The Kiki-Bouba Effect A Case of Personification and Ideaesthesia

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Abstract

The Kiki-Bouba effect comprises a relation between two abstract figures and two non-words: people call the star-shaped figure Kiki and the rounded figure Bouba in a proportion of 9 to 1 (Ramachandra and Hubbard, 2001). The effect is explained by a sound-vision synaesthesia: certain sounds are associated with certain shapes in a non-arbitrary manner. If we ask the participants to decide which of the two figures, the star-shaped or the amoeboid, to call Yin and which Yang, between 82% choose the star-shaped figure as Yin. There are cases of synaesthesia where personality is attributed to numbers or letters (Simmer and Holenstein, 2007). The word Kiki is overall happy, clever, small, slim, young, nasty and nervous. The star-shaped figure is overall clever, tall, small, slim, nervous, nasty and upper class. That is, the correspondence is above all in the qualifying adjectives clever, nasty and nervous, and about the physical appearance small and slim. This brings us to the fat-thin effect. The cinema, literature, comics and children's programmes are full of contrasting figures: Don Quixote and Sancho Panza, Ollie and Stan (the fat and the thin in Spain), Asterix and Obelix, Tintin and Captain Haddock, Epi and Blas (in Spanish. Their original English names are Bert and Ernie) or the Spanish comic about very naughty twin boys called Zipi (with fair hair) and Zape (with dark hair). We are going to analyze some of these cases and their relation with the Kiki-Bouba effect and the lips position: Forenames are not arbitrary. There is a correspondence between (rounded versus spread) names and physical characteristics (fat or slim objects or persons), personality (fool or intelligent, nice or nasty) or concepts.

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Introduction

The Kiki-Bouba effect (see Figure 1) comprises a relation between two abstract figures and two non-words: people call the star-shaped figure Kiki and the rounded figure Bouba in a proportion of 9 to 1 (Ramachandra and Hubbard, 2001). This occurs in different languages such as Tamil, English, Spanish and German and in children from two years old (Maurer, Pathman & Mondloch, 2006). The effect is explained by a sound-vision synaesthesia: certain sounds are associated with certain shapes in a non-arbitrary manner. Other variations of this same explanation given by Ramachandran and Hubbard would be that there exists congruence between sounds and the visual form, Kiki and its figure corresponding to straight lines with abrupt changes while the non-word Bouba and its corresponding shape are rounded with gradual changes. They also establish the Parieto-Temporo-Occipital (PTO region) of the brain as the place where these congruencies are detected. In addition, they have associated the opening of the mouth (closed versus open mouth) – which would be a synkinesis – with sounds and visual forms. This has led Ramachandran to suggest the possible implication in this effect of the mirror neurones and the Broca area (Ramachandran, Azoulai, Stone, Srinivasan & Bijou, 2005). Another explanation usually discarded but simpler would be that there is a visual similarity between the letters "k" and "i" and the star-shaped figure and the letters "b" and "a" and the rounded figure. Certain evidence in favour of this simple explanation has been contributed by Cuskley, Simner &Kirby. Against this hypothesis of visual-visual synergy would be that the effect occurs in the Tamil language where the orthography of these phonemes is very different and in Spanish the effect is maintained although the words are written "qyqy" or "quyquy", that is to say, with curved shapes and without abrupt changes, and VUVA (with capital letters to avoid rounded shapes).

Insert Figure 1 here

The Kiki-Bouba effect would have become an anecdote if Ramachandran and Hubbard had not related it to the origin of language through their hypothesis of Bootstrapping: the way we put names

to things is not arbitrary. In all languages the words for "large" are spoken with the mouth open and the words for "small" with the mouth closed. The word to denominate the other ("you") is spoken with the lips turned outwards and the word "me" with the lips turned inwards. It is not difficult to fault the logic involved in verifying these examples, for example, in Spanish the word "yo" (I in english) does not involve turning the mouth inwards. The word "agudo" (high-pitched) includes the letter G but so do "gordo" (fat), "grave" (low-pitched), "largo" (long) and "delgado" (slim). The aim of this article is to submit to a hypothesis test the explanations ascribed to the effect and to check what it has to do with the origin of language: Exactly with the correspondence between names and concepts, between forenames and persons descriptions.

Experiment 1: A case of ideaesthesia?

If we ask the participants to decide which of the two figures, the star-shaped or the amoeboid, to call Yin and which Yang (we also used Yan; also Tic versus Tac, or "i" versus "a" with identical results), between 75% to 90% respectively choose the star-shaped figure as Yin (we replicated the yin-yang effect twice with groups of 100 and 50 persons from ages between 10 to 80). In all experiments of our set the position left or right of the figures in the screen were counterbalanced. At the same time, Yin and Yang being the denominations for opposing categories: man-woman, God-the Devil, black-white, heat-cold… This made us think that perhaps the open and closed mouth associated with open (a) and closed vowels (i) might be the non-arbitrary mode for denominating opposites. Ideaesthesia (Nikolic, 2009) is an association not between senses, like synaesthesia, but of a conceptual type between ideas or between a sense and an idea (such as when we represent intelligence with an illuminated light, that is, like seeing). It is possible that certain sounds and/or certain openings of the mouth are associated with meanings, with ideas. The question is: what do the non-words Kiki and Bouba and the abstract star-shaped and amoeboid figures mean? We decided to find out by constructing a profile of the conceptual associations of the words and the images separately to see if they coincided. On one side we used a list of opposing categories, as

words for the images and images for the words Kiki and Bouba. The categories of opposites used were those associated with Yin and Yang: white versus black, man versus woman, God versus the Devil, stillness versus movement, heat versus cold, brain versus body… Well, we used these words to denominate the figures or we used images of God and the Devil, a white point and a black one… for the words Kiki and Bouba. When an image was confusing, for example representing heat by the sun, which could recall the star shape but is curved at the same time, we used several images to check that the effect was not specific to the image but was conceptual (a steaming cup, a thermometer indicating a high temperature…).

Subsequently, we detail only those results that deviate from chance in each profile (profile 1 or the Yin-yang profile) for both the images and the words. We describe the word Kiki and the star-shaped figure, knowing that Bouba and the amoeboid figure will be exactly the opposite. Again, 50 people, 30 women, with ages between 20 to 45, took this test.

In Profile 1 or that of Yin and Yang, for the word Kiki: white (70%), movement – person running – (81%), woman screaming (75%), cold – person in a coat shivering in a snowy landscape – (77%) or igloo (65%), body – image of headless anatomical atlas body – (72%). In the remaining categories (God-the Devil, naked woman-naked man…) the choice was random, always around 50%. That is, the word Bouba was a black dot, an image of stillness (person in a yoga pose: lotus flower), face of man screaming, heat (person sweating under a blazing sun or a hot cup) and brain (image of a lateral vision of the human brain).

For the star-shaped figure: man (73%), black (68%), cold (85% or 78%), high pitched voice (83%), devil (60%). In the remaining categories the choice was random (when choosing the words body-brain, movement-stillness, masculine or feminine voice…). That is, the profile is poor and different for the figures and the words. They become opposite in terms of colour and different in sex: the star-shaped figure is black and masculine, the word Kiki is white and more feminine. Figure and word coincide in relation to cold and high pitched voice. In any case, the key to the Kiki-Bouba effect would not appear to be in this battle of opposites, where the percentages do not move in the

proportion 9-1 either.

Experiment 2: Personalisation

We established a second profile based on personalisation. Human beings tend to empathise with objects, to think our car is strong or nice. There are cases of synaesthesia where personality is attributed to numbers or letters (Simmer and Holenstein, 2007). Given the possible involvement of the opening of the mouth and, consequently, of the mirror neurones and their relation with empathy, we proposed a game to our participants: the star-shaped figure and the amoeboid figure are two extraterrestrials and we must decide which is: clever versus silly, tall versus short, fat versus thin, nice versus nasty, large versus small, upper class (rich, boss, business man) versus low class (poor, worker, employee…).

For the Kiki-Bouba words, we indicated that they were two foreign words and that participants should say which meant tall versus short, large versus small… In this case, the concepts were represented by means of drawings: for large as opposed to small, we used a large rectilinear castle and another identical but in miniature (a rectilinear figure) or two identical elephants (one big and one in miniature: a curved figure) to avoid confounds with curved versus linear figures (the reader must remember that the main explanation of the Kiki-Bouba effect from Ramachandran is based on the correspondence between straight lines versus rounded figures and the words). We also used a hand with the thumb and index finger separated to indicate something large, or almost together for small (suggesting pliers, more open or less open). We used a list of more frequent adjectives to describe persons after a first look elaborated asking 30 participants (university students) for open descriptions of human pictures.

In Profile 2 or that of personality, for the word Kiki: Clever (78%), tall (66%), small (between 85% to 88% in all cases: elephant, castle or hand), slim (88%), happy (76%), extrovert (68%), young (80%), nervous (90%), nice (51%) and upper class (48%). For the star-shaped figure: Clever (77%), tall (80%), small (75%), slim (95%), happy (65%), extrovert (38%), young (58%), nervous (81%),

nasty (79%) and upper class (78%).   We depicted in black letters the results equal or above 75%.

The word Kiki is overall happy, clever, small, slim, young and nervous. The star-shaped figure is overall clever, tall, slim, nervous, nasty and upper class. That is, the correspondence is above all in the qualifying adjectives clever and nervous, and about the physical appearance slim and small.

In summary, Kiki can have multiple meanings, as can the star-shaped figure. Some of them independent of the straight line-rounded figures contrast (like in the case of the adjective small). Also their correspondence occurs on the level of a physical description: both tend to be slim. In the simplest of cases we are talking about a sound-vision synaesthesia (the "i" is a sharp, high-pitched sound; the "a" is low and deep).

A type of synesthesia in normal people is to say to someone: you have the face of Alexander or of Eva. When we say this, we mean that the person appears to us beautiful like Eva or strong and attractive like Alexander the Great or not very clever or young or old, that is, we make evaluations of people's physical attractiveness, social class or personality on first impressions and about the correspondence with their names. In the Kiki-Bouba effect, Kiki is an appropriate name for objects or people that are slim or small, perhaps also clever and nervous, vertical; the star-figure shares these characteristics.

Experiment 2-b

We ask 50 participants to look at nude human silhouettes filled in black ink that can belong to a woman or a man who can be slim or fat and to decide who is clever or fool, nervous or quiet, nice or nasty, rich or poor. The results for the slim man were: clever (70%), nervous (80%), nice (23%) and poor (68%). The results for the slim woman were: Clever (50%), nervous (78%), nice (25%) and poor (25%). It is clear that slim figure means nervous and nasty, fat figure means nice and fool and there is still sexism in the intelligency and social class attribution. The reader can remember now that the star-figure was clever, masculine, nasty and upper class.

To summarise, perhaps the Kiki-bouba effect has something to do a) with the correspondence between a psychophysical characteristic, the tone and some physical-visual characteristics (tall,

thin, small), which is perceptive synaesthesia; or b) with the assignation of names to objects in terms of correspondence in personalisation (attributing personality) between names (whether phonemes, syllables or words) and objects (even if they are inanimate or not), that is, it is a case of ideaesthesia or conceptual synaesthesia; In the following experiments we try to distinguish between these two possibilities. Or perhaps there is a first order correspondence between acoustic characteristics and visual characteristics and a second order correspondence between acoustic-visual characteristics and personality.

Experiment 3: The Don Quixote effect: person-name synaesthesia.

A variant of the synaesthesia called Ordinal Linguistic Personification (OLP) exists where personality, at least gender and colour, is attributed to numbers and letters, as we have already outlined. The letter "i" for a synaesthete of this type is a thin, white woman. The opposite effect also exists: attributing a grapheme to a person (you are number one) is person-number synaesthesia (Milán et al., submitted). It could be that the Kiki-Bouba effect corresponds to one of these opposed variants or to their congruence. On the one hand, the OLP type of synaesthesia, the names Kiki and Bouba, can be reduced to the vowels "i" and "a" and these to the psycho-physical property of the tone (high-pitched or low). Presenting the star-shaped and amoeboid figures, if we ask which corresponds to a high-pitched or a low-pitched voice, 83% choose the star-shaped figure as the high-pitched voice. In other words "i" is a vertical vowel and "a" is a horizontal vowel. We also asked 50 new persons to decide the correspondence between vertical and horizontal lines of the same size and the words Kiki and Bouba. 90% of them selected the vertical line like Kiki (another correspondence independent of the straight line-rounded contrast).

 On the other hand, figures can be personified in physical and psychological terms, such as something tall and thin, clever and nervous (in the case of the star-shaped form). Then the figures are associated according to their congruency with the tone (object-phoneme synaesthesia). This brings us to the fat-thin effect. The cinema, literature, comics and children's programmes are full of contrasting figures: Don Quixote and Sancho Panza, Ollie and Stan (the fat and the thin in Spain),

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Asterix and Obelix, Tintin and Captain Haddock, Epi and Blas (in Spanish. Their original English names are Bert and Ernie; in German Bernie and Ert; in Latin America Berto and Enrique) or the Spanish comic about very naughty twin boys called Zipi (with fair hair) and Zape (with dark hair). We are going to analyze some of these cases and their relation with the Kiki-Bouba effect. For example, the names Bert and Ernie do not pose any problem, but in Spanish calling them Epi and Blas generates some incongruence. Many people in Spain confuse them. The two characters were created by Don Sahlin, based on the contrast in their appearance: one is like a banana or a lemon and the other like an orange, one is tall and thin (vertical), the other short and with a horizontal face (chubby). The chubby character was naughty and the tall character grumpy-bored. The short chubby one is Epi and the tall thin one Blas.

We took 30 persons over-50s who remembered the characters but were not sure of their names and we asked them which was which. They chose Epi (Ernie) as the tall one and Blas (Bert) as the short one in 65%, that is, they got it wrong. Lastly, we presented them with the drawings of Epi (Ernie: tall and slim) and Blas (Bert: fat and shorter) and asked them to indicate which was called Kiki and which Bouba. 70% of them chose the tall thin one as Kiki and the short fat one as Bouba.

We obtained the same result if we presented photos of the Fat one and the Thin one of silent movies to twenty different people who didn't know them well and asked which was Ollie and which Stan. 75% affirmed that the fat one was Stan and the thin one Ollie, when the reverse is true. If we presented the images of the fat one and the thin one and asked them which was Kiki and which was Bouba, they chose the fat one as Bouba in 90%. We did the same with the figures of Don Quijote and Sancho Panza, 85% chose Don Quijote like Kiki. It is clear now that Mr. Kiki must be a tall and slim man. Probably also nasty, intelligent and upper class: Doctor Kiki, I presume. Another congruent case is that of Tintin (tall, thin and fair) and Captain Haddock (more thickset, dark and masculine). Therefore, rather than a sound-vision synaesthesia, we are talking about an ideaesthesia, since it occurs between two dominions, one of which is the sound and the other the global appearance of the figure (slim versus fat). Associations are then made between physical

characteristics (slim or fat) and personality (clever, nasty…).

A similar incongruence occurs in the case of R (Milán et al, 2007), a multi-synaesthete who experiences a yellow photism with the number 3 and the letter i, but while this photism appears to him as congruent with the letter i, it generates incongruence and unease with the number 3, since this is round while the i is vertical, and yellow is the colour of shrillness (lurid yellow), screams, pain, bells and intelligence for R. There is a Spanish comic where the twins are differentiated only by the colour of their hair: one is Zipi (the fair one) and the other Zape (the dark one). If we ask 20 people who are not familiar with them which is which, 80% say that Zipi is the fair one. If we tell them that one is a boy and the other a girl and ask them which is which, they affirm in a proportion of 82% that the girl is the fair one. If we present them with images of the two children and ask which one is Kiki and which one is Bouba, Kiki is the fair one (70%). Probably exists other psychological characteristics associated to sex, hair colour or physical look and names related directly to the visual form and to the characters.

Experiment 4: The lips position role

If we ask to fifty new participants to decide which of the two figures, the star-shaped or the amoeboid, to call "i" and wich "a", 80% chose the star-shaped figure as "i". The same happens if we try "i" versus "o" (86%) or "i" versus "u" (90%). However if we try "i" versus "e" only 59% choose "i" like the star-shaped figure. This could be explained by the role of the vowel "i" (closed vowel) versus "a" (open vowel). It means that the psychophysic distance is shorter or the mouth opening is more similar for the vowels "i" and "e". In other words, it is the part of the tongue that is raised (front vowels: i and e. Central vowel=a. Back vowel =o and u) and not the height to which it is raised (close vowels= i and u. Mid vowel= e and o. Open vowel= a). In fact, the main point can be the position of the lips (relaxed or spread vowels= i and e versus rounded or circular mouth opening vowels = a, o and u). Front vowels are spread vowels in some languages in others however the landscape is more complex. In words like Bouba the combination of the vowels "o", "u" and "a"

makes the word a rounded word (the same happens to Maluma). Kiki and Takete are mainly spread words. Lips position plays a role in the Kiki-Bouba effect probably in combination with mouth opening (e versus i deviated from random).

General Discussion

The Kiki-Bouba effect corresponds to a sound-vision synaesthesia, probably between the tone of vowels and the vertical or horizontal aspect of figures. This correspondence can be extended to the personality features of the vowels or of the figures. The involvement of the mirror neurones is not clear; at least it does not seem necessary in the synaesthetic component of the effect, though possibly it is so in the empathy underlying its ideasthetic interpretation, that is, when we generalise the sound-vision correspondence to the field of the personality of sounds and objects. However there is a role of the lips position even in the first order sound-vision synesthesia. Detecting the correspondence between tone and the spatial characteristic of being vertical (tall, slim) or horizontal (short, fat) does not appear to demand a high level of abstraction either. The abrupt-straight, gradual-curved properties do not seem to play any special role in the effect (similar to vertical versus horizontal contrast or to big versus small contrast). With regard to their importance in understanding the origin of language, we do believe the Kiki-Bouba effect is of great interest: even forenames are not arbitrary, they are related to personality and physical aspect to result congruent. For example, the word intelligence has some repeated vowels in different languages (Spanish, Portuguese, Italian, German, English…) -the vowels "i" and "e" - and similar constructions and synonymous adjectives or names like keen intelligence, brilliant, brilliance, light, lighting, illumination, cleverness or wit in English (spread words). In Spanish: Inteligencia, brillante, iluminacion, listo, ingenio, perspicacia o intelecto. About the word fool (bobo, romo, boludo in Spanish), stupid (estúpido in Spanish) or dumb (rounded words). However we can find counterexamples like idiot, silly, astute, sharp, smart or acute. Something similar happens to the words fat (gordo in spanish)- chubby, plump, obese, rotund, dumpy, gross but also fleshy- and slim

(delgado in spanish)-slim, thin, slender, fine, slight, flimsy but also small-. But in general rounded words are related to circular and horizontal figures like a ball and spread words to vertical and thin figures like a knife. Bouba means big, rounded, horizontal and also fool, nice or good (pleasant) like Ernie, Sancho Panza or Ollie in his real life. Kiki means small, slim, vertical, intelligent and nasty (unfriendly, unpleasant, serious) like Bernie, Don Quijote or Stan in his real life.

Running head: Dr. Kiki I Presume.

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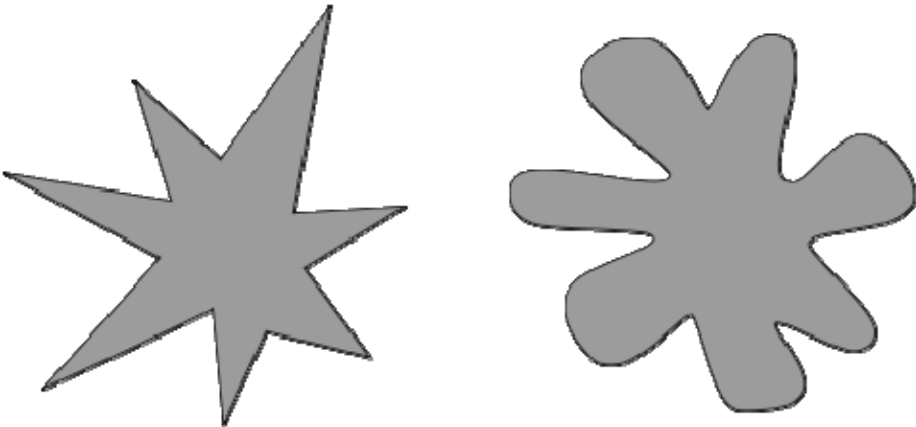
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Figure 1

Kiki-Bouba Figures