

Decoding design briefs

The role of abstraction levels in textual and visual stimuli

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DECODING DESIGN BRIEFS: THE ROLE OF ABSTRACTION LEVELS IN TEXTUAL AND VISUAL STIMULI

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ABSTRACT

This paper investigates the role of stimuli and respective levels of abstraction in design briefs and the implications for client-designer expectations alignment. This paper examines design briefs in professional settings in two Danish companies, from the perspectives of the client who creates a brief and the external designer who responds to a brief.

The method consists in analysing the design briefs and categorising content, type of stimuli and level of abstraction, followed by interviews with the sender and receiver of the brief. According to the findings, the definition of a clear solution space in the design brief occurs when there is a coherent relationship between the level of abstraction and the presented type of stimuli, which optimises resources in concept development. When coherency is not achieved, that is, when different stimuli are included with the incorrect level of abstraction that allows for broad interpretations, it is counterproductive.

INTRODUCTION

Often, a design brief is the first document and legal contract in the professional collaboration between a client and an external designer. It is a transfer of important content, among others aim, objective, specifications, and desired design DNA (Dewulf et al., 2012). The client needs to create a design brief that clearly frames and communicates the intentions for the product to be developed. This must enable an external designer to translate the client's vision into design concepts that reflect the desired product and aligns with the company's values and existing portfolio. Accordingly, the design brief and its content play a crucial role in the process of developing a new and successful product.

In the design brief, the client can describe the content in various ways which influence the designer's framing and interpretations of the solution space. It includes utilizing different stimuli to inspire and nudge designers onto certain paths towards a specific outcome. If stimuli provide too much limitation to the conceptual space, it can cause a blockage defined as design fixation (Jansson and Smith, 1991). Very few studies focus on actual in-use stimuli in design briefs transferred between a client and executing designer. Researching the design brief as a collective element of stimuli that can become a factor of design fixation is a question which has been called upon in recent research (Ruiz, 2020, p.145).

This paper investigates the role of stimuli in the process of communication via the design brief (message) between the client (sender) and the external designer (receiver). The inquiry assesses how stimuli in the



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design brief can ensure that clients and designers share a common vision to promote an alignment between intended design outcomes and developed products.

We address this phenomenon by building upon prior research to answer the question; ‘what makes a good design brief’. This includes how companies incorporate and use stimuli, whether consciously or unconsciously, and what effect it has on the external designer. This will be conducted by comparing existing theory on stimuli and design fixation with an analysis of two case studies on design briefs: one considering a client perspective and another considering an external designer perspective.

The goal is to address the following research questions:

1. What is the role of visual and textual stimuli in a design brief?
2. What effect do stimuli and respective abstraction levels play in defining a solution space in a design brief?
3. How do expert designers perceive and use design stimuli in a design brief?

The aim is to highlight the importance of the different elements of a design brief in a professional client-designer relationship. The results aim to unravel the specific type of stimuli that enables clearer communication of intended product DNA and solution framing in the design brief in order to reach a more effective collaboration.

LITERATURE REVIEW

DESIGN BRIEFS

It is common in design practices to innovate and create designs that deviate from current market trends (Ruiz, 2020). Client-designer partnerships (Wever et al., 2019) are formed to avoid the same team identifying the problem and executing the design development process. In such cases, the design brief becomes a point of transfer between two professional parties (Dewulf et al., 2012, pp. 458) and thereby an exchange of the company’s vision and product objectives.

The design brief stands as a starting point of the process but is also a way of directing the design efforts, framing and/or reframing of a project scope (Koronis et al., 2019). Given that research has shown that how designers frame a problem influences the outcome and path to it (Dorst, 2015), the design brief becomes critical in defining the problem space for such framing. Miscommunicating the vision, aim and thereby desired product DNA in a design brief might result in wasted time and cost. According to Petersen and Joo (2015, pp. 15) “concept development reflects only 5 percent of development costs, yet influences 70 percent of the final product cost, using a design brief to translate

management criteria into measurable and actionable design concepts is critical.”

Although design briefs are of high importance, current research still debates the contents that create ‘a good design brief’. Several factors have influence on this, but one of the main ones is that every organization and individual has created their own subjective brief-format, which is often a hybrid of different strategies (Read and Bohemia, 2012). Another is because the clients are inexperienced in creating clear design briefs and communicating their vision and ill-defined problems (Koronis et al., 2019). Research on the topic has proposed different approaches, including well-defined and structured checklists containing aims, deadlines, stakeholders, objectives etc (Phillips, 2004, pp. 28-48). Brown (2009) proposes the opposite and argues that keeping a certain level of ‘fuzziness’ can add a more experimental and positive transformational effect. Furthermore, Brown highlights that the fundamental factor is the precise aiming of the design brief and the significance placed on the design aspect both in the project and the organization itself.

Accordingly, there is no “one-format-fits all” and both formats can be suitable depending on the organisation’s predefined aim with the project.

The present research inquires further into the contents of design briefs and how they influence the client-designer relationship.

IDEATION PROCESS IN DESIGN KNOWLEDGE DOMAINS

Ideation is rooted in the individual knowledge of each designer. This knowledge could originate from background experiences, developed skills or design repertoire. Purcell and Gero (1992) highlight that this knowledge can originate from two main sources: intentional learning or everyday/incidental experiences, wherein the first is expected of expert designers. However, this knowledge can also originate from different stimuli available to them – both internal and external. The internal stimuli are expressed in mental images and verbal descriptions rooted in the memories of the designer. The external is the physical surrounding stimuli available, for instance verbal, audible and pictorial information in a brief. Both types have proven to have a huge impact on the development process in early design phases (Eastman, 2001).

According to Gonçalves et al. (2012) stimuli can be represented in different domains but are often separated into two: inside- and outside-domain. Inside-domain represents stimuli which directly or indirectly related to the problem or solution space of the project. Outside-domain is when the stimulus is far from the problem or solution space. Each of these stimuli domains operates on different levels of abstraction. Christensen and Shuu (2007) demonstrated that the inside-domain is known to

provide a narrow solution space in the ideation phase and therefore a low level of abstraction. Conversely, outside-domain allows the designer to collect inspiration from other contexts which opens the solution space and more divergence in ideation, and this requires a high level of abstraction. Research on this was conducted by Plucker and Beghetto (2004), which concluded that there must be a balance between the representations of the two domains in the ideation phase to make high-value concepts. Furthermore, their results indicated that a higher abstraction level is created when searching outside the domain and is very helpful in divergent phases. A lower abstraction and more domain-specific approaches are valuable in convergent phases. Gonçalves et al. (2012) summarises these lower and higher levels of abstractions as follows:

“Searching for similar solutions to a design brief offers an overview of what has been done and what remains unexplored and may be the first step to originate diverse ideas. However, a broader perspective of the problem and an appropriate choice of information brought from another domain can support creativity.”

Most research on this topic has been conducted on design students or novice designers in a laboratory setting. Gonçalves et al. (2014) have shown that there is a difference between the design thinking process of expert versus novice designers. Expert designers will have acquired more knowledge within different domains over time. If a designer is very knowledgeable in a certain domain, they will most likely come up with more creative outcomes than a designer with no knowledge of the field (Nickerson, 1999). Expert designers are also solution-focused and have a clear structure to which they approach a design problem in the early ideation phases. It is therefore relevant to look into the perception of the stimuli in a design brief and how they value and use in a professional and relevant context.

THE EFFECTS OF TEXTUAL AND VISUAL STIMULI

Inspiration can be defined as “when a designer experiences a stimulus or more which makes them want to create something based on that stimulus” (Oxford Dictionary, 2022). Much research has explored the creative ideation process of designers and approaches to design problems in the early design phases. More of them have concluded that exposure to external stimuli can have a dual effect on this process - both positive by creating diverse and creative solutions (Goldschmidt & Sever, 2010), but also negative by replicating existing features and limiting the idea generation process (Jansson and Smith, 1991). This negative effect stimuli have on the designer is also called design fixation.

The effect of design fixation was proposed by Jansson and Smith (1991) which sought to highlight the impact that access to certain stimuli could have on the design

process and product outcome. They presented two groups of design students with identical design briefs, and only one group was given an additional illustration of an existing solution to the problem as well. Their results proved that designers provided with an additional illustrative element, picture or drawing along with their statement of a design problem, constructed very different designs than the focus group, including elements from the provided illustration. Their conclusion was that design fixation is a hindrance to conceptual design development and prevents the designer from using their own acquired internal expert knowledge.

Through the years further research based on Jansson and Smith’s findings has been conducted with different stimuli variations to explore similarities. A study (Gonçalves et al., 2012) has shown textual information to have a similar effect to visual design fixation. Designers provided with fragments of stories, poems or factual descriptions created designs influenced by the contents of these texts. In addition to this, Malaga’s study in 2000 tested and compared both text, pictorial and text-pictorial stimuli, which proved that more creative ideas were developed by the designers with only visual stimuli. This made Malaga suggest that textual stimuli contribute to design fixation more than visual. But on the contrary to Jansson and Smith, Malaga argues the positive effect of visual stimuli.

Expert designers respond the strongest to visual and pictorial stimuli (Gonçalves et al., 2014). According to the researchers, one of the reasons for this was assumed to be that perceiving and decoding visual information is faster and more effective in a professional context where these factors as time constraints are of the essence. Furthermore, designers are highly visual thinkers and are taught to create visually and physically.

These external stimuli, both visual and textual can be placed in domains relevant to the problem statement or outside the problem domain. This will place them on different abstraction levels. Researchers (Purcell and Gero, 1992; Gonçalves et al., 2012) conclude that when the stimuli come from outside the domain, it creates a high level of abstraction while expanding the creativity of the designer. However, if the abstraction reaches a certain level the designs become too unrelated to the problem-frame, and thereby unusable. On the other hand, stimuli strictly within the domain create a lower level of abstraction and might result in more fitting designs with valid working principles, but also restricts the designers’ creativity, and limits their ability to innovate. According to Ezzat et al. (2020) designers provided with stimuli examples with high levels of abstraction are forced to search outside domain which mitigates the fixation risk. On the contrary designers provided with an example with high specificity will

affect them more and most likely force them to stay within the path of fixation.

Very little research was found on the relationship between design briefs and design fixation. Ruiz (2020, p. 145) calls for further research on this subject. According to Crilly's study on fixation and creativity in concept development (2015), which interviewed design professionals, the design brief and the cost of exploring a large solution space are factors that encourage fixation.

This paper seeks to explore the lack of the client-designer dimension to the empirical data, by considering the effects of the elements in a design brief in promoting creativity or design fixation.

CASE SELECTION

CASE CONTEXT

The data collection approach consisted of in-depth case studies of two Danish design companies, here denominated Company A (client) and Consultancy B (external designer). The data was collected at both companies by two of the authors over the period of four months. Both companies granted access to former design briefs for the purpose of this study as well as the option of informal interviews and close-hand collaboration with professionals who create design briefs and who use design briefs as part of their daily activities.

Company A is a Danish design company specializing in Scandinavian interior design, with a product portfolio consisting of soft and hard furniture, lighting, and accessories. Their customer spectrum expands from hospitality and contracts customers to the consumer market. With a Scandinavian contemporary design approach, they aim to create design classics with a "New Perspective", which is a notable part of their product DNA. This is achieved by handpicking external designers for their development process, where they look for a gimmick or new framing of the problem. Company A has inhouse design managers to identify problem scopes and develop briefs, as well as product developers for production preparation.

Consultancy B is a Danish design consultancy consisting of a small team of senior product designers, specializing in design, form, and usability for the healthcare industry, however having a lot of design experience in other fields as well, including speaker design and electronics. They prioritize long-lasting client-relations and close collaboration during development processes to ensure the best possible outcome when solving complex problems. Consultancy B acts as an external designer and receives design briefs from clients to proceed with product conceptualisation and development.

CASE SELECTION: DESIGN BRIEFS

To investigate the topic of how the type of stimuli and abstraction levels in design briefs are set in a professional client-designer relationship, one design brief from each case-company was selected. Prior to the selection, five design briefs from each company (10 briefs in total) were collected, read, and assessed. This was conducted to get prior knowledge of the construction and contents of the briefs. Furthermore, they were assessed based on their content and problem scope to select two design briefs with common traits, which both represented a "typical brief", respectively, and to ensure a basis of comparison for deeper analysis. The cases are both in the category of interior consumer products, with comparable requirements to design, function, and technical aspects.

The selected design brief made by Company A called for the design of a lamp. This brief was chosen to investigate the intentions determining the content of the design brief in relation to the envisaged solution space. This data provided insights from the client's perspective.

The selected design brief handed over to Consultancy B by a client called for a loudspeaker design. The objective for analysing this brief was to investigate how the elements of the brief are perceived and valued by an expert designer. This data provided insights from the external designer's perspective.

METHOD

DATA COLLECTION AND ANALYSIS: DESIGN BRIEFS

Both design briefs were analysed through labelling with different classifications at different levels, all of which were colour coded to create an overview. The results were translated into models which were then analysed to find insights.

The analysis encompasses three levels (summarised in Table 1). Firstly, the overall content of the design brief is organised under the three categories defined by Petersen and Joo (2015, pp. 16-17) strategy, context, and performance. Secondly, we classify if the type of stimuli presented is visual or textual. Thirdly, we define four levels of abstraction to assess the degree of fuzziness of the information in design briefs.

Table 1: Levels of classification for the elements in a design brief.

Levels	Procedure
Content	The content in each of the briefs was thoroughly read and divided into the following topics: Strategy, Performance and Context.

	Information outside these three topics was not accounted for (formalities etc.). <i>Colour-coding: blue, yellow, and red, respectively.</i>
Type of stimuli	Within the identified content each information was categorized into the two main stimuli types: Visual and Textual. This was based on their graphical representation in the briefs. <i>Colour-coding: Purple and dark blue.</i>
Level of abstraction	Each stimulus was assessed based on level of abstraction. The abstraction level was influenced by the degree of interpretation, domain placement and information frame. <i>Colour-coding: Different gradients of green (from light to dark).</i>

The four abstraction levels were established as follows:

1. Very abstract: Far from the problem-domain. Requires a high degree of interpretation to activity use in development.
2. Abstract: Contextualized abstract. It relates to something in a related-domain, but outside the context of use. Requires some degree of interpretation to activity use in development.
3. Specific: Solution-space is defined. It does not require a high level of interpretation. However, the quantified solution is not given.
4. Very specific: The solution-space or requirement is given and is directly measurable.

The analysis of the design briefs categorises information per page. The labelled content and visual stimuli unit is one image, and the text stimuli unit is equivalent to ten lines of text. Levels of abstraction were measured by the number of sentences and images, as each sentence was read and understood individually, opposed as to a collected text section which could contain different abstraction levels.

FOLLOW UP DATA COLLECTION AND ANALYSIS: SEMI-STRUCTURED INTERVIEWS

The analysis and findings from the design briefs were supplemented with semi-structured interviews with the design manager from Company A who created the analysed design brief, and the senior designer and founder of Consultancy B who worked on the analysed design brief. This step was done to extract verification

or contradiction of the findings, and furthermore acquire a more in-depth understanding of thoughts and experiences behind creating and using the design briefs.

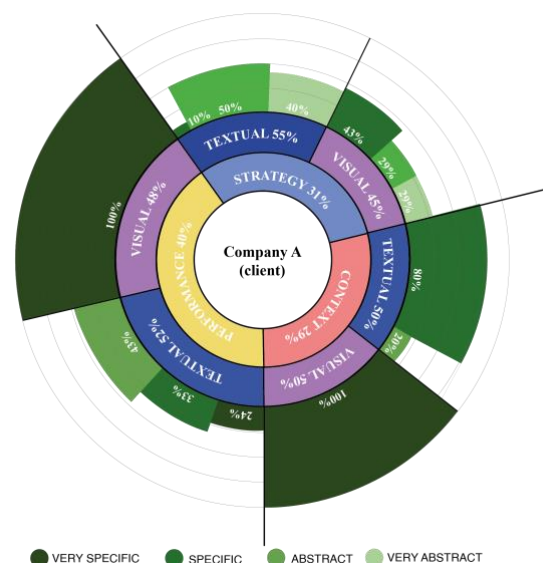
Prior to the interviews, common questions were formulated regarding the content and some specific for each company (e.g. “What do you find most important in the brief?”, “Where do you see the design DNA of the client being mirrored in the brief?”, etc). The interview was conducted starting with the questions, progressing into a reflection over the content of the design briefs, and a reflection over the analysed content of the design briefs. Both interviews lasted about 60 minutes and were recorded and later transcribed to deduce insights to complement the design brief analysis.

ANALYSIS OF DESIGN BRIEFS

TYPE OF CONTENT IN DESIGN BRIEFS

The results of the quantification and categorisation of the information on the design briefs were visualized in figure 1 and figure 2. The diagram illustrates the link between the layers as they depend on each other.

Figure 1: Levels of information in the Company A design brief.

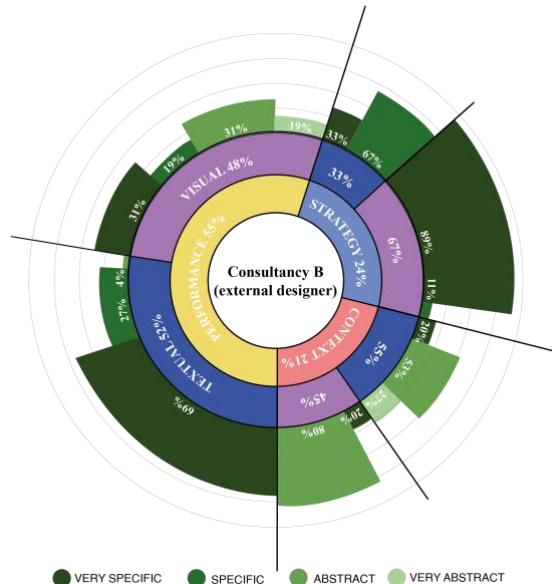


Both diagrams show that performance is the dominant topic (Company A-brief = 40%; Consultancy B-brief = 55%). This class of content informs about the requirements of which the designers are expected to utilize the most. The remaining two topics (strategy and context) are valuable for the overall perception of solution-space and company core values.

The diagrams are very different on almost all other parameters, however. The Consultancy B-brief contains less information regarding company strategy and context than the Company A-brief, and overall a less

even distribution of the three topics. This could be a result of the well-established partnership between Consultancy B and their client, which allowed them to limit information about the company's DNA and values.

Figure 2: Levels of information in the Consultancy B design brief.



VISUAL AND TEXTUAL STIMULI

The two diagrams reflect that both briefs include roughly evenly distributed textual and visual stimuli. According to theory, visual stimuli have the strongest effect on designers as it is faster to decode and translate into other types of visuals. Still, both briefs contained 52% textual stimuli that described the performance of the design, most of it classified as very specific of specific, which indicates requirements to be met.

From the execution of classifying the combination of stimuli and levels of abstraction, it became clear that textual stimuli are generally more abstract than visual stimuli; it is "harder" for the brain to process and translate text into a visual outcome contrary to translating visual stimuli to a visual outcome. This potentially means that textual stimuli might allow for a broader solution-space, with more possible interpretation directions that are not as fixed as visual stimuli. A finding from this could be the benefit of using textual stimuli when describing broad open solution-spaces. This is instead of using visual stimuli examples to describe the same, which is often seen in e.g., moodboards and styleboards.

LEVELS OF ABSTRACTION

According to theory (see section 2), a design brief should include a balanced use of inside- and outside-domain, hence making use of stimuli of both low abstraction and high abstraction. The diagrams (Figures

1 and 2) do not specify the content, only the levels of abstractions. Both design briefs feature all levels of abstraction.

In Figure 1 we can depict that the Company A (client) design brief included 100% very specific visual stimuli in performance, which was furthermore inside-domain. This could indicate that they had clear and precise communication regarding their desired product language and did not allow for the designer to explore too far off the given frame. On the contrary, the strategy section of the Company A-brief featured mostly abstract stimuli, both visual and textual. In terms of company DNA and implementation strategy they were unspecific and left a large solution-space to be explored.

The Consultancy B (external designer) design brief (Figure 2) shows that the performance content is built upon a combination of abstraction levels and is not as specific in their communication of this. This could indicate that the solution-space was meant to be broader and therefore defined with stimuli with high interpretation possibilities. Additionally, the visual stimuli included both inside-domain and outside-domain pictures. Conversely, most of the strategy content was specific in both textual and visual stimuli. This could be an indicator that the client was very aware of their company DNA but perhaps not in their desired product language and could be seeking something abstract and new.

Although the design briefs described somewhat similar products, they did not have any relation to each other, and the analyses were separated in two individual cases. The insights from the interviews were included in the following analysis with the purpose of adding another layer of understanding on the role of stimuli in the design briefs.

ANALYSIS OF INTERVIEWS ON THE ROLE OF STIMULI

THE COMPANY A DESIGN BRIEF: NARROWING THE SOLUTION SPACE

The writer of the Company A design brief is a graduated designer with 5-10 years of experience in formulating design briefs for external designers. Formulating the brief includes preparatory work, such as investigating market positioning, portfolio opportunities and gaps, finding the "right" external designers, and specifying which requirements of the new product-design were fixed and which ones were open for interpretation.

From the overall read-through of the design brief and the follow-up interview, it became clear that Company A knew exactly what type of lamp they were looking for; they had a straightforward solution-frame with strong arguments for the reasoning of the new product: a) to position themselves stronger on the market; b) to

expand a product family with a ‘cousin’ to an existing product in their portfolio; c) to create a product with a simple expression; d) to be produced using rotational spun aluminium; and e) featuring a specific light source. The certainty and confidence in the preparatory work were apparent in the design brief as well and thus verified the analysis. Company A was subconsciously aware of the opportunities and consequences of different levels of abstraction in their design brief. As a result of this awareness, they intentionally included very specific stimuli, thereby providing the external designer with a narrow solution-space within a specific frame of the design task. They highly influenced the output of the design proposal to make it fit their visions and thereby also their desired product language fitting of their portfolio. This is apparent in the visual stimuli represented under the performance content, which refers to the headline “Typology + appearance references” in the brief. The section consisted of four pictures of simple, rotational spun lamps, which was coherent with their desired solution space.

This implicit understanding of what a designer values and what actively inspires them onto certain paths, gives Company A an advantage in terms of creating a specific and well-communicated brief. The design manager at Company A described it as such:

“I include what I imagine the designer could use to understand what we want from them. (...) I mean, if I were the designer on this, I would benefit from this page the most [referring to “Typology + appearance references”]” (Company A 00:41:52)

Regarding the abstraction level, the design brief contains the tagline “new perspective”, as a part of the strategy content, classified as very abstract. “New perspective” is a cornerstone in Company A’s design DNA, and it was implemented as very abstract and abstract textual stimuli as well as one page with outside-domain very abstract and abstract visual stimuli in the design brief.

Through the interview, it became clear that “New Perspective” is what Company A is seeking by engaging in collaboration with external designers. Therefore, this company’s important core value and DNA were presented at a high abstraction level to provide freedom of interpretation for the solution-space.

“It is well spotted that some of the content is up for interpretation. (...) In reality, new perspectives can be the thing that gives the product a justification on the market of thousands of already existing pendants” (Company A 00:32:33)

By implementing different levels of abstraction tactically according to what needs to be specific and not, Company A ensured that the external designer could work more efficiently. A specific and fixed design brief is not necessarily easier to approach, it is almost on the

contrary, but the workload can be directed to relevant tasks, and it allows for the designer to go more in-depth with detailing instead of spreading out the solution space on locked specifications that are of no use in the end. This indicates that narrowing down the solution-space might be linked to the cost effectiveness of exploring a smaller solution space stated by Crilly (2015).

One could argue that Company A has a good understanding of how the desired design activity should be described, given that Company A makes use of expert designers to conduct the preparatory work and formulate design briefs. However, it was not fully intentional to choose either textual or visual stimuli in the design brief, but if an image can describe an aesthetic or a certain perspective, then the image is chosen.

THE CONSULTANCY B DESIGN BRIEF: MISLEADING SOLUTION SPACE

In the performance topic, there is a headline “Physical product” that contains a mix of textual and visual stimuli either very specific or specific. The content was directly related to the technical considerations, which mirrored the strengths of the client’s company.

The requirements set by the client in the design brief (e.g., sound setup, controls, speaker placement) are very specific stimuli to ensure a narrow solution-space. Consultancy B took the content and stimuli of the functional aspects very seriously as it is the client’s area of expertise.

Conversely, the “Material/shape board” headline only contains visual, outside-domain stimuli, classified as very abstract and abstract. The content is related to aesthetical considerations regarding appearance, form, and texture. It opens a wide solution space and invites various interpretations and creativity. The client did not have expertise in this area, but with this board attempted to outline a solution-space by seeking innovation on aesthetics. This made the designer unable to assess a concrete framing and focus on an ideation direction for the product language, which correlates to the findings by Ezzat et al. (2020) wherein a higher abstraction level mitigates fixation risk. However, it became a hindrance, since the brief pointed towards a wildly mixed aesthetic appearance that Consultancy B, through their agelong relationship, knew was too ambitious and out of reach.

“They [the client] have some sort of ambition that “sound” is their driver. And then when they present a brief like this for us... The way they give us freedom, it is not actually there because they are limited by their own production and their approach to their markets. So, there are some aspects, both visual but also because of ambition, that sets the bar falsely.” (Consultancy B 00:05:53)

The consequence of this was that Consultancy B rarely looked at the shape board and found the visual elements themselves. They used their design expertise and knowledge within this area and made use of their internal stimuli that have been built up over the years working with this client. They identified the contradicting elements between the provided design brief and the DNA of the client company. In the end, this could seem like wasted resources from both parties on producing and processing stimuli that were not useful. Consultancy B came up with concepts that derived from the board, but they were quickly deselected by the client, as they expected. Generally, if the client does not have any specific and concrete input to the aesthetics, Consultancy B would rather have the client use their resources solely at communicating their areas of expertise and correlating fixed requirements (e.g., the technical aspects).

CONCLUSION, IMPLICATIONS, AND DISCUSSION

CONCLUSION

In a professional client-designer relationship, expert designers are influenced by stimuli communicated in design briefs. A design brief defines both a problem- and a solution-space and by doing so allows a client to intentionally direct the designer towards the desired outcome in accordance with their company DNA and product language.

The findings in this paper indicate that in a professional context, the relationship between stimuli, abstraction levels and negative effects of design fixation cannot be described as simply as previous experimental research states. There are instances where a high level of abstraction in a stimulus can be misleading or opening the solution-space in ways that are not effective (e.g. time of development, cost, etc.) for the client-designer relationship. Therefore, we believe the correlation between the level of abstraction of stimulus and the level of fixation mitigation reported by Ezzat et al. (2020) must be situated. Furthermore, we found that the interviews enable a reflection upon the role of stimulus in a professional setting. Such method enables a thematic overview to be established and is similar to the method used by Crilly (2015) to characterise fixation as a collection of situated factors influencing concept design and product development rather than just a single negative concept.

This research paper has provided one of the first views into this topic by analysing two case studies of two Danish design companies, one from the client perspective (sender) and the other from the external designer perspective (receiver).

Companies can positively define a solution-space by using specific stimuli tailored to their aspirations, envisaged design language and in coherence to their

company DNA. This study shows that specific stimuli can be used as an effective way to increase efficiency and force the designer to focus on what matters the most. On the contrary, clients can invite the designer to be creative and innovative by defining an open solution-space with abstract stimuli on the required topics the client wishes to explore.

The negative use of stimuli in a design brief occurs when the solution-space is described as too abstract in different domains. This can compromise the designer's ability to focus on the envisaged domains. Using visual stimuli with a high abstraction level, might result in unclear design briefs with too many framing directions, thus making it harder for the designer to make a good framing fitting of the client. This results in wasted time and resources on both sides. Furthermore, it could generate product designs which clash with the company's DNA or existing portfolio which evidently would cause an undesirable market positioning.

Furthermore, this paper has provided insights into what the executing designer values and priorities to be included in a design brief. Findings indicate that designers call for specific stimuli and a precise problem scope. The designers have expert knowledge which they apply during ideation after they receive a design brief. When it includes too much abstraction not well accounted for, such elements in the design brief are regarded as superficial and almost useless.

IMPLICATIONS

This research has provided insights into the effect of stimuli and respective abstraction level in design briefs and thereby indicated how these can be used actively in the creation of design briefs. An understanding of the effects of abstraction levels and type of stimuli is a valuable tool for clients as well as designers in their partnerships. Some of these overall findings can be translated into initial baselines for creating a brief.

Based on the methodology of this research, it was possible to derive numerous findings from the data set; more than what has been discussed in the scope of this paper. This opens further research on the topic under three main directions. Firstly, on the graphic layout of a design brief. When analysing the design briefs, it became apparent that the graphic layout potentially made an impact on communicating stimuli. The following research questions arose: Does the size of visual stimuli have an impact on the interpretation? How does the text size impact the perception of the stimuli as "text" stimuli and not visual stimuli? How does the addition of headlines to pictures affect the perceived abstraction level of said visual stimuli? Introducing information design and interaction design knowledge into the analysis could provide another layer to this research to get a deeper understanding of the role of stimuli in design briefs.

Secondly, the cooperation between designers and engineers. The hand-over of a concept design from the external designer to the client is critical for delivering design DNA and important details. The interviews indicated that many important details often get lost in this process. How to hand-over a design between two professional competencies without losing design DNA and finding the best design compromises?

Thirdly, the assessment of the level of abstraction in the different stimuli before delivering the design brief. Based on our research, there is the possibility of creating toolkits that assess the abstraction level and stimuli to be used in professional settings, during the creation of design briefs. It could enable clients to use stimuli according to the specific intention of the company, and thereby better establish both the problem- and solution-space for creative exploration. This would support the company in testing out different innovation directions while remaining truthful to its own DNA.

DISCUSSION

As stated in theory, design briefs are different and depend on a lot of variables. As this research was only based upon two unrelated case studies, the results from this would need further verification from larger studies, possibly where the data collection is more specific on fewer variables than included in this data set. Alternatively with the addition of studies where the same design briefs are followed from development by a client through the briefing process and final read and implementation by the designer.

An area of discussion is whether it is possible to split textual and visual stimuli from each other. In the analysed cases, the visual stimuli came with a short textual explanation or a headline to set the context of the visual stimuli. This might indicate that there might occur different levels of co-dependency between each other. A visual stimulus alone can be perceived as one thing, but by adding a written description, word, or headline could shift the perception.

Another layer of analysis is the psychological dimension of stimuli perception, which is not accounted for in this study.

Lastly, this study only provides a specific insight into the design brief itself as a communication element. However, the whole briefing process includes other steps. Through the data collection, it became evident that debriefings, meetings, edits of the brief etc, assist in shaping the 'good design brief'. Furthermore, most clients and designers schedule meetings when the design brief content is unclear, and a new common understanding is created. Taking the whole briefing process into account might provide further nuances into the role of stimuli in design briefs.

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