

Product design for women - How can product appearance match to the diversity of women and their preferences

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Abstract

As the impression of products becomes more and more important, it is time to investigate the underexposed aspect of gender in product design. Research shows that differences in opinion and experience differ per gender. Marketing for women is already increasing. However, gender should not be seen as men versus women, as different types of masculinity and femininity can be found in both females and males. History shows that design for a specific sex is often based on wrong stereotypes. And designers and engineers (largely male) often design from an I-methodology. This paper explains that large groups of customers (largely women) are now being overlooked and how research should focus on this target group. In a case study, using two products specifically designed for women, significant differences could be found, using age groups as segmentation variable.

Keywords: product design, product appearance, gender, women, consumer groups

The importance of the appearance of a product

The development of a product follows a certain process, in which a product evolves via different phases. Newly developed products are often placed in the market as a technical novelty. While the market share of the product increases, the product is developed ever further, whereby more design aspects such as styling and usability become increasingly important. Competitors have entered the market and consumer expectations of the products increase. (Eger et al., 2004) Currently, many products are near the end of their development phases. A good example can be found when looking at the long rows of vacuum cleaners, irons or other consumer (electronic) goods in stores. Consumers react to similar products in line with these development phases. We are living in an experience economy. Supra-functional (social, aspirational, cultural, tribal and even spiritual) products are important to consumers, as adequate functionality is now expected. A Purchaser often relies on emotional decision-making and the appearance of products influence these choices in several ways. Norman describes it as: attractive things make people feel good, it affects how easy something is to use. Emotions aid in decision making. (Creusen & Schoormans, 2005; Govers, 2004; Jordan & Green, 1999; McDonagh & Denton, 2005; McDonagh & Weightman, 2003; Norman, 2004; Piet, 2004; Pine & Gilmore, 1999)

Gender

One way to study consumers is a division based on gender. The issue of gender is an important factor in product design. Milner (Milner & Fodness, 1996), claims that consciously or unconsciously, it is probably the first segmentation variable that marketers apply. She even describes it as 'critically important'. Marketing for women specifically is emerging. Take for example the book of Lisa Johnson and Andrea Learned: "Don't think pink: what really makes women buy – and how to increase your share in this crucial market". They show that women have a great earning power of one trillion dollars a year. The wage gap between men and women is quickly narrowing, making women's income more comparable to those of their male counterparts. Women now bring in half or more of the household in the majorities of U.S. households. (Johnson & Learned, 2004) In the Netherlands, the average standardized disposable income in 2004 is almost similar for both men and women. (22000 euro per year for men and 21100 euro per year for women) ((CBS), 2006) U.S. numbers show that women's

spending power is even larger than their earning power as it is estimated at over two trillion dollars each year. Over 80% of the consumption purchases are spent by women. (Johnson & Learned, 2004; Tool, 2002)

Differences per gender exist. You can look at the visible appearance differences, such as length and strength, or the inner, invisible characteristics, such as emotions, information processing and behaviour. Men and women think differently, which influences their absorption of, and reflection on information. (Delfos, 2004; Johnson & Learned, 2004; Tool, 2002). Considering the preference for products and product elements, differences indeed appear between men and women. Research of Gloria Moss shows an example here. At the risk of generalizing, Moss describes that females tend to like bright colours, surfaces replete with detail, curvy as opposed to straight lines, humour, and elements that blend in with their surroundings. Against this, males tend to prefer darker colours, surfaces devoid of detail and so on. (Moss, 2003). Also in an earlier study, the writer analyzed different perceptions per gender in the environmental appearance of audio products. Men seemed less fond of the brighter coloured products. (Stilma et al., 2004)

There are a few obstacles when differentiating men and women. Gender should not be seen as neutral, or innocent. It can lead to inequalities (manly is often more highly valued than womanly) and masculinity, or rather hegemonic masculinity, is being universally accepted and the norm against which the rest is measured. If a company decides to include girls or women in their target group and if it is a relatively unknown user group for them, there is a great need for an explicit description of the potential user. The most commonly used technique seems to be that designers refer to general beliefs about the way men or women 'are'. So, in other words, they rely on stereotypes. When gender is perceived as fixed and dichotomous, there is the risk of reproducing dichotomous and stereotypical thinking in other settings as well. Beware! Many women feel an almost physical discomfort in response to a marketing effort that discounts them, pegs them as "typical" women, or mistakenly or superficially uses flowers and pastels to reach them. Almost as important is the implicit representation technique, referred to as the 'I-methodology', in which the designer assumes him- or herself as exemplary for the user. Especially, when considering the fact that engineers and industrial designers are mostly men. In a wider sense, if a companies' own values are expected to be good for all, they'll miss part of the market. (Johnson & Learned, 2004; Oost, 2003; Rommes et al., 2000)

However, when considering gender it should not be seen as purely man versus woman. Different types of masculinity and femininity exist in both females and males. Gender is multi faceted. (Stienstra, 2003) More and more references can be found that focus on the differences and the similarities between men and women. Some examples will be given in the following. The BBC (BBC, 2006), collaborated with a team of psychologists to create 'Sex ID', which for the first time, brings together a series of separate psychological tests related to 'brain sex differences'. They mention that some researchers say that men can have 'women's brains' and that women can think more like men. Jean Shinoda Bolen (Bolen, 2005), shows a new psychology of women and of men. E.g. different types of women have been identified that range from 'independent, adventurous' types of women to more 'domesticity and family' types. Also in the Netherlands several studies can be found, such as '100% women' by Sanoma publishers (Sanoma-uitgevers-vrouwen), 2005). In line with this paper, it is important to mention the study of McDonagh and Denton (McDonagh & Denton, 2005), who identified two types of femininity. One type of femininity being pink, soft and fluffy and the other being darker, more sophisticated. However, when clustering women, Johnson and Learned (Johnson & Learned, 2004), advise to cluster women using 'time' as a varying variable. One of their example groups is the youngest group. They are born since 1980 and grew up with computers and the internet.

Gender and product design

If products are not designed to the liking of female consumers, women most probably feel less excited about the products and will be less motivated to purchase. It is important that more attention should be given to design styles for female consumers in particular. Clearly, designing for female consumers should be handled with care, but even so, it should have a high priority. The question is how you can properly design for female consumers? If people design from I-methodologies, more women are needed in the engineering and design departments. More and more women are finishing a design (engineering) education and are starting to work as designers. In 2002, 40% of the students of Industrial Design Engineering at the Technical University of Delft were female. (Universiteitsdienst, 2006) Even then, how many actually get to design products? Designers and engineers in general can also become more aware of the possibilities that design can have on female consumers in specific.

In the field of gender and product design, there are several perspectives. From a marketing perspective, products can be purposefully designed for women and visibly marketed as such. Take for example new mobile phones, where several models of 'lady phones' already exist. Products for women can also be invisibly marketed as such. Johnson and Learned prefer this approach and refer to it as 'transparent marketing'. Products or services are not explicitly promoted as products for women, but purposefully are. In both cases, good research is needed to know what women want and need. (Johnson & Learned, 2004) A sociological perspective to gender and product design can be seen in a study performed by Ellen van Oost to 'materialised gender'. She focused on the analysis of objects and the way the gender of the envisioned user influenced the material design of the object. Shavers were used as case study, as they are two analogous devices (Philishave for men and Ladyshave for women). She describes how material objects acquire gendered meaning, by showing the influence of the different steps in the design process. (Oost, 2003)

Case study: Appearance impression of electrical toothbrushes

To investigate whether the theoretical differences in opinion between types of women could be found, a case study has been performed. Two electrical toothbrushes, specifically designed for women, were used. These rather extremely designed products might help elicit distinctive reactions. Both designs were inspired by a study of McDonagh and Denton (McDonagh & Denton, 2005), and therefore their theory is also used as basis for the design of this case study. The goal of this case study is to analyze whether different determined groups of women, show a difference in opinion regarding products. Differences based on defined characters and on age groups will be analyzed.

Instruments

Input for this case study has been developed during the Masters course 'Design & Emotion' in June 2005, at Industrial Design Engineering at the University of Twente. A course based on research and redesign, resulting in a paper, a design report and a prototype. Two images of redesigns for women in specific, are used in this case study. (See figure 1.) Both students were (partly) inspired by a study performed by McDonagh and Denton. (McDonagh &

Denton, 2005) In their case study, with moodboards envisioning a gender, two types of femininity visibly emerged. One type of femininity being pink, soft and fluffy and the other being darker, more sophisticated. Differences appeared in the description of these moodboards as well. Boys described the first type of moodboards with terms such as young, childlike and the second with more sexual and seductive meaning, whereas girls focused with the first on terms such as calm, delicate and floating. With the second type, female argumentation made far fewer sexual references and these tended to be less aggressive. They perceived the second type of moodboard representing a mysterious, darker more sophisticated kind of femininity. Student Kyra Adolfsen, focused on the darker, more sophisticated kind of femininity. Student Annemieke Raven, targeted a group in between the darker more sophisticated kind and the pink, soft and fluffy kind of femininity.

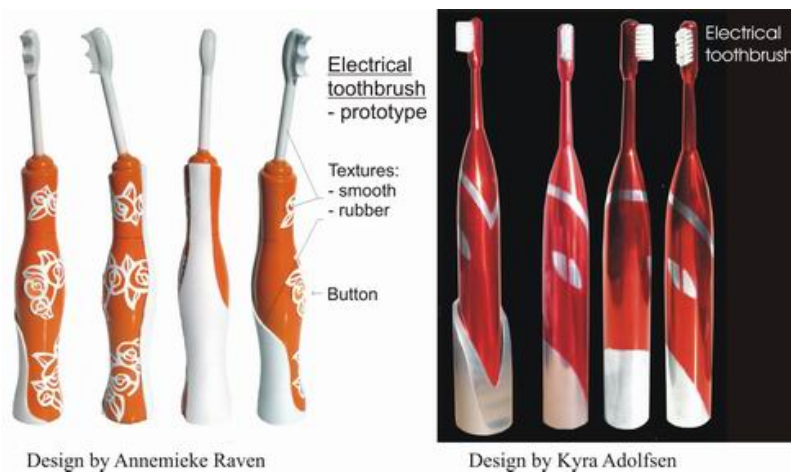


Figure 1: Images of the electrical toothbrushes for women, as used in the questionnaires. Left: Image for study 1, designed by Annemieke Raven. (bright orange and white) Right: Image for study 2, designed by Kyra Adolfsen. (shiny dark red and shiny metal)

An Internet questionnaire was used to gather all the data. Results were sent to one file per study, which could be imported in SPSS 12.0 for statistical analyzes. The questionnaire itself contained several groups of questions: Product questions referred to the design style, the appearance of the product and whether people liked the product. Participant related questions, focussed on character descriptions and demographic questions. The product appearance and the participant character determining questions are based on the two types of femininity as described by McDonagh and Denton. (McDonagh & Denton, 2005) The used age groups are based on the study “100% women”. (Sanoma-uitgevers-vrouwen), 2005)

Table 1: the questions of the questionnaire

<p>Your first impression</p> <p>1. I think this product is [1]very ugly-[5]very beautiful.</p> <p>Design/styling</p> <p>2. I think the design of this product is [1]crowded-[5]simple</p> <p>3. I think that the proportions of the shapes are [1]ugly-[5]beautiful</p> <p>4. I think that the round shapes of the product are [1]ugly-[5]beautiful</p> <p>5. I think that the used colours are [1]ugly-[5]beautiful</p> <p>6. I think that the brightness of the colours is [1]ugly-[5]beautiful</p> <p>7. I think that the colour contrast is [1]ugly-[5]beautiful</p> <p>8. I think the decoration of the product is [1]ugly-[5]beautiful</p> <p>9. I think that the amount of decoration is [1]ugly-[5]beautiful</p> <p>10. I think that the textures (rubber, smooth) are [1]ugly-[5]beautiful</p> <p>11. This design matches with me [1]not-[5]yes</p> <p>12. If I need a new electrical toothbrush, I would buy this one [1]not-[5]yes</p> <p>13. I want more products in a similar design style as this product [1]not-[5]yes</p>	<p>Appearance of the product: I think that the appearance of the product matches the following description. [1]absolutely not-[5]absolutely.</p> <p>B1. soft, sweet</p> <p>B2. cheerful</p> <p>B3. seduction and passion</p> <p>B4. young and childlike</p> <p>B5. spontaneously</p> <p>B6. technical</p> <p>B7. calm, delicate</p> <p>B8. seriously, self confident</p> <p>B9. mysterious</p> <p>B10. strong, dominant</p> <p>B11. cute</p> <p>B12. spicily</p> <p>Which description matches you best?</p> <p>[1]absolutely not-[5]absolutely</p> <p>C1. domesticity</p> <p>C2. dominant</p> <p>C3. orderly</p> <p>C4. sensitive</p> <p>C5. adventurous</p> <p>C6. social</p> <p>C7. gentle</p> <p>C8. individual</p> <p>C9. ambitious</p> <p>C10. calm</p>
<p>Demographic questions:</p> <p>D1: Gender: man; woman</p> <p>D2: Age: <18 years; 18-35 years; 36-49 years; 5-56 years; 65< years</p> <p>D3: Highest educational level: lower education; higher education (MSc, BSc)</p>	

Method

Because the design of both products is based on the two types of femininity as described in the study of McDonagh and Denton, these two types of femininity are used as a reference in this case study as well.

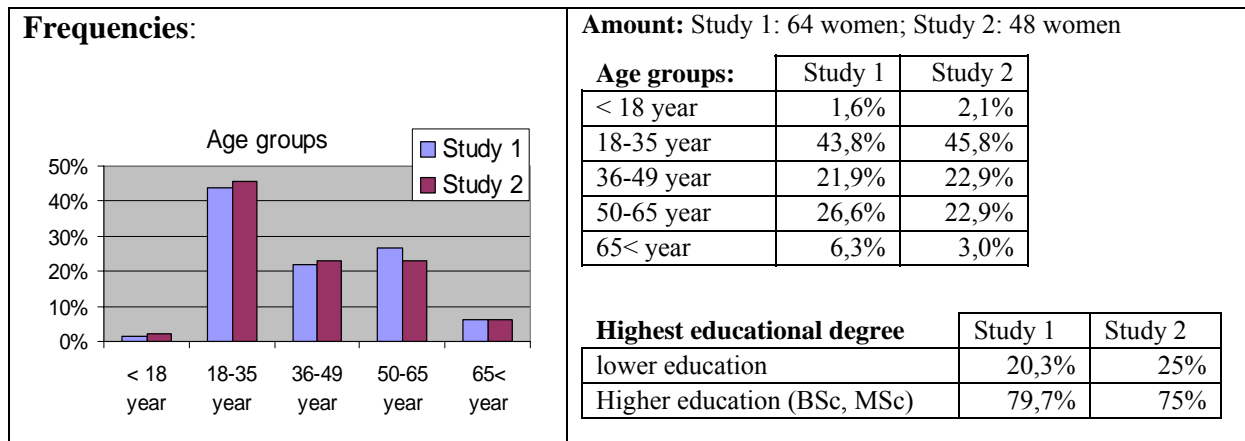
Participants were asked to give their opinion on the two different electrical toothbrushes in two separate Internet questionnaires with identical questions. Via a central page, people could link to one of the two questionnaires. At the end, participants were asked to fill in the other questionnaire as well. The specific electrical toothbrush was presented via a picture showing four sides of the product. (see figure 1) Via e-mail and via forums on the internet, people have been asked to fill in the questionnaires.

The questionnaire itself focussed on the product and on the participants who filled in the questionnaire. All opinion questions were asked on a scale of 1 (negative) to 5 (positive). The appearance and the character questions were asked in random order. All questions were asked in a personal style.

Data is analyzed using non-parametric statistics, as questions are asked in intervals and the sample of people is too small for nominal analyzes.

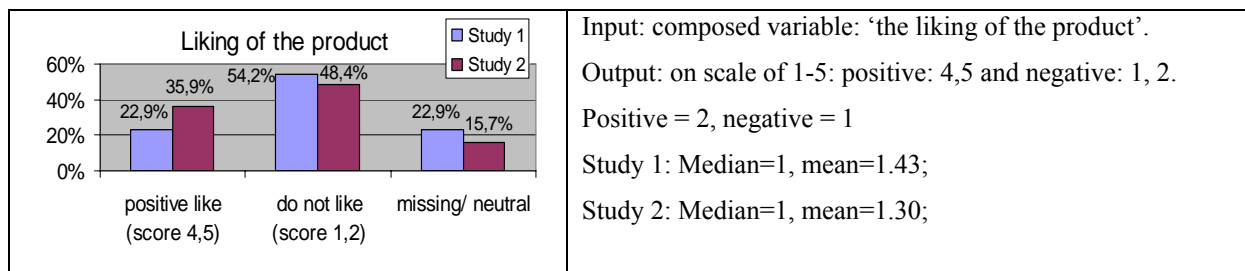
Two variables were composed. One variable 'translated' the participant's 'liking of the product' in 'yes' or 'no', based on the questions 1, 11, 12, 13. (see table 1) Composition of this variable used at least three positive questions (score 4,5) for a 'yes' or three negative questions (score 1,2) for a 'no'. The other variable, determining the 'participants' character', is based on the two types of femininity as described by McDonagh and Denton. (McDonagh & Denton, 2005) Participants who scored high on the questions C1, C4, C7, C10, were grouped as "pink, soft and fluffy". Participants who scored high on the questions C2, C5, C8, C9, were grouped as "darker, sophisticated". A score is positively high, if at least three questions from one group scored positive, and if there is a difference of more than two positively or negatively questions from another group. Very few people scored negatively on both groups. Participants that scored low on both groups were also grouped together.

Results



Research question 1: How much did people like the product? (positive = 2, negative = 1)

The group of people who did like the products is smaller than the group who didn't liked the products. A substantial group appeared more neutral or was less explicit in their answering.



Research question 2: Do the 'determined character groups' have different opinions?

No significant differences appeared between the determined character groups in both studies.

Input: the composed variable: 'the liking of the product' and the 'participant's character'.
 Test statistics: Kruskal-Wallis H; $\alpha=0.05$
 Study 1: the liking of the product (H(5.49); $p<0,5$): shows no significant difference in opinion between the different character groups. Further more, only question 3 (H(11.20), $p<0.05$) resulted in a significant difference.
 Study 2: the liking of the product (H(5.50); $p<0.5$) shows no significance difference in opinion between the different character groups and no difference in opinion for specific questions as well.

Research question 3: Do the age groups have different opinions?

Significant differences between the age groups appeared for study 1. Several answers even showed a strong significant difference in opinion ($P<0.005$)! Surprisingly however, for study 2 no significant differences appeared, using age groups as the differentiation variable.

Input: the age groups and the composed variable 'the liking of the product'.

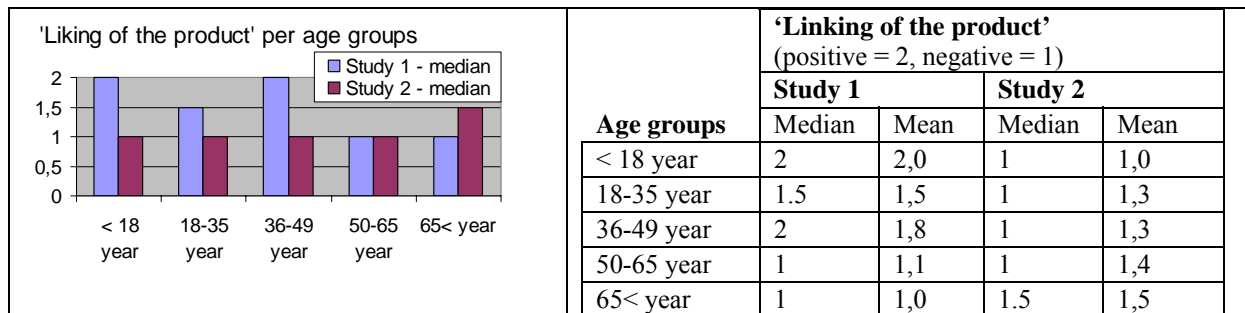
Test statistics: Kruskal-Wallis H; $\alpha=0.05$

Study 1: the liking of the product (H(15.54), $p<0.01$) shows a clear significant difference in opinion between the different age groups. A significant difference can also be found in the results for questions 2,7,8,11,13,C2,C9, with $p<0.05$, question 6 with $p<0.01$, and question 9 with $p<0.005$. The results of these questions show that there exist significant differences in opinion based on age groups. (An indication for the significant difference can be found in the results for questions 1,5,10,B5, B8, with $p<0.1$.)

Study 2: the liking of the product (H(1.135), $p<1.0$) shows no difference. Only the result of question B1, with $p<0.05$, showed a difference. An indication can be found with the results of questions C4 and C9, with $p<0.1$

Research question 5: How much does each age group like the product? (pos.=2, neg.=1)

Younger people were more positively towards the product of study 1 while the oldest people seem to prefer the product of study 2.



Discussion and conclusion

Literature showed that research to the differentiation of women is necessary, as gender should not be seen as fixed 'men versus women', but rather as different types of masculinity or femininity at the same time. This research focuses on the differentiation of women first, as it appears to need more attention at the moment. The case study analysed a diversification of women from two perspectives with two different product appearances (study 1 and 2). One perspective is a division based on character groups that are derived from the two types of femininity, as described in a study by McDonagh and Denton (2005). The other uses age groups, as advised in marketing for women (Johnson & Learned, 2004). The results show that, with the product of study 1, age groups appeared to be a significant differentiation variable. Specific differentiation appeared within the 'product styling variables' and not within the 'product appearance variables'. With the product of study 2, hardly any significant differences were found. The differences between the two studies show an interesting element.

More participants liked the product of study 1. Participants hardly seem to like the product of study 2. Perhaps, due to the fact that the participants didn't like that product, did result in more neutral or less extreme opinions? That no significant differences were found using the character groups was surprising and could have several reasons. It could be that the appearance descriptions did not match enough with the participants' impressions, or the descriptions should be used with more sensitivity. The representation of the products might have influenced the opinions of the participants in this case study as well. Especially, when considering that in casually discussing the actual prototypes with others, different reactions appeared. For a follow up, the real products instead of the pictures, will be used to give participants a better insight in the design of the product.

Results do indicate that differentiation in groups of participants result in significant differences in opinions! More research should be done to investigate how differentiation of women can be done. In combination, more research should be done to matching design styles for these groups of women.

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