Storytelling x Signature Design Chairs:

Does the (hi)story matters?

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Abstract: This research was aimed at measuring the impact of storytelling over user experience. Study 1: Two groups of adults were exposed to texts about four chairs (storytelling x descriptive texts) and their images. Two stories were followed by original images of the chairs and the following two by fake images. The dependent measures were purchase probability; difference between estimated value and how much the respondent would pay for the chair (EV-P); and perceptions of comfort, pleasure, admiration, interest and surprise. Plia and Landi (presented with original images) evoked higher EV-P when facing storytelling texts. Measures of pleasure for Plia, and pleasure and interest for Landi were superior when facing descriptive texts. Wassily and Ant (presented with fake images) evoked higher EV-P when facing storytelling texts. Study 2: Two groups of adults were exposed to storytelling texts (50 and 100-word long texts equivalent in content) to test the effect of storytelling length over the same dependent measures. The same two images of the original chairs were used as materials. The 100-word texts evoked more pleasure for Plia and Landi, and more surprise for Landi. Results are discussed regarding the importance of storytelling as an element to qualify user experience.

Key-Words: Design for Experience; Design Psychology; Storytelling.

1. Introduction

Psychologist Renne Fuller, developing psychological research on storytelling, has discovered that short stories composed by verbs and substantives can help cognitive development. He stated that stories can evoke primitive reactions in humans, playing a central role in cognition, social interactions and culture development (BECKMAN, BARRY, 2009).

Conceptions on what a story is are very distinct. In one extreme, researchers refer to strict criteria regarding the literal construction of a structure to be considered a story. In another pole, other researchers believe that any point of view or report can be understood as a story (McGREGOR, HOLMES, 1999).

Several researchers on the theme state that the format of a story is the natural cognitive unit to naturally and spontaneously represent information on social relations (McGREGOR, HOLMES 1999). Therefore, stories have a great potential in the design process when consciously handled and studied (DELARGE, 2004) due to its potential to influence users' perceptions and judgments (McGREGOR, HOLMES, 1999).

Storytelling has had an influence in studies related to several areas, such as organizational strategy (DENNING, 2005; DELARGE, 2004; BECKMAN, BARRY, 2009; CHEN, 2012), including communication aspects (CHRISTENSEN, 2002), and health (BAILEY, TILLEY, 2002). It has also had influence in studies on design.

In accordance to Erickson (1996), storytelling can be introduced as an element to initiate a dialogue between designers and users, aiming at collecting useful information for the conception of a specific product. The author highlights the importance of the use of stories in order to create discussions, persuade and inform users. In this sense, designers should be able to communicate the most significant aspects about the products to those who will implement, produce, communicate and distribute these products (ERICKSON, 1996).

Mattelmäki (2006) explores how to establish an interactive environment, being storytelling a tool that can be used as a stimulus for an activity in collaborative design. Garcia et al. (2002) see storytelling as a useful tool in the projects' visual description, in order to facilitate the costumer's understanding of a certain product or service.

Fritsch et al. (2007) highlights the importance of empathy in the design process, because it brings the understanding of user experience as a resource for design. In this sense, storytelling can be a useful tool to establish an unbiased communication with users, since it allows professionals to design not only focusing on concrete characteristics of products, but also on emotional aspects which, through a direct dialogue, can be difficult to obtain. Thus, the authors show that the fundamental elements of a project are understood through the users' stories.

User experience and emotion have been objects of analysis in the social sciences for decades and, in the 90’s, these terms also started to appear more consistently in publications of design researchers (for an overview, see DESMET, HEKKERT, 2009). Research on design and experience has resulted in tools, techniques and design methods to evoke or avoid particular experiences.

Desmet (2009) highlighted that there are four distinct approaches to design for emotions:

(a) Research-driven: This approach tends to start from research data and/or test design insights/prototypes;
(b) Theory-driven: It is based on theoretical insights to help developing concepts;
(c) Designer-focused: This approach has the designer as the center of the project, and the professional challenges users with new ideas;
(d) User-focused: It includes the user in the design process, in which the designer usually uses exploratory techniques, such as mock-ups.

Questioning whether storytelling can be a way to design for experience or not, process that could be helpful to design, based on by research with users or even focused on the user, this paper presents research developed on the relation between user experience and storytelling. In this sense, results of two experiments on the topic are presented in the paper. The products used in the experiments were signature design chairs, due to their well-known stories as design artifacts.

Even though the research work presented in the paper follows an experimental approach, it has an exploratory character, since stories told to users in the experiments present real information about design artifacts, not strictly controlling independent variables as researchers usually do in experiments. Therefore, the experiments have a more naturalistic character, following the idea already presented in this introduction that stories are natural cognitive units that naturally and spontaneously represent information (McGREGOR e HOLMES 1999). In the following sections, the paper presents methods, and results and discussion.

2. Materials and Methods

Materials and methods from both experiments are presented together, considering that they share one of the experimental groups: the "basic" situation of a 50-word storytelling, described as follows.

2.1 Study I Design

The experiment manipulated the presence of storytelling versus a simple technical description of signature design chairs (Plia, Landi, Wassily and Ant), as between group independent variable (all texts were 50-word long in length). The authenticity of the chairs' images was also manipulated as within-groups independent variable: original images (Plia and Landi) and fake images of the chairs (Wassily and Ant).

Figure 1. Original Plia (top left), original Landi (top right), fake Wassily (bottom left) and fake Ant (bottom right).

The dependent measures were purchase probability (5-point scale); difference between estimated value and how much the respondent would pay for the chair (willingness to pay) (EV-P) in Brazilian Reais (BRL); and perceptions of comfort, pleasure, admiration, interest and surprise when looking at the pictures (through 5-point semantic differential scales).

Examples of the 50-word[1] storytelling and technical descriptive text:

Sample 50-word storytelling text – Chair: Landi

This chair is a landmark in design history. It was created by the Italian designer Giancarlo Piretti in 1967, being remarkable due to its folding mechanism which allowed the chair to be stable, light and compact at the same time. It is currently part of the permanent collection of the Museum of Modern Art (MoMA) in New York.

Sample 50-word technical description text – Chair: Landi

This chair is made of acrylic, aluminum and chrome steel and is 76,2 cm tall x 46,7 cm large and 43,2 cm deep. It has plastic shoes that avoid slicing. Its producer is Anonima Castelli and it is part of the category of folding chairs.

Figure 2. Sample 50-word texts

2.2 Study II Design

This experiment confronts 50-word long storytelling versus 100-word versions with equivalent content to test the effect of storytelling length (between group independent variable) over the same dependent measures. The same two original signature chairs' images were used as materials in the experiment and the extended 100-word texts were developed following the same contents, in an extended format.

Example of the 100-word storytelling text:

Sample Storytelling 100-word text – Chair: Landi

Despite its regular shape, this chair is a revolutionary landmark in the history of chair design, due to its simplicity. It was created by the Italian designed Giancarlo Piretti in 1967, drawing attention due to its folding mechanism, which allowed the chair to be stable, light and compact at the same time. It is only 5 cm deep when it is closed. It reached the mark of four million units sold since 1969. It is currently part of the permanent collection of the Museum of Modern Art in New York and is recognized as a precursor and inspiration to millions of models of folding chairs.

Figure 3. Sample 100-word text

2.3 Participants

Participants were 115 graduate and undergraduate students (67 female, mean age: 31.79 years old, Std=9.79). In order to prevent skewed data, it was chosen to exclude design, architecture and art students or professionals from the sample.

[1] The texts were 50 and 100-word long in Brazilian Portuguese, language in which they were developed. The authors have decided to maintain the translation as it is in order to preserve the contents of the texts.

2.4 Instruments and Procedures

In both experiments, participants responded to a survey, which was segmented in three progressive pages: (1) a textual version of the storytelling or a descriptive text about a chair, (2) a picture of the chair (original or fake), (3) a questionnaire containing a five-point purchase probability scale; open input fields to insert the estimated value (price) of the chair and how much the respondent would pay for it; and five-point semantic differential scales (to measure judgments of comfort, admiration, pleasure, interest and surprise of the users towards the chair).

The materials used in the development of the online survey were pictures of signature design chairs (Plia and Landi) and images of generic non-signature chairs, which were also identified in the study as signature chairs, reason why they were denominated here as "fake" signature chairs (Wassily and Ant).

In both experiments, the data collection was developed individually and in an online platform. Participants were recruited via e-mail and divided into three groups: (G1) 4 images of chairs (2 original signature design chairs and 2 fake images) and 50-word storytelling texts about them; (G2) 4 images of chairs (2 original signature design chairs and 2 fake images) and 50-word descriptive technical texts about the chairs; (G3) 2 images of chairs original signature design and 100-word storytelling texts about them.

It is important to highlight that the responses collected in G1 were the basis of both studies, since the two experiments "share" one of the experimental groups: the "basic" situation of a 50-word storytelling. The only difference is that, in Study I, all responses given to the four chairs were compared to data collected in G2, while in Study II only responses related to the two chairs presented with original images were compared to G3 answers.

Before looking at each image, respondents have read separately texts about each chair, which were simple descriptive texts (containing, e.g., measures and materials of the chairs) or storytelling texts, depending on the experimental condition to which they were assigned to. Both types of texts were based on in-depth researches and compilations about the history of the chairs, such as social, economical and technological contexts and scenarios.

Only responses from individuals who did not recognize the image of the chairs from previous experience were considered in the analysis. This procedure was meant to reassure that all respondents did not know the signature chairs beforehand, which could influence their judgments about the images shown in the experiments.

3. Results

Results from the two experiments are presented separately in the following sub-sections. Considering that the experiments have an exploratory character, not only significant results (0.05 level) were reported, but also marginally significant effects (0.1 level) were described.

3.1 Study 1

3.1.1 Chairs with original images:

Table 1 presents all dependent measures comparisons between respondents' answers to storytelling and descriptive 50-word texts to Plia and Landi (chairs presented with original images).

Table 1. Study 1 results: Chairs presented with original images and 50-word texts

Dependent measures	Experimental Condition	Plia			Landi		
		N	Mean	Std	N	Mean	Std
Purchase Probability	Storytelling text	40	2,20	0,85	45	2,73	0,91
	Descriptive text	55	2,22	0,79	53	2,87	0,88
	Total	95	2,21	0,81	98	2,81	0,89
EV-P	Storytelling text	40	756,58**	2381,45	45	694,82*	1889,24
	Descriptive text	55	134,24	278,66	53	100,66	158,60
	Total	95	396,27	1578,93	98	373,49	1311,90
Comfort	Storytelling text	40	2,15	0,89	45	2,98	0,89
	Descriptive text	55	2,38	0,85	53	3,15	0,99
	Total	95	2,28	0,87	98	3,07	0,94
Pleasure	Storytelling text	40	2,20	0,82	45	2,87	0,92
	Descriptive text	55	2,64*	1,08	53	3,19**	1,02
	Total	95	2,45	1,00	98	3,04	0,98
Admiration	Storytelling text	40	2,73	1,06	45	2,91	0,92
	Descriptive text	55	2,87	1,07	53	3,08	0,98
	Total	95	2,81	1,06	98	3,00	0,95
Interest	Storytelling text	40	2,68	1,14	45	3,04	1,07
	Descriptive text	55	2,78	1,05	53	3,38**	0,90
	Total	95	2,74	1,08	98	3,22	0,99
Surprise	Storytelling text	40	2,38	1,08	45	2,58	0,87
	Descriptive text	55	2,36	0,78	53	2,87	1,02
	Total	95	2,37	0,91	98	2,73	0,96

*p<0.05; **p<0.1

For Plia, storytelling had a marginally significant effect over the difference between estimated value and how much the respondent would pay for the chair (EV-P), since higher mean differences were found, compared to the group which read a simple descriptive text about the chair ($F(1, 93)= 3.701$; $p<0.1$). The descriptive analysis shows that the mean value of this chair, estimated by the group which read the storytelling text, was BRL691.54 (Std BRL2010.98) and the average willingness to pay BRL117.17 (Std BRL258.10). For the group which read the descriptive text, the mean estimated value was BRL324.77 (Std BRL1050.53) and the average willingness to pay BRL194.19 (Std BRL790.99).

It was also found for Plia a significant effect on pleasure ($F(1, 93)= 4.601$; $p<0.05$), since a higher score was detected when facing technical specifications of the chair, compared to the storytelling version.

For Landi, it was detected a significant effect on EV-P ($F(1, 96)= 5.209$; $p<0.05$), since the mean score in the storytelling experimental condition was higher than when in the descriptive text group. Descriptive data show that, for the group which read the storytelling text, the mean estimated value was BRL696.28 (Std BRL1683.59) and the average willingness to pay BRL128.05 (Std BRL97.20). For the group which read the descriptive text, the

mean estimated value was BRL 371.19 (Std BRL1305.51) and the average willingness to pay BRL273.30 (Std BRL1181.13).

It was also found for Landi a marginally significant effect on pleasure ($F(1, 96)= 2.653$; $p<0.1$) and interest in the chair ($F(1, 96)= 2.803$; $p<0.1$), since higher scores in both variables were detected when facing technical specifications of the chair, compared to the storytelling version.

3.1.2 Chairs with fake images:

Table 2 presents the dependent measures comparisons between respondents' answers to storytelling and descriptive 50-word texts to Wassily and Ant (chairs presented with fake images).

Table 2. Study 1 results: Chairs presented with fake images 50-word texts

Dependent measures	Experimental Condition	Fake Wassily			Fake Ant		
		N	Mean	Std	N	Mean	Std
Purchase Probability	Storytelling text	38	3,16	0,92	43	2,35	1,11
	Descriptive text	53	2,94	0,99	50	2,28	0,99
	Total	91	3,03	0,96	93	2,31	1,04
EV-P	Storytelling text	38	690,66*	1320,15	43	460,30**	996,41
	Descriptive text	53	166,47	410,15	50	159,10	496,59
	Total	91	385,36	938,75	93	298,37	779,35
Comfort	Storytelling text	38	3,50	1,06	43	2,28	0,96
	Descriptive text	53	3,42	1,13	50	2,18	1,02
	Total	91	3,45	1,10	93	2,23	0,99
Pleasure	Storytelling text	38	3,05	1,11	43	2,51	1,12
	Descriptive text	53	3,13	1,11	50	2,44	1,01
	Total	91	3,10	1,11	93	2,47	1,06
Admiration	Storytelling text	38	2,97	0,91	43	2,72	0,96
	Descriptive text	53	3,06	1,08	50	2,54	1,03
	Total	91	3,02	1,01	93	2,62	1,00
Interest	Storytelling text	38	2,82	0,90	43	2,74	1,11
	Descriptive text	53	3,00	1,14	50	2,64	1,03
	Total	91	2,92	1,05	93	2,69	1,06
Surprise	Storytelling text	38	2,29	0,87	43	2,67	1,02
	Descriptive text	53	2,53	1,10	50	2,50	0,99
	Total	91	2,43	1,01	93	2,58	1,00

*p<0.05; **p<0.1

Among the chairs with fake images, it was detected, for the fake Wassily, a significant effect on EV-P ($F(1, 89)= 7.391$; $p<0.05$). The descriptive analysis shows that the mean value of this chair, estimated by the group which read the storytelling text, was BRL663.95 (Std BRL1123.86) and the average willingness to pay BRL169.72 (Std BRL198.61). For the group which read the descriptive text, the mean estimated value was BRL479.16 (Std BRL1569.93) and the average willingness to pay BRL317.35 (Std BRL1187.74).

For the fake Ant, a marginally significant effect was detected on the same variable ($F(1, 91)= 3.549$; $p<0.1$). Descriptive data show that, for the group which read the storytelling text, the mean estimated value was BRL480.85 (Std BRL905.91) and the average willingness to pay BRL102.00 (Std BRL87.43). For the group which read the descriptive text, the mean estimated value was BRL321.21 (Std BRL1112.06) and the average willingness to pay BRL174.98 (Std BRL655.09).

3.2 Study 2

Table 3 presents the dependent measures comparison between respondents' answers to 50 and 100-word storytelling texts about Plia and Landi (chairs presented with original images).

Table 3. Study 2 results: Chairs presented with original images and 50 and 100-word texts

Dependent measures	Experimental Condition	Plia			Landi		
		N	Mean	Std	N	Mean	Std
Purchase Probability	50-word storytelling text	40	2,20	0,85	45	2,73	0,91
	100-word storytelling text	41	2,49	0,78	40	2,85	0,77
	Total	81	2,35	0,82	85	2,79	0,85
EV-P	50-word storytelling text	40	756,58	2381,45	45	694,82	1889,24
	100-word storytelling text	41	712,68	2710,32	40	604,63	1908,06
	Total	81	734,36	2537,35	85	652,38	1887,32
Comfort	50-word storytelling text	40	2,15	0,89	45	2,98	0,89
	100-word storytelling text	41	2,37	0,86	40	3,28	1,06
	Total	81	2,26	0,88	85	3,12	0,98
Pleasure	50-word storytelling text	40	2,20	0,82	45	2,87	0,92
	100-word storytelling text	41	2,83*	0,92	40	3,20**	0,97
	Total	81	2,52	0,92	85	3,02	0,95
Admiration	50-word storytelling text	40	2,73	1,06	45	2,91	0,92
	100-word storytelling text	41	2,80	0,84	40	3,08	0,89
	Total	81	2,77	0,95	85	2,99	0,91
Interest	50-word storytelling text	40	2,68	1,14	45	3,04	1,07
	100-word storytelling text	41	2,88	0,95	40	3,28	0,93
	Total	81	2,78	1,05	85	3,15	1,01
Surprise	50-word storytelling text	40	2,38	1,08	45	2,58	0,87
	100-word storytelling text	41	2,32	0,85	40	3,00*	0,82
	Total	81	2,35	0,96	85	2,78	0,86

*p<0.05; **p<0.1

For Plia, the 100-word storytelling had a significant effect over pleasure ($F(1, 79)= 10.520$; $p<0.05$), producing higher pleasure scores than the 50-word version. For Landi, the analysis detected a marginally significant effect of the 100-word storytelling over pleasure ($F(1, 83)= 2.653$; $p<0.1$), since higher pleasure was detected, when compared to the 50-word version of the storytelling, and a significant effect of the 100-word storytelling over

surprise ($F(1, 83)= 5.313$; $p<0.05$), since higher surprise scores were detected compared to the 50-word version of the storytelling.

4. Discussion and Conclusion

It is important to highlight that results have shown the impact of storytelling texts over user experience, both compared to simple technical descriptions on the chairs and between two text lengths (50 x 100-word texts). Some of the results, on the other hand, seem curious.

In Study 1, among the chairs presented to respondents with original images, both Plia and Landi have evoked higher EV-P when facing the storytelling version of the texts. Surprisingly, measures of what we call here "the quality of the experience" (comfort, pleasure, admiration, interest and surprise) were superior when facing texts with simple technical descriptions (pleasure for Plia, and pleasure and interest for Landi). Among the chairs presented with fake images, both Wassily and Ant have evoked higher EV-P when facing the storytelling version, but no other effects were detected.

In Study 2, the extended 100-word storytelling texts have evoked more pleasure when looking at the pictures for both Plia and Landi, and more surprise for Landi, compared to 50-word versions of the storytelling texts.

Interpretations on the reasons why short storytelling texts were less efficient than technical descriptions to evoke surprise would be random speculation. An important hypothesis that can be tested in further studies, on the other hand, is that the length of the storytelling might be connected to the level of expectation produced by it that people will have when looking at the actual pictures, as longer storytelling texts have shown a greater impact on the quality of the experience than the shorter versions.

It is also important to highlight that the stories used in this research have had a low level of control over the variables whiting the text itself. The choice, as a first study developed by the authors in this specific culture (Brazilian), was to follow McGregor and Holmes (1999) conception of stories as more natural cognitive units to spontaneously represent information. Designer, year, country and design characteristics were constant information among the storytelling texts, but other textual qualities were not controlled, what might have had an impact over the results (confusion variables). Thus, it is important, in further studies, to improve control over the variables to speculate less and less about the results. This fact, of course does not invalidates the work presented in this paper, since it has, as mentioned in the introduction, an exploratory character. Other limitations that are worth mention are the fact that only one type of product (chairs) was evaluated, and that the sample was limited to Brazilian graduate and undergraduate students.

An application of the results is also worth mentioning. It is important to highlight that these storytelling products might be strongly dependent on the story told about them to evoke a more valuable experience among users, and that the story must be deeply thought of. Should it be short or long? Which kind of information must be provided to the user? The view of these products as simple products seems extremely limited, and a more complex view about them, as product-service-systems, might be better to increase their success on the market, since the services included in advertising and selling products like them might be even more valuable to consumers than the product itself.

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