

How is evolution expressed sound-symbolically?

An analysis of the monster names of *Digital Monster*

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BACKGROUND

- *Digital Monster*, or *Digimon*, is a computer game released in 1997 by Bandai. Players raise and battle monsters that have artificial intelligence in a computer network called the Digital World.
- The monsters undergo evolution to be stronger.
- There are six basic levels of evolution:
 1. Baby I (*Younenki-I*) (e.g., *botamon*, *punimon*)
 2. Baby II (*Younenki-II*) (e.g., *koromon*, *tsunomon*)
 3. Child (*Seichouki*) (e.g., *agumon*, *gabumon*)
 4. Adult (*Seijukuki*) (e.g., *gureimon*, *garurumon*)
 5. Perfect (*Kanzentai*) (e.g., *metarugureimon*, *waagarurumon*)
 6. Ultimate (*Kyūkyokutai*) (e.g., *woogureimon*, *metarugarurumon*)

INTRODUCTION

- Kawahara et al. (2018) found that, as Pokémon characters evolve, the number of voiced obstruents in their names and their length in morae are more likely to increase in their names (e.g., *po-p-po* (3 morae) → *pi-jyo-n* (3 morae) → *pi-jyo-t-to* (4 morae)).
- The current study examines whether the same sound-symbolic trend found in Pokémon names is also observed in the more than 600 monster names featured in *Digimon*.

THE CURRENT ANALYSIS

- Extracted 806 monster names from the official website of *Digimon* and excluded 195 monsters that belonged to the exceptional evolutionary levels. **The final target was 611 monsters.**
- Performed (multiple) regression analysis, the dependent variables being evolutionary levels, and the numbers of voiced obstruents and morae being independent variables.

TAKE-HOME MESSAGE

Evolutionary stages are positively correlated with the number of voiced obstruents and the number of morae in *Digital Monster*.
This replicates the results of the sound-symbolic analysis of Pokémon names conducted by Kawahara et al. (2018).

RESULTS & DISCUSSION

- The higher the evolutionary stage, the more likely the number of morae is to increase, and the more likely the number of voiced obstruents is to increase.

- Multiple regression analysis shows an interaction effect between morae and voiced obstruents ($t = -4.17, p < .001$), which means that the effects of morae and voiced obstruents are not independent of each other.

• Spearman's correlation analysis

Positive correlations between evolutionary levels and the number of morae ($\rho = 0.503, p < .001$) and the number of voiced obstruents ($\rho = 0.245, p < .001$).

- Evolution is expressed using both the effects of voiced obstruents and length in morae.

- These results replicate those obtained in the study of Pokémon characters by Kawahara et al. (2018).

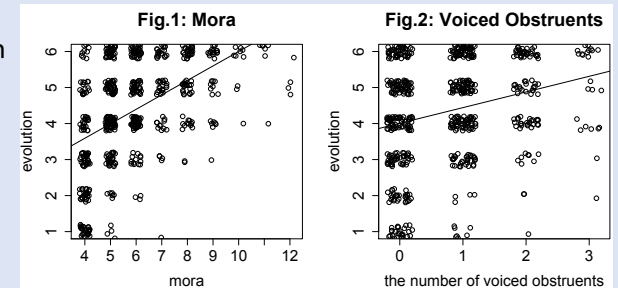


Table 1: Average numbers of mora and voiced obstruents at each evolution level

evolution	N	Mora	VdObs
1	34	4.21	0.26
2	36	4.33	0.31
3	84	4.98	0.62
4	150	5.77	0.83
5	142	6.29	0.80
6	164	6.79	1.04
ALL	611	-	-