General Intelligence and Emotional Intelligence Factors in Women's Leadership Ability in Facing Crisis: A Literature Review

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Abstract: The COVID-19 pandemic highlighted the exceptional leadership of female government leaders during a global crisis. Yet, women continue to face significant barriers to achieving leadership positions, often due to discriminatory stereotypes. One persistent stigma is the belief that women possess lower general intelligence compared to men. Additionally, women are frequently perceived as emotionally unstable, lacking the emotional intelligence necessary for effective leadership. These biases, which favor men, contribute to their greater trust as leaders. The paper aimed to critically examine the validity of these gender-based stereotypes regarding general and emotional intelligence in leadership. A systematic literature review was conducted, utilizing keywords such as "general intelligence," "emotional intelligence," and "women leadership" within a timeframe of 2012 to 2022. Databases including DOAJ, JSTOR, MDPI, Springer, APA, and Taylor & Francis were searched for relevant studies. Research findings consistently indicate no significant gender differences in general intelligence. Furthermore, variations in amygdala function, a brain region associated with emotional intelligence, were not attributed to gender but rather to age. This study underscores the leadership potential of women and challenges the discriminatory stereotypes that have historically hindered their advancement.

1 INTRODUCTION

The global pandemic records the achievements of women government leaders. Women heads of government from Denmark, Ethiopia, Finland, Germany, Iceland, New Zealand, and Slovakia, are recognized as having the speed of response in overcoming the pandemic. They are not only responsive to actions to lower the curve, such as imposing lockdowns, social distancing, and widespread testing, but also provide transparent and effective communication of data-based information (UN Women, 2020). In addition, other countries that value input from women experts have also been successful in dealing with the pandemic. For example, South Korea made many policies under the direction of its female health minister at the time, Kang KyungWha. This fact shows the leadership potential of women on a broad scale.

In particular, Zenger and Folkman (2020) stated from their research that women can lead better in times of crisis. Their research results before the pandemic found that women had significantly more positive leadership than men. This gap is even bigger when research is conducted during a pandemic. This proves that female leadership has better performance in times of crisis.

However, so far women rarely get leadership positions, especially in the political realm. Data from UN Women (2020) shows that around 75% of parliamentary seats in countries in the world are filled by men. In addition, only 7.2% of female heads of state, 6.2% of female heads of government, 21.3% of female ministers, and 24.7% of female health ministers.

Even on a smaller scale, women are rarely trusted to lead. They often accept discrimination to reach leadership positions in offices, companies, or educational institutions (Koenig, Eagly, Mitchell, & Ristikari, 2011). Many factors hinder women from reaching leadership positions, starting from ethnic traditions, religious traditions, deeply rooted

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patriarchal culture, obstacles to roles in the household, and various stigmas about women's weaknesses (Heilman, 2012).

One of the stigmas that become an obstacle is the doubts about the ability of women's intelligence. Women are often seen as having lower intelligence than men in general. Specifically, regarding emotional intelligence, women are often seen as more emotional than men and have a low ability to regulate emotions so they are considered to cause many problems when sitting in leadership (Lopez-Zafra et.al, 2012).

So far, the general opinion is that men are logically superior. Man is considered to have higher general intelligence so they have better rational thinking skills (Hyot and Murphy, 2016). These two main factors are generally inherent in men and are the main reason men are more trusted to be leaders. However, even though leadership has so far been stereotyped as related to masculinity, there is no evidence that women are incompetent as leaders. Even women's leadership can be more effective than men's in certain situations (Hyde, 2014).

This paper will specifically analyze the truth of the stigma that doubts the intelligence and emotional intelligence of women in leadership.

2 METHOD

This study uses a literature review research method. A literature review can be defined as a systematic method for collecting and synthesizing the results of previous research that can serve as a basis for knowledge development, create guidelines for policy and practice, provide evidence of effects, and if done well, have the capacity to generate ideas, new and directions for specific fields (Synder, 2019).

Then data collection on the results of previous research was carried out by searching international scientific articles on DOAJ, JSTOR, MDPI, Springer, APA, and Taylor & Francis. The search was carried out using the keywords "g factor", "emotional intelligence", "women leadership", and "gender differences".

This study limits the use of scientific journals in the period 2011 to 2021. Scientific journals before 2011 are used to show the development of research results that affect the development of intelligence theory. The diagram of the literature method for this study can be seen in the Appendix.

Scientific journals from search results are reduced to 13 scientific articles which are references in the results and discussion of this research. All scientific journals are international scientific journals from various countries which are the result of empirical research using quantitative data collection and processing. Tables of scientific journals used in this study can be seen in the Appendix.

3 THEORETICAL OVERVIEW

The theoretical overview in this paper will explain the definitions of the two important variables of this research, namely general intelligence and emotional intelligence. This also shows the limitations of the research in this paper. Even though many spectrums of intelligence emerge, in particular, this paper will examine the factors of general intelligence and emotional intelligence in women's leadership when facing a crisis.

3.1 Definition of General Intelligence Based on The Theory g Factor Spearman

The consensus on understanding general intelligence comes from the concept of the g factor put forward by Spearman. G factor by Gottfredson in Lubinski (2004) is defined as a basic general mental ability which, among other things, involves the ability to reason, plan, solve problems, think abstractly, understand complex ideas, learn quickly, and learn from experience. This G factor is not only related to learning from books, narrow academic skills, or intelligence in doing exams. In contrast, the g factor reflects a broader and deeper ability to understand our environment, "understand" things, or "figure out" what to do. Based on this definition, it can be understood that the g factor is an important factor in individual leadership abilities.

In leadership skills, not only special academic skills are needed, but rather the ability to solve problems, plan, understand, and find out what to do. The G factor or general intelligence is what the general public often calls the ability to reason or reason. The ability to reason plays an important role for leaders, especially when facing a crisis.

3.2 Definition of Emotional Intelligence

According to Goleman (2012), emotional intelligence is a person's ability to regulate their emotional life with intelligence. Maintain emotional harmony and expression through self-awareness, self-control, self-motivation, empathy, and social skills. Goleman further argued that emotional intelligence is a person's greater ability to motivate himself, manage emotions,

resilience in the face of failure, control emotions, delay gratification, and regulate the state of the soul. With this emotional intelligence, a person can put his emotions in the right portion, sort satisfaction, and set the mood.

This emotional intelligence is related to the function of the inner part of the brain, namely the amygdala. The amygdala is responsible for triggering emotional feelings, which are sometimes responsible for pre-programmed 'primitive' impulsive actions. The amygdala, the inner brain region located just above the end of the spinal cord, constantly informs us of how we feel about anything and everything in our everyday lives. It gives us a "gut feeling" about things and sometimes allows us to say, "This doesn't look right", even though we can't rationally explain why. The amygdala is also a repository for experience accumulation. This explains why older people seem to have stronger intuition, as they gain more life experience.

Emotional intelligence has an important leadership role. George in Sadri (2012) recommends that leaders with high emotional intelligence can recognize, assess, and regulate emotions well it enables them to work together in teams as well as motivate them. Emotional intelligence is an important factor in leadership, especially when facing a crisis.

4 RESULT AND DISCUSSION

The results and discussion of this paper is the synthesis of several empirical research results on general intelligence and emotional intelligence. The discussion will be limited to discuss the relationship between the g factor and gender differences and the relationship between emotional intelligence and gender differences.

4.1 The Relationship of Spearman's g Factor with Gender Differences

The general opinion is that men have a higher g factor intelligence than women because men have a physically larger brain volume. This opinion is greatly influenced by Darwin's theory of evolution which sees human civilization developing in line with the increase in the volume of the human brain. Lynn's research (1993), followed by the results of Petrides, Furham, and Martin (2004) agrees with the opinion that a larger male brain volume affects higher general intelligence in men. Extra neurons in men are the reason why men are considered to have higher logical abilities than women.

However, several other recent studies have contradictory results. Burgarelta, et al (2012) conducted a study with high-resolution MRI on 100 healthy adult samples consisting of 44 men and 56 women. Participants also took an intelligence test which consisted of tests to measure abstract, verbal, and spatial abilities. This study aims to examine the relationship between brain volume, gender differences, and general intelligence.

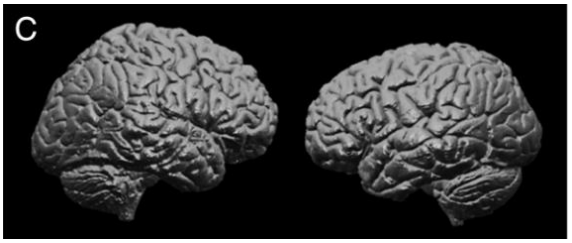

Figure 1: Differences in male brain volume (left) and female brain (right) (Bulgareta, 2012)

Three-dimensional imaging of the brains of men and women in the Bulgareta study did find that men's brain volumes were about 10% larger than women's. However, the results of Burgareta's study showed that differences in brain volume in different sexes were not associated with differences in general intelligence abilities. The size of the brain volume in men is not related to the high general intelligence they have. Thus, the hypothesis that men's general intelligence is higher due to larger brain volumes is not proven in this study.

However, the study found that in the field of visual-spatial intelligence, men are superior to women. This could explain why the male brain volume is larger, following the fact stated by Reid in Burgarelta (2012) that a large expanse of the cerebral cortex – greater than 50% of the total in many primate species – is involved mainly or exclusively in the processing of visual information. ma

The results of Bulgareta's research are in line with the research of Cox, Ritchie, Fawns-Ritchie, Trucker-Drob, & Dweck (2019), which uses a combination of MRI imaging data from The UK Biobank and measurement results with four cognitive test kits. The study, which involved 1,758 participants aged between 44-81 years, showed that there was no effect of gender differences on individual general intellectual abilities. Research in Romania with measurements using six intelligence measuring instruments in 15,000 participants aged 2-99 years showed that general intelligence was found not to be affected by gender differences (Iliescu, Ilie, Ispas, Dobrean, & Clinciu, 2016). Furthermore, Meisenberg's research (2017) used intelligence tests on 5975 male participants and

5939 female participants aged 14-22 years. It showed that the results of both gender differences and physical development were not consistently related to general intelligence. Intelligence research conducted by Fischer, Schult, and Hell (2012) on 554 junior high school students in Germany showed that female students had higher general intelligence than male students.

Some of the research results above show that the physiological evidence of a larger brain volume in men than women does not always indicate that men have more general intelligence than women. So, in terms of intelligence, the opinion that men can lead better than women because they have better reasoning abilities and emotional intelligence is proven to be wrong. General intelligence which is the main capital in leadership is not related to gender differences or even brain volume.

4.2 The Relationship of Spearman's g Factor with Gender Differences

Marembo, Chinyamurindi, and Mjoli (2018) investigated the effect of emotional intelligence on work performance in 220 participants with 56.8% female participants. The research was conducted using a measuring tool for emotional intelligence accompanied by measuring work performance. The results of research by Marembo, et al. showed that emotional intelligence increased significantly with age. While the results of the measurement of emotional intelligence vary on the gender difference variable. Even in the Marembo study, women were reported to have higher emotional intelligence scores than men. The results of this study are in line with the results of research by Frank, et al; Kumar & Muniandy; Pooja & Kumar in Marembo, et al (2018).

A study of work performance in another IT field of 157 IT workers at the managerial level also showed that women had higher emotional intelligence scores than men (Dhani & Sharma, 2017). Another study of 206 psychology students who examined the relationship between emotional intelligence and stress processes showed that women are more negatively affected by stressors than men (Schneider, Lyons, & Khazon, 2013). A study that specifically examines emotional intelligence factors in virtual team transformational leadership in 500 participants found that female leaders are considered to be able to regulate and express emotions better (Mysirlaki & Paraskeva, 2020). Van Genderen (2012) compiled a comparative gender study using measurements of the emotional intelligence of 152 participants. Research examining the effect of emotional intelligence on transformative leadership styles in Russia did not find the effect of emotional intelligence on leadership styles and also gender differences.

Research by Gupta, Koscik, Bechara, and Tranel (2011) on the function of the amygdala in emotional intelligence shows that the amygdala is an important component of neural networks that plays a role in decision-making abilities. Gupta, et al found that although gender differences play a role in the function of the amygdala in information processing, there is no indication of the role of gender differences in the function of the amygdala in decision-making abilities.

Based on the results of this study it was found that the opinion that men have better emotional intelligence so that they are more worthy of leadership is not proven. Some empirical studies even found that women have better emotional intelligence than men in leading. This could further explain why women can lead so well in times of crisis.

5 CONCLUSION

The results and discussion in this study have concluded that women have adequate general intelligence and emotional intelligence and are proven to have the potential to lead well in times of crisis. The stigma that circulates that men have general intelligence and higher emotional intelligence so that they are better at leading can be *psychobabble*. This is proven by several qualitative research results which prove that there is no effect of gender differences in general intelligence and emotional intelligence. Even some studies have found women have higher general intelligence and emotions.

Based on the results of this study, suggestions can be formulated so that women are given more places to lead, including in the political field. In intelligence, women have no obstacles to carrying out their roles as leaders even in a state of crisis. However, what often hinders women's leadership careers are the demands of traditional roles in the household and the belief in local and religious traditions for women's leadership, as well as stigmatization associated with views about women's limitations. So there needs to be a change in the perspective in society about the traditional role of women and education to change the stigma of society about women's abilities.

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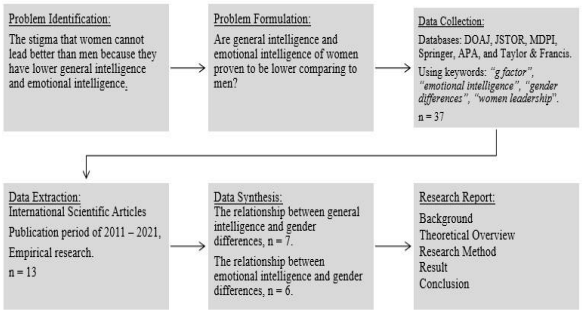
APPENDIX

Appendix 1. Literature Review's Processes



Appendix 2. The Result of Literature Review

No.	Writer	Year	Country	Method	Results
1.	Burgerelta , et al	2012	Spanish	Quantitative	Difference the size of the brain on Men and woman no relate to difference in intelligence general .
2.	Cox, et al	2019	English	Quantitative	There is no influence of gender differences in individual general intelligence ability
3.	Dani & Sharma	2017	India	Quantitative	Women have higher emotional intelligence scores than men
4.	Fisher, et al	2013	German	Quantitative	Female students have a higher general intelligence than male students
5.	Gupta et al	2011	America	Quantitative	There is no indication of the role of gender differences in amygdala function in decision-making abilities.
6.	Iliescu, et al	2016	Romania	Quantitative	General intelligence was found not to be influenced by gender differences.
7.	Lynn	1993	Ireland	Quantitative	larger male brain volume affects higher general intelligence in men.
8.	Marembo, et al	2018	South Africa	Quantitative	measuring emotional intelligence varies with gender differences
9.	Meisenberg	2017	Dominica	Quantitative	Gender differences and physical development are not consistently associated with general intelligence.
10.	Mysirlaki & Paraskeva	2020	Greece	Quantitative	Female leaders are considered to be able to regulate and express emotions better.
11.	Petrides, et al	2004	English	Quantitative	larger male brain volume affects higher general intelligence in men.
12.	Schneider, et al	2013	America	Quantitative	Women are more negatively affected by stressors than men .
13.	Van Genderen	2012	Russia	Quantitative	Did not find the effect of emotional intelligence on leadership style and also gender differences.