

## **ETHICS AND ACCEPTANCE OF INSIDEABLES IN JAPAN: AN EXPLORATORY Q-STUDY**

**Stéphanie Gauttier, Jorge Pelegrín Borondo, Mario Arias-Oliva and Kiyoshi Murata**

Grenoble Ecole de Management – Univ Grenoble Alpes ComUE (France), Universidad de la Rioja (Spain), Universitat Rovira I Virgili (Spain), Meiji University (Japan)

Stephanie.gauttier@grenoble-em.com; Jorge.pelegrin@unirioja.es ;  
Mario.aras@urv.cat ; kmurata@meiji.jp

### **EXTENDED ABSTRACT**

#### **Cyborg technology**

Nowadays, it is possible to buy microchip implants to be put inside the body for a few hundred euros. The use of this technology, which is also called an “insideable” as it goes inside the body is not without ethical concerns.

Previous studies show that while there is low resistance toward insideables (technology that is implanted into the body) for human augmentation, participants also question the morality of such a use of enhancement technology (Murata et al. (2017). In a further study, Pelegrín-Borondo et al. (2018) show that ethical dimensions explain 48% of the intention to use cyborg technologies. Based on secondary data, Gauttier (2019) shows that there are many ethical deliberations embedded in the decision to accept or reject insideables. Understanding how ethical concerns shape the perception of cyborg technologies such as insideables is needed.

#### **Shared points of view about cyborg technology in Japan**

The points of view of Japanese students on insideable technologies were surveyed through a Q-study. Q-methodology aims at capturing the subjective points of view of individuals on a topic (Stephenson, 1935). The starting phase of a Q-study is to gather the volume of all items referring to a topic, which is then reduced to a smaller list of items to avoid redundancies. These items can be in textual, visual, or oral form. They are then proposed to participants who have to 1) read through the items; 2) sort them in three categories: agree, don't agree, neutral; 3) sort them on a forced distribution matrix according to the degree to which the items represent their point of view, 4) answer open-ended questions about the Q-sorting exercise. The forced distribution matrix follows a normal distribution, so that there are only a few statements the participants can rank as mostly representing or not representing their point of view. The filled in matrix are called Q-sorts, which are then analysed through Q-factor analysis. This analysis is a by-person analysis, and not an analysis by variable as is traditionally done with factor analysis in R. As a result, we obtain factors which are the composite Q-sorts representing the shared points of view across the sample, and can see which are the distinguishing or consensual items across the different factors.

In our case, we used the verbatim of the interview study conducted by Murata et al. (2017) and analysed it to identify statements to include in the concourse. Additional statements coming from a study on insideable by Gauttier (2019) were added. In total, 33 statements were retained, which covered topics such as the regulation needed around this technology, religious motives, business interest, and so on. A forced distribution matrix ranging from +3 to -3 was used. 20 Japanese students

proceeded to the Q-sorting exercise. A Q-factor analysis was performed combining PCA and VARIMAX. 3 factors were retained. The correlation across factors is presented in Table 1.

Table 1. Factors correlation

	<b>1</b>	<b>2</b>	<b>3</b>
<b>1</b>	1.000	0.4610	0.5838
<b>2</b>	0.4610	1.000	0.3161
<b>3</b>	0.5838	0.3161	1.000

The three factors are analysed separately, then each description is refined considering the consensus and distinguishing statements. The three points of view can be described as follows.

#### Factor 1 – Not interested in the use of additional technology

It is necessary to ensure that the use of insideables is not forced (+3), especially because it is not acceptable to be controlled or monitored via insideables (-3). Even though the technology can appear to be convenient (+1), I do not like the idea of having the technology inside my body (-2) and I hope to spend the rest of my life as a flesh and blood person (+2). This is not driven by religious motivations (-3) but out of personal preference. I am not interested in being amongst the first to use this technology (-2), I am actually not really interested in using technology in order to keep my good health (-1).

#### Factor 2 – Prudent acceptance of the use of insideables as enhancement technology

I am not opposed to the idea of enhancement beyond medical purposes (+2) and I generally think that insideables are convenient (+3). I can think of using them myself: I do not aim at remaining a flesh and blood body (-2), and I am interested in technologies to keep healthy (+1). However, the use of insideables must be allowed only in specific conditions. For instance, it must not be forced (+3), the data must be protected (+2). I would think of each case of use and then make up my mind (+1).

#### Factor 3- The use of insideable is potentially dangerous for society

There is great danger associated to the use of insideables, even if this technology is convenient (+2). The dangers are of political nature (+3), but also related to how people would treat each other if some would use the technology (+2), and to our position in relation to technology as we would grow dependent (+2) and might harm our ability to learn on our own (+3). A social debate is therefore needed (+2), whereby eventually an age limit could be set (+1) and the use of insideables would not be forced (+1). It is necessary to think about these things first, there is no attraction in being amongst the first using the insideables (-2), and I am not sold to the idea of enhancement: I do not like the idea of technology becoming a part of my body (-2) and I do not agree with the idea of using insideables for non-medical purposes (-2).

#### Differences and consensus across factors

The differences across the factors are indeed mostly centered on the statements around the fusion between technology and body; the use of insideables for non-medical purposes.

The consensus across factors is related to a need for a social debate and neutral perspective on statements describing potential use situations. There is also a shared belief that the use of enhancement technologies is not going to solve issues: all factors disagree with the idea that insideables would lead to less ignorance because they can bring additional memory.

### **The role of ideology and ethics in shaping the factors**

This study identifies different points of view on insideables among Japanese students. The points of view are polarised according to ideological positioning regarding the role of technology in the body, the idea of enhancement, as well as dependent on participants' abilities to imagine future uses. In this sense, they reflect the current philosophical debates on enhancement which oppose visions of the human and are at an impasse when empirical cases are not available to stimulate one's imagination of potential futures.

It is noteworthy that both in Factors 1 and 2, the idea of not knowing enough to have an opinion was highly rated, while Factor 3 disagrees slightly with this statement. This explains why Factors 1 and 2 did not focus on potential ways to regulate the use of the technology, for which a solid understanding of the technology is required. The participants forming this point of view explained in the post sorting interview that they "cannot clearly realize the nature and ways of using the insideable" (participant 5), that they "can't imagine" (participant 1, participant 10). The uses that go beyond what one can imagine should be prohibited (participant 10).

Participants in Factor 1 did explain that they would not accept the technology. There is a strong-pre-existing position on the insideables, which the Q-sorting exercise barely changes. Participant 2 mentions being intuitively opposed to insideables, but that reading the statements it appears that the general public must make their opinion.

Participants in Factor 2 do on the contrary mention some benefits for a surveillance society and some belief that enhancement can bring happiness. The difference between the two points of view is therefore related to an ideological positioning on the desirable role of the technology.

The points of view of Factor 1 and 2 consider ethical questions related to privacy and data control, as well as consent. These ethical concerns are widely discussed in society nowadays and are potentially easier to grasp for students. On the contrary, statements requiring a projection regarding what the technology could do are not ranked in the extremes, as if the participants had less interest, perhaps more difficulties, in appropriating them.

**KEYWORDS:** Human enhancement, Insideables, Ethics, Acceptability, Technology Acceptance, Q-method.

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