

# EMOTION CAPTURE AS A DESIGN EDUCATION TOOL

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## **ABSTRACT**

This paper firstly considers the challenges and opportunities facing designers who attempt to emotionally connect with consumers through their product's design. Secondly, it describes an experiment which captured six participants' emotional responses to the aesthetic design of a number of lighting products. Thirdly, the results of the experiment are discussed with respect to how emotion capture could be introduced as a design education tool to assist with the design process as a whole, and in particular, the concept selection process.

*Keywords: Design Education, Product, Emotion, Concept Selection*

## 1 INTRODUCTION

In today's highly competitive consumer market it has become increasingly difficult for organisations to gain competitive advantage on the basis of price, quality and technology [1]. Design has therefore become a key factor in product differentiation. Furthermore, previous studies have identified that consumer's emotional responses to products have a considerable influence on purchase decisions [2]. This revelation has driven organisations to challenge designers to manipulate the emotional impact of their products through design. However, due to the idiosyncratic nature of emotion phenomena designers are often timorous, or reluctant, to confront this challenge. Over the last couple of decades a number of tools and methods have been developed to assist the integration of affective aspects such as emotions and consumer perceptions into the product development lifecycle. This study will consider the characters developed by Desmet for the PrEmo tool [3]. The characters represent seven positive emotions and seven negative emotions and can be seen together with their related emotion descriptive words in Figure 1.

## 2 METHOD

Six final year product design students volunteered to participate in the experiment which involved three stages.

### **2.1 Stage one – Eye tracker**

Stage one involved the participants viewing images of ten lighting products on a computer screen. An eye tracker was used to capture how each participant viewed each product, identifying products and features that each of the participants spent most time looking at.

## 2.2 Stage two –Emotion words and characters

Participants were first asked to assign one, more than one or none of Desmets 14 characters, and the corresponding emotion descriptive words, which they felt best represented how the product made them feel.

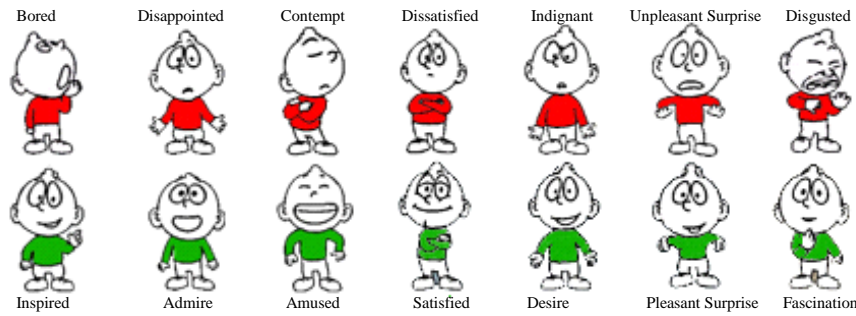


Figure 1 Desmets PrEmo characters and related descriptive words

## 2.3 Stage three - Interview

Stage three took the form of a structured interview. Participants were asked to discuss each of the lighting products and what they liked or disliked about each of them. They were then asked to discuss the characters and words that they had assigned to each product. Participants were also asked about their current design projects and if they had ever considered the emotional impact of their designs before. They were asked if they thought designers could manipulate the emotions that their designs elicited and if they found any of the tools used in the experiment useful.

## 3 RESULTS

### 3.1 Emotion descriptive words

Figure 2 shows the results of the emotion descriptive words which participants choose to represent how each of the products made them feel. Out of the 14 emotion descriptive words available to choose, only 12 were used. The two words which were not selected by any participant were indignant and unpleasant surprise. The words which were selected the most often were admire, dissatisfaction and inspired. Product number 8 was assigned with seven positive emotion words and zero negative words. When the numbers of positive and negative words were totalled, product numbers 1, 4, 7 and 9 resulted in a negative or zero total.

### 3.2 Emotion characters

Figure 3 shows the results of corresponding words relating to the characters which participants choose to represent how each of the products made them feel. All 14 of the characters were selected at least once. The most popular characters selected were satisfaction and fascination. The characters selected the least were desire, pleasant surprise, dissatisfaction and unpleasant surprise. Product number 8 was assigned with six positive emotion characters and zero negative characters. Product number 9 was assigned five negative emotion characters and only one positive emotion character. When the numbers of positive and negative characters were totalled, product number 8 resulted in the highest value and product number 9 the lowest.











Words	1	2	3	4	5	6	7	8	9	10
										
<b>Positive emotions</b>	Inspired Fascination	Admire Admire Satisfied	Inspired Admire Amused Desire	Inspired Satisfied Satisfied	Admire Admire Admire Admire Satisfied	Inspired Inspired Fascination Fascination	Admire Satisfied	Inspired Inspired Admire Desire Pl-Surprise Fascination Fascination	Inspired Desire Fascination	Inspired Admire Amused Desire
<b>+ ve</b>	+2	+3	+4	+3	+5	+4	+2	+7	+3	+4
<b>Negative Emotions</b>	Bored Dissatisfied	Bored Dissatisfied	Bored Disgusted	Bored Dissatisfied Disgusted Disappointed	Bored Dissatisfied	Disappointed Disappointed	Disappointed Dissatisfied Disgusted		Disappointed Dissatisfied Disgusted	contempt
<b>- ve</b>	-2	-2	-2	-4	-2	-2	-3	0	-3	-1
<b>Sum</b>	0	+1	+2	-1	+3	+2	-1	+7	0	+3

Figure 2 Results of selected emotion descriptive words











Characters	1	2	3	4	5	6	7	8	9	10
										
<b>Positive emotions</b>	Admire Admire Fascination	Satisfied Satisfied	Satisfied Satisfied	Inspired Satisfied Fascinated	Admire Pl-Surprise Satisfied	Amused Amused Fascination Fascination	Inspired Satisfied	Satisfied Satisfied Desire Fascination Fascination Fascination	Satisfied	Inspired Admire Satisfied
<b>+ ve</b>	+3	+2	+2	+3	+3	+4	+2	+6	+1	+3
<b>Negative Emotions</b>	Bored Admire Contempt	Contempt Contempt Disgusted	Bored Disgusted	Bored Dissatisfied	Bored Bored	Indignant	Disappointed Disappointed Disappointed		Disappointed Dissatisfied Disgusted Indignant Unp-surprise	Disappointed
<b>- ve</b>	-3	-3	-2	-2	-2	-1	-3	0	-5	-1
<b>Sum</b>	0	-1	0	+1	+1	+3	-1	+6	-4	+2

Figure 3 Results of corresponding words relating to selected emotion characters

### 3.3 Emotion words and characters results


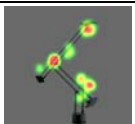


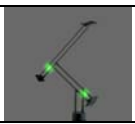


Combining the results from the characters and words resulted in product number 8 achieving the highest value of 13 and product number 9 achieving the lowest value of negative 4. The results of these two products, number 8 and number 9, are described in more detail in Table 3 and 4 respectively. It is interesting to note that overall more words were selected than characters but that a wider vocabulary was expressed with the characters. It is also important to note that participants only occasionally chose corresponding words and characters. The most common word selected to reflect participants emotions was admire whereas the most common character selected was satisfied.

### 3.4 Product eliciting the most positive emotions

Table 3 shows the responses to product number 8 in more detail. The majority of the participant responses when interviewed highlighted that they were intrigued by how the product worked and that they wanted to touch it and play with it. The technical

aspects and the simple clutter-free design were also mentioned. The most common emotion elicited was fascination. Participants were fascinated by how the product worked and balanced. This was verified by the eye tracker results which show that all of the participants focused on the joints and weights.


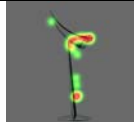
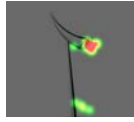
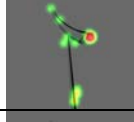

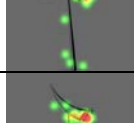

Table 1 Product eliciting most positive emotions detailed results (W=Words, C=Characters)

		<b>Product Name: Tizio</b> <b>Designed: 1972</b> <b>Designer: Richard Sapper</b>	
	<b>Eye Tracker</b>	<b>Emotions</b>	<b>Comments</b>
<b>1</b>		W - Satisfied C - Inspired	Mechanical, Functional, Clutter free, Not traditional
<b>2</b>		W -Fascination C - Desire	Interesting, Looks modern but probably older. Want to know more about it, how it works, want to touch it
<b>3</b>		W - Admire W - Pl Surprise C - Satisfied C - Fascination	Intrigued by how it works, likes the counterbalance action. Enjoys the clean lines and the sharp angles.
<b>4</b>		W- Fascination C - Fascination	Interested by the way it is weighted and balanced. Wants to find out how it moves. Wants to interact with it.
<b>5</b>		W - Inspired C - Fascination	Wants to find out how it works, wants to touch it and play with it. Loves how it balances.
<b>6</b>		W - Admire C - Satisfied	Looks technical and precise but also quite simple. Would really like to own one. Looks like one small change to the design would make it not work.

### 3.5 Product eliciting the most negative emotions

Table 2 shows the responses to product number 9 in more detail. Five of the six participants disliked the product, the majority of whom felt that the head and the base didn't work well together. The eye tracker results show that participants focused primarily on the head which was the area that most participants found particularly dissatisfying. Two of the participants questioned the designers thinking.

Table 2 Product eliciting most negative detailed results (W=Words, C=Characters)

		<b>Product Name: Ara</b> <b>Designed: 1988</b> <b>Designer: Phillippe Starck</b>	
	<b>Eye tracker</b>	<b>Emotions</b>	<b>Comments</b>
1		W - C - Indignant	Ultra masculine, Speed, velocity, Ego driven design. Almost feel contempt for the masculine statement that it makes
2		W - Admire W - Desire W - Fascination C - Satisfied	Looks precious, want to know why its sharp, want to know more about it
3		W - Dissatisfied C - Disgusted	Top and the base don't work together at all. The bottom is very basic and the top part more fluid. Really don't like it.
4		W -Disappointed C - Disappointed	It looks odd, the curve looks like it should be going the other way. The top and the bottom don't match at all. If I saw it in a shop I would question it.
5		W -Disappointed C - Unp Surprise	Don't like it at all, it makes me cringe and feel embarrassed. It looks sharp like a knife and you would never want to touch it.
6		W - Disgusted C - Dissatisfied	Don't like it at all. It looks like a bone or a horn or a stick. Don't know what the designer was thinking. It looks wrong.

### 3.6 Interview results

All of the participants agreed that designers can manipulate the emotions elicited by a products design but that it was a difficult task often achieved through texture, material and finish. Two of the participants said that they had considered the emotional impact of their designs and that they wanted to evoke intrigue and desire however none of the participants had ever used any tools or methods to assist with designing for emotion or to measure the emotions elicited by their designs. All of the participants agreed that the tools used in the experiment would be useful in the product development process agreeing that they would be particularly useful to aid concept selection. Four of the six participants thought that the eye tracker would be particularly useful to identify key product features of interest. There were mixed views as to whether the words or characters were easier to select. One participant thought that providing the words was a bit suggestive and that he often changed how he felt about the products to suit the available words. One participant thought that the characters were easier to choose than the words but also felt that people's interpretation of the characters emotions would probably vary considerably.

#### 4 DISCUSSION

Emotional design is often used to explain why consumers sometimes have an irrational desire to buy a product for which they have no use or does not function appropriately [4]. However, in today's current climate of environmental concern, perhaps a more responsible use of emotional impact would be to design products that consumers could have a more durable emotional relationship with [5]. All of the lighting products used in the study were selected from Phaidon design classics [6]. These products were awarded the title of design classic due to their durability in the market and timeless quality. The product evoking the most positive emotions elicited fascination, inspiration and satisfaction. More research is required to assess whether these are representative emotions elicited by design classics.

As organisations continue to challenge designers to manipulate the emotions elicited by products it is increasingly important that design students are exposed to the challenge. The students all found the eye tracker very interesting although it provided no indication as to whether the participant's interest in a particular product or feature was positive or negative. For example, the eye tracker showed interest in the features participants were most fascinated by in product number 8 but also showed interest in the feature that participants were most dissatisfied with in product number 9. Some students responded better to selecting words to express how the products made them feel whilst others responded better to the characters. Although both the characters and the words produced similar results in terms of positive and negative responses the responses did vary and there were few occasions that participants selected the corresponding words and characters. Further investigation of these tools and other developed tools and methods is required to establish the most appropriate method for design students.

All of the participants expressed an interest in designing for emotion but none had any real understanding of how to tackle it or measure it which implies that more education in this area is required. The interview stage proved really valuable by encouraging the students to use vocabulary they would not normally associate with design and rationalise how and why they felt about each product. This type of discussion is a critical foundation for design and emotion understanding.

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