

게임에서의 유리천장: 포켓몬 시리즈의 불평등 성 지위

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Glass ceiling in video games: Unequal gender status in Pokémon Series

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요 약

본 연구는 포켓몬 시리즈의 남성/남성 지배 포켓몬들과 여성/여성 지배 포켓몬들의 특징을 분석하면서 포켓몬 시리즈의 성 지위에 대해 탐구한다. 1세대부터 8세대까지 802의 포켓몬 캐릭터가 존재한다. 각 포켓몬들은 태어날 때 다른 성 비율을 지니고 있다: 하나의 포켓몬은 남성, 여성, 동등, 무성의 “확률”을 지니고 있다. 본 연구를 이러한 포켓몬들은 3가지 기준으로 분석 한다: 1) 출연 빈도 2) 능력 3) 종류의 다양성, 그리고 이것을 성별의 기준으로 비교한다. 포켓몬 시리즈는 다른 비디오 게임과 다르게 다양한 캐릭터들을 제공한다. 그러므로 이는 사람들이 비디오 게임 캐릭터들의 성 지위를 보다 깊고 의미 있게 볼 수 있도록 도와준다.

ABSTRACT

This study explores the gender status of *Pokémon* Series by analyzing the aspects of male/male-dominated Pokémons and female/female-dominated Pokémons. Counting from the First Generation to the Seventh Generation Pokémon, there are 802 characters. Each Pokémon has different gender ratio; the one Pokémon could have more “possibility” to become male, female, equal, or genderless when he/she is born. This study examines those Pokémons in three criteria: 1) Frequency 2) Stats 3) Diversification of Type, and it compares them based on their gender. *Pokémon* Series is different than other video games as it provides many characters (Pokémons). Thus, it helps the audience to view the gender status of video game characters more closely and meaningfully.

Keywords : Pokémon, Gender, Video Game, Glass Ceiling, Equality

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1. Introduction

One of the many controversial social issues is gender inequality; simple but far reaching implication that insinuates that women do not have equal rights as men do. In fact, throughout history, women have had unequal treatments in several ways. Suffrage could be a great example of that. In western democratic nations, women did not have the right to vote in the past; they were simply excluded from participating in politics. However, in the course of time, some nations took change. First change in suffrage movement was when New Zealand women were allowed to vote in 1919. Following that, other nations presented voting rights to women (E.g. Finland in 1906, The United States in 1920, and The Great Britain in 1928). Along with the advances of voting right, many women decide to take action for better condition and respect, and it is sometimes related to feminism movement; each feminism movement has evoked with own forms, goals, and styles.

Although women's status has become better, this issue is still controversial as ever. Many believe that women do not share the rights that men do; it is evident in various fields such as job market and sports. In case of job market, there is a term coined "glass ceiling" which refers to the fact that female workers have a hard time being promoted than male workers do; female workers covertly face discrimination and unequal treatment at work. In reality, there are not many female board members and CEOs. It has been reported that women consist 4.2% of the CEO positions in USA's 500 biggest companies[1]. Another problem is that the audience perception is sometimes different towards males and females. According to

Harvard Business Review, students tend to feel positive feelings when the name is Howard (Male) and negative feelings when the name is Heidi (Female) with the same context of the successful story[2]. It demonstrates that successful women are less likable than successful men; even if women succeed and become outstanding in the field of business, the public sees otherwise.

Additionally, it is clear that women face inequality in sports industry. Women also play sports professionally, but the deal seems not fair enough. For example, several members of the U.S women's soccer team recently refused for their payment which are relatively lower than male sports players. Claiming that it is discrimination in pay, they formally filed a complaint with Equal Employment Opportunity Commission in 2006. The players allege that the U.S Soccer Federation discriminated female players as it pays higher wage to the men's soccer team, although the women's team generated higher revenues in 2015 [3]. During the CBS interview, these female players argue that the payment system is different between men and women, but it ultimately helps men to receive more income and incentive. And they also say that they hope to close the gap, not just in sports, but also in any kind of jobs where women do the same work as men[4].

This research goes on to analyze and reveal the gender status in the video game industry. As referred, there have been a lot of discussion, controversies, and movements regarding gender issue in society, but it seems that studies that examine gender issue in video games are not enough. As video game becomes a part of life to many people for fun activities, it is now time to explore how male

characters and female characters have different treatments. This study chooses Pokémon Series created by Japanese company Nintendo and Game Freak not only because the Pokémon Series have been internationally popular, but also because it contains 802 Pokémons, which makes it possible to compare male/male-dominated Pokémon characters and female/female-dominated Pokémon characters. With careful and critical analysis, it is expected to give the facet of gender issue and right in the video game industry.

2. Background

2.1 Female gender status in video game

Among various types of virtual objects, video game is the main enjoyment that everyone plays these days. It is said that the very first video game Magnavox was created by American engineer Ralph Bear in 1972 [5]. After that, like the Cambrian Explosion, the video games have evolved in numerous different styles, genres, platforms, systems, and so on. There are even Virtual Reality (VR)-based video games; a gamer wears a screen embedded pair of glasses and plays games by moving his/her head and body. These video games often reflect, implicate, and analyze some social issues in several ways. Now the question can arise, “What about gender issue in the video game?”

Throughout the research, females have been usually portrayed as a “damsel in distress” or supporter/sidekick of the male protagonists; In Super Mario Series, the main story is as

follows. The Princess Peach is kidnapped by the villain Bowser and the main character Mario embarks upon adventure to save her. In Zelda Series, though female Zelda is mentioned in title, the story begins with the male protagonist Link goes on a journey to save the Princess Zelda. Various research verifies that there have been greater number of male protagonists in the video game history. Among 873 characters of 70 video games, 73% are male characters and 12% are female characters. Even when female characters appear, they are more likely to be seen in secondary roles/positions. Of popular 20 PC-based video games in 1999, 70% are male characters and 12% are female characters for primary role[6]. Furthermore, it present that 85.23% are male characters and 14.77% are female characters in 8,572 characters from 133 video games[7]. In this respect, it is reasonable to conclude that not only there are greater number of male characters but also male characters are more likely to be chosen as a protagonist. Even for video game cover, male characters are almost four times more likely to appear than their female counterparts and female characters are rarely given roles of action compared to their male counterparts[8]. These results clearly portray the unequal gender status in the video game industry.

However, some video games that hold female protagonist have appeared and become popular. Tomb Raider Series developed by British company Core Design can be a great example of that. Tomb Raider is an action-adventure video game that stars a female protagonist Lara Croft. This game is different not only because a female protagonist leads the game but also because it portrays a female character as

strong, active, and independent figure. Lara Croft is also physically strong, can fight and shoot, has incredible athletic abilities and gymnastic skills, and happens to be a best-selling writer[9]. Lara Croft is a prototypical example of the video games that have women in leading parts. On the other hand, there are some critics for Lara Croft due to her overtly sexual portrayal in the game[10]. Because Lara Croft has glamorous body and wears short pants, some people criticize that Lara Croft is not being free of the sexual objectification. Regarding this situation, it puts a question, “Is Lara Croft a feminist icon or a cyberbimbo?” Even though Lara Croft is being represented as an action heroine that is distinguishable, Lara Croft also plays a role as Fatal Femme; the voyeuristic appeal is apparent[11]. That is, even though the debut of Lara Croft is sensational that breaks the glass ceiling in the video game industry, but she may be mainly accepted by gamers due to her sexy body and costume.

The good news is that women’s appearance and role in the video game industry seem much better than ever before. After the success of Lara Croft of Tomb Raider, many video games, whose playable protagonist is or one of female, were created. (E.g. Faith of Mirror’s Edge (2008), Ellie of The Last of US: Left Behind (2014), Evie of Assassin’s Creed Syndicate (2015), YoRHa No. 2 Model B of Nier: Automata (2017)). In addition, at Electronic Entertainment Expo (E3) 2016 held in Los Angeles, 6 games (Mass Effect: Andromeda, Horizon Zero Dawn, Dishonored 2, ReCore, Bound, Battlefield 1) have made female characters playable[12]. Additionally, among

female characters of 571 games from 1983 to 2014, it uses the Sexualization Index which evaluates the level of how female characters are sexy, and it generally has been decreasing in recent days, and it concludes that the female characters come to have better positions from being supposed to be sexy and glamorous[13].

2.2 Female gender status in video game

Pokémon (a contraction of Pocket Monster) Series is a Role-Playing Game (RPG) video game developed by Japanese company Game Freak and Nintendo, and it is one of the most popular video game in the world. Starting with game designer Satoshi Tajiri, the first video game was released in February, 1996 on the Gameboy platform (portable). Later, several sequels of Pokémon Series were created in diverse and modified styles with more playable characters. Table 1 shows the basic history of Pokémon Series.

[Table 1] Basic History of Pok émon Series

Generatio n	Name	Platform	Release D a t e (Japan)
1	Red and Green	Gameboy	Feb. 1996
	Blue	Gameboy	Oct. 1996
	Yellow	Gameboy Gameboy Color	Sep. 1998
2	Gold and Silver	Gameboy Gameboy Color	Nov. 1999
	Crystal	Gameboy Color	Dec. 2000
3	Ruby and Sapphire	Gameboy Advanced	Nov. 2002
	Emerald	Gameboy Advanced	Sep. 2004
4	Diamond and Pearl	Nintendo DS	Sep. 2006
	Platinum	Nintendo DS	Sep. 2008
5	Black and White	Nintendo DS	Sep. 2010
	Black 2 and White 2	Nintendo DS	Jun. 2012
6	X and Y	Nintendo 3DS	Oct. 2013
7	Sun and Moon	Nintendo 3DS	Nov. 2016

The basic story and way of playing Pokémon Series is simple; the protagonist takes on an adventure with a Pokémon. Pokémon is cast of cute monsters that look like birds, insects, or take on more mythical appearances with varying personalities, ways of fighting and physical attributes[14]. Then, the protagonist raises his/her Pokémon, catches other several Pokémon, and evolve Pokémon which become stronger than original one. In the course of time, a gamer competes with other Pokémon users/trainers including rivals and villains, and then finally becomes a top

Pokémon trainer. This distinctiveness is that there are a lot of Pokémon characters along with plentiful events and quests made incredible success all around the globe. It is reported that Pokémon is by far the best-selling RPG series with sales of the main series tipping 204.24 million worldwide[15]. There are diverse researches and interpretations how and why Pokémon Series have become popular in the world. Moreover, Pokémon is considered as highly diverse, malleable, and open-ended[16]. More importantly, she argues that Pokémon's popularity stems from not the game alone but also its character merchandising and its aura of "cuteness" which appeals across gender and age, and the cuteness is directly related to the Japanese cultural predilection.

Due to the huge success, Pokémon Series has appeared in other media as a spin-off; first, several Pokémon have made an entrance in other video games. For example, some Pokémon such as Pikachu, Charizard, and Jigglypuff, are selectable in fighting action game Super Smash Bros. Series, another video game created by Nintendo. Second, many products expand to other media; Created by TV Tokyo, Pokémon animation has been directed since April, 1997 until present for each game title. Although there are slight differences between video game and animation, Pokémon animation also hits the market[17]. Pokémon Anime (Animation) is a successful adaptation of a video game because Pokémon anime remains an integral part of the franchise's identity unlike other animations originated from video games[18]. Recently, Pokémon is even made for the film draw

attentions; recently, it is announced that the live-action Pokémon film, Great Detective Pikachu is now being produced by Nichole Perlman and Alex Hirsh[19].

3. Purpose and Method of Study

This study deals with the “inner” structures of the Pokémon Series; it analyzes 802, the total number of Pokémon (151 for First Generation, 100 for Second Generation, 135 for Third Generation, 107 for Fourth Generation, 156 for Fifth Generation, 72 for Sixth Generation, and 81 for Seventh Generation) on the basis of gender. It is plausible to use all data because usually a newest title has a group of new Pokémon and brings old Pokémon in previous series; the newest title Pokémon Sun and Moon officially contains 802 Pokémon. Specifically, this study uses three categories for specific analysis: 1) Appearance 2) Stats 3) Diversification of Type.

Then, the foremost question is “how to define gender for each Pokémon?” Like animals, Pokémon have gender ratio. However, the gender system is quite different; some Pokémon, when they are being born, have different “possibility” to become male or female. It is quite unscientific and unreasonable in view of organisms in the real life. The thrust is that we can obviously categorize Pokémon by gender in 8 categories: 1) 100% male 2) 87.5% male & 12.5% female 3) 75% male & 25% female 4) 50% male & 50% female 5) 25% male & 75% female 6) 12.5% male & 87.5% female 7) 100% female 8) Genderless. When one gender is over

the other gender proportionally, this study uses the term “male or female-dominated” simply because one gender dominates the other.

Thus, three questions will be researched for this study in order to view and analyze gender difference among 802 Pokémon:

Question 1: How male/male-dominated Pokémon and female/female-dominated Pokémon appear differently?

Question 2: How male/male-dominated Pokémon and female/female-dominated Pokémon have stats differently?

Question 3: How male/male-dominated Pokémon and female/female-dominated Pokémon have type differently?

Then, it needs to find a way how to collect data. Fortunately, the website PokemonDB (<http://pokemondb.net>) handsomely offers all the necessary information for the study; this study uses the website for collecting data. On Pokédex page (National Dex) of Pokémon data section, the questions can be answered properly and Type chart page of Pokémon data section and Dual Type chart page of Game mechanics section help to research for Question 3. The website has been well maintained since its establishment in 2008, and has been used as a credible source among Pokémon users. Also, it is necessary to visit other Pokémon communities online and analyze how Pokémon gamers use and trust the Pokémon DB website, and it seems that the website looks trustworthy and is being cited many times. Plus, for extra information, this study refers to official Pokémon website (<http://www.pokemon.com/us/>) as well. Finally, on 08/31/2017, all data was gathered.

4. Result

4.1 Appearance

First of all, the study handles the appearance of 802 Pokémon classified by gender. As mentioned, there are 8 categories, and Table 2 shows the result.

[Table 2] Different appearance of Pokémon characters

Generation	Male-dominated			Neutral 50 M/ 50 F	Female-Dominated			Unevaluable Genderless	Total
	100 M	87.5M	75 M		75 M	87.5F	100 F		
1	6	19	10	91	6	0	6	13	151
2	2	13	2	67	5	0	3	8	100
3	2	14	2	95	4	0	2	16	135
4	2	20	2	59	2	0	5	17	107
5	7	21	3	100	5	0	4	16	156
6	0	14	0	46	2	0	3	7	72
7	0	10	0	43	2	0	4	22	81
Total	19	111	19	501	26	0	27	99	802

It shows that there are unequal gender appearances. Excluding neutral and genderless, there are more male-dominated Pokémon (149) than female-dominated Pokémon (53). The next task is to gather result more mathematically precise in view of probability:

For male characters: $19 * (1.00) + 111*(0.875) + 19*(0.75) + 26 * (0.25) = 136.88$

For female characters: $111*(0.125) + 19*(0.25) + 26 * (0.75) + 27 * (1.00) = 65.13$

Thus, even in the precise method, unequal gender appearance exists (More male-dominated characters).

4.2 Stats

The second mission is to examine the stats between male/male-dominated Pokémon and female/female-dominated Pokémon. Basically, stats consist of Health Point (HP), Attack, Defense, Special Attack, Special Defense, and Speed. Each Pokémon has different stats therefore different total stat points. In this study, the method of calculation has some rules for definite results:

* It excludes Alolan Pokémon (18), Mega Pokémon (46), and Primal Pokémon (2). Alolan Pokémon are the Pokémon that are only found in Alola regions, and they have different stats, type, and looking from their original form. Mega Pokémon and Primal Pokémon evolve more powerfully than general evolution throughout some items and conditions. Unlike evolved Pokémon, these three styles of Pokémon do not have different a book number.

* Certain Pokémon can transform/form-change (not evolution) to two or more, and it chooses the default/original/average/standard/ordinary/condition when being caught or founded first; Deoxys as normal form, Rotom as original, Giratina as origin form, Shaymin as land form, Darmanitan as standard mode, Tornadus, Thundurus, and Landorus as incarnate form, Kyurem as original Kyurem, Keldeo as ordinary form, Meloetta as Aria form, Greninja as original Greninja, Aegislash as shield form, Pumpkaboo and Gourgeist as average size, Zygarde as 50% form, Hoopa as Hoopa confined, Wishiwashi as solo, and Minior as Meteor form.

* With regard to some Pokémon who do

not have a default Pokémon form, it uses the average (mean) of stats of possible Pokémons. Wормadam, the evolution Pokémon of Burmy, she could be Plant Cloak, Sandy Clock, or Trash Cloak depending on the type (Grass/Ground/Steel). So, it calculates the average of three forms as it is not able to choose the default value. Likewise, Lycanroc, the evolution Pokémon of Rockruff, could be either Midday Lycanroc or Midnight Lycanroc. Since two forms are unable to have a default Pokémon, it should have the average of two forms which have different stats.

* Plus, Oricorio has four distinctive types, but they have the same stats so only one type of stats is being used.

[Table 3] Average(Mean) of Total Stats of Pok mon Characters

Generation	Male-dominated			Neutral	Female-Dominated			Unevaluable Genderless
	100M	87.5M	75M		50M/50F	75M	87.5F	
1	423.83	442.11	431.50	385.68	385.83	N/A	423.33	474.85
2	332.50	418.85	362.50	394.16	317.60	N/A	441.25	568.88
3	515.00	423.21	355.50	383.06	295.00	N/A	515.00	514.75
4	471.00	423.70	540.00	414.92	381.00	N/A	439.60	574.12
5	507.14	421.52	405.00	405.20	388.00	N/A	410.00	543.81
6	N/A	431.29	N/A	402.83	438.00	N/A	408.67	608.57
7	N/A	413.00	N/A	401.71	480.50	N/A	372.50	549.59
Total	459.47	425.80	423.47	396.95	370.08	N/A	424.41	543.15

It proves that male-dominated characters

((459.47+425.80+423.47)/3 = 436.25) have higher stats than female-dominated characters ((370.08+424.41)/2 = 397.25) on average (mean). Now, let's use the precise method:

For male characters: $459.47 * (1.00) + 425.80 * (0.875) + 423.47 * (0.75) + 370.08 * (0.25) = 1242.17$

For female characters: $428.80 * (0.125) + 423.47 * (0.25) + 370.08 * (0.75) + 424.41 * (1.00) = 861.44$

So, the result is the same that male-dominated characters have higher stats than female-dominated characters on average (mean).

Moreover, it is necessary to view the stats when Pokémons gets leveled up. While playing Pokémon Series, Pokémons will come to have higher stats. When a Pokémon becomes a Level 100, the minimum and the maximum stats will appear differently, mostly depending on EV (Effort Value) and IV (Individual value). For instance, Bulbasaur has base stats of HP 45/Attack 49/Defense 49/Special Attack 65/Special Defense 65/Speed 45 (Total 318); when he/she gets minimum values at Level 100, he/she will have HP 200/Attack 92/Defense 92/Special Attack 121/Special Defense 121/Speed 85 (Total 711). But, when he/she achieves maximum values at Level 100, he/she will possess HP 294/Attack 216/Defense 216/Special Attack 251/Special 251/Speed 207 (Total 1435). It means that the difference could be 724 between minimum values and maximum values at Level 100 condition. Table 4 and Table 5 show the average of stats of Pokémons when they become Level 100 with Minimum values (EV 0, IV 0) and Maximum values (252 EV and 31 EV). And then, we do

compare characters based on gender again.

Level 100.

[Table 4] Average(Mean) of Total Stats of Poké mon Characters at Level 100 (Minimum Values)

Generation	Male-dominated			Neutral	Female-Dominated			Unevaluable
	100 M	87.5M	75 M		50 M/50 F	75 M	87.5F	
1	905.33	939.16	919.40	836.02	842.17	N/A	913.67	997.69
2	737.00	896.00	791.50	853.12	715.80	N/A	947.25	1172.63
3	1071.50	905.29	791.50	832.81	671.75	N/A	1071.50	1064.06
4	991.50	906.15	1117.00	891.10	828.50	N/A	938.20	1180.82
5	1060.43	901.86	876.67	873.37	840.60	N/A	882.75	1125.63
6	N/A	920.36	N/A	868.22	933.00	N/A	877.33	1243.14
7	N/A	886.90	N/A	866.09	1007.50	N/A	812.00	1137.36
Total	971.32	909.75	906.53	857.80	810.00	N/A	911.07	1123.07

It stipulates that male-dominated characters $((971.32+909.75+906.53)/3 = 929.20)$ have higher stats than female-dominated characters $((810.00+911.07)/2 = 860.54)$ on average (mean) at minimum values of Level 100. Next, we do the precise method.

For male characters: $971.32 * (1.00) + 909.75 * (0.875) + 906.53 * (0.75) + 810.00 * (0.25) = 2649.75$

For female characters: $909.75 * (0.125) + 906.53 * (0.25) + 810.00 * (0.75) + 911.07 * (1.00) = 1858.92$

Thus, the result of the precise method is the same that male-dominated characters have higher stats than female-dominated characters on average (mean) at the minimum values of

[Table 5] Average(Mean) of Total Stats of Poké mon Characters at Level 100 (Maximum Values)

Generation	Male-dominated			Neutral	Female-Dominated			Unevaluable
	100 M	87.5M	75 M		50 M/50 F	75 M	87.5F	
1	1665.17	1703.42	1680.80	1580.93	1575.67	N/A	1655.17	1775.69
2	1467.00	1653.62	1533.50	1597.66	1428.60	N/A	1692.00	1977.13
3	1863.00	1662.14	1504.50	1574.23	1382.50	N/A	1863.00	1849.19
4	1767.00	1663.85	1918.00	1644.53	1572.00	N/A	1694.80	1990.06
5	1842.86	1659.00	1617.33	1623.58	1585.40	N/A	1631.25	1924.00
6	N/A	1680.50	N/A	1618.52	1695.00	N/A	1633.00	2066.00
7	N/A	1640.20	N/A	1615.77	1789.50	N/A	1553.25	1936.64
Total	1741.32	1668.26	1661.68	1605.08	1544.88	N/A	1661.41	1920.92

It verifies that male-dominated characters $((1741.42+1668.26+1661.68)/3 = 1690.45)$ have higher stats than female-dominated characters $((1544.88+1661.41)/2 = 1603.15)$ on average (mean) at maximum values of Level 100. Then, we utilize the precise method.

For male characters: $1741.32 * (1.00) + 1668.26 * (0.875) + 1661.68 * (0.75) + 1544.88 * (0.25) = 4833.53$

For female characters: $1668.26 * (0.125) + 1661.68 * (0.25) + 1544.88 * (0.75) + 1661.41 * (1.00) = 3444.02$

Therefore, the precise model has the same result.

In addition, it is rational to explore inner component of stats that Pokémons possess.

Since the previous results show the average of stats, analyzing each component of stats of Pokémon has stats would be meaningful and multi-dimensional. In this process, in order to make clear-cut results, it unifies the data of Pokémon characters of all generations. Table 6. Illustrates the result.

[Table 6] Average(Mean) of Each Component of Stats

Component of Stats	Male-dominated			Neutral	Female-Dominated			Unevaluable
	100 M	87.5 M	75 M		50 M/50F	75 M	87.5 F	
HP	70.68	67.06	71.37	65.30	69.15	N/A	85.19	82.66
Attack	97.58	77.00	86.00	73.10	56.50	N/A	55.89	93.62
Defense	69.26	71.03	55.89	69.26	56.92	N/A	63.19	93.37
Sp. Attack	63.95	75.08	74.21	63.05	62.08	N/A	67.81	96.95
Sp. Defense	78.42	70.31	64.74	64.63	62.15	N/A	84.33	93.81
Speed	79.58	65.32	71.26	61.60	63.27	N/A	68.00	82.75
Total	459.47	425.80	423.47	396.95	370.08	N/A	424.41	543.15

Now let's evaluate each component to analyze stats more exactly:

HP: $(70.68 + 67.06 + 71.37)/3 = 69.70$ vs. $(69.15 + 85.19)/2 = \mathbf{77.17}$

Attack: $(97.58 + 77.00 + 86.00)/3 = 86.86$ vs. $(56.50 + 55.89)/2 = \mathbf{56.20}$

Defense: $(69.26 + 71.03 + 55.89)/3 = 65.39$ vs. $(56.92 + 63.19)/2 = \mathbf{60.06}$

Sp. Attack: $(63.95 + 75.08 + 74.21)/3 = 71.08$ vs. $(62.08 + 67.81)/2 = \mathbf{64.95}$

Sp. Defense: $(78.42 + 70.31 + 64.74)/3 = 71.16$ vs. $(62.15 + 84.33)/2 = \mathbf{73.24}$

Speed: $(79.58 + 65.32 + 71.26)/3 = 72.05$ vs. $(63.27 + 68.00)/2 = \mathbf{65.64}$

In this respect, female-dominated characters outweigh male-dominated characters in HP and Sp. Defense component, while male-dominated characters outweigh female-dominated characters in other 4 components.

Again, for more accurate result, we use the precise calculation:

HP: $70.68 * (1.00) + 67.06 * (0.875) + 71.37 * (0.75) + 69.15 * (0.25) = 200.17$ vs. $67.06 * (0.125) + 71.37 * (0.25) + 69.15 * (0.75) + 85.19 * (1.00) = \mathbf{163.28}$

Attack: $97.58 * (1.00) + 77.00 * (0.875) + 86.00 * (0.75) + 56.50 * (0.25) = 243.58$ vs. $77.00 * (0.125) + 86.00 * (0.25) + 56.50 * (0.75) + 55.89 * (1.00) = \mathbf{129.39}$

Defense: $69.26 * (1.00) + 71.03 * (0.875) + 55.89 * (0.75) + 56.92 * (0.25) = 187.56$ vs. $71.03 * (0.125) + 55.89 * (0.25) + 56.92 * (0.75) + 63.19 * (1.00) = \mathbf{128.73}$

Sp. Attack: $63.95 * (1.00) + 75.08 * (0.875) + 74.21 * (0.75) + 62.08 * (0.25) = 200.82$ vs. $75.08 * (0.125) + 74.21 * (0.25) + 62.08 * (0.75) + 67.81 * (1.00) = \mathbf{142.31}$

Sp. Defense: $78.42 * (1.00) + 70.31 * (0.875) + 64.74 * (0.75) + 62.15 * (0.25) = 204.03$ vs. $70.31 * (0.125) + 64.74 * (0.25) + 62.15 * (0.75) + 84.33 * (1.00) = \mathbf{155.92}$

Speed: $79.58 * (1.00) + 65.32 * (0.875) + 71.26 * (0.75) + 63.27 * (0.25) = 206.00$ vs. $65.32 * (0.125) + 71.26 * (0.25) + 63.27 * (0.75) + 68.00 * (1.00) = \mathbf{141.43}$

Thus, in all components, male-dominated Pokémon characters outweigh female-dominated Pokémon characters.

4.3 Diversification of Type

Last but not least, this study looks into

diversification of type that every Pokémon and his/her moves holds. (E.g. Pikachu is Electric Type and Porygon is Normal Type). Throughout Pokémon history, there have been 18 different types: Normal¹⁾ /Fire/Water/Electric/Grass/Ice/Fighting/Poison/Ground/Flying/Psychic/Bug/Rock/Ghost/Dragon/Dark/Steel/Fairy). Each type has its strong, neutral, weak, or null against the other type in attack and defense. For example, when a Ghost-Type Pokémon attacks, the damage will be 200% against Psychic Type Pokémon and Ghost Type Pokémon, the damage will be 50% against Dark Type Pokémon, 0% against Normal Type Pokémon, and 100% for other types.

That is, each type has strength and weakness against other types. Furthermore, some Pokémon assess Dual Type. (E.g. Jynx is Psychic Type/Ice Type and Tapu Bulu is Grass Type/Fairy Type). This Dual Type mean that each type is equally weighted. Thus, “multiplication” applies to Dual Type Pokémon. For example, Durant is a Dual Type Pokémon (Bug Type/Steel Type). When being attacked by Fire Type Pokémon, Durant will get 400% damage as Fire Type gives 200% damage to both Grass Type and Steel Type ($200\% * 200\% = 400\%$). When being attacked by Ice Type Pokémon, Durant will get 100% damage as Ice Type gives 200% damage to Grass Type and 50% damage to Steel Type ($200\% * 50\% = 100\%$) When being attacked by Grass Type Pokémon, Durant will get 25% damage as Grass Type gives 50% damage to both Grass Type and Steel Type ($50\% * 50\% = 25\%$). When being attacked by Poison Type Pokémon, Durant will get 0 % damage as

Poison Type gives 200% damage to Grass Type but 0% damage to Steel Type ($200\% * 0\% = 0\%$).

The significant point is that the diversification of type can matter. As mentioned before, diversity is one of factors that make Pokémon Series popular and enjoyable. Therefore, it is reasonable to analyze gender differences of Pokémon in view of diversification of Type. First of all, it examines the distribution of type. Due to Dual Type Pokémons and different forms²⁾ of Wormadam and Oricorio who have a different type depending on the situation, the result will be higher than 802, the number of Pokémons. Table 7 demonstrates that.

1) Normal does not mean nothing. It is one of types.

2) Lycanroc also has two different forms but both of them are only Rock Type.

[Table 7] Average(Mean) of Each Component of Stats

Generation	Male-dominated			Neutral 50M/ 50F	Female-Dominated			Unevaluable Genderless	Total
	100M	87.5M	75M		75M	87.5F	100F		
Normal	3	3	0	77	12	0	5	10	110
Fire	0	25	5	21	5	0	1	6	63
Water	0	31	0	88	2	0	0	10	131
Electric	1	1	3	31	1	0	0	11	48
Grass	0	26	0	59	0	0	6	6	97
Ice	0	3	0	25	0	0	3	5	36
Fighting	7	9	8	23	0	0	0	7	54
Poison	3	4	0	52	0	0	0	1	60
Ground	2	3	0	52	0	0	2	6	65
Flying	6	9	0	70	1	0	3	9	98
Psychic	2	2	3	39	4	0	4	29	83
Bug	2	3	0	67	0	0	3	4	79
Rock	0	22	0	29	1	0	0	10	62
Ghost	0	1	0	31	1	0	1	9	43
Dragon	1	2	0	33	0	0	1	9	46
Dark	0	5	0	36	0	0	2	4	47
Fairy	0	0	0	0	0	0	0	0	0
Steel	0	4	0	23	0	0	1	22	50
Total	27	153	19	756	27	0	32	158	1172

In this study, we use Shannon Index, a popular diversity index. Based on Shannon's Index[20], the highest order is 87.5M (2.32), 100F (2.31), 100M (2.00), 75F (1.64), 75M (1.30). So, for the average, female-dominated

characters have 1.98 $((2.31+1.64)/2)$ and male-dominated characters have 1.87 $((2.32) + (2.00) + (1.30))/3$, which means female-dominated characters are slightly more diverse. However, by using the precise method, the result is different:

For male characters: $2.00 * (1.00) + 2.32 * (0.875) + 1.30 * (0.75) + 1.64 * (0.25) = 5.42$

For female characters: $2.32 * (0.125) + 1.30 * (0.25) + 1.64 * (0.75) + 2.31 * (1.00) = 4.16$

The second realm is to focus on investigating Dual Type Pokémon. Dual Type Pokémons do not necessarily mean that they are greater and stronger than ordinary one; however, for the purpose of the study, it is reasonable to look Dual Type Pokémon, and there are 402 Dual Type Pokémons with 54 combinations of possible 153 combinations $((18 * 17) / 2)$. Table 8 shows that.

[Table 8] Number of Dual Type of Pokémon characters

Generation	Male-dominated			Neutral 50M/ 50F	Female-Dominated			Unevaluable Genderless	Total
	100M	87.5M	75M		75M	87.5F	100F		
1	1	9	0	47	2	0	2	6	67
2	0	1	0	42	2	0	1	3	49
3	1	9	0	44	1	0	1	10	66
4	2	9	0	32	0	0	3	7	53
5	4	6	0	50	0	0	2	12	74
6	0	7	0	26	2	0	0	6	41
7	0	6	0	28	1	0	1	16	52
Total	8	47	0	269	8	0	10	60	402

Like the appearance, there are more Dual Type Pokémon characters in male-dominated

Pokémon characters. Even if we use the precise method, the result is the same.

For male characters: $8 * (1.00) + 47 * (0.75) + 8 * (0.25) = 45.25$

For female characters: $47 * (0.25) + 8 * (0.75) + 10 * (1.00) = 27.75$

5. Discussion

Unlike previous gender studies and research in video games, this study has two main differences. For one thing, it focuses on direct comparison at a given situation. Since there are 802 Pokémon's in Pokémon Series currently, it is possible to compare microscopically male/male-dominated Pokémons, female/female-dominated Pokémons, equal gender Pokémons, and genderless Pokémons. Secondly, this study examines monster-like Pokémons; they are not human beings, but it has own unique implications because only humans but also other species have gender system. Pokémons also have gender system and ratio, but the point is that it is not easy to distinguish them not merely because some of them have different possibility to become either male or female but also because the appearance does not fully represent their gender. Before checking out the database website, ordinary gamers have no chance to find out the possibility of gender of certain Pokémons in detail. Gamers may know the gender of Pokémons that they have, but it does not fully explain the whole gender system in Pokemon series. Moreover, gamers may think of the possibility of the gender of Pokémons by looking them, but that is not

guaranteed. People may guess with the naked eyes when they see certain Pokémons, but it could be confusing. Let's see the appearance of Gardevoir, Vespiquen, and Gothitelle.



[Fig. 1] Portrayal of Gardevoir, Vespiquen, and Gothitelle

When examining as color, clothing and body shape, and possibly its name, people may recognize that these Pokémons are or close to female Pokémon. But, at the first sight, it would be difficult to know Gardevoir has gender ratio 50% Male & 50% Female, Vespiquen has gender ratio 0% Male & 100% Female, and Gothitelle has gender ratio 25% Male & 75% Female. Thus, it is safe to say that the gender ratio is somewhat “hidden” because people may not know the specific gender ratio throughout playing Pokémon without visiting the website that provides information.

Then, this study does an astute job in presenting and analyzing the gender status of Pokémon characters in more detailed ways. Specifically, this study utilizes three standards (Appearance/Stats/Diversification of Type), and the results demonstrate that the gender status are not equal. First of all, as for appearance, male/male-dominated Pokémon characters are greater in number when compared to female/female-dominated Pokémon character. It is simple and easy-to-analyze; the “number”

of appearance itself reveals the gender inequality as existence. Like gender inequality in our life, this inequality is inappropriate. Secondly, regarding stats, this study shows that male/male-dominated Pokémon perform better than male/female-dominated in basic stats, maximum at Level 100, minimum at Level 100, and inner components of stats. This inequality can induce gamers, especially beginners, to prefer male/male-dominated Pokémon so that they can excel in the game. Last but not least, with respect to diversification of type, the result demonstrates not only that male/male-dominated characters are more diverse (by precise method) but also that male/male-dominated characters have more Dual Type Pokémon. As mentioned, diversity is one of the factors that made Pokémon Series popular around the globe, so it means that male/male-dominated characters can be more favored in terms of diversity.

In this respect, these results prove that the world-famous Pokémon Series are not free of gender equality, even though we do not exactly know whether it is intentional or not. The key point is that we are able to compare the characters based on gender in Pokémon Series at the same time. Previous studies about gender inequality are either meta-analysis of a number of games or focusing on a certain game character (E.g. Lara Croft of Tomb Raider). However, Pokémon gives us a chance to analyze different gender characters more deeply and objectively, and this study proves gender inequality in three dimensions.

6. Conclusion

Because of controversies in gender issue, several feminism movements have occurred in various places. Now it is active not only in the United States but also in other regions such as Asia, Africa, and Latin America. Some feminists argue that feminism is strongly connected to culture, system, and custom. Even some activists, usually from Western nations try to help nations where have (relatively) less women's rights and status than Western nations. He For She supported by United Nation could be an example of that. For achieving general equality, this movement centers on international cooperation. British actress Emma Watson who was named UN Goodwill Ambassador was invited when He for She campaign was launched in September 2014, and she emphasizes the global change and conciliation[21].

Like the real world, now it is time to globally explore the female characters' status in video game industry. It is not only because the video game market is increasing but also because the medium has the power to influence the public's perception of female gaming characters. Many studies prove that the traditional media from newspaper to television have affected ordinary people regarding the perception of gender role, status, stereotype, etc. Thus, it is very reasonable to think that unequal gender status of the video game industry can affect the people and the society. A previous study show that male characters have been treated more than female characters in fighting action game[22] and there are not many video games that attract

female gamers yet[23].

This study is being researched as a cast study, dealing with Pokémon Series, and the result shows that female/female-dominated Pokémon characters are not treated equally compared to male/male-dominated Pokémon characters in all the standards that were used. This study will help and inform gender scholars, gaming scholars, and some even game users to understand the wholesome issue of sexuality in video games. Further studies will be done to explore gender issue more deeply and critically. Video game is one of the many media that the society is exposed to, and it has the possibility to make an impact in our lives, societies, cultures, and recognitions.

However, this study has some limitations. First of all, there are many Pokémon that have different possibility to become a male and a female. However, that does not exactly mean that those Pokémon are either male or female. For example, 87.5 Male & 12.5 Female is categorized as male-dominated, but female Pokémon can be found there. This study uses the precise method/calculation, but still it is somewhat unclear. Secondly, stats can be used as a proper standard, but some exceptions can happen. Let's see the list of Pokémon used in Pokémon game tournament. During the Masters Division of VGC (Video Game Championship) 2016 World Championship, one of the common Pokémon was Gengar among top 24 gamers. As for base stats, Gengar possess HP 60/Attack 65/Defense 60/Special Attack 130/Special Defense 75/Speed 110 so Total is 500. Several Pokémon characters have higher stats than Gengar, but Gengar has been used by gamers during the game tournament

because of specific effective moves and Dual Type (Ghost Type/Poison Type). That is, using stats as a standard can be used but it is somewhat fragmentary. Thirdly, this study does not count each Pokémon's move (way of attack/defense) and ability (Skill that naturally operate). It is simply because adding and analyzing Pokémon's moves will be very complex and multifaceted. Fourthly, the credibility of the Pokémon Database website is not fully guaranteed. With careful examination, the website looks reliable, but it may have false data. Fourthly, this study does not cover the appearances of Pokémon "while" playing the game in order to analyze the gender issue more deeply. It would be difficult to research that exactly not only because the situation will vary but also because the scope of the research is too large. Possibly, professional Pokémon gamers might help the problem, and then it should be added.

Last but not least, this study does not use specific statistics methods. This study does not use professional statistics calculations such as standard deviation, t-test, and one-way ANOVA. It would be better further studies examine Pokémon characters more mathematically and statistically.

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