How Pokémonastics has evolved: Ver 1.0

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Kawahara et al. (2018b), originally circulated in late 2016, is the very first study in Pokémonastics, a research paradigm in which we use Pokémon names to study the nature of sound symbolic patterns in natural languages. The whole project came out of in-class discussion during a week-long intensive lecture that I gave at Tokyo Metropolitan University. Gakuji Kumagai, a then PhD candidate, came up with the original idea of analyzing Pokémon names, after my lecture on the phonetic bases of sound symbolism. Atsushi Noto took care of much of the data-coding within a day or two, so that we could complete the preliminary analysis within that week. The paper analyzed the set of existing Pokémon names in Japanese. We ended up publishing the paper in *Phonetica* in 2018, as it bears upon Ohala's Frequency Code Hypothesis, whose essence was published in the journal in 1984 (Ohala 1984).

Prior to the publication of Kawahara et al. (2018b), a preliminary version of that initial analysis was also presented in an introductory phonetics book that I wrote in Japanese (Kawahara 2017, Chapter 6).

Gakuji Kumagai and I followed up on Kawahara et al. (2018b) to address the question of the productivity of the sound symbolic patterns that we identified in the existing names. The first experimental study using nonce names was conducted in early 2017 and appeared as Kawahara and Kumagai (2019a). The second experimental study, written up primarily by Kumagai in Japanese, appeared as Kumagai and Kawahara (2019). A MaxEnt analysis of sound symbolic connections was already presented in this paper, and I think it was mainly Kumagai's idea. This evolving hunch—we can use MaxEnt to model stochastic sound-meaning connections—was further developed in several later works of mine (Kawahara 2020a,b, 2021a,b; Kawahara et al. 2019), and still continues to be one of my current research agendas.

With a different research team, we tested whether the results obtained by Kumagai and Kawahara (2019) would replicate with preschoolers (Kawahara et al. 2018a). This is one direction in which I would like to expand on in the future, once experiments with children become not too challenging; i.e., once the pandemic is not in our way.

These three experimental studies only tested the notion of evolution. Kawahara and Kumagai (2021) in addition tested whether weight, height, and strength can be signaled by way of sound symbolism. The main inspiration of that work is Winter et al. (2019), who showed the multi-dimensionality of sound symbolism.

When Kawahara et al. (2018b) was still circulated as an unpublished manuscript, an international group of researchers, lead by Stephanie S Shih, started analyzing the Pokémon names in other languages, going beyond Japanese (Shih et al. 2018). The name of this

general research project—Pokémonastics—is actually due to Shih. This effort has been crystallized as Shih et al. (2019), which analyzes Pokémon names in Cantonese, English, Japanese, Korean, Mandarin, and Russian.

Many authors of the study by Shih et al. (2019) met together in Tokyo at the 1st International Conference on Pokémonastics held at Keio University in May 2018. This conference also featured a number of other presentations on sound symbolic patterns in several genres. I hope to organize the second meeting at some point in the future, but perhaps sometime in the next five years.

Inspired by Shih et al. (2018), with Jeff Moore I conducted two experiments with English speakers. The experiments were conducted in 2018. Various factors contributed to the delay of publication of this paper, which finally appeared in print in 2021 (Kawahara and Moore 2021). After this paper was accepted, some follow-up experiments with English speakers were conducted to address the additional issue of cumulativity in sound symbolism (Kawahara 2020b). This paper, Kawahara and Breiss (2021), was published before Kawahara and Moore (2021).

A team of researchers in Brazil, led by Mahayana Godoy, ran a series of studies that elicit Pokémon names in Brazilian Portuguese, since in Brazil, they use English Pokémon names (Godoy et al. 2020).

While working on these series of studies, during the time of lockdown due to COVID in 2020, I came across a handout by Bruce Hayes (Hayes 2020a) (see also Hayes 2020b). Hoping that I could do something fun (i.e. Pokémonastics) during the depressing time, while at the same time addressing issues that theoretical linguists would be interested in, I tested the quantitative prediction of MaxEnt laid out by Hayes. This resulted in the article published in *Phonology* (Kawahara 2020a). A follow-up study is reported in Kawahara (2021b).

These studies were actually inspired by a term paper written by Michinori Suzuki, a then undergraduate student at International Christian University, which analyzed *move* names (Suzuki 2017). With Kumagai and Suzuki, I ran a follow-up judgment study, which is reported in Kawahara et al. (2020c). All of these studies, as well as Kawahara and Breiss (2021), address the general issue of the cumulativity of sound symbolism (Kawahara 2020b)—whether sound symbolic effects are cumulative, and if so, how? This general issue of cumulativity, I believe, is one factor that makes studies of sound symbolism potentially interesting for theoretical linguists, as (non-)cumulative nature of phonological patterns is one actively debated topic in the theoretical phonology literature.

Two undergraduate students at Tokyo University of Agriculture and Technology expanded the scope of Pokémonastics by studying Pokémon types (Hosokawa et al. 2018). Their observations were experimentally assessed by Kawahara and Kumagai (2019b). The analyses were also further developed in Uno et al. (2020), who also discuss why it is interesting to study sound symbolism from the perspective of Cognitive Linguistics.

Maha Godoy pointed out that both Socrates and the Upanishads talk about the possible connections between sibilants and flying/sky. We tested their (ancient) claim within Pokémonastics in Kawahara et al. (2020a). Accidentally, the link to our online experiment was advertised on a Pokémon fan website, and we obtained more than 700 participants over night, which highlights a distinct forte of running an experiment using Pokémon names.

Whether English speakers and Brazilian Portuguese speakers are also sensitive to sound symbolism related to Pokémon types was tested by Kawahara et al. (2020b) and Godoy et al.

(2021), respectively.

Just for fun, I used Pokémons to test the *bouba-kiki* effect (Ramachandran and Hubbard 2001) with English speakers, by presenting roundish Pokémons and angular Pokémons (Kawahara 2021a). The results basically replicated those of D'Onofrio (2014). I have run a similar experiment with Japanese speakers, but I feel that it is necessary to run a follow-up study to make sense of what's going on (the effects of orthography were really salient in the results). I think it would be fun to test the *bouba-kiki* effect using Pokémons in other languages as well.

I am making an active use of these materials in my teaching, and I strongly hope that Pokémonastics can work as a 'hook' that can attract students' interest as well as attention from the general public (Kawahara 2017, 2019, 2020d). I also have a strong feeling that theoretical phonologists have much to learn by studying sound symbolic patterns in natural languages. I wrote a brief summary/position article on this topic (Kawahara 2020c), which I hope to expand before too long.

What else do I want to do? Analyses of existing Pokémon names in languages that were not covered by Shih et al. (2019) is one obvious direction. I hear from people from time to time that they have actually analyzed a new language, and I hope to see their results published soon. Also I would be very much interested in conducting experimental studies on languages other than English, Japanese, and Brazilian Portuguese. The results so far are showing interesting cross-linguistic similarities and differences among these three languages. Three is a good number, but I would love to do more.

Another topic that I am currently thinking a lot about is whether sound symbolic principles can cause phonological alternations, and relatedly, whether phonological considerations can impact sound symbolic patterns. I am fairly optimistic that such cases exist (Akita 2020; Alderete and Kochetov 2017; Dingemanse and Thompson 2020; Jang 2021; Kumagai 2019), implying that formal phonological systems and sound symbolic patterns are closely related with one another, at least more tightly than currently believed.

Resources

1. Almost all the papers that I wrote about Pokémonastics can be found on this web page: `http://user.keio.ac.jp/~kawahara/research.html`

2. In this YouTube talk, I present a more extensive review of Pokémonastics research as of December 2020: `https://www.youtube.com/watch?v=fcEE5aaVRcA&t=1505s`.

3. Here is the conference website for the 1st International Conference on Pokémonastics. Some slides are available: `https://1stpokemonastics.wordpress.com`.

4. Here's a nonce name generator that I use from time to time for my Pokémonastics experiments: `http://sei-street.sakura.ne.jp/page/doujin/site/doc/tool_genKanaName.html`

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