

# TOWARDS MEASURING AESTHETICS IN THE CLASSROOM: A CROSS-CULTURAL TRANSLATION AND ADAPTATION OF AN AESTHETIC PLEASURE SCALE IN DESIGN

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## ABSTRACT

Measuring complex constructs has always been a big challenge for researchers and educators; aesthetic pleasure is not the exception. Many scales have been proposed but with limited validity and reliability; however, the aesthetic pleasure scale from the Unified Model of Aesthetics (UMA) lacks these shortcomings. Given that our research is in a Spanish speaking country, we needed the scale to be in the local language so that it could be understood when implemented with local respondents. Most translation methods rely on the translator's expertise but, based on social cognitive methods, our approach aims to be not only constructed for but also from the target respondents' language. The aim of this paper is to illustrate the process that is being taken in order to gain understanding of the respondent's vocabulary.

*Keywords: Aesthetic pleasure, Aesthetic assessment, Cross-cultural translation, Cultural domain*

## 1 INTRODUCTION

The field of product aesthetics has gained more and more attention in the past years; its influence in attracting customers and creating value has been already mentioned by many authors [6]. Consequently, there is an increasing interest in trying to gain a better understanding of aesthetics in product design and the factors relating to it. Many studies have successfully tested the influence of different determinants on the way people perceive products [15] [11], but measuring aesthetics by evaluating the determinants has its limitations. The formation of aesthetic pleasure is context and product dependent [10]. Not all the determinants have the same influence in every case. As Oscar Wilde said “No object is so beautiful that, under certain conditions, it will not look ugly”. Most of the successful empirical studies in this area have been tested on a single product category on a specific context and the methodological differences between studies make it difficult to establish comparisons between studies across different context and product categories [4].

Another way to evaluate product aesthetics is to measure the response from the target audience. But when it comes to the measurement of aesthetic impressions, there is also a big gap. As mentioned by Augustin, Wagemans and Carbon, one of the biggest problems in literature on psychological aesthetics is the lack of precision in the terminology [2] [8]. This has led to an absence of reliable standardised scales in the design practice and education. Most of the existing aesthetic pleasure scales are used ad hoc and no evidence of their validity or reliability is presented when they are implemented. Some of the instruments are usually borrowed from other fields such as arts and human computer interaction, and, although they have been systematically constructed, there is no evidence of their compatibility within the field of product design [4].

In design education, there is even a bigger gap. Most of the previously mentioned methods are being developed for scientific research and they never reach the classroom. Without a structured method to assess aesthetics, students rely on their teacher's expertise or their classmates to validate their choices. This is not always bad, but, because of its complexity, being able to evaluate a product's aesthetics objectively is a hard task [19], mainly because of the following reasons:

- Designers have a different background and expertise than the target users, and therefore different aesthetic preferences as their profession requires more tolerance to novelty.

- In 2014, Nikander, Liikkanen and Laakso found evidence that designers tend to have a systematic preference for their own ideas when evaluating concept alternatives [14].
- The fact that designers share the same professional and educational background does not mean that they agree on their aesthetic preference. Diels and Ghassan, in an automotive design education context, asked expert automotive designers to rate a set of vehicles in 2015 and, although a high level of agreement was expected, the results actually showed a low level of consensus [7].
- The easiest way to objectively evaluate product aesthetics would be a checklist of aesthetic principles and parameters, but as seen before, not all the determinants have the same influence in every case and context. Also, by evaluating a specific set of parameters, designers would be restrained and the diversity of the proposals could be harmed.

These aspects highlight the need of a more robust method to assess aesthetics, both in design education and practice. Project UMA (Unified Model of Aesthetics), has made advancements in this area, by trying to connect the different existing aesthetic theories to achieve a global understanding [3]. These efforts have led them to the development of a reliable and valid instrument to measure the aesthetic pleasure in design [4]. This instrument lacks the previously mentioned shortcomings, as it was specially designed to fit the realm of product aesthetics. That scale aims to assess the construct of aesthetic pleasure in isolation of its determinants and its validity and reliability have been successfully tested among different product categories by empirical studies. It also allows researchers and designers to validate their designs directly with the users, eliminating the evaluator's bias from the process. The developed scale consists of 5 different terms (beautiful, attractive, pleasing to see, like to look, nice to see), all selected through a systematic and robust research study [4]. Instruments like the UMA project's scale have a great potential on giving students and professional designers aesthetic evaluation resources.

After finding a good instrument, it was then time to implement it in the local context. As a first approach, every item was directly translated into its correspondent Spanish term. Then the scale was pre-tested in order to have a look at its usability and level of understanding. However, respondents seemed to be confused by the items, as they didn't understand the differences between them and found the scale hard to use. It was then important to achieve a better adaptation of the scale if we wanted to use it in the classroom.

## 2 ADAPTING INSTRUMENTS

It is important for adapted instruments to have, not only semantic and technical equivalence, but also to be relevant and understandable on the target context [13]. Items should not only represent the theoretical meaning, but they should also reflect the way people express those concepts. For example, "beautiful" and "attractive" may be two completely different words if defined by the dictionary, but for people in Colombia, differentiating them as two separate items while rating a product was a difficult task. Also, it might be usual to describe a product as "attractive" for English speakers, but when it comes to Colombian Spanish, people do not normally use the word "*atractivo*" or "*atrayente*" to do so. As mentioned by Gonzalez-Calvo et al. assuming cultural universality in the construction of research instruments may lead to a wrong implementation and even a misguided interpretation of the research findings [9]. Many translation methods rely on the translator's expertise [18], but in a domain as complex as product aesthetics it was clear that a new approach was vital to obtain a better adaptation of the instrument. This approach had to not only consider people as validators, but also as the main source of information since early stages.

## 3 METHOD

When talking about complex concepts such as aesthetics, it is important to be aware that not everyone has the same understanding or vocabulary. Designers are formed in the use of design principles and product language and as a consequence acquire some specific terms and concepts other people do not normally use. Therefore, it is important for designers to get familiar with the users' vocabulary in order to have a better communication with them and a better understanding of the research insights.

A cultural domain, as defined by Borgatti, is a set of terms or concepts that seem to belong to the same mental category for a specific group of people [5]. Being able to understand the domain from the users' perspective is the first step to explore the vocabulary and have a better idea.

The combination of Free Listing tasks and Card Sorting has been previously proposed and used [16] [9], proving to be a successful way to explore the cultural domains and map the respondents' mental models. The proposed method for adapting the scale consists of four steps:

1. Using Free Lists to explore the user's vocabulary.
2. Implementing Card Sorting to create a representation of the mental connections of the main terms found in the Free Listing exercise.
3. Adapting the scale through the creation of a translation panel. Both expert translators and experts in aesthetics should be part of the adaptation process. The results of Free Listing and Card Sorting activities will be used as an input in the adaptation process.
4. Validating the scale within different product categories.

This paper concentrates on the implementation of the Free Listing task and its results.

### **3.1 Free Listing**

Free listing is an elicitation technique that has been widely used inside the social sciences. It allows researchers to get a better understanding of the knowledge a group of people have about a particular subject and the vocabulary they use to make reference to it [5]. Free Listing is a simple but structured method, which allows researchers to have quick access to a lot of information about the cultural domain. It consists of asking respondents to "list all the adjectives and words of X that they can think of" [1] [5]. According to Smith, the items with the higher frequency and average position are the ones most relevant for the target group [17].

#### **3.1.1 Participants**

The study was conducted in Medellín, Colombia, and its surroundings. Participants were selected by convenience with pre-defined quotas, as done before by Antmann [1]. Four different companies participated in the study by allowing the research team to get access to some of their employees. Three of the companies are manufacturers, one in the domestic appliances', another one in the clothing and one in the textile market, and the remaining one is a banking service provider. Employees from different areas participated in each company. This strategy allowed us to reach a high level of diversity in the respondents, while keeping some pre-defined criteria:

- All respondents are workers.
- None of the respondents has an art or design related job / profession. The aim of the Free Listing task was to explore the non-designers' and non-artists' vocabulary.
- The proportion of female and male participants has to be similar.
- In the Colombian context, the social strata index provides indirect information about the average income, the access to education and other services and facilities. Accordingly, 68.3% of Colombian people belong to social strata 2 or 3 (on a scale, 1 being the lowest to 6 being the highest).

#### **3.1.2 Procedure**

Free Listing requires clarity in the instructions. Before collecting the data in the real sessions, the format was pre-tested for validation and then redesigned. The process was repeated three times before achieving an approved version. With the final version of the instrument prepared, visits in the different companies were scheduled. Sessions took place within groups of employees in order to be time efficient. Participants were given a printed format and asked to write down every positive word or adjective they would use when referring to product's aesthetics or appearance. The task time was set for two minutes. No visual stimulus was given in order to avoid any bias from visual images. There is evidence that elicited words may differ between product categories [2], but it was important to be as general as possible, in order to extract the core aesthetic pleasure concepts. For this reason, respondents were asked to think as general as they could. No word examples were given during the activities and participants were asked to keep their answers for themselves to avoid affecting other respondents' lists.

#### **3.1.3 Data analysis**

ANTHROPAC software was used because it was designed to manage and analyse Free Listing data [5] [17]. This software uses the frequency and average appearing position of every item on the lists to

create a salience index. This index allows the clear identification of the core items inside a domain by creating a more robust indicator [17].

Before introducing the data on the software, a pre-processing routine took place:

1. Answers with incomplete information (strata and gender) were deleted.
2. Unusual colloquialisms and made-up words were taken out of the lists.
3. Spelling errors were corrected.
4. Items were reduced to the main term or word by the removal of articles and qualifiers, such as “very”.
5. Word variations, such as plurals, different spellings and corresponding words (adjective vs. noun), were normalised and standardised into a unique version.

The software was then used to obtain the frequency of mention and the salience index. Items mentioned by more than 5% of the participants were considered for further analysis.

#### 4 RESULTS & DISCUSSION

A total amount of 155 different items were collected from 97 respondents with the Free Listing task. Each participant wrote down an average of 5.9 adjectives. Most of the elicited words were related to aesthetic evaluations. However, as seen in other studies [1], some of the produced words had a descriptive nature instead of an evaluative one, making reference to specific product attributes (colour, big, small) and some others had more of a semantic nature (technologic, comfortable, modern, functional, economic) making reference to products’ meanings and communication instead of the pleasure caused by them. Aesthetic pleasure is multi-sensorial [11], but the exercise was completely visual oriented as it asked for elicited words regarding products’ appearance, yet some of the words made reference to the sense of taste (tasty, delicious). A similar behaviour has been reported in past studies, where respondents elicited words related to other senses [1]. In order to prioritise the core concepts, further analyses were only conducted on the 30 most frequent items reaching the 5% threshold, as done before by Jacobsen [12]. These are shown in Table 2. Importantly, almost 60% of the items in the original list were mentioned only by one respondent. This evidences the diversity in the vocabulary regarding the realm of product aesthetics in the local context.

The most frequently mentioned item was “*bonito*” (beautiful), but it only reached a mention frequency of 47.4% in contrast to Jacobsen’s study in Germany, where beautiful was also the most frequently mentioned word but being produced by 91.6% of the respondents [12]. This “low level” frequency of mention among respondents could be caused by the amount of available terms and the variety of the Spanish language, as this same behaviour was evidenced in another study where native Spanish speakers of three countries were asked to write down elicited food texture words. In those countries, the highest frequency reached was between 50% and 60% amongst the respondents. Only two colloquialisms, *bacano* and *chévere* (both meaning cool, awesome), were considered because of their level of acceptance in Colombia and their popularity across people from different genders and strata. One of them, “*bacano*”, reached the second highest frequency index.

Having a reference on UMA Project’s scale, it was expected to find words which could be associated with the item “attractive” in English. None of the 30 core words found in the study represents a direct translation to the word attractive. And the ones that were most related, “*llamativo*” (showy), “*interesante*” (interesting) and “*tentador*” (tempting) didn’t reach a high frequency of mention among respondents. This could mean that respondents do not identify this aspect as relevant when expressing their aesthetic impressions. There is also a possibility that this aspect of the aesthetic impression is being represented by the colloquial words “*bacano*” and “*chévere*”. There is no direct translation for neither of them, but both represent a combination of a positive valence and the presence of interest. As evidenced in other studies, the word “*bonito*” (beautiful), is by far the most relevant term in the domain [2] [12]. However, assuming that aesthetic pleasure could be explained by a single beautiful-ugly dimension would harm the construct’s content validity. As seen in the item generated list, there are multiple facets of aesthetic pleasure.

*Table 2. Elicited words regarding product aesthetics*

| Item                       | Frequency (%) | Salience |
|----------------------------|---------------|----------|
| Bonito (beautiful)         | 47.4          | 393      |
| Hermoso (gorgeous)         | 27.8          | 188      |
| Bacano (colloq. Cool)      | 27.8          | 183      |
| Lindo (pretty)             | 23.7          | 164      |
| Elegante (elegant)         | 22.7          | 142      |
| Chévere (colloq. Cool)     | 17.5          | 129      |
| Espectacular (spectacular) | 17.5          | 115      |
| Bueno (good)               | 14.4          | 92       |
| Agradable (pleasant)       | 14.4          | 89       |
| Excelente (excellent)      | 11.3          | 83       |
| Súper (super)              | 12.4          | 77       |
| Me encanta (I love it)     | 15.5          | 68       |
| Calidad (quality)          | 10.3          | 65       |
| Práctico (practical)       | 9.3           | 61       |
| Estético (aesthetic)       | 8.2           | 57       |
| Color (colour)             | 9.3           | 55       |
| Rico (tasty)               | 12.4          | 54       |
| Aparente (showy)           | 9.3           | 54       |
| Belleza (beauty)           | 9.3           | 53       |
| Me gusta (I like it)       | 9.3           | 47       |
| Divino (delightful)        | 9.3           | 44       |
| Util (useful)              | 7.2           | 43       |
| Maravilloso (wonderful)    | 5.2           | 32       |
| Modern (modern)            | 5.2           | 31       |
| Lo quiero (I want it)      | 7.2           | 30       |
| Económico (economic)       | 6.2           | 28       |
| Novedoso (novel)           | 5.2           | 28       |
| Diseño (design)            | 6.2           | 25       |
| Tecnológico (technologic)  | 5.2           | 23       |
| Funcional (functional)     | 5.2           | 20       |

\*Approximate Translations to English

## 5 CONCLUSIONS

The present research contributes to diminish the lack of precision in the aesthetic terminology by studying the users' vocabulary in Medellín, Colombia. Further research needs to be done in different regions of Colombia and other countries in order to establish a more robust bank of words and to enable the identification of the common terms used by Spanish speaking respondents.

The identified relevant terms give insight for improving communication between designers and users, but it is recommended to investigate the meaning associated with the found terms and the context in which respondents would place them.

The identified terms will be used as input in the following research steps. Card Sorting is currently taking place with local respondents in order to represent the mental model in which the terms are understood and related to each other. After the adaptation process, the resulting scale will be tested in the design education context to empirically evaluate its impact and relevance as a supporting tool.

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