



News

博報堂 広報室

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Findings from a Neuroscience-Based fMRI Pilot Study Report Announced

Discovery of multiple engagement mechanisms between consumers and brands

Tokyo—March 13, 2009—Interest is growing in applying neuroscience approaches to studies attempting to learn how *sei-katsu-sha** respond to products, brands, advertising, and video content. With this in mind, Hakuhodo has conducted a pilot study using functional magnetic resonance imaging (fMRI) (see below) to investigate how engagements are formed between *sei-katsu-sha* and brands and which contact points are critical in building relationships with brands. This pilot study was organized under Hakuhodo's Brain Bridge Program (see below).

The brands selected for this study were the Japanese soccer team Gamba Osaka and the U.S. motorcycle brand Harley Davidson, both of which have passionate and loyal fan bases. We scanned the brain activity of volunteer fans while presenting them with various forms of visual stimuli related to their respective brands. The results showed that rather than there being one generic engagement mechanism, the mechanisms at play in forming fan-brand engagements differed between the two groups.

The study confirmed that for Gamba Osaka fans the visual stimuli activated areas of the brain associated with memories and preferences—the same activation areas discovered in earlier overseas fMRI research on leading beverage brands. Conversely, these brain regions were not activated as strongly in Harley Davidson fans; instead, the stimuli activated the area associated with empathy.

These findings suggest different mechanisms underpin loyalty in each fan group and

* *Sei-katsu-sha* are more than simply consumers, just as people's lives and lifestyles include more than just shopping. Hakuhodo introduced this term in the 1980s to emphasize its commitment to a comprehensive, 360-degree perspective on consumers' lives.

coincide with the supposition that multiple mechanisms are behind brand engagement effects.

Differences found between Gamba Osaka and Harley Davidson and their fans

- **Gamba Osaka:** a strong brand with a strong competitive (antagonistic) relationship with other brands
- **Harley Davidson:** a strong brand that has an independently strong position without a competitive relationship with other brands

We believe that Gamba Osaka sets itself apart from the competition with brand logos, uniforms, and brand images that encourage strong loyalty in fans by clearly differentiating just how different Gamba is from other brands (teams), whereas the foundation of loyalty to Harley Davidson is the strength of empathy with the individual Harley riding experience that is akin to participating in a Harley event. (See Detailed Findings for more details.)

Hakuhodo intends to launch related client services in the near future after accumulating more experience and knowledge through fMRI and other neuroscience-based studies about such considerations as what communications are effective in increasing brand loyalty and what is essential to advertising creative.

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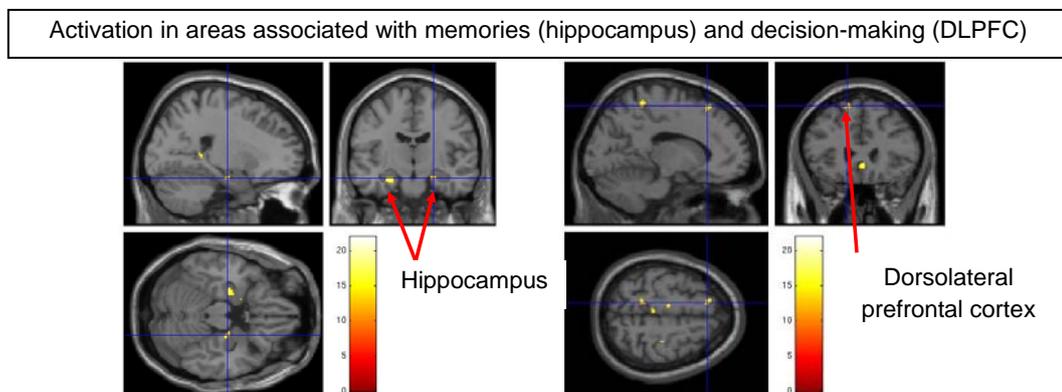
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Detailed Findings

When the two groups of fans viewed images associated with their respective brands, activity was found in the hippocampus (associated with memories) and the dorsolateral prefrontal cortex (DLPFC) (associated with decision-making). These results indicate that the subjects feel familiarity, a strong sense of personal meaning, and comfort when viewing these images. Previous comparative studies on beverage brands have already clarified that activation in these brain regions is a response pattern consistent with strong brand loyalty. The findings of this experiment are extremely significant because there had been no previous experimental verification of activation in this area network for stimuli other than leading brands.



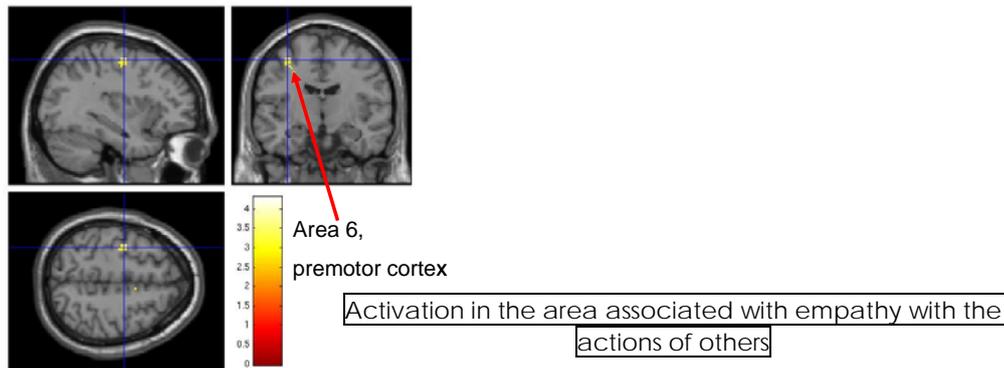
- **Gamba Osaka: a strong brand with a strong competitive (antagonistic) relationship with other brands**

Looking at just Gamba fans, we found activity in the medial prefrontal cortex (MPFC) (the area associated with preference) as well as the hippocampus. Therefore, we know the subjects are having a “my team” response to the logos, uniforms, and Gamba players that symbolize Gamba. Because the MPFC plays a crucial role in processing culturally based brands, the fact that this area is activated in Gamba fans seems to indicate they have a powerful personal social identification as Gamba fans.

- **Harley Davidson: a strong brand that has an independently strong position without a competitive relationship with other brands**

The Harley Davidson owners’ brain scans did not turn up the same degree of activity in the Hippocampus and DLPFC, but a distinct response was noted when the subjects viewed images of Harley Davidson social events. The response was found in a region known as Brodmann area 6. BA6 cells activate when the subject feels empathy with someone else: that is, when the subject imagines doing the same

action that others are doing (indicating that BA6 contains many “mirror neurons” associated with empathy). We believe that this brain response suggests Harley brand images produce strong empathy and that Harley owners feel like they are actually riding a bike or participating in the social event when they view such images. Perhaps then, the strong engagement between Harley owners and their bikes is based much more on empathy, obtained through the physical experience of riding, than on symbolic bonds.



Outline of the Study

1. Objective

To explore how brands with loyal fan/user bases maintain strong ties (engagement) with consumers and which contact points are important for building relationships with brands.

2. Methodology

Subjects are presented with multiple stimuli (still images and video footage) associated with different brands and the engagement effects of the stimuli and other brain responses measured with fMRI.

3. Subjects

Fourteen members of the Gamba Osaka fan club

Fourteen Harley Davidson owners

Total of 28 subjects, all male ranging in age from 30 to 59

4. Testing organization

Brain Activity Imaging Center (BAIC) of the Advanced Telecommunications Research Institute International (ATR)

5. Testing dates

November 14–21, 2008

6. Data computation and analysis

Neurosense Limited

Based in the United Kingdom, Neurosense provides specialist consultancy with a select group of leading cognitive neuroscientists (led by Professor Gemma Calvert, University of Warwick, and Professor Michael Brammer, King's College London) using brain imaging techniques, psychological tools, and other approaches. *Time* and other magazines have repeatedly covered the achievements Neurosense has had in product development for global multinational corporations and in fMRI assessment studies of media and advertising. Neurosense became a contracted advisor to Hakuhodo in 2008.

About Functional Magnetic Resonance Imaging (fMRI)

fMRI is an imaging technology for detecting and quantizing brain activity associated with thoughts, emotions, and behaviors. By presenting subjects who are placed inside a scanner (right) with various stimuli such as brand photos, products, advertisements, and TV programs, it is possible to measure within the subject's brain the extent to which the stimuli activate cognitive functions or elevate emotions in terms of likes/dislikes, memories and associations, and decision-making.



About the Brain Bridge Program

The Brain Bridge Program is a multidisciplinary project involving Hakuhodo's Research & Development and Marketing Planning divisions and is part of our original suite of marketing surveys, workshop services and other solutions that draw on the latest theories and technologies from neuroscience, cognitive science, psychology, and sociology to gain insight on the real motives of consumers from both brain hemispheres.