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Descriptive and Comparative Analysis of Labor IQ in Indonesia by Gender, Age, Education, and Provincial Domicile

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ABSTRACT

The study aimed to analyze variations in intelligence (IQ) across demographic factors, including gender, age, education, and geographical location, to explore their influence on IQ scores. Utilizing a cross-sectional quantitative research design and convenience sampling, data were analyzed using descriptive and cross-tabulation methods. The results showed no significant difference in IQ scores between males and females, challenging the initial hypothesis regarding gender differences. Additionally, no significant differences were found between age groups, contradicting the expectation that age would influence IQ, specifically through fluid and crystallized intelligence. In contrast, educational level showed a significant positive correlation with IQ scores, confirming the role of education in shaping intelligence. Geographical origin, particularly environmental factors such as access to education and nutrition, did not significantly affect IQ scores, likely due to the homogeneous socioeconomic conditions among the predominantly Java-based sample. These findings highlight the complexity of intelligence determinants and question prior assumptions about demographic influences on IQ.

Keywords: Age; Education Level; Gender; IQ Comparation; Provincial Residency

INTRODUCTION

The company's human resources (employees) are regarded as valuable assets or capital investments that must be maintained and developed to maximize their contribution to the company's success (Prasetya et al., 2018). The company requires qualified and competent human resources in their respective fields because employees are a key factor in determining a company's success or failure (Prasetya et al., 2018). The recruitment process is essential for finding and hiring prospective employees who have the capabilities to become valuable members of the company team (Potale et al., 2016). To secure a qualified workforce, companies must implement an effective recruitment process (Potale et al., 2016). The benefit of an effective recruitment process lies in its ability to place the right individual in the appropriate position, guiding managers in the placement of human resources within their company (Potale et al., 2016). To achieve optimal employee performance, organizational management must prioritize factors that can boost the performance of employees in the transportation department. One crucial factor influencing performance is employee competence. As stated by Haryadi and Wahyuni (2022), competence refers to a combination of intelligent and responsible actions that individuals need to be recognized as capable by society in performing tasks related to their profession. Employees whose skills align with their job responsibilities are more likely to perform their tasks efficiently. Consequently, when an employee's competencies meet the job requirements, they tend to enjoy their work more and stay committed to their roles (Haryadi & Wahyuni, 2022).

According to Gan et al. (2024), there is no significant relationship between employability skills and unemployment, suggesting that employability skills among young graduates do not have a significant impact on their unemployment issues. Assessments in the recruitment process enable companies to effectively compare prospective employees, evaluate their quality, and save time by focusing on individuals who are likely to fit the required position. The use of assessments is crucial because screening prospective employees solely through CVs and interviews is insufficient (Hafidz, 2021). From a psychological perspective, an employee's abilities can be categorized into two parts: potential abilities, which include intellectual intelligence (IQ), and abilities related to knowledge and practical skills (Akbar, 2018). When humans utilize all their abilities to their fullest potential, they can achieve exceptional business performance and significantly enhance family well-being (Yuliastuti et al., 2024).

IQ (Intelligence Quotient) typically refers to a score from tests that measure a person’s cognitive abilities in comparison to the general population. IQ tests aim to evaluate an individual’s problem-solving skills and understanding of concepts (Hafidz, 2021). According to Nur'aeni (2020), various psychological tests are commonly used in employee selection processes to assess different dimensions of cognitive ability and intelligence. Some of the well-known tests include the Stanford-Binet (SB) Intelligence Scale, the Wechsler Intelligence Scale for Children - Revised (WISC-R), and the Wechsler Adult Intelligence Scale (WAIS), which assess cognitive abilities across various age groups, from children to adults. Additionally, the Standard Progressive Matrices (SPM) test is frequently used to assess cognitive functions, especially in relation to nonverbal problem-solving skills.

Selecting employees with high cognitive abilities and intelligence has become a top priority in today's competitive business environment. One effective way to measure these cognitive abilities is through IQ tests. According to Nst (2014), the intellectual intelligence factor (IQ) positively influences employee performance by 59.9%. Therefore, companies must carefully consider the selection and placement of employees based on these factors.

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However, to ensure the effectiveness of IQ-based recruitment strategies, companies need to understand the local context, including the average IQ score of the population in a specific country. In the Indonesian context, various factors such as culture, education, and social background may affect the overall IQ scores. Therefore, it is necessary to conduct research to determine the average IQ score of the Indonesian population, providing a more accurate basis for setting reasonable IQ targets in the employee recruitment process.

IQ is one of the most inheritable psychological characteristics, and modern IQ test scores are strong indicators of various life outcomes, such as success in education and career, health, longevity, and even happiness (Pietschnig & Voracek, 2015). The correlation with "g" illustrates how general intelligence is connected to different aspects of human life. In the realm of mental chronometry, basic cognitive tasks (ECTs) have a high correlation with "g" (Psynso, n.d.). Despite their simplicity, these tasks show a robust relationship with more comprehensive intelligence tests. Reaction time, measured in tiny fractions of a second, has a strong correlation with "g," whereas physical movement time shows a weaker correlation (Psynso, n.d.). WPT is renowned for its swift and effective method of assessing intelligence, emphasizing simplicity and time limitations as central components. The results of the test yield valuable insights that decision-makers can utilize for hiring employees or choosing college students. It delivers a quick and dependable overview of an individual's cognitive skills in different contexts, making it a favored instrument in human resource selection.

This research involves an in-depth exploration of differences in intelligence (IQ) levels across various population categories, including age, gender, education level, and geographical location (province of residence). The research aims to compare intelligence levels among these different categories. First, the research will examine changes in intelligence levels with a focus on age. Next, it will compare intelligence levels between men and women. The study will also investigate the relationship between intelligence levels and the level of education attained, establishing a foundation for understanding how education can affect an individual's intelligence level. Finally, the research will closely analyze differences in IQ distribution across Indonesia's provinces, comparing the IQs of residents from different provinces.

LITERATURE REVIEW

Definition of IQ and Intelligence

The definition of intelligence is a topic that remains difficult to reach an agreement on (Gill & Phythian, 2013), despite its frequent use in everyday language. This challenge largely arises from the confusion between the common use of the term "intelligence" and its scientific interpretation. According to Palanca-Castan et al. (2021), this confusion also occurs because different disciplines define intelligence based on their unique perspectives: biologists use biological frameworks (Haier, 2023), while computer scientists approach it from a computational angle, among others (Alpi et al., 2007). Intelligence has been described in various ways, including the ability to reason, abstract, comprehend, self-reflect, learn, manage emotions, plan, think critically, and solve problems. It can also be seen as the capacity to interpret and store information as knowledge, which can then be used to adapt behavior in specific environments or contexts. Ultimately, the definition of intelligence covers multiple facets and is often shaped by the particular field of study examining it.

History of Intelligence

The concept of intelligence has roots in ancient times, with influential philosophers like Plato and Aristotle contributing to its development. Plato, in his practice of dialectics, described intelligence as a form of reasoning used in mathematical proofs and logical exercises (Plato in Palanca-Castan et al., 2021). He considered intuitive reasoning to be the highest form of human intelligence. Around 2300 years ago, Aristotle offered one of the earliest mentions of intelligence, though he referred to it as "reason" (Aristotle in Jake, 2021). Aristotle viewed reason as the human ability to control desires and suppress instinctual impulses, setting us apart from animals.

In the 17th century, reason was still seen as an "all or none" ability, but about 200 years later, Charles Darwin suggested that "reason," or "mental power," could exist in degrees (Stack, 2019). Thinkers like Locke further elaborated on this concept by defining a person as "a thinking intelligent being, having reason and reflection, and can consider itself as itself, the same thinking thing, in different times and places" (Locke in Wiggins, 1976). In 1904, Charles Spearman introduced the Two-Factor Theory of Intelligence, proposing the existence of a general intelligence factor ("g") and specific abilities ("s") (Psynso, n.d.). Spearman (1961) argued that while individuals possess different levels of general intelligence, their specific abilities ("s") vary depending on the tasks they perform. Thus, the concept of intelligence has evolved from ancient views of dialectics and intuitive reasoning to modern understandings of general and specific abilities.

General Intelligence

Definition of General Intelligence

The "g factor," or general intelligence, is a statistical measure in psychometrics used to assess the mental abilities that underlie performance on various cognitive tests (Psynso, n.d.). Despite being over a century old since Spearman (1961) first introduced the concept of general intelligence, its definition continues to be a topic of debate. This idea originated from Charles Spearman's Two-Factor Theory of Intelligence, where each mental test is represented by a hypothetical oval, with specific factors ("s") explaining one part of the variance and the "g factor" explaining another. The "g factor" plays a central role in measuring mental abilities across different cognitive domains.

In a collection of IQ tests, those that most effectively measure "g" tend to show the highest correlation with other tests. Typically, tests that involve abstract reasoning are the most reliable indicators of the "g factor," making it an important measure of general intelligence across various cognitive aspects.

Correlation of General Intelligence in Various Fields

IQ is one of the most heritable psychological traits, and modern IQ test scores are reliable indicators of various life outcomes, such as educational and career success, health, longevity, and even happiness (Pietschnig & Voracek, 2015) The correlation of "g" reflects the extent to which general intelligence influences different aspects of human life. In mental chronometry, simple cognitive tasks (ECTs) are strongly correlated with "g" (Psynso, n.d.). Although these tasks appear straightforward, they still show strong correlations with more complex intelligence tests. Reaction time, typically measured in fractions of a second, is closely related to "g," while physical movement time shows a weaker correlation (Psynso, n.d.).

From a biological and genetic standpoint, "g" is associated with several factors, including prefrontal lobe size (Tranel et al., 2008), overall brain mass (Lange et al., 2010), and glucose metabolism rate in the brain (Debatin, 2019). Some studies have found a connection between "g" and the relationship between IQ and cortical thickness (Bajaj et al., 2018; Burgaleta et al., 2014; Menary et al., 2013; Schmitt et al., 2019; Schnack et al., 2015). Additionally, the heritability of "g" is estimated to be around 0.85 (Panizzon et al., 2014). However, the notion that "g" is limited by short-term memory capacity is being reconsidered, as evidence suggests a stronger link to working memory capacity (Psynso, n.d.).

Socially, "g" has a positive correlation with traditional success measures like income (Jensen, 1998), academic performance (Izzaty et al., 2017), job success (Zimmer & Kirkegaard, 2023), and career prestige (Psynso, n.d.). On the other hand, "g" shows a negative correlation with negative life outcomes such as dropping out of school (Rosada & Lestari, 2022), unplanned pregnancies (Enthoven et al., 2022), and poverty (Hair et al., 2015). Research also indicates that specific cognitive abilities measured by IQ tests do not predict job performance better than "g" alone (Visser et al., 2006). The Flynn effect, which refers to the rise in IQ scores over time, is also linked to "g" (Psynso, n.d.). However, recent data suggests that the trend of increasing intelligence scores has plateaued in some developed countries, suggesting "g" has an independent role in the Flynn effect (Psynso, n.d.).

Reliability

The reliability of “g” is a crucial aspect of measuring human intelligence. As noted by Jensen (1998), the reliability of “g” is higher than that of height and weight measurements taken in a doctor's office. Although g has been studied for more than a century, some of its properties remain unresolved. Nevertheless, its predictive power surpasses that of competing psychometric constructs.

Research shows that “g” is the single best predictor of job performance, with an average validity coefficient of about 0.55 in several meta-analyses based on supervisor ratings and job samples. The average meta-analytic validity coefficient for performance in job training is 0.63. This indicates that “g” has excellent predictive ability for both job performance and training outcomes, providing a strong foundation for its validity and reliability as an indicator of intelligence. Despite some unresolved aspects, the reliability of “g” remains a crucial cornerstone in measuring human intelligence and performance.

Wonderlic Personnel Test (WPT)

Definition of WPT

The Wonderlic Personnel Test (WPT) is an intelligence assessment tool designed to measure an individual's cognitive abilities and problem-solving skills within a specified time limit (Matthews & Lassiter, 2007). The WPT is widely used in employment selection scenarios and college admission processes. The test consists of a series of questions to be answered within a certain time frame, covering various cognitive skills, including logic, mathematics, and verbal comprehension. The mathematical aspects of the test include averages, algebra problems, decimals, percentages, ratios, and levels. Meanwhile, the logic component covers spatial thinking, deductive reasoning, 3D forms, and pattern recognition, while the verbal component includes proverbs, identifying exceptions, sentence structuring, analogies, vocabulary, and general knowledge. General knowledge questions involve identifying errors/duplications, date recognition, decimal number structuring, as well as interpreting graphs and data. The test is designed to provide a quick overview of an individual's intellectual potential and their ability to learn and adapt quickly in a work or educational environment.

The WPT is known for its quick and efficient approach to measuring intelligence, emphasizing simplicity and time constraints as key elements. The test results provide information that decision-makers can use when hiring employees or selecting college students. Although the WPT only provides a brief snapshot of cognitive capacity, it remains a valuable tool for evaluating an individual's potential in various contexts.

Types of WPT

The WPT comes in two versions: the WPT-Q (Wonderlic Personnel Test Quickest) and the WPT-R (Wonderlic Personnel Test Regular). The WPT-Q is an 8-minute test with 30 questions, each worth one point. Participants have just 16 seconds per question, meaning there is little benefit to attempting to search for answers online at home. This version is often used to determine who will be invited for an interview, making it essential for candidates to perform well. On the other hand, the WPT-R, the full version of the test, is a 12-minute exam with 50 questions, administered on-site under supervision. In some cases, candidates may have already taken the WPT-Q to secure an interview. During the interview process, WPT-R results are compared with those of other participants and can significantly influence hiring decisions. Both the WPT-Q and WPT-R are crucial in evaluating candidates during recruitment.

Validity and Reliability of WPT

The WPT is known for its high validity and reliability, making it a reliable tool for employee selection and assessment. According to the KeyClouding team, as cited in Evalart (2022), the Wonderlic test shows a validity score of r = 0.90 and a reliability score of 0.95. These values indicate that the WPT has excellent validity, meaning it effectively measures what it is designed to assess, and offers an accurate representation of a person's cognitive abilities.

In terms of reliability, the WPT scores are between 0.91 and 0.93 when compared to the IQ WAIS, making it one of the most reliable tests for personnel selection. The test has been endorsed by the American Psychological Association, and additional research, such as that by Drodill (1982), supports its reliability at 0.94. These strong reliability scores suggest that the WPT consistently delivers dependable results, providing a sound basis for its use in employee selection and assessment.

Hypotheses Development

In this study, gender, age, educational level, and respondent origin were selected as variables of interest because each has a significant impact on IQ scores and contributes to a comprehensive understanding of cognitive differences across various groups. Gender is included due to ongoing debates about potential differences in IQ between men and women (Deary, 2020). Age is considered because cognitive abilities can change with age, with research by Horn and Cattell (1967) indicating that while fluid intelligence may decline with age, crystallized intelligence often remains stable. Educational level is examined as it is known to positively correlate with IQ scores (Ritchie & Tucker-Drob, 2018). Lastly, respondent origin is studied due to potential environmental influences on IQ, Ojo (2016) demonstrates that factors such as access to education and quality of nutrition can affect cognitive performance. This study aims to explore how these variables influence IQ scores, providing insights into the broader factors that contribute to cognitive differences.

According to the mentioned theoretical review, the hypotheses of this study were formulated as follows.

H1: There is a significant difference in IQ scores between males and females.
H2: Age has a significant influence on IQ scores, with younger individuals having higher fluid intelligence while older individuals retain stable crystallized intelligence.
H3: Higher educational levels are positively correlated with higher IQ scores.
H4: Respondent origin, particularly environmental factors like access to education and nutrition, significantly affects IQ scores.

RESEARCH METHOD

Research Design

The research utilized both descriptive and comparative quantitative methods. Descriptive research aims to summarize general trends in the data, understand the variation in scores, and provide insight into how individual scores compare to others (Creswell, 2021). Meanwhile, the comparative research involved testing the entire population by comparing results based on a representative sample (Sugiyono, 2019). The study employed a cross-sectional survey method, gathering data from different samples within the population at a single point in time (Creswell, 2021).

Primary data were collected through an online distribution of test instruments. This data included respondents' demographics such as age, education level, date of birth, and province of residence. Participants also took a 14-minute general cognitive ability test, which resulted in an IQ score.

Population and Sample

The population in this study refers to a group of individuals sharing similar characteristics (Creswell, 2021). Researchers aimed to select a sample that could accurately represent the entire population (Creswell, 2021). The sampling method used was non-probability sampling, specifically convenience sampling, where participants were chosen based on their availability and willingness to take part (Creswell, 2021). The study included male and female participants within the productive age range of 18 to 56 years, with most falling between 20 and 40 years old. All respondents who met the criteria completed an intelligence scale instrument, which was distributed online via the matala.id platform. In total, the study involved 2,989 participants.

Data Collection Method

The research employed a scale to measure participants' intelligence, which was developed by the research team based on Wonderlic's theory (Matthews & Lassiter, 2007) and dimensions. These dimensions included general intelligence, verbal ability, logical reasoning, numerical (arithmetic) skills, and abstraction. Prior to data collection, the instrument was tested for reliability and validity. The reliability test, using Cronbach’s Alpha, yielded a coefficient of 0.935, indicating high reliability. A coefficient of 0.90 or above is deemed satisfactory (Nawi et al., 2020). Additionally, a validity test using Pearson's product-moment correlation was conducted, showing that 30 out of 36 items were valid, with item discrimination indices ranging from 0.385 to 0.715.

Data Analysis Method

Data processing was conducted using descriptive analysis and cross-tabulation analysis with the help of JASP 0.18.1.0 to obtain a clear picture of the respondents' data. Descriptive analysis aims to transform a set of raw data into a more understandable form, providing concise information. In this research, descriptive analysis was performed on respondents' data based on profiles, demographics, and IQ scores. The descriptive method was used to describe or illustrate the collected data without intending to draw general conclusions or generalizations. Meanwhile, cross-tabulation analysis in this study was conducted on respondents' demographic variables—namely, gender, province, age, and educational level—in relation to IQ.

RESULTS

Table 1. Demographic Background of the Respondents

Age	Gender		Total
	Female	Male	

	Frequency	Percentage	Frequency	Percentage	
#N/A	37	33.04%	75	66.96%	112
18	0	0.00%	2	100.00%	2
19	2	25.00%	6	75.00%	8
20	6	33.33%	12	66.67%	18
21	14	36.84%	24	63.16%	38
22	58	52.21%	54	47.79%	113
23	132	54.22%	114	45.78%	249
24	141	40.28%	212	59.72%	355
25	149	43.57%	193	56.43%	342
26	101	35.79%	183	64.21%	285
27	76	34.08%	147	65.92%	223
28	79	36.74%	136	63.26%	215
29	59	34.66%	115	65.34%	176
30	42	31.65%	95	68.35%	139
31	31	28.70%	77	71.30%	108
32	20	19.80%	81	80.20%	101
33	21	29.58%	50	70.42%	71
34	21	26.25%	59	73.75%	80
35	17	31.48%	37	68.52%	54
36	8	22.86%	27	77.14%	35
37	15	34.88%	28	65.12%	43
38	5	19.23%	21	80.77%	26
39	7	21.88%	25	78.13%	32
40	6	20.00%	24	80.00%	30
41	6	26.09%	17	73.91%	23
42	6	31.58%	13	68.42%	19
43	2	13.33%	13	86.67%	15
44	1	7.14%	13	92.86%	14
45	1	10.00%	9	90.00%	10
46	3	33.33%	6	66.67%	9
47	0	0.00%	4	100.00%	4
48	3	23.08%	10	76.92%	13
49	0	0.00%	5	100.00%	5
50	1	25.00%	3	75.00%	4
51	0	0.00%	3	100.00%	3
52	0	0.00%	1	100.00%	1
53	2	40.00%	3	60.00%	5
54	0	0.00%	7	100.00%	7
56	2	100.00%	0	0.00%	2
Total	1074		1904		2989

From the analysis of data in Table 1, it can be concluded that the most significant age group in terms of respondent participation is the 22-year-old group, which falls within the 20-24 age range. In this group, there is a balanced distribution of gender, with 1.81% female respondents and 1.97% male respondents. On the other hand, the age group that shows the least participation is the 56-year-old group, which falls within the 55-59 age range. Female participation in this group is only 0.07%, with no male respondents participating.

Table 2. Educational Level/Stratum Data of Respondents

Education Level	Frequency	Percentage (%)
Non-Degree	165	5.52

Certified	5	0.167
Elementary School (SD)	4	0.134
Senior High School (SMA)	46	1.539
Vocational High School (SMK)	76	2.543
Diploma 1 (D1)	4	0.134
Diploma 2 (D2)	5	0.167
Diploma 3 (D3)	192	0.424
Diploma 4 (D4)	13	0.435
Bachelor’s Degree (S1)	1449	48.478
Master’s Degree (S2)	46	1.539
#N/A	984	32.921
Total	2989	100

Based on education level data in Table 2, 165 respondents (5.52% of the total) were without a formal degree (Non-Degree), while certification was only followed by 5 respondents (0.17%). Participation from Elementary School (SD) and High School (SMA) was 4 (0.13%) and 46 respondents (1.54%) respectively. Vocational High School (SMK) was followed by 76 respondents (2.54%). Levels D1, D2, and D4 have a share of less than 0.5%, while D3 is significant at 6.42%. The majority of respondents (48.48%) have a Bachelor's degree (S1), Master's degree (S2) only 1.54%. Data was not available (#N/A) for 984 respondents (32.92%).

Table 3. Provincial Residence Data of Respondents

Province	Frequency	Percentage (%)
#N/A	118	3.95
Aceh	6	0.20
Bali	68	2.28
Banten	325	10.87
Bengkulu	0	0.00
DI Yogyakarta	58	1.94
DKI Jakarta	1017	34.02
Jambi	5	0.17
West Java	845	28.27
Central Java	148	4.95
East Java	153	5.12
West Kalimantan	5	0.17
South Kalimantan	3	0.10
Central Kalimantan	0	0.00
East Kalimantan	8	0.27
North Kalimantan	0	0.00
Bangka Belitung Islands	4	0.13
Riau Islands	9	0.30
Lampung	37	1.24
West Nusa Tenggara	5	0.17
East Nusa Tenggara	3	0.10
Papua	0	0.00
Riau	17	0.57
South Sulawesi	44	1.47
Central Sulawesi	5	0.17
Southeast Sulawesi	0	0.00
North Sulawesi	2	0.07
West Sumatera	18	0.60
South Sumatera	38	1.27

North Sumatera	48	1.61
Missing	0	0.00
Total	2989	100

Table 3 shows the variation in the respondents' provincial origins within the sample distribution of the study. Respondents from unidentified regions (#N/A) total 118, accounting for 3.95% of the total. Banten is the most dominant province in the sample, with 325 respondents (10.87%). DKI Jakarta has the highest participation, with 1,017 respondents (34.02%). West Java and East Java also have a significant contribution, with 845 respondents (28.27%) and 153 respondents (5.12%), respectively.

Table 4. Descriptive Data of IQ Scores

	IQ Score
Valid	2989
Missing	0
Mode	90.000
Median	93.000
Mean	93.186
Std. Deviation	15.692
Minimum	0.000
Maximum	138.000
25th percentile	83.000
50th percentile	93.000
75th percentile	102.000

Table 4 discusses the respondents' IQ score data. The average IQ score of the respondents is 93.186, with a median of 93 and a mode of 90. The standard deviation is calculated at 15.692. IQ scores range from 0 to 138. The minimum recorded score is 0, while the maximum reaches 138. The distribution of IQ scores is reflected in the quartiles, with the first quartile (25%) at 83.000, the second quartile (50%) at 93.000, and the third quartile (75%) at 102.000.

Table 5. Distribution of IQ Norm Scores of Respondents

IQ Norm	IQ Score Distance	Frequency	Percentage (%)
Very Low (Borderline)	59-78	426	14.252
Below Average (Normal Category)	80-90	905	30.278
Average (General)	93-108	1248	41.753
High (Normal Category)	111-120	314	10.505
Superior	121-130	86	2.877
Very Superior (Exceptional)	132-148	10	0.335
Total		2989	100

Table 5 shows the distribution of the respondents' IQ norm results. A total of 426 respondents (14.252%) fall into the "Very Low (Borderline)" category, while 905 respondents (30.278%) are in the "Below Average (Normal Category)" category. The "Average (General)" category includes 1,248 respondents (41.753%), and the "High (Normal Category)" comprises 314 respondents (10.505%). Additionally, 86 respondents (2.877%) are classified as "Superior," and 10 respondents (0.335%) fall into the "Very Superior (Exceptional)" category.

Table 6. Distribution of IQ Norm Scores by Gender

Norm

Gender	Very Low	Below Average	Average	High	Superior	Very Superior	Total
Female	160	324	457	113	31	0	1085
Male	266	581	791	201	55	10	1904
Total	426	905	1248	314	86	10	2989

Note: Very Low (Borderline), Below Average (Normal Category), Average (General), High (Normal Category), Superior, Very Superior (Exceptional)

Table 6 shows the cross-tabulation between IQ and gender. In the "Very Superior (Exceptional)" category, there is no contribution from female respondents, while male respondents account for 100% of the total, with 10 respondents. Conversely, in the "Very Low (Borderline)" category, female respondents account for 37.56% of the total, with 160 respondents, while male respondents make up 62.44%, with 266 respondents.

The majority of both female and male respondents fall into the "Average (General)" category. In the "Very Low (Borderline)" category, female respondents account for 37.56% of the total, with 160 respondents, while male respondents account for 62.44%, with 266 respondents. In the "Very Superior (Exceptional)" category, there is no contribution from female respondents, while male respondents account for 100% of the total, with 10 respondents.

Table 7. Distribution of IQ Norm Scores by Age Group

Norm							
Age	Very Low	Below Average	Average	High	Superior	Very Superior	Total
#N/A	37	31	38	6	0	0	112
18-23	50	124	202	41	8	3	428
24-29	188	481	694	181	47	5	1596
30-35	91	167	219	57	18	1	553
36-41	35	65	62	17	9	1	189
42-47	18	22	21	7	3	0	71
48-53	5	11	10	4	1	0	31
54-57	2	4	2	1	0	0	9
Total	426	905	1248	314	86	10	2989

Note: Very Low (Borderline), Below Average (Normal Category), Average (General), High (Normal Category), Superior, Very Superior (Exceptional)

The analysis of age groups in Table 7 reveals intriguing trends in participation and IQ score distribution. For the 18-23 age group, 47.20% of respondents are classified as "Average (General)," with a total of 50 individuals in the "Very Low (Borderline)" category, 124 in "Below Average (Normal)," 202 in "Average (General)," 41 in "High (Normal)," 8 in "Superior," and 3 in "Very Superior (Exceptional)." This group is predominantly represented by individuals with average IQ scores, indicating a potential upward trend in intelligence.

In the 24-29 age group, 188 respondents fall into "Very Low (Borderline)," 481 into "Below Average (Normal)," 694 into "Average (General)," 181 into "High (Normal)," 47 into "Superior," and 5 into "Very Superior." Despite increases in lower IQ categories, this age group still shows a dominant presence of average IQ scores.

The 30-35 age group shows 91 individuals in "Very Low (Borderline)," 167 in "Below Average (Normal)," 219 in "Average (General)," 57 in "High (Normal)," 18 in "Superior," and 1 in "Very Superior." While this group shows growth in participation, the trend remains similar with average IQs dominating.

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For the 36-41 age group, there are 35 respondents in "Very Low (Borderline)," 65 in "Below Average (Normal)," 62 in "Average (General)," 17 in "High (Normal)," 9 in "Superior," and 1 in "Very Superior." This group exhibits a shift, with most respondents now classified in the "Below Average" category.

In the older age categories, the 42-47 group has 18 individuals in "Very Low," 22 in "Below Average," 21 in "Average," 7 in "High," and 3 in "Superior." Similarly, in the 48-53 age group, there are 5 respondents in "Very Low," 11 in "Below Average," 10 in "Average," 4 in "High," and 1 in "Superior." Lastly, the 54-57 age group consists of 2 respondents in "Very Low," 4 in "Below Average," 2 in "Average," and 1 in "High," with no respondents in the "Superior" or "Very Superior" categories.

Overall, the data indicates a decline in IQ scores with age, with younger age groups having a higher representation of "Average" and above-average IQ scores, while older age groups increasingly fall into the "Below Average" and "Very Low" categories.

Table 8. Distribution of IQ Norm Scores by Education Level

		Norm						
Degree		Very Low	Below Average	Average	High	Superior	Very Superior	Total
Non-Degree	n	31	46	69	13	5	1	165
Certified	n	1	2	2	0	0	0	5
SD	n	1	1	2	0	0	0	4
SMA	n	5	21	16	4	0	0	46
SMK	n	12	27	34	3	0	0	76
D1	n	2	0	2	0	0	0	4
D2	n	1	3	1	0	0	0	5
D3	n	32	67	80	11	1	1	192
D4	n	1	5	6	1	0	0	13
S1	n	164	443	616	179	42	5	1449
S2	n	4	12	22	7	1	0	46
#N/A	n	172	278	398	96	37	3	984
Total	n	426	905	1248	314	86	10	2989

Note: Very Low (Borderline), Below Average (Normal Category), Average (General), High (Normal Category), Superior, Very Superior (Exceptional)

The analysis of IQ scores across various education levels in Table 8 shows that respondents in the "AVERAGE" category consistently make up the largest proportion at each educational level.

In the Non-Degree category, the IQ score distribution is as follows: 31 individuals are in the "Very Low (Borderline)" category, 46 in "Below Average (Normal)," 69 in "Average (Common)," 13 in "High (Normal)," 5 in "Superior," and 1 in "Very Superior (Exceptional)." The majority in this group fall into the "Average" category.

For the Certification category, 1 respondent is in "Very Low," 2 in "Below Average," and 2 in "Average," with no individuals in the higher IQ categories, indicating the dominance of "Below Average" and "Average" IQ scores.

In the Elementary School (SD) category, 1 respondent is in "Very Low," 1 in "Below Average," and 2 in "Average." This group is predominantly represented by individuals with average IQ scores.

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For the High School (SMA) category, 5 respondents fall into "Very Low," 21 into "Below Average," 16 into "Average," and 4 into "High," with no representation in the "Superior" categories. The group is mainly comprised of individuals with below-average IQ scores.

In the Vocational High School (SMK) category, 12 respondents are in "Very Low," 27 in "Below Average," 34 in "Average," and 3 in "High." The majority of this group falls into the "Average" category.

For the Diploma 1 (D1) category, 2 individuals are in "Very Low," and 2 are in "Average." No individuals are represented in the higher IQ categories, with the group being dominated by average IQ scores.

In the Diploma 2 (D2) category, 1 respondent is in "Very Low," 3 in "Below Average," and 1 in "Average," with no representation in higher IQ categories.

For the Diploma 3 (D3) category, 32 respondents fall into "Very Low," 67 into "Below Average," 80 into "Average," 11 into "High," and 1 each in "Superior" and "Very Superior." This group is predominantly dominated by "Average" IQ scores.

In the Diploma 4 (D4) category, 1 respondent is in "Very Low," 5 in "Below Average," 6 in "Average," and 1 in "High." This group is primarily composed of individuals with average IQs.

For the Bachelor's Degree (S1) category, 164 respondents fall into "Very Low," 443 into "Below Average," 616 into "Average," 179 into "High," 42 into "Superior," and 5 into "Very Superior." The S1 group is mostly dominated by "Average" IQ scores.

In the Master’s Degree (S2) category, 4 respondents are in "Very Low," 12 in "Below Average," 22 in "Average," 7 in "High," and 1 in "Superior." The group is predominantly in the "Average" IQ range.

For the #N/A category (education not available), 172 respondents fall into "Very Low," 278 into "Below Average," 398 into "Average," 96 into "High," 37 into "Superior," and 3 into "Very Superior." This group has a significant presence in the "Below Average" and "Average" categories.

In summary, across all education levels, the "AVERAGE" category consistently has the highest number of respondents, followed by the "Below Average" category for most groups. Higher education levels, such as Master’s (S2) and Certification, show slightly higher representation in the "High" category, while the #N/A group has a notable number in the "Very Low" category.

Table 9. Distribution of IQ Norm Scores by Province

Province	Norm						
	Very Low	Below Average	Average	High	Superior	Very Superior	Total
#N/A	37	33	40	7	1	0	118
Aceh	0	3	3	0	0	0	6
Bali	15	22	21	7	3	0	68
Banten	34	118	120	42	9	2	325
Bengkulu	0	0	0	0	0	0	0
DI Yogyakarta	3	13	24	10	8	0	58
DKI Jakarta	149	292	457	88	27	4	1017
Jambi	1	1	1	2	0	0	5

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West Java	128	260	342	95	18	2	845
Central Java	10	44	63	22	8	1	148
East Java	18	48	64	18	4	1	153
West Kalimantan	2	1	0	2	0	0	5
South Kalimantan	1	1	1	0	0	0	3
Central Kalimantan	0	0	0	0	0	0	0
East Kalimantan	2	3	2	1	0	0	8
North Kalimantan	0	0	0	0	0	0	0
Bangka Belitung Islands	0	1	3	0	0	0	4
Riau Islands	1	1	3	3	1	0	9
Lampung	3	11	21	2	0	0	37
West Nusa Tenggara	0	4	1	0	0	0	5
East Nusa Tenggara	1	1	1	0	0	0	3
Papua	0	0	0	0	0	0	0
Riau	2	3	12	0	0	0	17
South Sulawesi	6	13	21	3	1	0	44
Central Sulawesi	0	5	0	0	0	0	5
Southeast Sulawesi	0	0	0	0	0	0	0
North Sulawesi	0	2	0	0	0	0	2
West Sumatera	1	2	11	3	1	0	18
South Sumatera	5	8	18	4	3	0	38
North Sumatera	7	15	19	5	2	0	48
Total	426	905	1248	314	86	10	2989

Note: Very Low (Borderline), Below Average (Normal Category), Average (General), High (Normal Category), Superior, Very Superior (Exceptional)

The cross-tabulation analysis between provinces and respondents' IQ scores in Table 9 reveals variations in the distribution of IQ scores across different regions. DKI Jakarta has the highest number of respondents in the "Average" category (45%), followed by "High" (8.7%), "Below Average" (28.8%), and "Superior" (2.7%). West Java has a majority of respondents in the "Average" category (40.5%) with a more even distribution across other categories. Bali shows a majority in "Average" (30.9%) and "High" (10.3%), while Banten demonstrates a balanced distribution across various categories. Other provinces like Central Java, East Java, West Sumatra, and South Sumatra also exhibit variation in the distribution of respondents' IQ scores.

Comparative Test

This section aims to discuss the comparative test of IQ by gender. Before proceeding to the hypothesis testing stage of this study, assumption tests were conducted, including tests of normality and homogeneity. The normality test refers to the evaluation of the distribution of data in a data set or variable to determine whether it follows a normal pattern or not. In this study, the Kolmogorov-Smirnov test was used to assess the normality of the data. The use of the Kolmogorov-Smirnov normality test is common, and data is considered normally distributed if the significance value exceeds 0.05.

Table 10. Normality Test of IQ Scores

Test	Statistics	p
Kolmogorov-Smirnov	0.059	<0.001
Shapiro-Wilk	0.0931	<0.001

The results of the normality analysis using the Kolmogorov-Smirnov test in Table 10 indicate that the significance value for IQ scores is 0.000. With a significance value less than 0.05 ($p<0.05$), it can be concluded that the data distribution for the variable of emotion regulation strategies in the context of this study does not follow a normal distribution pattern.

Table 11. Levene's Homogeneity Test for IQ Scores

	F	df1	df2	p
IQ Score	0.689	1	2987	0.407

The homogeneity of variances test, analyzed using Levene's method and presented in Table 11, resulted in a p-value of 0.407. Since this p-value is higher than the significance level of 0.05, there is not enough statistical evidence to reject the null hypothesis. This suggests that the assumption of equal variances in the IQ score data is satisfied, meaning there is no significant difference in the variability of IQ scores among the observed groups.

Table 12. Data for Comparing IQ Differences by Gender

	W	df	p
IQ Score	1.014x10+6	-	0.402

The analysis of the independent samples t-test on IQ scores in Table 12 showed that the resulting W statistic was 1.014×10^6, with a p-value of 0.402. Since the p-value exceeds the significance level ($p>0.05$), it can be concluded that there is no significant difference in IQ scores between male and female genders.

Table 13. Data for Comparing IQ Differences by Age Group

Cases	Sum of Squares	df	Mean Square	F	z
Age Group	3360.198	6	560.033	2.351	0.029
Residuals	683615.05	2870	238.193		

Table 14. Data for Comparing IQ Differences by Age Group

Factor	Statistic	df	p
Age Group	23.596	6	<0.001

The ANOVA analysis of IQ scores across various age groups, as shown in Table 13 and Table 14, produced an F statistic of 2.351 and a p-value of 0.029. Because this p-value is below the significance level of 0.05, it indicates a significant difference in IQ scores among the different age groups.

Table 15. Post Hoc Analysis of IQ Differences by Age Group

Age Group		Mean Difference	SE	t	Cohen's d	ptukey
(18-23)	(24-29)	-0.445	0.84	-0.529	-0.029	0.998
	(30-35)	1.551	0.994	1.561	0.101	0.707

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	(36-41)	2.076	1.348	1.54	0.135	0.72
	(42-47)	3.074	1.978	1.554	0.199	0.712
	(48-53)	1.967	2.871	0.685	0.127	0.993
	(54-57)	6.473	5.198	1.245	0.419	0.876
(24-29)	(30-35)	1.996	0.762	2.62	0.129	0.12
	(36-41)	2.52	1.187	2.123	0.163	0.339
	(42-47)	3.518	1.872	1.879	0.228	0.494
	(48-53)	2.412	2.799	0.862	0.156	0.978
	(54-57)	6.917	5.159	1.341	0.448	0.833
(30-35)	(36-41)	0.525	1.3	0.404	0.034	1
	(42-47)	1.523	1.946	0.783	0.099	0.987
	(48-53)	0.416	2.849	0.146	0.027	1
	(54-57)	4.922	5.186	0.949	0.319	0.964
(36-41)	(42-47)	0.998	2.148	0.464	0.065	0.999
	(48-53)	-0.109	2.991	-0.036	-0.007	1
	(54-57)	4.397	5.266	0.835	0.285	0.981
(42-47)	(48-53)	-1.106	3.322	-0.333	-0.072	1
	(54-57)	3.399	5.461	0.622	0.22	0.996
(48-53)	(54-57)	4.505	5.844	0.771	0.292	0.988

However, through the Post Hoc test in Table 14, it is stated that the comparison of IQ across age groups does not show a significant difference. This is indicated by the lack of p-value exceeding the significance level (p>0.05). Due to the large amount of data, the p-level tends to become significant or <0.05. However, since the Post Hoc test shows no significant data, the difference in IQ across the age group is not significant.

Table 16. Data for Comparing IQ Differences by Education Level

Cases	Sum of Squares	df	Mean Square	F	p	η²	η²p
Educational Level	8699.212	10	869.921	3.898	<0.001	0.019	0.019
Residuals	445059.539	1994	223.199				

Table 17. Data for Comparing IQ Differences by Education Level

Factor	Statistic	df	p
Educational Level	31.115	10	<0.001

The ANOVA analysis of IQ scores across different education levels, as detailed in Table 16 and Table 17, yielded an F statistic of 3.898 and a p-value of less than 0.001. Given that this p-value is below the significance level of 0.05, it indicates a significant difference in IQ scores among the various education levels.

Table 18. Post Hoc Analysis of IQ Differences by Education Level

Educational Level		Mean Difference	SE	t	ptukey	pscheffe	pbonf
(Non-Degree)	Certified	1.667	6.782	0.246	1	1	1
	SD	19.917	7.56	2.635	0.232	0.731	0.467
	SMA	0.754	2.491	0.303	1	1	1
	SMK	3.101	2.071	1.497	0.921	0.994	1
	D1	5.417	7.56	0.716	1	1	1
	D2	5.667	6.782	0.836	0.999	1	1
	D3	0.969	1.586	0.611	1	1	1
	D4	-1.333	4.304	-0.31	1	1	1
	S1	-2.902	1.228	-2.364	0.391	0.848	0.999

	S2	-4.746	2.491	-1.905	0.714	0.962	1
Certified	SD	18.25	10.022	1.821	0.768	0.973	1
	SMA	-0.913	7.035	-0.13	1	1	1
	SMK	1.434	6.898	0.208	1	1	1
	D1	3.75	10.022	0.374	1	1	1
	D2	4	9.449	0.423	1	1	1
	D3	-0.698	6.768	-0.103	1	1	1
	D4	-3	7.862	-0.382	1	1	1
	S1	-4.569	6.693	-0.683	1	1	1
	S2	-6.413	7.035	-0.912	0.998	1	1
SD	SMA	-19.163	7.788	-2.461	0.329	0.81	0.767
	SMK	-16.816	7.664	-2.194	0.509	0.903	1
	D1	-14.5	10.564	-1.373	0.955	0.997	1
	D2	-14.25	10.022	-1.422	0.943	0.996	1
	D3	-18.948	7.547	-2.511	0.299	0.789	0.667
	D4	-21.25	8.542	-2.488	0.312	0.799	0.712
	S1	-22.819	7.48	-3.051	0.083	0.504	0.127
	S2	-24.663	7.788	-3.167	0.059	0.438	0.086
SMA	SMK	2.347	2.791	0.841	0.999	1	1
	D1	4.663	7.788	0.599	1	1	1
	D2	4.913	7.035	0.698	1	1	1
	D3	0.215	2.452	0.088	1	1	1
	D4	-2.087	4.693	-0.445	1	1	1
	S1	-3.656	2.237	-1.634	0.868	0.988	1
	S2	-5.5	3.115	-1.766	0.8	0.978	1
SMK	D1	2.316	7.664	0.302	1	1	1
	D2	2.566	6.898	0.372	1	1	1
	D3	-2.132	2.025	-1.053	0.994	1	1
	D4	-4.434	4.484	-0.989	0.996	1	1
	S1	-6.003	1.758	-3.414	0.027*	0.309	0.036*
	S2	-7.847	2.791	-2.812	0.154	0.638	0.274
D1	D2	0.25	10.022	0.025	1	1	1
	D3	-4.448	7.547	-0.589	1	1	1
	D4	-6.75	8.542	-0.79	0.999	1	1
	S1	-8.319	7.48	-1.112	0.99	1	1
	S2	-10.163	7.788	-1.305	0.968	0.998	1
D2	D3	-4.698	6.768	-0.694	1	1	1
	D4	-7	7.862	-0.89	0.998	1	1
	S1	-8.569	6.693	-1.28	0.972	0.998	1
	S2	-10.413	7.035	-1.48	0.926	0.995	1
D3	D4	-2.302	4.282	-0.538	1	1	1
	S1	-3.871	1.147	-3.373	0.031*	0.329	0.042*
	S2	-5.715	2.452	-2.33	0.413	0.86	1
D4	S1	-1.569	4.162	-0.377	1	1	1
	S2	-3.413	4.693	-0.727	1	1	1
S1	S2	-1.844	2.237	-0.824	0.999	1	1

Through the Post Hoc tests conducted in Table 18, there is a significant difference in IQ levels between individuals with a Vocational High School (SMK) background and those with a Bachelor's (S1) degree. Analysis using the Tukey test yielded a p-value of 0.027, indicating a significance level below the predetermined threshold ($p<0.05$).

Furthermore, the IQ test results between individuals with a Diploma (D3) and those with a Bachelor's (S1) also showed a significant difference, with the Tukey test revealing a p-value of 0.031, which is below the significance level (p<0.05). These results suggest that intelligence levels can vary substantially between different education levels, providing relevant information for understanding cognitive differences among these educational groups.

Table 19. Data for Comparing IQ Differences by Province

Cases	Sum of Squares	df	Mean Square	F	p
Province	9337.468	23	405.977	1.709	0.019
Residuals	676358.149	2847	237.569		

Table 20. Data for Comparing IQ Differences by Province

Factor	Statistic	df	p
Province	49.224	23	0.001

The ANOVA analysis of IQ scores across provinces in Table 19 and Table 20 shows an F-statistic value of 1.709 with a p-value of 0.019. Since the p-value is less than the significance level (p<0.05), it can be concluded that there are significant differences in IQ scores among the provinces.

Table 21. Post Hoc Analysis of IQ Differences by Province

Province		Mean Difference	SE	T	Ptukey	Pscheffe
Aceh	Bali	3.485	6.564	0.531	1	1
	Banten	0.363	6.35	0.057	1	1
	DI Yogyakarta	-6.293	6.61	-0.952	1	1
	DKI Jakarta	1.081	6.311	0.171	1	1
	Jambi	-0.2	9.333	-0.021	1	1
	West Java	1.116	6.315	0.177	1	1
	Central Java	-3.088	6.419	-0.481	1	1
	East Java	-0.614	6.415	-0.096	1	1
	West Kalimantan	3.8	9.333	0.407	1	1
	South Kalimantan	7	10.899	0.642	1	1
	East Kalimantan	4	8.324	0.481	1	1
	Bangka Belitung Islands	-1	9.949	-0.101	1	1
	Riau Islands	-7	8.124	-0.862	1	1
	Lampung	0.784	6.783	0.116	1	1
	West Nusa Tenggara	7	9.333	0.75	1	1
	East Nusa Tenggara	5.667	10.899	0.52	1	1
	Riau	0.235	7.319	0.032	1	1
	South Sulawesi	1.091	6.708	0.163	1	1
	Central Sulawesi	10	9.333	1.071	1	1
	North Sulawesi	9.5	12.585	0.755	1	1
	West Sumatera	-7.5	7.266	-1.032	1	1
	South Sumatera	-2.789	6.771	-0.412	1	1
	North Sumatera	0.188	6.674	0.028	1	1
Bali	Banten	-3.122	2.055	-1.519	0.998	1
	DI Yogyakarta	-9.778	2.755	-3.549	0.067	0.96
	DKI Jakarta	-2.405	1.931	-1.246	1	1

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	Jambi	-3.685	7.142	-0.516	1	1
	West Java	-2.369	1.943	-1.219	1	1
	Central Java	-6.573	2.258	-2.911	0.355	0.997
	East Java	-4.1	2.246	-1.825	0.981	1
	West Kalimantan	0.315	7.142	0.044	1	1
	South Kalimantan	3.515	9.093	0.387	1	1
	East Kalimantan	0.515	5.761	0.089	1	1
	Bangka Belitung Islands	-4.485	7.93	-0.566	1	1
	Riau Islands	-10.485	5.467	-1.918	0.966	1
	Lampung	-2.702	3.149	-0.858	1	1
	West Nusa Tenggara	3.515	7.142	0.492	1	1
	East Nusa Tenggara	2.181	9.093	0.24	1	1
	Riau	-3.25	4.18	-0.778	1	1
	South Sulawesi	-2.394	2.982	-0.803	1	1
	Central Sulawesi	6.515	7.142	0.912	1	1
	North Sulawesi	6.015	11.058	0.544	1	1
	West Sumatera	-10.985	4.086	-2.689	0.525	0.999
	South Sumatera	-6.275	3.122	-2.01	0.944	1
	North Sumatera	-3.298	2.906	-1.135	1	1
Banten	DI Yogyakarta	-6.656	2.197	-3.03	0.276	0.995
	DKI Jakarta	0.718	0.982	0.731	1	1
	Jambi	-0.563	6.946	-0.081	1	1
	West Java	0.753	1.006	0.748	1	1
	Central Java	-3.451	1.528	-2.258	0.84	1
	East Java	-0.977	1.511	-0.647	1	1
	West Kalimantan	3.437	6.946	0.495	1	1
	South Kalimantan	6.637	8.94	0.742	1	1
	East Kalimantan	3.637	5.516	0.659	1	1
	Bangka Belitung Islands	-1.363	7.754	-0.176	1	1
	Riau Islands	-7.363	5.208	-1.414	0.999	1
	Lampung	0.421	2.674	0.157	1	1
	West Nusa Tenggara	6.637	6.946	0.956	1	1
	East Nusa Tenggara	5.304	8.94	0.593	1	1
	Riau	-0.128	3.835	-0.033	1	1
	South Sulawesi	0.728	2.476	0.294	1	1
	Central Sulawesi	9.637	6.946	1.387	1	1
	North Sulawesi	9.137	10.932	0.836	1	1
	West Sumatera	-7.863	3.732	-2.107	0.912	1
	South Sumatera	-3.153	2.642	-1.193	1	1
	North Sumatera	-0.176	2.383	-0.074	1	1
DI Yogyakarta	DKI Jakarta	7.374	2.081	3.544	0.068	0.961
	Jambi	6.093	7.184	0.848	1	1
	West Java	7.409	2.092	3.541	0.069	0.961
	Central Java	3.205	2.388	1.342	1	1
	East Java	5.679	2.377	2.389	0.757	1
	West Kalimantan	10.093	7.184	1.405	0.999	1

	South Kalimantan	13.293	9.126	1.457	0.999	1
	East Kalimantan	10.293	5.813	1.771	0.987	1
	Bangka Belitung Islands	5.293	7.968	0.664	1	1
	Riau Islands	-0.707	5.522	-0.128	1	1
	Lampung	7.077	3.243	2.182	0.879	1
	West Nusa Tenggara	13.293	7.184	1.85	0.977	1
	East Nusa Tenggara	11.96	9.126	1.311	1	1
	Riau	6.528	4.251	1.536	0.998	1
	South Sulawesi	7.384	3.081	2.396	0.752	1
	Central Sulawesi	16.293	7.184	2.268	0.834	1
	North Sulawesi	15.793	11.085	1.425	0.999	1
	West Sumatera	-1.207	4.159	-0.29	1	1
	South Sumatera	3.504	3.217	1.089	1	1
	North Sumatera	6.481	3.008	2.155	0.892	1
DKI Jakarta	Jambi	-1.281	6.91	-0.185	1	1
	West Java	0.035	0.717	0.049	1	1
	Central Java	-4.168	1.356	-3.074	0.25	0.994
	East Java	-1.695	1.337	-1.268	1	1
	West Kalimantan	2.719	6.91	0.394	1	1
	South Kalimantan	5.919	8.912	0.664	1	1
	East Kalimantan	2.919	5.471	0.534	1	1
	Bangka Belitung Islands	-2.081	7.722	-0.269	1	1
	Riau Islands	-8.081	5.16	-1.566	0.997	1
	Lampung	-0.297	2.58	-0.115	1	1
	West Nusa Tenggara	5.919	6.91	0.857	1	1
	East Nusa Tenggara	4.586	8.912	0.515	1	1
	Riau	-0.845	3.769	-0.224	1	1
	South Sulawesi	0.01	2.373	0.004	1	1
	Central Sulawesi	8.919	6.91	1.291	1	1
	North Sulawesi	8.419	10.91	0.772	1	1
	West Sumatera	-8.581	3.665	-2.341	0.789	1
	South Sumatera	-3.87	2.547	-1.52	0.998	1
	North Sumatera	-0.893	2.277	-0.392	1	1
Jambi	West Java	1.316	6.913	0.19	1	1
	Central Java	-2.888	7.008	-0.412	1	1
	East Java	-0.414	7.005	-0.059	1	1
	West Kalimantan	4	9.748	0.41	1	1
	South Kalimantan	7.2	11.256	0.64	1	1
	East Kalimantan	4.2	8.787	0.478	1	1
	Bangka Belitung Islands	-0.8	10.34	-0.077	1	1
	Riau Islands	-6.8	8.597	-0.791	1	1
	Lampung	0.984	7.344	0.134	1	1
	West Nusa Tenggara	7.2	9.748	0.739	1	1
	East Nusa Tenggara	5.867	11.256	0.521	1	1

	Riau	0.435	7.841	0.056	1	1
	South Sulawesi	1.291	7.274	0.177	1	1
	Central Sulawesi	10.2	9.748	1.046	1	1
	North Sulawesi	9.7	12.896	0.752	1	1
	West Sumatera	-7.3	7.792	-0.937	1	1
	South Sumatera	-2.589	7.332	-0.353	1	1
	North Sumatera	0.388	7.243	0.053	1	1
West Java	Central Java	-4.204	1.373	-3.061	0.257	0.994
	East Java	-1.73	1.354	-1.278	1	1
	West Kalimantan	2.684	6.913	0.388	1	1
	South Kalimantan	5.884	8.915	0.66	1	1
	East Kalimantan	2.884	5.475	0.527	1	1
	Bangka Belitung Islands	-2.116	7.725	-0.274	1	1
	Riau Islands	-8.116	5.165	-1.571	0.997	1
	Lampung	-0.332	2.589	-0.128	1	1
	West Nusa Tenggara	5.884	6.913	0.851	1	1
	East Nusa Tenggara	4.551	8.915	0.51	1	1
	Riau	-0.881	3.776	-0.233	1	1
	South Sulawesi	-0.025	2.383	-0.011	1	1
	Central Sulawesi	8.884	6.913	1.285	1	1
	North Sulawesi	8.384	10.912	0.768	1	1
	West Sumatera	-8.616	3.671	-2.347	0.786	1
	South Sumatera	-3.905	2.556	-1.528	0.998	1
	North Sumatera	-0.928	2.287	-0.406	1	1
Central Java	East Java	2.473	1.777	1.392	1	1
	West Kalimantan	6.888	7.008	0.983	1	1
	South Kalimantan	10.088	8.989	1.122	1	1
	East Kalimantan	7.088	5.595	1.267	1	1
	Bangka Belitung Islands	2.088	7.81	0.267	1	1
	Riau Islands	-3.912	5.292	-0.739	1	1
	Lampung	3.872	2.833	1.367	1	1
	West Nusa Tenggara	10.088	7.008	1.439	0.999	1
	East Nusa Tenggara	8.755	8.989	0.974	1	1
	Riau	3.323	3.947	0.842	1	1
	South Sulawesi	4.179	2.647	1.579	0.997	1
	Central Sulawesi	13.088	7.008	1.867	0.975	1
	North Sulawesi	12.588	10.972	1.147	1	1
	West Sumatera	-4.412	3.848	-1.147	1	1
	South Sumatera	0.298	2.803	0.106	1	1
	North Sumatera	3.275	2.56	1.279	1	1
East Java	West Kalimantan	4.414	7.005	0.63	1	1
	South Kalimantan	7.614	8.986	0.847	1	1
	East Kalimantan	4.614	5.59	0.825	1	1
	Bangka Belitung Islands	-0.386	7.807	-0.049	1	1
	Riau Islands	-6.386	5.287	-1.208	1	1
	Lampung	1.398	2.824	0.495	1	1

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	West Nusa Tenggara	7.614	7.005	1.087	1	1
	East Nusa Tenggara	6.281	8.986	0.699	1	1
	Riau	0.85	3.94	0.216	1	1
	South Sulawesi	1.705	2.637	0.647	1	1
	Central Sulawesi	10.614	7.005	1.515	0.998	1
	North Sulawesi	10.114	10.97	0.922	1	1
	West Sumatera	-6.886	3.841	-1.793	0.984	1
	South Sumatera	-2.175	2.794	-0.779	1	1
	North Sumatera	0.802	2.55	0.314	1	1
West Kalimantan	South Kalimantan	3.2	11.256	0.284	1	1
	East Kalimantan	0.2	8.787	0.023	1	1
	Bangka Belitung Islands	-4.8	10.34	-0.464	1	1
	Riau Islands	-10.8	8.597	-1.256	1	1
	Lampung	-3.016	7.344	-0.411	1	1
	West Nusa Tenggara	3.2	9.748	0.328	1	1
	East Nusa Tenggara	1.867	11.256	0.166	1	1
	Riau	-3.565	7.841	-0.455	1	1
	South Sulawesi	-2.709	7.274	-0.372	1	1
	Central Sulawesi	6.2	9.748	0.636	1	1
	North Sulawesi	5.7	12.896	0.442	1	1
	West Sumatera	-11.3	7.792	-1.45	0.999	1
	South Sumatera	-6.589	7.332	-0.899	1	1
	North Sumatera	-3.612	7.243	-0.499	1	1
South Kalimantan	East Kalimantan	-3	10.435	-0.287	1	1
	Bangka Belitung Islands	-8	11.772	-0.68	1	1
	Riau Islands	-14	10.276	-1.362	1	1
	Lampung	-6.216	9.253	-0.672	1	1
	West Nusa Tenggara	9.486×10-13	11.256	8.427× 10-14	1	1
	East Nusa Tenggara	-1.333	12.585	-0.106	1	1
	Riau	-6.765	9.652	-0.701	1	1
	South Sulawesi	-5.909	9.197	-0.642	1	1
	Central Sulawesi	3	11.256	0.267	1	1
	North Sulawesi	2.5	14.07	0.178	1	1
	West Sumatera	-14.5	9.612	-1.509	0.998	1
	South Sumatera	-9.789	9.243	-1.059	1	1
	North Sumatera	-6.812	9.173	-0.743	1	1
East Kalimantan	Bangka Belitung Islands	-5	9.439	-0.53	1	1
	Riau Islands	-11	7.49	-1.469	0.999	1
	Lampung	-3.216	6.01	-0.535	1	1
	West Nusa Tenggara	3	8.787	0.341	1	1
	East Nusa Tenggara	1.667	10.435	0.16	1	1
	Riau	-3.765	6.608	-0.57	1	1

	South Sulawesi	-2.909	5.924	-0.491	1	1
	Central Sulawesi	6	8.787	0.683	1	1
	North Sulawesi	5.5	12.185	0.451	1	1
	West Sumatera	-11.5	6.549	-1.756	0.988	1
	South Sumatera	-6.789	5.996	-1.132	1	1
	North Sumatera	-3.812	5.886	-0.648	1	1
Bangka Belitung Islands	Riau Islands	-6	9.262	-0.648	1	1
	Lampung	1.784	8.113	0.22	1	1
	West Nusa Tenggara	8	10.34	0.774	1	1
	East Nusa Tenggara	6.667	11.772	0.566	1	1
	Riau	1.235	8.565	0.144	1	1
	South Sulawesi	2.091	8.049	0.26	1	1
	Central Sulawesi	11	10.34	1.064	1	1
	North Sulawesi	10.5	13.348	0.787	1	1
	West Sumatera	-6.5	8.52	-0.763	1	1
	South Sumatera	-1.789	8.102	-0.221	1	1
	North Sumatera	1.188	8.021	0.148	1	1
Riau Islands	Lampung	7.784	5.729	1.359	1	1
	West Nusa Tenggara	14	8.597	1.628	0.996	1
	East Nusa Tenggara	12.667	10.276	1.233	1	1
	Riau	7.235	6.354	1.139	1	1
	South Sulawesi	8.091	5.639	1.435	0.999	1
	Central Sulawesi	17	8.597	1.977	0.953	1
	North Sulawesi	16.5	12.049	1.369	1	1
	West Sumatera	-0.5	6.292	-0.079	1	1
	South Sumatera	4.211	5.714	0.737	1	1
	North Sumatera	7.188	5.599	1.284	1	1
Lampung	West Nusa Tenggara	6.216	7.344	0.846	1	1
	East Nusa Tenggara	4.883	9.253	0.528	1	1
	Riau	-0.548	4.516	-0.121	1	1
	South Sulawesi	0.307	3.438	0.089	1	1
	Central Sulawesi	9.216	7.344	1.255	1	1
	North Sulawesi	8.716	11.19	0.779	1	1
	West Sumatera	-8.284	4.429	-1.87	0.974	1
	South Sumatera	-3.573	3.56	-1.004	1	1
	North Sumatera	-0.596	3.372	-0.177	1	1
West Nusa Tenggara	East Nusa Tenggara	-1.333	11.256	-0.118	1	1
	Riau	-6.765	7.841	-0.863	1	1
	South Sulawesi	-5.909	7.274	-0.812	1	1
	Central Sulawesi	3	9.748	0.308	1	1
	North Sulawesi	2.5	12.896	0.194	1	1
	West Sumatera	-14.5	7.792	-1.861	0.976	1
	South Sumatera	-9.789	7.332	-1.335	1	1
	North Sumatera	-6.812	7.243	-0.941	1	1
East Nusa Tenggara	Riau	-5.431	9.652	-0.563	1	1
	South Sulawesi	-4.576	9.197	-0.498	1	1

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	Central Sulawesi	4.333	11.256	0.385	1	1
	North Sulawesi	3.833	14.07	0.272	1	1
	West Sumatera	-13.167	9.612	-1.37	1	1
	South Sumatera	-8.456	9.243	-0.915	1	1
	North Sumatera	-5.479	9.173	-0.597	1	1
Riau	South Sulawesi	0.856	4.402	0.194	1	1
	Central Sulawesi	9.765	7.841	1.245	1	1
	North Sulawesi	9.265	11.522	0.804	1	1
	West Sumatera	-7.735	5.213	-1.484	0.999	1
	South Sumatera	-3.025	4.497	-0.673	1	1
	North Sumatera	-0.048	4.35	-0.011	1	1
South Sulawesi	Central Sulawesi	8.909	7.274	1.225	1	1
	North Sulawesi	8.409	11.144	0.755	1	1
	West Sumatera	-8.591	4.312	-1.992	0.949	1
	South Sumatera	-3.88	3.413	-1.137	1	1
	North Sumatera	-0.903	3.217	-0.281	1	1
Central Sulawesi	North Sulawesi	-0.5	12.896	-0.039	1	1
	West Sumatera	-17.5	7.792	-2.246	0.846	1
	South Sumatera	-12.789	7.332	-1.744	0.989	1
	North Sumatera	-9.812	7.243	-1.355	1	1
North Sulawesi	West Sumatera	-17	11.488	-1.48	0.999	1
	South Sumatera	-12.289	11.182	-1.099	1	1
	North Sumatera	-9.313	11.124	-0.837	1	1
West Sumatera	South Sumatera	4.711	4.41	1.068	1	1
	North Sumatera	7.688	4.26	1.805	0.983	1
South Sumatera	North Sumatera	2.977	3.347	0.889	1	1

However, through the Post Hoc test in Table 21, it is stated that the comparison of IQ across provinces does not show a significant difference. This is indicated by the lack of a p-value exceeding the significance level ($p>0.05$). Due to the large amount of data, the p-level tends to become significant or <0.05. However, since the Post Hoc test shows no significant data, the difference in IQ among the provincial groups is not significant.

DISCUSSION

Based on the results of the difference test, it can be concluded that there is no significant difference between IQ and gender, age groups, or respondents' provinces. However, there is a significant difference between IQ and educational level. Hence, in Table 12, it can be concluded that H1 is not supported. This is consistent with previous research findings by Banerjee et al. (2024). This result highlights the complexity of factors influencing intelligence and challenges previous findings regarding IQ differences between men and women.

Based on the data obtained from the comparative tests, it can be concluded that an individual's IQ varies due to several factors. As shown in Table 15, with a p-value of 0.029, which is less than the significance level ($p>0.05$), it can be concluded that H2 is not supported. This is supported by Horn and Cattell (1967) who proposed that intelligence is divided into two aspects: fluid and crystallized intelligence. IQ tests typically include components that measure both of these aspects. Fluid intelligence refers to the ability to solve new problems and think abstractly without relying on previously acquired knowledge. It includes the capacity to think quickly, understand patterns, and solve problems that have not been encountered before. Crystallized intelligence refers to knowledge acquired through experience and education, such as skills, facts, and information learned throughout life. It includes the ability to use existing knowledge and skills to complete tasks and make decisions. Although fluid intelligence may show a decline with age, crystallized intelligence tends to remain stable or even increase, which means that overall IQ scores may remain relatively stable.

Furthermore, a significant difference was found between IQ and educational level. As shown in Table 18, with a p-value of 0.031, which is less than the significance level ($p>0.05$), it can be concluded that H3 is supported. This can be explained by previous research by Ritchie and Tucker-Drob (2018), which highlighted a positive correlation between intelligence test scores and the duration of education. The study revealed that each additional year of education significantly impacts the increase in intelligence test scores. The effect of increased education duration on IQ scores relates to aspects such as learning material directly relevant to tests, training in thinking styles such as abstract reasoning, and the development of concentration and self-control (Ceci in Ritchie & Tucker-Drob, 2018). Furthermore, improvements in the quality of education, not just the number of years spent in education, also seem to play an important role in influencing the relationship between education and intelligence (Becker et al. in Ritchie & Tucker-Drob, 2018). Additionally, factors such as education, literacy rates, and the proportion of agricultural workers explain variations in IQ scores across countries, with additional correlations with low birth weight and cognitive demands in developed countries (Barber, 2005; Rindermann et al., 2016).

In Table 21, the Post Hoc test shows that H4 is not supported. Across various regions, intelligence is significantly related to various economic, social, and demographic phenomena, including income ($r = 0.56$), educational attainment ($r = 0.59$), health ($r = 0.49$), general socioeconomic status ($r = 0.55$), and is negatively related to fertility ($r = -0.51$) and crime ($r = -0.20$) (Hegelund et al., 2020). However, this finding contradicts the actual expected results about the correlation between intelligence and various economic, social, and demographic factors (Lynn et al., 2018). On the other hand, the non-significant results in this study are that the majority of respondents are from the island of Java (Banten, Yogyakarta, Jakarta, West Java, Central Java, East Java), making up 85.17% of the total respondents, which results in minimal differences between these regions.

The discrepancy between the findings of this study and the actual demographic status in Java can be attributed to several factors. Despite intelligence being significantly linked to various economic, social, and demographic phenomena such as income, education, and health across regions, the sample composition in this study plays a critical role in shaping the results. Given that 85.17% of respondents are from Java—where the provinces exhibit relatively high and stable socioeconomic conditions, especially in DKI Jakarta, East Java, and West Java—the limited variability among regions may have minimized observable differences. While poverty and unemployment levels in Java vary, with D.I. Yogyakarta having the highest poverty rate and Banten the highest unemployment rate, the economic landscape remains relatively homogeneous in comparison to more diverse regions. This homogeneity in socioeconomic status, particularly in Java's more developed areas, could explain why the anticipated correlations between intelligence and economic or social factors were not as significant in this study as in other research.

Based on Fazrin (2023), GRDP (Gross Regional Domestic Product) per capita of provinces in Java from 2011 to 2022. DKI Jakarta had the highest GRDP per capita, with an average of IDR 152,242,582 million, driven by its role as the political and economic center of Indonesia, with growth in almost all sectors except agriculture and mining. The

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other provinces followed by East Java (IDR 36,121,053 million), Banten (IDR 32,796,740 million), West Java (IDR 27,306,778 million), and Central Java (IDR 24,881,265 million). D.I. Yogyakarta recorded the lowest GRDP per capita with an average of IDR 24,394,522 million.

According to research by Fazrin (2023), poverty levels in the provinces of Java from 2011 to 2022 fluctuated annually. D.I. Yogyakarta recorded the highest average poverty rate at 13.30%, followed by Central Java with an average of 12.77%, East Java at 11.77%, West Java at 8.66%, and Banten at 5.80%. DKI Jakarta had the lowest poverty rate, with an average of 3.94%. Additionally, there was a significant disparity in poverty levels across Java, notably reflected in the wide gap between DKI Jakarta and D.I. Yogyakarta.

In contrast, unemployment rates in Java showed a different trend. According to the data, open unemployment rates in the provinces of Java fluctuated between 2011 and 2022. Banten had the highest average open unemployment rate at 9.52% per year, while D.I. Yogyakarta had the lowest, averaging 3.70% per year over the same period.

However, among the four groups included in the comparative tests, the gender group shows different results. The comparative test found that the p-value for IQ and gender comparison is 0.407, which exceeds the significance level ($p>0.05$). Thus, it can be concluded that there is no significant difference in IQ scores between genders based on this data. This is consistent with previous research showing no significant difference in average IQ between genders (Kaufman et al., 2016) which also confirm that there are no significant statistical differences between the average IQ scores of men and women. However, some findings have shown differences in certain aspects of IQ based on gender. For instance, Giofrè et al. (2022) found that women tend to perform better in verbal abilities and processing speed, while men tend to perform better in visual-spatial ability and crystallized intelligence. Hyde (2007) found that men specifically perform better, on average, in spatial visualization, spatial perception, and mental rotation. Ultimately, overall, there is no significant difference in intellectual abilities or IQ scores between men and women, though each gender may have strengths in certain specific aspects.

CONCLUSION

From the results of the difference test, it can be concluded that there is no difference in IQ with respect to gender, age groups, and respondents' provinces. However, there is a difference in IQ concerning educational levels. Previous findings indicated average IQ differences between men and women, further analysis of this research data shows that there are no significant differences in IQ scores between genders. Therefore, these results highlight the complexity of the factors influencing intelligence and challenge previous findings regarding IQ differences between men and women.

Based on the results of the comparative tests, several suggestions and implications can be drawn. First, further research is recommended to investigate how age and educational levels impact IQ scores over time, which could provide more comprehensive insights into developmental changes and the effects of education on intelligence. Additionally, expanding the analysis to explore more granular regional differences within provinces could uncover specific local factors influencing IQ scores, such as socioeconomic conditions and educational access. Since no significant gender differences were found in IQ scores, it would be beneficial to re-examine other aspects of cognitive abilities that might vary by gender, such as emotional intelligence or specific cognitive skills. Educational interventions tailored to different age groups and educational levels should be developed and tested to enhance cognitive skills across diverse educational settings.

Furthermore, a deeper investigation into how cultural and socioeconomic factors affect IQ scores across various regions and demographic groups could provide valuable information.

The implications of these findings challenge existing stereotypes about gender differences in intelligence, supporting the view that intelligence is not inherently different between genders. This insight calls for gender-neutral approaches in both educational and occupational contexts. Policymakers should consider age and educational level when designing educational policies, ensuring resources are allocated effectively to support cognitive development. Regional educational strategies should be adapted to address specific needs based on local factors. These results also contribute to the broader discussion on intelligence, highlighting the importance of considering multiple influencing factors beyond gender and age. Future research should focus on the interplay between educational attainment, socioeconomic status, and other demographic variables to better understand their combined effects on IQ scores.

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DECLARATION OF CONFLICTING INTERESTS

The authors declared no potential conflicts of interest.

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