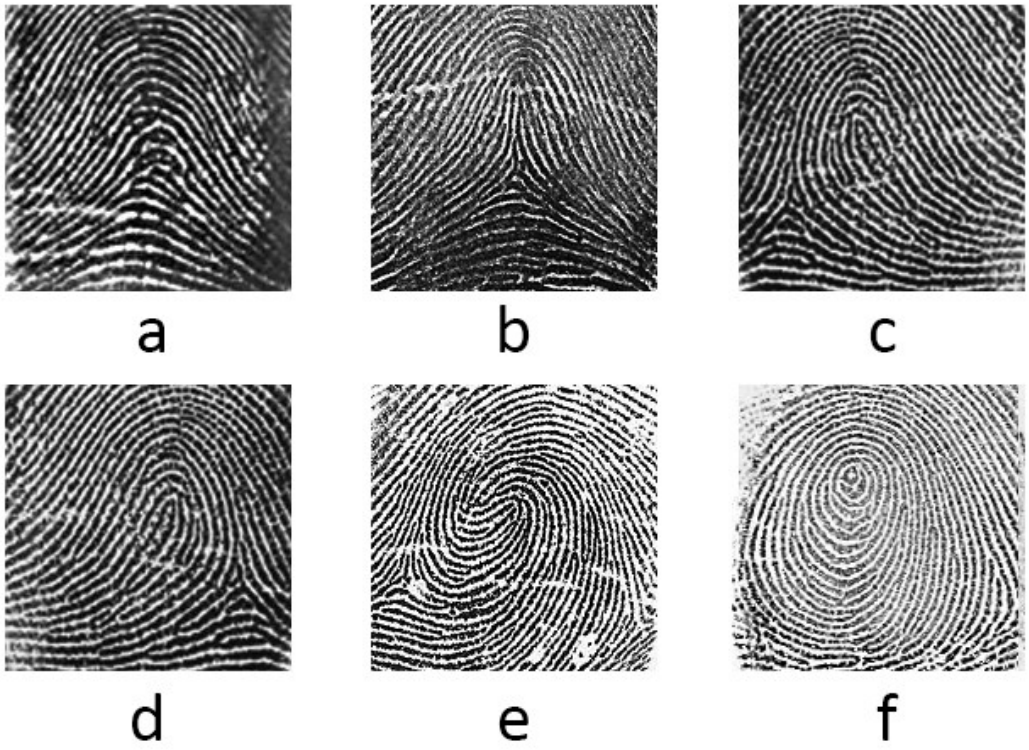
Appendix

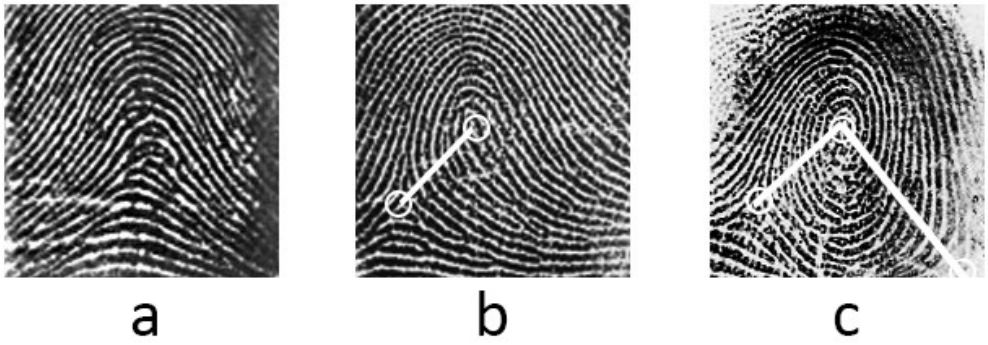
Dermatoglyphic terms

Fingerprint Types: Arches, Loops, Whorls



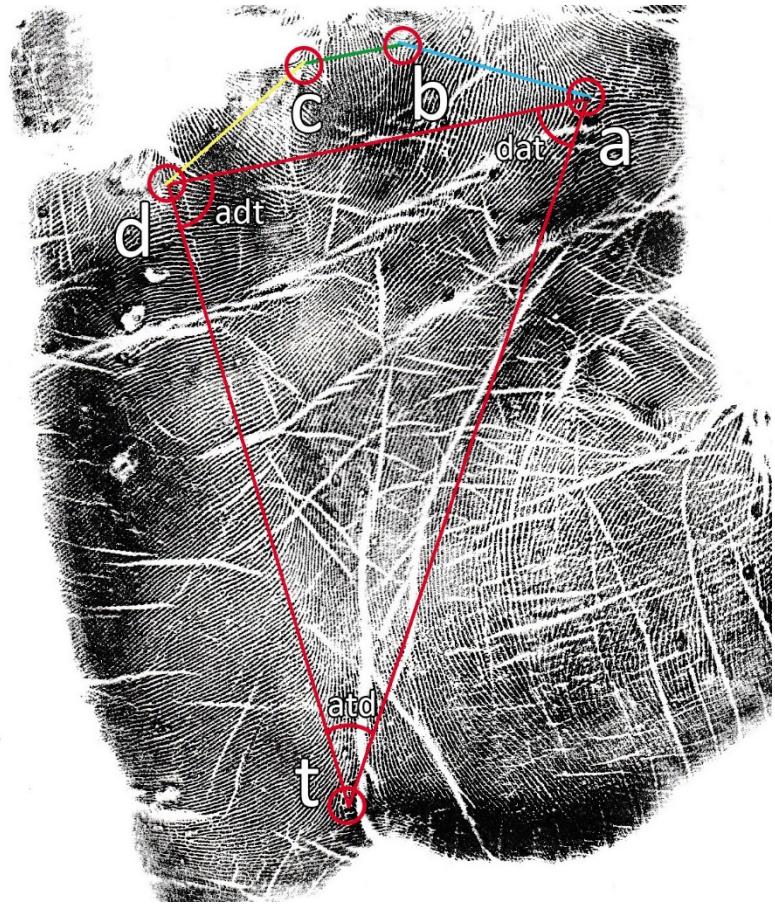
Types of fingerprints defined by the delta point and core. (a) Arch, (b) Tented Arch, (c) Right Loop (radial/ulnar) (d) Left Loop (radial/ulnar), (e) Composite/Double Loop (f) Whorl.

Triradi of fingerprint & finger ridge count



Triradius on the palm is the point of convergence of ridges from three different ridge patterns. Total finger ridge count (TFRC) is the sum of the ridge count of all ten fingers, which varies according to the print pattern. (a) Aches have no delta point and a low ridge count. (b) Loops have one delta point and one core equalling an increased ridge count. (c) Whorls have two delta points and one core equalling a higher ridge count compared to arches and loops.

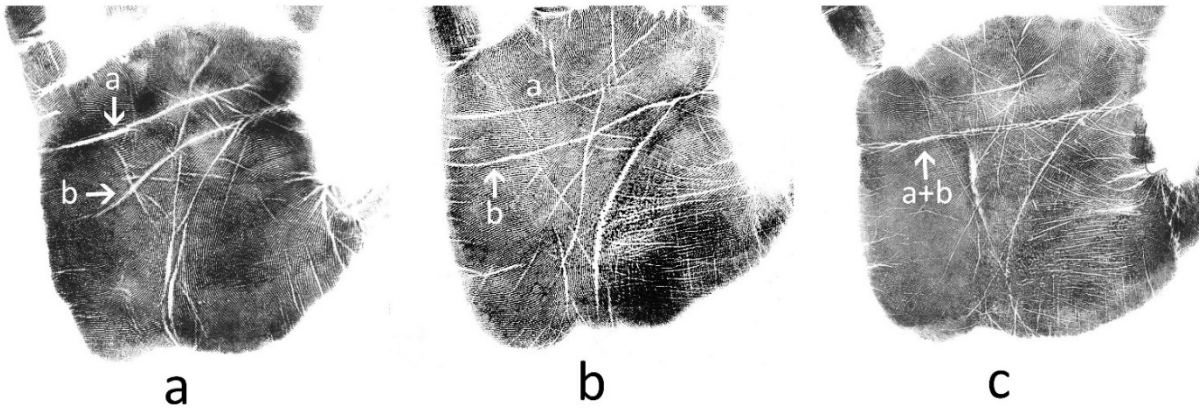
a-b, b-c, c-d ridge counts & ATD and ADT angle



Under the fingers are depicted the palmar triradii a, b, c and d and the axial triradius is shown as t at the base of the palm. The a-b, b-c or c-d ridge counts is the total ridge count between the corresponding triradii. The ATD and ADT angles are formed by connecting lines between finger and axial triradius.

Palmar creases terms

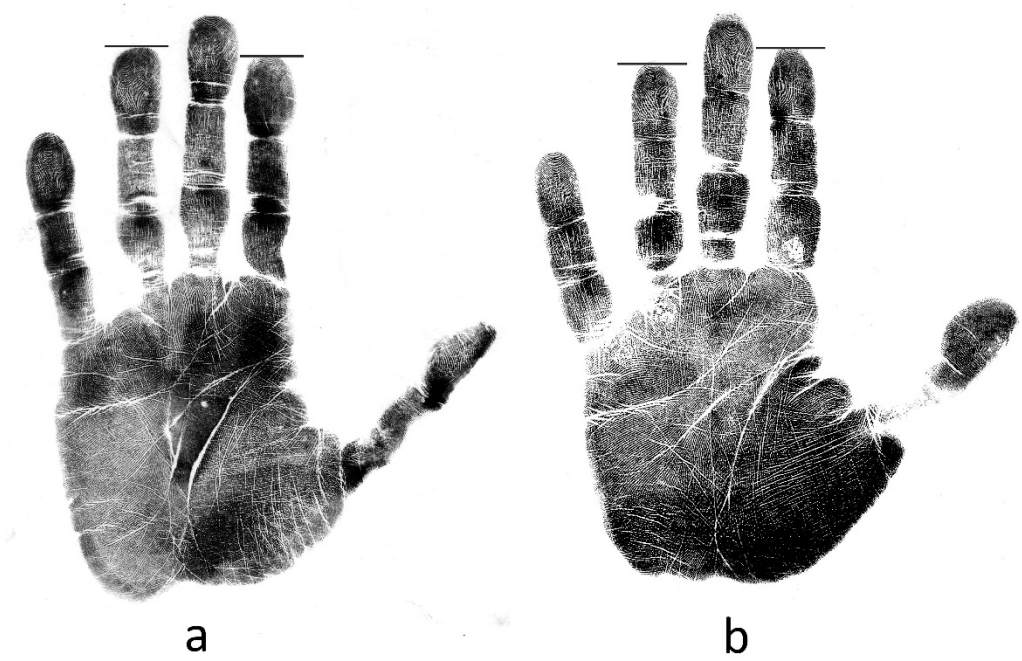
Normal formation, Sydney line & Simian line



(a) shows a normal palmar crease formation where the distal and proximal transverse creases do not meet. (b) shows a Sydney line where the proximal transverse creases is extend all the way across the palm. (c) shows a Simian line where the distal and proximal transverse creases combine to form a single crease.

Digit ratio terms

2D:4D ratio



The 2D:4D is calculated by dividing the length of the index finger by the ring finger. Image (a) depicts a lower 'masculinised' ratio and image (b) a high 'feminised' ratio. Lower mean ratios are repeatedly found in males compared to females and is considered to be due to increases prenatal testosterone compared to oestrogen.

Summary Points:

- Biomarkers on the hands have been associated with a range of physical and mental health conditions
- Diagnosing mental health conditions mainly relies on subjective clinical evaluation and identifying biomarkers for mental health conditions could be valuable for predicating, diagnosis and treatment.
- Three primary subfields of hand biomarkers have been examined for their biometric relationship to mental illness: dermatoglyphics, digit ratio and palmar creases
- A systematic literature search was conducted through Web of Science, Scopus and MEDLINE for the three fields of biomarkers in conjunction with mental illnesses in accordance with PRISMA guidelines
- 29 relevant papers were selected for the review (dermatoglyphics = 6, digit ratio = 12, palmar crease = 11) comprising a total of 13,030 participants.
- Palmar crease research most consistently showed a correlation to mental illness, with all studies producing significant and corresponding findings.
- Dermatoglyphics presented significant findings, although there were specific biometric inconsistencies in some results.
- Digit ratio produced the least consistent results, with some non-significant and contrasting results.
- The evidence of this review suggests that all three fields can indicate mental disorders.