The association between adult penile length and IQ: evidences from 139 countries

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Article

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Abstract

Objective

This study investigates the global correlation between adult penile length and Intelligence Quotient (IQ).

Methodology:

The study utilizes data from 115,387 males aged 18–65 across 139 countries, examining penile size and IQ measurements. After adjusting for variables including GDP per capita, educational spending, daily maximum temperature, and BMI, we performed partial correlation and regression analyses on penile length and IQ, along with an interethnic comparison.

Results

A statistically significant negative correlation was found between flaccid penile length and IQ \( (P < 0.001) \), indicating higher IQs in individuals with shorter penile lengths, and notable ethnic differences were observed \( (P < 0.001) \).

Conclusions

The inverse relationship between flaccid penile length and IQ could be linked to genetic, evolutionary, or environmental factors, offering insights into the penile size-IQ connection.

1 | INTRODUCTION

The investigation into penile length as a crucial marker of male sexual maturation and its potential association with intelligence quotient (IQ) is gaining interest. Preliminary findings from smaller clinical studies indicate that men with shorter penises may have slightly higher IQs. [1] These preliminary observations call for validation through broader, empirical research.

The previous studies delineate notable distinctions in penile dimensions across racial groups, with individuals of African descent exhibiting the largest lengths and circumferences, Caucasians presenting intermediate sizes, and Mongoloids the smallest. Regarding IQ levels, Mongoloids and Caucasians are observed to have the highest, followed by Native Americans, while Southeast Asians and those of African descent rank at the lower end of the spectrum. [2–3] The study aligns with the r-K life history theory of racial differences, which classifies species based on their reproductive strategies, ranging from r (signifying highly active sexual behavior and greater offspring production) to K (indicating fewer offspring but increased parental care and investment). This theory postulates that East Asians have evolved with the most significant K-strategy, Africans the least, and Caucasians in an intermediate position. The theory further suggests that humans evolved differing reproductive strategies based on their environmental contexts; in Africa’s warmer climes, a high reproduction strategy emerged, whereas in the colder regions of Europe and Northern Asia, a strategy emphasizing fewer but well-cared-for offspring.
was adopted. Furthermore, the study notes that African populations evolved in the warmer regions south of the Sahara, while Caucasians and Mongoloids evolved from groups migrating to the colder environments of North Africa, the Middle East, Europe, South Asia, and Northeast Asia. The demands of colder environments for higher cognitive functioning imply a necessity for larger brain sizes and higher IQs for effective environmental adaptation. The research also touches upon the role of testosterone in determining aggression and sexual competitiveness, suggesting a correlation between higher levels of testosterone and increased penile length, which in turn enhances the likelihood of successful semen deposition in the female uterus.

While many studies acknowledge the existence of racial disparities in both penile size and IQ, with the latter's variation among races being broadly accepted, there remains a segment of the academic community that contends the insufficiency of evidence to definitively assert marked racial differences in penile size. The exploration of the relationship between penile length and IQ is fraught with complexities. The current discourse is characterized by divergent viewpoints: one posits that changes in penile length and IQ have evolved independently, while another theory suggests that the colder climates of Europe and Northeast Asia may have favored the development of larger brain sizes, higher IQs, and smaller penises. Furthermore, the lack of a clear temporal sequence between penile length and IQ renders causal inferences challenging. Despite these complexities, this study aims to navigate these intricacies using statistical control methods to elucidate the partial correlation or covariate relationships between penile length and IQ. Employing global datasets, this research seeks to delve into and analyze the interplay between adult penile length and IQ, integrating racial comparisons and comprehensive statistical evaluations.

2 | METHODS

2.1 Data Sources

This research utilized global adult penile data from Lynn (https://data.world/jemus42/world-penis-data) and Lukas Burk (https://data.world/jemus42/world-penis-data), covering 2010 to 2014 across 139 countries/regions. This comprehensive dataset includes flaccid and erect penile measurements of 115,387 adult males, providing data for seven ethnic and thirteen mixed ethnic populations. Complementary variables such as IQ, per capita educational expenditure, daily maximum temperature, GDP from the 2014 World Bank report (https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?end=2014&start=1960&year_high_desc=true), and BMI from the 2014 World Health Organization (WHO) (https://www.who.int/nmh/publications/ncd-status-report-2014/en/) enrich this analysis.

Data processing excluded self-reported measurements, and all measurements were performed by professional technicians using standardized methods. This included compressing the pubic fat at the base of the penis for accurate length measurement - from the pubic-penile junction to the glans tip, excluding foreskin - in flaccid, stretched, or erect states. Girth measurements were taken at the base or
mid-shaft, specifically avoiding the coronal groove, in both flaccid and erect conditions. This approach ensured uniformity and precision in the data collection process.

Additionally, sample inclusion required a minimum size of 100 male subjects aged 18–65 years, guaranteeing a diverse and representative dataset.

### 2.2 | Ethnic Classification

Based on existing literature, [3–4] this study divides ethnic groups into five categories: Negroids (= 1, mainly in Africa, Sub-Saharan Africa, and the Americas), Caucasoids (= 2, predominantly in Europe, North Africa, the Horn of Africa, West Asia, Central Asia, South Asia, North America, South America, and Oceania), Mongoloids (= 3, primarily in East Asia), Amerindians/Mestizos (= 4, native to the Americas), and Mixed Ethnicity (= 5).

### 2.3 | Statistical Strategy

Statistical analyses were performed using Stata 13.0. Quantitative data are represented as mean ± standard deviation (± s), with a significance level set at $P < 0.05$. The analysis included:

1. Correlation of global adult penile lengths, both flaccid and erect, with IQ, alongside ethnic comparisons.

2. Investigation of the partial correlation between penile length and IQ, controlling for GDP Per Capita, Education Expenditure Per Capita, Daily Max Temperature, BMI, and exploring racial differences.

3. Utilization of linear regression models to describe data characteristics, analyzing the relationship between penile length and IQ.

### 3 | RESULTS

Table 1 provides a global overview of adult penile lengths in both flaccid and erect states, along with corresponding IQ distributions across various ethnicities. It presents weighted average values (mean) and standard deviations (SD) in its initial columns, and ethnic differences in penile size and IQ in the subsequent ones. The data reveal significant ethnic disparities in both IQ and penile length. For IQ, the ranking is as follows: Mongoloids, Caucasoids, Mixed Ethnicity, Amerindians, and Negroids, with Mongoloids having the shortest and Negroids the longest penile lengths.

Table 1 is about here.

Table 2 reports on the correlations between adult penile measurements, ethnicity, IQ, and other control variables on a global scale, including significance testing. Findings indicate notable correlations between penile size and factors such as IQ and ethnicity. Both flaccid and erect lengths and circumferences exhibit negative correlations with IQ ($P < 0.001$). Yet, the validity of these correlations requires further exploration, controlling for other variables to understand their partial and covariant relationships.
Table 2 is about here.

Figure 1 employs scatterplots to illustrate the relationship between adult penile length or circumference and IQ in countries globally, identified by two-letter abbreviations. The graphs in the first row focus on penile length in flaccid and erect states, respectively, while the second row charts circumferences in these conditions. The findings suggest a noticeable negative correlation between penile length and IQ, while the correlation between circumference and IQ is less apparent.

Figure 1 is about here.

Table 3 presents high-order partial correlation coefficients between various adult penile measurements and IQ, after adjusting for factors like GDP per capita (ln), BMI, educational expenditure per capita (ln), daily maximum temperature, and ethnicity, accompanied by significance testing. The results demonstrate a pronounced negative correlation between adult flaccid penile length and IQ ($P < 0.001$), even when other variables are controlled.

Table 3 is about here.

Table 4 elucidates the relationship between IQ and penile dimensions, while adjusting for covariates including per capita GDP (log-transformed), Body Mass Index (BMI), per capita educational expenditure (log-transformed), daily maximum temperature, and racial demographics. This table specifically presents regression and standardized coefficients for variables such as flaccid length, girth, and dimensions during full erection of the adult penis, using IQ as the dependent variable. The findings reveal a notable inverse association between the flaccid length of the adult penis and IQ ($P < 0.001$), persisting after accounting for other factors. Additionally, significant racial disparities in IQ are observed ($P < 0.001$). In light of these results, the study undertakes a comparative analysis of standardized coefficients, integrating novel variables into the regression model, such as coefficients for penile length growth and girth expansion, to robustly validate these findings.

Table 4 is about here.

4 | CONCLUSIONS AND DISCUSSION

This study, after controlling for various confounding variables, has conducted partial correlation and regression analyses exploring the interplay between penile dimensions (length and girth) and IQ. The preliminary findings are as follows:

There is a notable racial variation in both adult IQ and penile length. In terms of IQ, the ranking is as follows: Mongoloids > Caucasoids > Mixed Ethnicity > Amerindians > Negroids. This order inversely correlates with penile length, with Mongoloids exhibiting the shortest length but the highest IQ, and Negroids having longer lengths but the lowest IQ.
In a flaccid state, controlling for consistent girth, penile length negatively correlates with IQ ($P < 0.001$). Specifically, a shorter penile length is associated with a higher IQ, showing significant racial disparities (refer to Table 3 Models 1 and 3, and Table 4 Models 1 and 3). This pattern remains consistent even when controlling for flaccid circumference, fully erect length, and circumference. However, in the fully erect state, the correlation between penile length and IQ reverses: a longer erect length corresponds to a higher IQ when girth is constant ($P < 0.001$) (see Table 3 Models 2 and 3, and Table 4 Models 2 and 3). A comparison of standardized coefficients (Table 4 Model 3) indicates that the regression coefficient for erect penile length (0.07) is lower than the absolute value for flaccid length (-0.08, $P < 0.001$), suggesting a stronger correlation between flaccid length and IQ.

The apparent contradiction in the relationship between IQ and penile length in its flaccid and erect states may stem from variations in the penile length growth coefficient. Penises with shorter flaccid lengths tend to exhibit higher growth coefficients compared to those with longer flaccid lengths. However, the disparity in circumference expansion coefficients between penises with smaller versus larger flaccid circumferences is marginal.[16–18]

Therefore, for men with equivalent flaccid girth, full erection length, and circumference, those with shorter flaccid lengths have higher IQs, and this trend is markedly evident across different racial groups. Mongoloids, having the shortest flaccid lengths, display the highest IQs, while Caucasoids, Amerindians, Mixed Ethnicity, and Negroids, with longer lengths, have correspondingly lower IQs. These conclusions are further corroborated by subsequent robustness tests involving length growth and circumference expansion coefficients. It is crucial to note, however, that these findings do not imply a causal relationship between penile length and IQ.

The potential influences on the observed correlation between penile length and IQ are multifaceted, encompassing not only genetic, racial, and evolutionary factors but also encompassing a spectrum of social and environmental elements. These include education, cultural norms, dietary habits, exposure to chemicals or environmental pollutants, and climatic conditions. [19–22] Some studies propose a possible connection between penile length and reproductive fitness, suggesting that shorter penile length might correlate with a lower competitive edge in fertility. In scenarios of sperm competition, a longer penis could facilitate the positioning of a male's semen closer to the cervix, potentially enhancing the propagation of his genetic material. This hypothesis is reflected in the reproductive strategies of different racial groups, with individuals of African descent often exhibiting an r-strategy, characterized by a high frequency of sexual activity and a larger number of offspring. In contrast, Mongoloid populations typically demonstrate a K-strategy, focusing on rearing fewer offspring with greater parental investment. [4][23][24]

Genetic differences between races, along with varying levels of androgens, significantly contribute to the regulation of penile size. Notably, the AR gene on the X chromosome (Xq11-12) and the SRY gene on the Y chromosome are implicated in determining penile dimensions. The development of the male penis is also influenced by the secretion of pituitary growth hormone or gonadotropins, while androgens, such as
testosterone, are critical during puberty for penis enlargement and elongation.\[25\] A deficiency in growth hormone (GH) and insulin-like growth factor 1 (IGF-1) can result in smaller penile size.\[26\]

While this study indicates a negative correlation between penile length and IQ, it is not without its limitations. Firstly, the analysis, although based on data from 139 countries, lacks individual-level microdata within each nation, potentially leading to ecological fallacy. Secondly, the hypothesized inverse relationship between penile length and IQ is yet to be underpinned by extensive theoretical support, warranting further exploration. Finally, the standardized measurements of penile size used in the study may be influenced by various factors such as ambient temperature, arousal state, presence of others, concerns about privacy, or time elapsed since the last ejaculation. These factors could introduce biases in the reliability and validity of the measurements. Additionally, the regression analysis does not account for a range of confounding factors and does not adequately address sample selection bias or possible measurement errors, thus precluding any causal interpretations.

Declarations

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest in connection with this article.

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References


Tables
Table 1 to 4 are available in the Supplementary Files section.

**Figures**

![Figure 1](Image)

**Figure 1**

Scatterplots of Adult Penile Length, Circumference, and IQ (Flaccid vs. Erect)

Note: The fitted lines in the graphs represent simple linear regression fits of IQ against the respective x-axis variables and do not control for other variables.

**Supplementary Files**

This is a list of supplementary files associated with this preprint. Click to download.

- Table14.docx