INTERNATIONAL CONFERENCE ON ENGINEERING AND PRODUCT DESIGN EDUCATION
6 & 7 SEPTEMBER 2012, ARTESIS UNIVERSITY COLLEGE, ANTWERP, BELGIUM

STIGMA-FREE PRODUCT DESIGN: AN EXPLORATION IN DUST MASK DESIGN

Kristof VAES[1], **Pieter Jan STAPPERS**[2] **and Achiel STANDAERT**[1]
[1]Artesis University College of Antwerp, Product Development
[2]Delft University of Technology, ID-Studiolab

ABSTRACT
Assistive, protective or medical products that are visibly worn or used in proximity to the human body can have an emotional impact on users and bystanders. An encounter with a person using or wearing a potentially stigmatizing product can be an impacting experience that is the result of the product itself, the individuals experiencing the stigma, the observing bystanders and the cultural context in which the situation is set. This paper reports on ways in which stigma-free product design could be achieved for a dust mask. To illustrate and evaluate the various design approaches, 45 mask concepts were matched with their corresponding stigma-free design intervention. Two design interventions were derived from stigma related literature in both social psychology and design research, one aimed at user identification, the other at user de-identification with the product. The design concepts were the results of an 8-week User Experience Project, in which third grade bachelor students Product Development at the Artesis University College of Antwerp participated. Apart from interesting conclusions regarding the applied design strategies, our analysis showed that depending on the targeted population, the selected anti-stigma interventions differed substantially. The article ends by exploring the results of a one-week workshop focused on user empowerment. The initial results show that this might be a promising anti-stigma design intervention that actively involves the end-user. In addition to the extrinsic qualities of identification or de-identification strategies, empowering products have the capacity to intrinsically reinforce the users capacities.

Keywords: Stigma, product acceptance, product semantics, design education

1 INTRODUCTION

This article presents and evaluates the design efforts of third grade bachelor students that participated in the "Pleasurable Mask Experience" design challenge. During this 8-week project, students were challenged to design a pleasurable dust mask experience, in which the negative connotations that users have regarding dust masks were eliminated. The students were not informed about any stigma-free design techniques before or during the actual design project. Apart from the practical and ergonomic discomfort associated with such a product, students had to take into account some recurrent and all too familiar experiences related to the use of assistive or protective devices: the frustration of having to wear or use a product that damages one's self-esteem, the desire to be perceived as normal, the relief when a passer-by did not notice ones assistive or protective device.

The introduction of the project was enriched with a philosophical discourse on masks through history and ethnic culture. To increase the empathy with the future users of their mask designs, an emotional immersive experiment, where students had to wear dust masks in public, was integrated. Three weeks into the project, the first concepts and prototypes were evaluated during a 4-hour co-creation session with end-users.

The students visualized their final concepts on standardized A3 concept cards and presented their interpretation of a stigma-free dust mask for one of four specific target groups: bike couriers, yourself within 40 years (seniors), children aged 3 to 7 and children aged 8 to 13. For this evaluation the results from both child age groups were grouped and the 15 most representative concepts were selected.

A detailed description of the design challenge, and the ways in which empathy enhancing activities were integrated, can be found in an article for the E&PDE 2010 conference. [1]

After evaluation our students' spontaneously favoured anti-stigma design strategies are determined, complemented with insights on the ways in which they tried to improve the social image of their user. This evaluation used the universal dimensions of social cognition, as described by Fiske and colleagues: Warmth and Competence. [2]

2 CONTENDING STIGMA IN PRODUCT DESIGN

In previous theoretical framing we used insights from social psychology as a stepping-stone for anti-stigma design strategies. Our theoretical research started with an identity threat model in social psychology [3], which provided us with top down evidence of product related stigma attribution in social settings and led us to three overall strategies to contend stigma in product design.
All three strategies are intertwined and it is therefore advisable for a designer to direct efforts towards each of the strategies.

- Re-shaping the socio-societal context. (A)
- Re-shaping the meaning of the product. (B)
- Empowering the product user against stigma. (C)

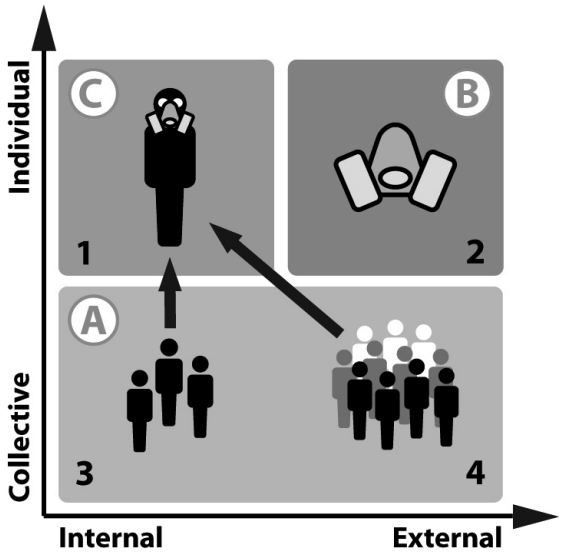

Figure 1. Three strategies to contend product related stigma attribution

The boxes in figure 1 represent three strategies to contend product related stigma attribution, projected on the four reality contexts in which products get evaluated: the context of the product as it is designed (1), the context of the individual experiencing the stigma (2), the social context of the observing bystanders and surroundings (3) and the cultural/societal context in which the product is launched (4). In a first strategy we situate all efforts towards understanding and re-shaping the social and societal context in which products are launched and perceived. A second strategy addresses all the efforts that the designer can direct towards re-shaping the meaning of the physical product. A third strategy groups all efforts towards empowering the user against stigma.
For this specific design challenge, students were not encouraged to focus on initiatives geared at the re-shaping of the social and societal context. The interventions of interest for this analysis were strategies A and B (figure 1). During the project this theoretical framework was not communicated to our students, nor did we provide any scientific literature on the topic.

3 EVALUATION PARAMETERS

From the above framework two encompassing anti-stigma interventions were deduced. Within the strategy of re-shaping the meaning of a product, we were interested whether our students would opt for a de-identification (concealment, camouflage) or an identification (personalization, pride, status) approach to decrease the potential stigma of their designs. Apart from these two design interventions, a complementary analysis determined which dimension of social cognition (warmth or competence) students tried to integrate to increase the social perception of the user.

3.1 Two anti-stigma design interventions

3.1.1 De-identification

A first set of interventions is grouped under the name of de-identification. De-identification can be obtained through concealment (disguise) or the diversion of attention. Both interventions can be seen as reactive or flight strategies and involve defensive attempts to artfully dodge, avoid or reduce the impact of stigma, without actively challenging it. The aim of this strategy is to camouflage or disguise and can be exemplified by the use of translucent or skin coloured material to hide the obtrusiveness of certain design features. Implementation has proven its value many times. It is however important to integrate this technique tactfully and with style. Improper integration can lead to a very tacky or unnatural result that may in return lead to unpleasant reactions of bystanders.

Goffman referred to a similar intervention based on the diversion of attention: "Stigmatizing features can be presented as signs of other features that are less stigmatizing" [4]. This intervention actually suggests aiming for a diversion of attention, away from the stigmatizing feature, towards more appealing or eye-catching features.

3.1.2 Identification

'Identifying with a product' entails that a person wishes to associate himself with that product, and possibly values it as an extension or addition to his or her personality. Adding extrinsic value to a product is a strategy that is commonly used in product design and it can be achieved through personalization or mass-customization. Personalization enables the user to select or alter the product in such a way that it matches and expresses his or her identity, by integrating lifestyle elements for example. If properly integrated, this intervention can imply feelings of pride, joy, status and a sense of belonging instead of shame and stigma. By personalizing a product's appearance, the consumer directs time, effort, and attention to the product. In other words, the consumer invests energy in a product. Several scholars have argued that for instance product attachment is related to the psychical energy invested in a product [5][6].

3.2 Universal dimensions of social cognition: Warmth and Competence

To evaluate which strategy students used to improve the social perception of their user we used the universal dimensions of social cognition, as described by Fiske and colleagues: Warmth and Competence, which are reliable dimensions of social judgment across stimuli, cultures and time [2]. Fiske states that people who are perceived as warm and competent elicit uniformly positive emotions and behaviour. Stigmatized groups, on the other hand, tend to be negatively stereotyped on the dimensions of competence and/or warmth in most cultures. The consistency with which these dimensions appear might reflect the answers to two basic survival questions: first, and crucially, does the other intends to harm or help me (or us) (Warmth)? Secondarily, does the other have the ability to enact those intentions (Competence)? Distinct types of discrimination result from each warmth-by-competence combination (figure 2.). Being primary, the warmth dimension predicts active behaviours: active facilitation (helping) versus active harming (attacking). Being secondary, the competence dimension predicts passive behaviours: passive facilitation (association) and passive harm (neglect).

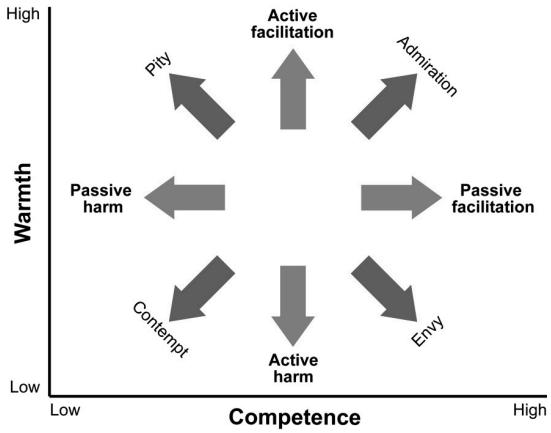

Figure 2. Schematic representation of behaviours from intergroup affect and stereotypes (BIAS) map [7]

4 RESULTS

Figure 3. The mask concepts that were evaluated

.

Table 1. Overview of the anti-stigma design interventions

Target group	De-identification	Identification	Warmth	Competence
Kids	1	14	11	4
Bike Couriers	3	12	2	13
Seniors	10	4	13	1
	14	**30**	**26**	**18**

Table 1 presents a basic overview of the anti-stigma interventions that students integrated in their concepts. Intuitively students opted for the identification strategy. By integrating practical and comfort

improvements and by delivering the option for personalization, students clearly attempted to increase the users' product attachment.
A closer look at the preferred interventions for each target group delivers a more nuanced impression.

Children
Most students preferred to integrate a high degree of personalization for their child-masks. Almost all masks displayed bright colours and patterns and allowed kids to add their creative touch. The option to conceal or hide the mask was rarely chosen. By allowing kids to add their personal touch or by adding playful features such as whistles or laser-beams, these masks even provided a twist of empowerment. Most students opted for the warmth dimension to improve the social image of their target users.

Bike Couriers
Due to the somewhat aggressive and sportive nature of these masks, virtually all concepts display a high degree of identification. Students favoured bright colours and playful or decisive shapes. It comes as no surprise that competence was the preferred social dimension for this target group. Although most students did integrate a lot of practical improvements, real empowering features were very scarce.

Seniors
For the senior population the de-identification approach proved its usefulness. During the co-creation session most students detected a lot of resistance towards a very visible dust masks. Translucent material and especially the integration of the mask in or with clothing and accessories turned out to be a popular intervention. With a strong focus on the warmth dimension, students attempted to make their subjects' social image as likable and unsuspicious as possible.

5 EMPOWERMENT OF THE USER

'Empowering products' should make a product user feel stronger or more capable. His or her personality is truly reinforced by the product and delivers intrinsic value and meaning for that person.
This intervention is clearly aimed at developing ammunition for users to cope with stigma. The user not only likes to identify himself with his product, he actually feels empowered by it. When properly integrated the outcomes of the empowerment strategy can actively involve the user in the anti-stigma intervention and can turn him or her from a passive victim into an active challenger of stigma.
Strategies for the user to actively challenge the product related stigma attribution include: true empowerment or the actual increase of ability over abled people, emphasizing the design effort towards specific user goals and motives.
A powerful example of this strategy can be found behind the high-tech prostheses that turn disability into super-ability. The American award-winning athlete Aimee Mullins, who had both of her legs amputated below the knee as an infant, has set an inspirational example of this. According to Mullins [8], a prosthetic limb is no longer a replacement of loss, but "a symbol that the wearer has the power to create whatever it is that they want to create in that space".
After re-scanning the 45 concepts we noted that only a few students tried to integrate empowering features into their concept. Being curious about the potential of this intervention, we organized a one week workshop were we challenged students to design a dust mask for kids that did realize some degree of empowerment for them. Figure 4 shows three results to which kids openly expressed their acceptance and joyfulness.

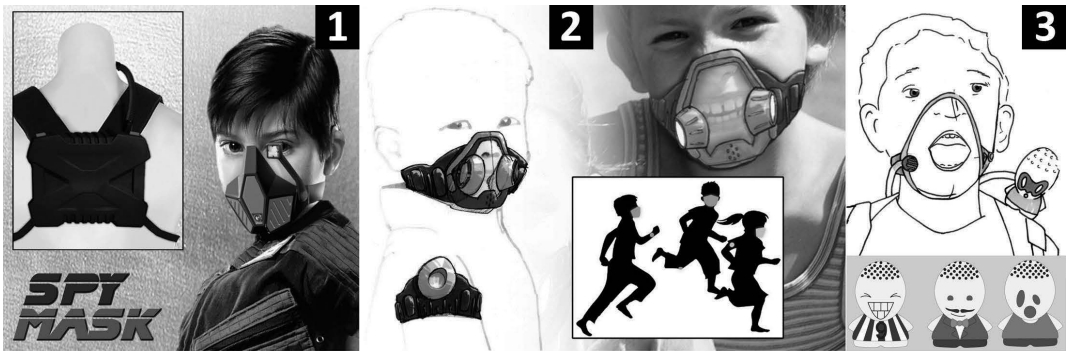

Figure 4. Three results from the empowerment workshop.

Concept 1 is a Spy Mask that is aimed at adventurous boys and empowers them with spy qualities such as a digital spy camera with visor. The batteries and electrostatic air filter are incorporated in a rugged backpack that leaves plenty of room for personal belongings. Concept 2 has a pressure sensor that accompanies the dust mask. This sensor can be worn around the arms or legs and changes the mask colour when it is touched. This simple device enables kids to play and develop a virtually endless number of games. As in the previous concept, concept 3 uses transparent material to make the dust mask more acceptable and friendly looking. By allowing the mouth to be visible, kids can detect their friends' facial expressions. The electrostatic filter of concept 3 is situated in a 'cool' and customizable 'shoulder-friend' that accompanies the kid wherever he goes.

6 CONCLUSIONS

The results from both design exercises do display a great variety of possible anti-stigma interventions and provide inspiration for similar design challenges. The 'Pleasurable Mask Experience' and its focus on empathy enhancing activities showed that even without an elaborate introduction, students came up with decent interventions to reduce product related stigma. The identification strategy that plays on personalization and an increase of status or pride, proved especially popular for the target groups of bike couriers and children. The de-identification strategy where stigmatizing features are concealed, or attention is diverted away from them, was the preferred intervention for the senior population. In many cases students intuitively tried to mix aspects from both intervention strategies.

Looking at the dimensions of social cognition also demonstrated its usefulness. Depending on the target group the product is aimed at, it could be useful to consider an enhancement of the users social image towards a more friendly (warmth) or capable (competence) image. Our students illustrated this by incorporating competence enhancing looks or features into the bike masks and by focusing on more amicable or friendly aspects in the dust masks that were designed for seniors and children.

Finally, we would like to direct attention to the option of user-empowerment as an option for designers to cope with product related stigma. A workshop devoted to this specific intervention proved that students tapped into the concept and were able to generate concepts that excited the end-user. Properly integrated empowerment combined with the above-mentioned interventions, has the capacity of boosting user involvement and increasing user abilities over those who do not own or use the product. Whereas user identification with the final product rarely implies empowerment, empowerment will always imply user identification. Merely aiming for 'extrinsic' identification by adding ego-enhancing features not necessarily makes a user stronger. If a user is dependent on these features for his wellbeing, he can become more vulnerable in their absence.

Incorporating true empowerment gives evidence of higher product integrity and has the potential to intrinsically reinforce the users capacities and eradicate product related stigma.

REFERENCES

[1] Vaes K., Corremans J., Moons I. (2011). Educational model for improved empathy "The Pleasurable Mask Experience"; Proceedings of the 13th International Conference on Engineering and Product Design Education, City University London, UK

[2] Fiske, S.T., Cuddy, A.J.C., & Glick, P. (2007) Universal dimensions of social cognition: Warmth and competence. Trends in Cognitive Sciences, 11, 77-83.

[3] Major, B., O'Brien, L.T. (2005). The social psychology of stigma, *Annual Review of Psychology*, 56, 395.

[4] Goffman, E. (1990 [1963]). Stigma: Notes on the Management of Spoiled Identity. London, England: Penguin Books.

[5] Belk, R. W. (1988). Possessions and the extended self. *Journal of Consumer Research, 15*(2), 139-168.

[6] Csikszentmihalyi, M., & Rochberg-Halton, E. (1981). *The meaning of things: Domestic symbols and the self.* Cambridge, UK: Cambridge University Press.

[7] Cuddy AJ, Fiske ST, Glick P. The BIAS map: behaviours from intergroup affect and stereotypes. J Pers Soc Psychol. 2007 Apr; 92(4):631-48.

[8] Aimee Mullins and her 12 pairs of legs. TED2009, Long Beach, California, Feb 2009. Webcast. http://www.ted.com/talks/aimee_mullins_prosthetic_aesthetics.html.