

Mind the face

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Abstract. Images of real people trigger designers to empathise with users. This paper explores the use of visual representations of a person's face in conveying results of user studies to design teams. Several small and large studies with different explorations around the search, choices and use of images are described. The paper concludes with tentative guidelines for selecting and creating effective images of users in design communication.

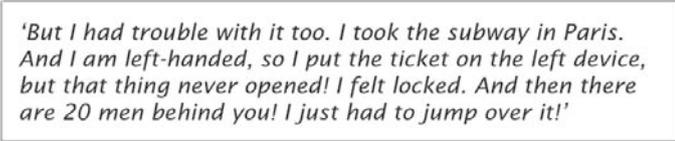
1 Introduction

When designing product experiences for people, designers need to have an empathic understanding of the people they are designing for [9,10,15]. Much is gained if designers have direct access to the users, but for a variety of reasons, contact between designers and users is often mediated. Mostly, researchers conduct, analyse and present the results. Then, design teams start on the basis of indirect information, e.g., research results which are presented by quotes, themes, and/or personas [14]. The way in which results from user studies are communicated can enhance an empathic understanding and support creativity [16].

In our work we have experienced that especially images of the users have impact on the way designers interpret the results and are inspired by them. Figures 1 and 2 illustrate what including a photo of a user can do to the impact of a quote.

Photos of people, and especially of people's faces, attract much attention [5]. A face is the most expressive of all images [6] and is therefore rich in communication, but also ambiguous. People 'read' interpersonal cues (e.g., appearance, gesture, facial expressions) to create a mental image of that person [8].

Representation of a person's face plays a prominent role in our world, e.g., the newsreader on TV, virtual agents, but also self-representations online such as on dating sites, blogs and communities. In the interface design field, several research address the question how virtual agents can be represented to support effective interaction [e.g., 12].



'But I had trouble with it too. I took the subway in Paris. And I am left-handed, so I put the ticket on the left device, but that thing never opened! I felt locked. And then there are 20 men behind you! I just had to jump over it!'

Fig. 1. A quote from a user study (compare Fig. 2)

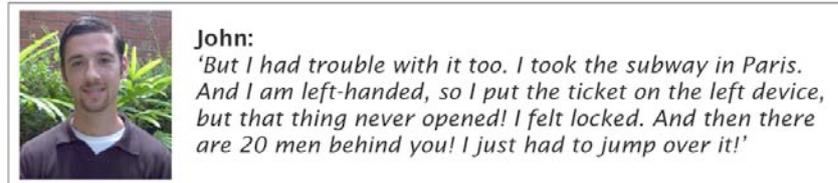


Fig. 2. Adding a picture and a name of the user turns a quote (see Fig. 1) into a personal experience report

Personas are a design technique that uses images of people to represent knowledge about users [14]. Personas are descriptions of fictional users, which have life stories, goals and tasks [4]. Scenarios [3], a related technique, tell stories about users. Although visual representations of users play a role in scenarios, Nielsen [13] notes that there, the depictions of users are often less detailed than in personas. Personas put a face on the user, a memorable, engaging and actionable image that serves a design function [14]. Although users are real and personas are fictive, both gain by showing images of people in largely similar ways.

However, showing the right image can be a problem. Privacy issues often prohibit widespread use of participants' photos or real names. Photos and names can be replaced or abstracted, but how should these representations be chosen?

The way users are represented is important; it is a design problem in itself. One which can be conducted by research teams, design teams or combined research and design teams.

In this paper we describe our experience over the past four years with representing users by means of images of people in communicating user study results. We start by reviewing the various functions that images of people in user study results imply in design communication. Then we relate our experiences in designing representations in several design projects, and one study conducted with industrial design students. At the end we summarize our knowledge by reflecting on these experiences, and present guidelines for creating the right image.

2 How images of people work in design communication

Although there is no mature theory, considerations from everyday life and insights from visual communication, media studies, etc indicate how images of users can serve several functions in design communication.

Stimulating empathy. The main aim of showing users is to support designers to achieve an empathic understanding. Showing the actual users can make a presentation or a report more lively and engaging. Actual people with their daily life stories provide designers with rich information [16].

Supporting creativity. Images of people are suggestive. As Grudin and Pruitt [7] point out, they trigger the mind's powerful ability to extrapolate from partial knowledge of people and to create coherent wholes and project them into new settings and

situations. Glimpses of users' lives can satisfy our curiosity and stimulate our imagination. The subjective ability of making empathic inferences about the users is part of a creative act, which can support the creative design activity. The representation invites designers to use their imagination. Designers do not only observe, they experience a scene from that person's perspective.

Building trust. Showing the actual participants enhances credibility [14]. The information is perceived as more lifelike and trusted, as compared to stylized and symbolic representations. The details of raw data are often experienced as more convincing.

People and stories as binding elements. The results of user studies are rich and diverse, such as 'a day in a life'-descriptions, experiences and contexts in which people use products. This kind of information does not fit well in schematic representations alone, because they cannot convey the richness and diversity [16]. However, the richness and diversity can more easily be conveyed by linking it to people and stories about people. It serves to create a mental imagery to create coherent stories, and to give all parts a place. Personas and scenarios [14], for example, do serve this function of holding together user experiences.

Anchoring. Images support recall by a process named 'anchoring', which allows people to remember selective but coherent elements of the information [2]. Designers create a coherent image of the participants and share anchors they can refer to, e.g. the names or photos [14]. The image serves as a reference point through the process of receiving the information and calling upon it later in the design process.

Depending on the design activity and the composition of the team, some of the above described functions weigh more than others. In this paper, we focus only on the use of images, especially images of faces, that represent participants from user studies. Other media, such as audio, video and text are beyond the scope of this paper.

3 Presenting users by a portrait

Next to these functions of images of people in design communication, there are some basic perceptual principles that are relevant for representations of people by portraits. Fig. 3 shows the grammar of a typical portrait. Each of its elements plays a role.



Fig.3. Most representations of people feature a face, a body, and a background. In close-up, less of the body and background is shown

Background information. The background behind the person is an important source of information. Next to situational information, the background can also give suggestions for interpretations of personality attributes. In an earlier study, students were asked to describe the character of team mates from only a photo. One photo showed another student in a rural area, which led to the response (*'He is a hard worker, because he comes from a farmer family.'*). Excluding the background will put more emphasis on the single expression of a persons' face.

Amount of body shown. The ratio of face to body in an image influences the way the person in the image is perceived. Images in which the face takes up most of the image focus attention on the person's intellectual and personality attributes [1] (see Fig. 3). When more body is shown, the posture and physical attributes also give cues about the person.

Friendly people. A classical lesson from narrative theory is that the main character must be 'good' enough to be liked, otherwise the audience will not be able to empathize with him [19]. People have difficulty in empathizing with somebody who appears unsympathetic, and consequently, representations of users must be likeable [14].

Sources of faces of people. When original photos are missing, or privacy issues forbid their use, other images must be substituted. Fig. 4 shows three categories from practice: Famous people, stereotypes and everyday people. Each category is interpreted differently. Famous people are recognized immediately, but come pre-packaged with messages: they already represent a set of values and norms and other connotations. These may interfere with the user study results to be conveyed. Stock photos, highly popular as they are easy to get, show a stereotype, evoking a standard, polished set of presuppositions and prejudices. This results in a flat character- one that is not likely to be as rich and complex as real people are. Everyday people, e.g., private photos of friends, family relatives or strangers, are natural, approachable and more open for interpretation. Unlike the businessman, the real person suggests to have a life beyond to what is shown in the image. Our conclusion from this brief comparison is that only the last category is suitable as an anchor for user study results.



Fig. 4. Three categories of images used in idea generation sessions. A famous person; Snoop Dogg, a stock photo of a businessman, and an everyday person

Style of representation. Representations can vary on the dimension of real photos to iconic abstractions. A real photo provides a lot of information. More abstracted versions range from iconic representations, to cartoons, to combinations of sketches

and photos. An abstraction can serve to empathize. A cartoon-style figure in a realistic background invites the viewers to identify with that figure [11].

Ethical guidelines [20] often warn against showing the actual participants, and as a result the images are often cropped, abstracted or otherwise anonymized, as in Fig. 5. These manipulations, however, can influence the perception of that participant, e.g., blocking the eyes make it look as if the person was a criminal. The fourth image retains an expressive face, even though the original person cannot be recognised.



Fig. 5. Some image manipulations for preserving privacy

4 Studies in exploring the faces of people

In this section we describe several studies in which we explored the search and the use of images of people in communicating user study results. In five of these projects, we created the user images to communicate research results to design teams from industry. The sixth project is a study which explored how a class of design students themselves experience creating representations of users. Table 1 gives an overview of these studies.

Table 1. Overview of projects (column ‘#’ refers to number of represented participants)

	project activity	teams members	product topic	#	reasons for (not) including original material	representation type
4.1	idea generation workshop	designers	shaving	8	privacy	pilot: sketches; workshop: fictive photos
4.2		multi-disciplinary design team	social worlds of elderly	3	used only in-company	pilot: one original photo; workshop: multiple
4.3			morning routines of families	4	no original photos available	combination of fictive photos with sketches
4.4						cartoons
4.5			footwear freshness	9	used only in-company	original photo without context
4.6	exploration	design students	shaving	1	various	various

4.1 From sketches to fictive photos

The Personal Cardset [16] was created to communicate the results of a user study about men’s shaving experiences to design teams. Each card represented one single

user. In a pilot version of the card set fictive names and simple representations by means of sketches were made to identify each user (see Fig. 6). During the evaluation of this pilot version, the design team expressed having difficulties to keep track of which user said what (*'The data is blurry', 'Overview is missing'*). The cards were perceived as interchangeable, and thus missed their goal of anchoring the data.

For the final set, the researcher added real photos of 'substitute' people. In searching for replacements, the researcher used her impressions of the age, personality, appearance and narratives of the participants, as she had gained during the study. For finding photos the researcher used magazines, internet, and photos from her private collection. Because of the subjective and complex nature of these judgements, finding good images was a time-consuming and difficult design task.



Fig. 6. Simple sketches of the users in a pilot version of the cardset (left image) were replaced by fictive photos of people

This final version was used by design teams in idea generation sessions. Afterwards, the teams reflected on their use of the cards and on the cards' different elements. All reported that their attention on first inspection always went to the photo and name (*'First I looked at everything a bit, but especially the photos', 'The photos are very useful and make the data very personal', 'Because of the photos you immediately see a kind of character, which makes the image of that user complete', 'The photo is a reference point'*). During designing they had frequently referred to a card by a name or description (*'Do you have the bald guy there?'*). Some even mentioned that the photo was the most inspiring element of the cards. Also, one designer had noticed a mismatch between the (substitute) photo and the narrative: (*'This guy says he shaves his head every week, but he has quite some hair. Is this photo false, or is this text belonging to another user?'*). When this designer heard that the photos were fictive photos she felt misled, because her understanding of the users' experiences was strongly based on the photos of the users. This project shows that photos and names attract much attention. A great amount of detail is picked up from them and they support memory. The sketches failed to do this.

4.2 From one image only to a sequence of images

In the second study, privacy of the users was not a problem, since permission had been obtained for in-company use of images. Again, a card set was made. Each card

showed a (original) photo from the interview, a (fictive) name and a quote (see Fig. 7). The background of the photos showed the participants' homes.



Fig. 7. Cards used in a pilot workshop with design students

In the pilot workshop, design students said the cards with quotes gave them rich insights into the users' social worlds, but they missed information to create a comprehensible overview (*'The cards give in-depth information, but I would like to see these quotes in perspective', 'I can only see what is printed on these cards, it is just a selection', 'I feel that context is missing'*).

The final card set was more diverse. The researcher included more context information on larger cards (age, living situation, a map of their social worlds, and original photos of exterior and interior of living houses). A more varied set of pictures of each participant was chosen (see Fig. 8). The intention was to make the set of cards more lively and to show different expressions of each participant.



Fig. 8. Cards from the final cardset for one participant, each card with a different photo

During the workshops, which began with video fragments of the interviews, the design team repeatedly linked the quotes to the individual users. In the discussion afterwards, one mentioned (*'I heard them talking on the video fragments, and I recognise them on these card.'*). The use of sequences of multiple photos of each participant appeared to motivate and enable the designer to interpret the participant's character and, when taken together with the other information, to assume an empathic perspective. Few other remarks were made regarding the photos, which was taken as a sign that the representations were experienced as rather natural and complete. Similar to the previous project, somebody had spotted a different name on the cards compared to fragments of original data (*'But it says Mary, and here it is Marilyn. Probably a mistake in the card'*). Such little mismatches can cause confusion, irritation, and lack of trust.

4.3 Combination of cartoon style and photos

In this study the designers received a large storyboard to convey findings about the morning routines of families. The storyboard depicted two storylines of activities and clashes in a family's morning ritual. Fictive photos and cartoons represented the user. Mum and dad were represented by a persona description including a fictive photo. In the storyboard, photos were used for the context and children, but the faces of mum and dad were abstracted (see Fig. 9). The style was chosen to optimally stimulate the creative activity of the design team, to invite them into the shoes of mum and dad, and experience the daily morning routine from their perspectives.



Fig. 9. Storyboard in which two parent characters have sketched faces, and two children are represented with photos from magazines

After the workshop, the designers were satisfied with the rich visualisations [18], although they missed links to the original material (*'There is too little raw data, which always contains many small and inspiring details.'*). There had been a creative atmosphere, with great curiosity towards the provided storyboard. In the discussion afterwards, they said that they appreciated the combination of styles (*'Photographs really help me getting into the situation, and cartoons are easy.'*). The designers also mentioned that they wanted to see the perspectives of the children as well. This confirms the principle in section three about abstraction serving to guide and enhance empathy.

4.4 Showing cartoons only

From the same data as in the previous project, a set of cards, an animated movie and two life-size dolls, representing the children were created (see Fig. 10). The movie was completely sketched, and the cards presented stills from the animated

movie. The intention of this style of representation was to encourage the team to step into the shoes of these two kids, and experience their morning routine.

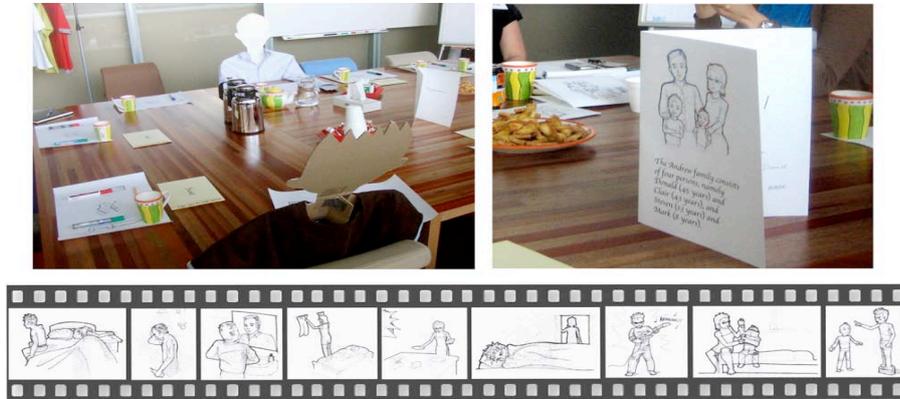


Fig. 10. Workshop material containing life-size dolls that took a full place on the table in between the designers, an animated movie and cards showing family situations

In the discussion afterwards, the designers said that they missed real data (*'With the dolls the information was too filtered', 'I prefer real pictures over cartoons'*). They felt the abstractions failed to convey the presumed richness of the user study. The life-size dolls surprised them and were attracting attention in the beginning, but the designers lost interest quite soon (*'It is funny to take place next to him, but [unfortunately] they do not talk back'*). This indicates that life-size dolls can stimulate curiosity (temporarily), but static as they are, they fail to engage the designers to provide them with more information.

4.5 Real photos without context

In another study posters [17] were created, showing clusters of data (anecdotes, images, annotations) grouped around an image of each user (see Fig. 11). Permission had been obtained for in-company use of original photos, which had been made by participants themselves with Polaroid cameras. These photos were of low quality (over- or underexposed, brownish, unclear, too small for scaling up). The photos had to be intensively corrected (color balance), and the background was replaced by a single colour. The pictures were intended to serve mostly as anchors, since most of the team members had seen the participants earlier, by observing the generative sessions, or by viewing materials during the analysis of the data. In the weeks leading up to the workshop, a sensitizing website (see Fig. 11) informed the multi-disciplinary team (shown at the bottom of the screen) about the progress of the analysis. Two times a week, a bit of data about one of the participants (shown at the top of the screen) was displayed and the design team could react on that.

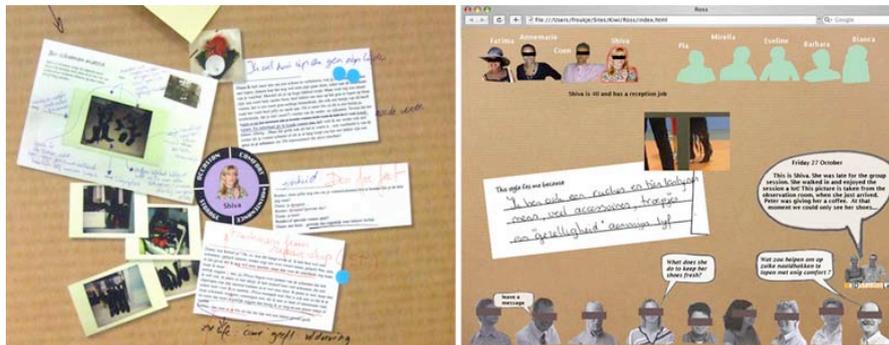


Fig. 11. Left: Part of a poster, showing raw data clustered around a participant. Right: The sensitizing website, showing the real participants by photo and name

Already before the workshop, the team was engaged with the participants, and had created a personal image about some of them. During the workshop, they talked lively about the participants, and referred to them by name. The pictures without context served as visual anchors for pointing and adding notes.

4.6 Designers creating the representations of users

In the projects described above, we felt that the search for finding a fitting image for the representations of users, is a design act itself, which already stimulates empathy with the users. This suggests giving this task to design teams to explicitly 'fill in' the character. Designers could become participative in creating the representations of users.

In this study, the act of interpreting a user's character and creating an image by designers was the subject. Do designers create mental images of the users' characters? Would the act of enriching the users' characters, by creating a fitting image, in a design activity stimulate empathy and creativity?

As part of a design assignment, 120 industrial design students read a transcript of a focus group featuring four users. The students were instructed to search for themes in this transcript which they could use for design directions. No explicit assignment was given for studying the users' characters. After reading the transcript they were asked to create an identity card (consisting of a name, description and a photo) for one (students' choice) of the four users. Half the students had received a transcript in which the users were described by a name and small photo each. In the transcript given to the other students, users had been anonymized (names replaced by P1, P2, ...; no photos included). We expected that the anonymous transcript would stimulate less empathy than the personalised transcript and were interested in possible differences in richness of the identity cards, that the two groups of students produced.

We did not find differences in richness between the identity cards made by the two groups, but students had experienced the two types of transcripts quite differently. Students who had received the anonymized transcripts, mentioned that they had had difficulties in keeping track on the four users. It took them intense (re)reading to form an opinion about each users' personality. About one quarter of this group mentioned

that they had created a mental image of each user when reading the transcript (see Fig.12). Of the students who had received the personalized transcript, more than half said they had created a mental image of each user. This result suggests that a personalised transcript supports designers in getting more empathy with the users.

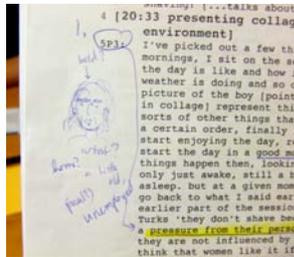


Fig. 12. Some students already express their mental images of the user by means of little annotations and sketches in the margins of the transcript

Most of the students thought that creating the identity cards was meant as an ice-breaker exercise in between the analysis activities. Some, however, mentioned that the act of exploring the characters of the users did not support them in their creative process (*'I am looking for themes, I do not want to spend my time on the characters of the users'*), but other students were positive about this (*'It makes you analyse the transcript with different perspectives in mind'*). In a plenary discussion after the exercise, some mentioned that the act of searching for pictures (*'Made you think more about the person'*, and *'It makes you reread the transcript'*).

The cards representing the same user showed similarities in age, and lifestyle (see Fig. 13). Students mentioned that the way they derived character information from the transcript was, besides elements as age and lifestyle, the role in the conversation (e.g., dominant, interrupting, shy).



Fig. 13. Identity cards created by students; for representation photos and sketches were used

5 Reflecting back on our experiences

In these projects the various functions (stimulating empathy, creativity, and anchoring, binding and building trust) of user representations were addressed, in one project more explicitly than the other. The following conclusions are based on reflecting back on our experiences. In the next section some tentative guidelines are presented.

Use of images. Images of users are a powerful means to represent results of user studies to design teams. One project (4.1) shows that the photo in combination with the names received the most attention of all elements that the cards provided. Without representations of individual users, it is hard to understand the relations between the different expressions and opinions of the users. Fictive photos worked much better than sketches, indicating that this is not just an arbitrary visual symbolic labelling, but rather an empathic enhancement. Similarly, in project (4.3), where sketches and photos were combined, the designers felt satisfied with the richness of the presented materials. Project (4.4) provided the design team with only sketched representations, which was experienced as too poor. These experiences showed us that sketches alone leave out too many details of life, are less convincing and result in a lesser emphasis on real people.

Often additional information is needed, besides the image. In the pilot test of project (4.2) the designers asked for additional information about the users to be able to form a comprehensible and complete impression of the users.

When the image is fictive, this can affect the message. Designers easily notice small differences, such as names or photos that do not correspond in one data set (see projects 4.1 and 4.2). In a workshop, this can be very confusing and leading to distrust easily.

Goals of workshop. In these projects, the composition of the teams and goals of the workshops differed widely. All workshops had in common that teams received results from studies of individual users and that the workshop would end with product ideas. In projects (4.1, 4.2, and 4.5) emphasis was to bring the users alive for the team members. In these projects photos, either fictive or original, were used. In the other projects (4.3 and 4.4) the goal of the workshops was to step into the shoes of the users, and to be inspired to designing from the users' perspective. In these projects more abstracted representations served designers to quickly step into the shoes of the users.

Designers are a critical audience. Designers are quite critical towards the way information is delivered. They are sensitive to chosen aesthetics of other researchers and designers. *'The letter size could be a bit smaller, but cool presentation.'* is an excerpt from the workshop in project (4.5). Designers have strong personal graphic preferences. In several projects (4.1, 4.3, 4.4) sketched representations were used. The aesthetics of these sketches are highly influential on the interpretation of a design team. The effects of various styles of sketches, compositions and photos, however, is a topic that deserves further investigation.

Designers as participative creators. The study of project (4.6) shows that designers differ in the act of creating a rich image of the participants. The personal preferences of designers vary greatly in relation to creating empathy with the users. Design teams should be given the opportunity to participate in the creation of representing users. The creation of the representations can be a collaborative design effort, of the sending (user researchers) and receiving (design teams) parties.

6 Guidelines

We finish with a tentative list of guidelines for representing users in design communication. The main criteria for choosing such a representation is the goal of the design activity. If the goal is to obtain a deep understanding of the people you are designing for, and to create sensitivity for the difference between the designer himself and the users, it is more convincing to create fully detailed and realistic representations such as real photos of the actual users. If the goal is stepping in the shoes of the users, and experiencing the presented stories as the designer would experience them himself, also use of abstracted representations can be recommended.

In creating the images, many practical decisions must be taken; here are some considerations and tips.

Style of representations. A representation of a user needs additional information to create a comprehensible image. At least a name should be attached, and a small description is desirable. Representations showing multiple views enrich the mental image that designers create. More images of a participants' face show more expressions, which provide designers with a richer view. Using screenshots from a movie or photos with different expressions seem to stimulate more empathy. In that sense, a sequence of small photos of a user versus one larger image of that person is preferable in communicating user study results.

Fictive material. Photos of everyday people are suitable to represent real users. Avoid stock photos. When combining original and fictive elements, e.g., an original photo and a fictive name, take care of any mismatches in the data, since these can easily cause confusion and even distrust.

Abstracted material. Sketched representations have the advantage of focusing on only a few aspects of the user. Especially, representations with sketched users in combination with realistic context photos serve to trigger designers to identify with the users. However, be careful with the style of sketches. The graphic style should not derive the attention away from the users who are represented to the personal artistic expression of the mediator.

Original material. In general, original material is the most convincing. It is richer and perceived as more trustworthy by design teams. Photographs of the real participants are preferred, as they strongly stimulate empathy. Another advantage of using original material is that the search for replacing the photos with fictive photos, which

is very time-consuming, is not needed. When setting up a study it is recommended to think already about how to communicate the findings. If original material is desired, it should be collected together with the users' permissions.

This paper described the search, choices and use of images in a series of projects. We hope that our findings, and these tentative guidelines can help researchers and designers to create effective images of people in the communication of user study results.

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