Lip_print Crosstabulation**

| | | Lip_print | | | | | Total | p-value |
|---|---|---|---|---|---|---|---|---|
| | | Type 1 | Type 2 | Type 3 | Type 4 | Type 5 | | |
| Occupation | DENTIST | 0 | 0 | 16 | 0 | 0 | 16 | 0.00 |
| | DOCTOR | 13 | 0 | 0 | 0 | 0 | 13 | |
| | HOUSE WIFE | 39 | 1 | 30 | 0 | 0 | 70 | |
| | IT | 1 | 0 | 0 | 0 | 0 | 1 | |
| | OTHERS | 39 | 40 | 18 | 20 | 9 | 126 | |
| | STUDENT | 281 | 44 | 202 | 19 | 9 | 555 | |
| | TEACHER | 0 | 0 | 2 | 0 | 0 | 2 | |
| | WORKING | 49 | 3 | 91 | 12 | 2 | 157 | |
| Total | | 422 | 88 | 359 | 51 | 20 | 940 | |

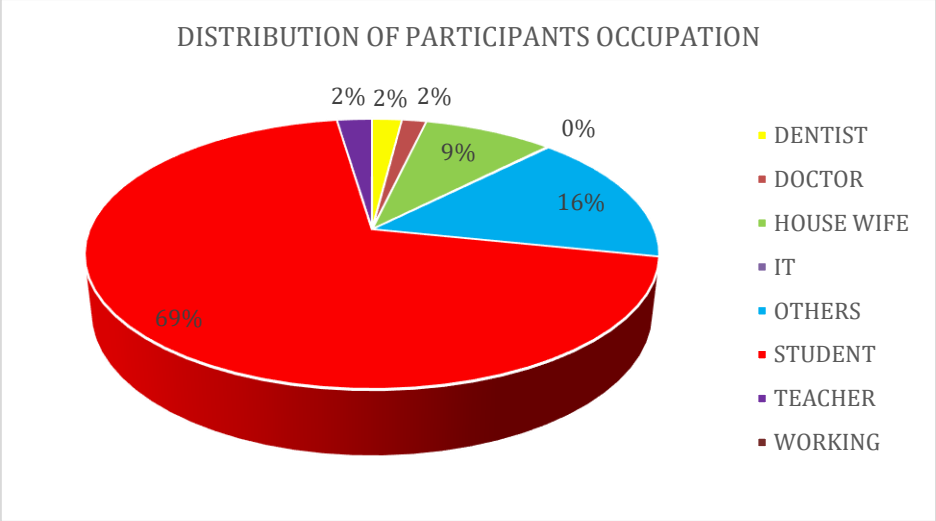
Table 3

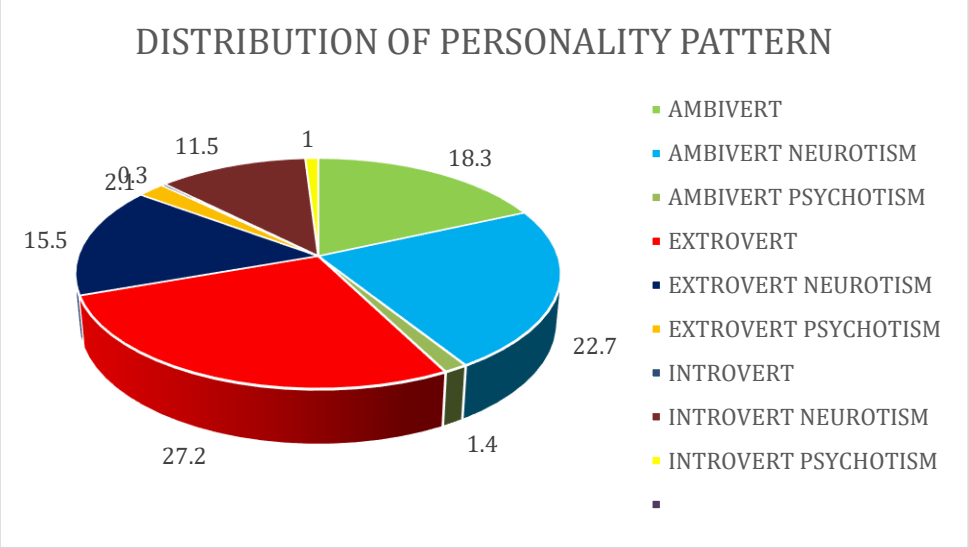
**Lip_print * Character Crosstabulation**

Count

| | | Character | | | | p-value |
|---|---|---|---|---|---|---|
| | | Extrovert Psychotism | Introvert | Introvert neurotism | Introvert Psychotism | |
| Lip_print | Type 1 | 6 | 0 | 33 | 0 | 0.00 |
| | Type 2 | 14 | 0 | 30 | 0 | |
| | Type 3 | 0 | 0 | 10 | 0 | |
| | Type 4 | 0 | 0 | 26 | 7 | |
| | Type 5 | 0 | 3 | 9 | 2 | |
| Total | | 20 | 3 | 108 | 9 | |

Graph 1




Graph 2