

## **AWARENESS:**

### **Tactility and Experience as Transformational Strategy**

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#### **Abstract**

The Awareness Project investigates the following question: Can dialogue tools that challenge tactile competencies support the development of fashion and textile design in a sustainable direction? In this article, we pay special attention to user engagement and design education and discuss experiences of tactile sensibility as a means to create increased awareness about the material quality of textiles and garments. The aim of our research is to develop new dialogue tools to be used in the teaching of fashion and textile design students in order to stimulate new ways of thinking and engaging with users. By employing participatory methods in the field of fashion and textiles, we seek to develop an alternative transformational strategy that may further the design of products and services for a more sustainable future.

In the initial theoretical section, we define tactile sensibility, which is at the core of our research question. Next, we take a closer look at what constitutes an experience and how scholars in the field of fashion and textiles connect this to sustainability issues. Subsequently, we describe the methodical basis of the dialogue tool and our empirical material. We base our discussion on two experiments conducted as part of the Awareness Project.

The outcome of the study shows new ways of establishing dialogue between users and designers, as well as furthering reflection and verbalization of areas within the perception of textile and fashion products that are often considered “tacit knowledge” and a “tacit experience”.

Finally, we conclude that if designers wish to promote change related to sustainability, it is likely that an embodied participatory dialogue that builds on the

combination of user experience and tactile sensibility can be further developed into didactic tools to support a “new design paradigm” and eventually contribute to changes in the fast fashion system.

**Keywords:** fashion and textile design education, participatory design, dialogue tools, tactile sensibility, experience, awareness, embodiment

## Introduction

As resources are getting scarcer, we need to find ways of changing the current patterns of fashion consumption. This requires serious adjustments in textile production, the fashion system, the use phase, as well as in the education of designers. For the professional designer this implies having an approach to the design process that fundamentally considers other perspectives of designing than pure form giving and the use of aesthetics entirely as the servant of commercial seduction.

As design educators and researchers, we have identified a need to develop and introduce tools and techniques that can support future fashion and textile designers in embracing environmental challenges through user engagement. We assume that by employing a participatory methodology to the field of fashion and textiles, alternative transformational strategies furthering the design of products and services for a more sustainable future may have a better chance of emerging.

The overall research question of our study is whether dialogue tools that challenge tactile competencies can support the development of fashion and textile design in a more sustainable direction. Since our focus is on fashion and textiles, we consider it appropriate to combine the participatory approach with tactile sensibility and bodily experience because we believe them to be core competencies of these particular design disciplines.

This article describes the methodological and theoretical framework of two experiments engaging with young users in the Awareness Project at the Design School Kolding, Denmark. The purpose of our experiments was to increase the

participants' awareness of tactile sensing of textiles, garments, consumption patterns and sustainability issues, as well as to develop new participatory dialogue tools and methods for design students. Before describing and discussing the experiments, we position our research by looking at related work within the field.

## Transformational Strategies

During the past two decades, literature on sustainable fashion and textiles has been established in different fields; for example, consumer studies (Niinimäki & Koskinen, 2011; Niinimäki, 2011; Klepp & Bjerck, 2014; Laitala & Klepp, 2011; Klepp, 2001, 2008), design thinking (Fletcher, 2008; Fletcher & Grose, 2012; von Busch, 2008), and practice (Gwilt & Rissanen, 2011; Krüger, Planthinn, Dahl, & Hjort, 2012).

Niinimäki and Koskinen (2011) present a framework that integrates user experience, sustainable product relationships and the role of fashion design. They argue that to improve sustainability, designers must think about ways to create user attachment in order to prolong a product relationship; one way, they suggest, could be found in a deeper product satisfaction. Thus, the authors draw our attention to the importance of product experience:

We feel attached to garments because of their aesthetic beauty, as well as through beauty experience over time that develop in social situations and through positive and multi-sensorial use experiences. The beauty of clothing is therefore not only visual, but also entails tactile, olfactory and kinetic experiences, such as the feeling of comfort, the weight of the material against our body, and pleasant touch and odour. The pleasure clothing offers to the wearer deeply involves the garment/body interaction, and this has a strong and profound connection to tactile memory and our personal experiences and history. (Niinimäki & Koskinen, 2011, pp. 170-171)

Transforming the fashion system, its products and design practice, is the topic of the book *Fashion & Sustainability – Design for Change* by Fletcher and Grose (2012). Here, we shall briefly touch upon part three, "Transforming Fashion Design Practice", where the authors present four roles the designer may take on: that of

communicator-educator, that of facilitator, that of activist, and that of entrepreneur. Especially relevant to this article are the first two roles, in relation to which Fletcher and Grose state that:

In order for sustainability ideas and practices to transform the fashion sector fully, a deeper and broader communication and education movement has to develop to build 'literacy' in the general population around ecology and natural systems and their interconnections with human systems. (Fletcher & Grose, 2012, p. 157)

Within this context the authors see emerging opportunities for designers to communicate new visions of fashion and sustainability by, for example, providing tools, examples, skills and language that can support "a collective voice" which can bring about deep change more rapidly in the sector (ibid., p. 158). Fletcher and Grose also state that co-design, where the designer acts as the facilitator, represents the most complete form of immersion in practice.

From these suggestions for transformational strategies, we move to consumer studies. To prolong the lifetime of garments, Laitala and Klepp (2011) suggest that designers must acquire greater awareness about common problems that occur during the use phase in order to create what they call "a new design-paradigm". The authors conclude that: "Improved knowledge among designers on the actual clothing consumption, combined with better knowledge among consumers about textiles' quality and mending techniques could lead to significant improvements as increased lifetime" (Laitala & Klepp, 2011, p. 20).

Finally, and in line with other scholars, we believe that aesthetics can also play a different role in creating awareness about quality of life and establishing emotional bonds between users and products (Cranz, 2013; Margolin, 2002; Norman, 2004; Saito, 2012). Defining aesthetics as an invisible blend of sensation, emotion, and knowledge, Cranz suggests that "sustainability could easily be pursued through the lens of the senses" (Cranz, 2013, p. 155). Moreover, Saito (2012) points out that there is a growing recognition that cultivating environmentally responsible attitudes

should be accompanied by appropriate aesthetic values. Thus, we argue that aesthetic experiences might act as gateways to more sustainable behaviour.

Following these arguments, it seems crucial to equip users with basic expertise in judging the quality of textile materials (durability and tactility) as well as an awareness of personal preference for garment fit and style (including colour and pattern). In design education, these issues are addressed on a professional level in various ways but rarely, in our opinion, in ways that include methods and tools for interacting with users during the design phase or follow up on the users' tactile reception of material, garment fit and style once the product has left the shop. Therefore, we suggest developing a transformational strategy that builds on tactile sensing and dialogue between designers and users in order to create a new design paradigm.

### Tactile Sensibility

It is widely recognized that the dominance of vision influences the tactile sensibility and thus reduces our experience of the world (Albers, 2000; Pallasmaa, 2005; Paterson, 2007). Consequently, impressions perceived through our other senses receive less attention and thus remain tacit and not fully experienced. However, lack of tactile sensing goes far beyond the perception of textile products and is significant to the processing of experiences of other products and our environment as well. The architect Juhani Pallasmaa claims that, "all senses ... are extensions of the tactile sense; the senses are specializations of the skin tissue, and all sensory experiences are modes of touching, and thus related with tactility" (Pallasmaa, 2013, p. 219).

Most people would agree that we live in a visually dominated culture where, according to Walker, there is "a major emphasis on product appearance" (Walker, 2006, p. 7). This is also the opinion of Pallasmaa, who finds that "the dominance of vision has never been stronger than in our current era of the visual image and its industrial mass production" (Pallasmaa, 2013, p. 217). Some scholars even claim there is evidence that most research on sensory perception of materials are concerned with visual perception, and find that "other sensory modalities, particularly touch, have been less investigated" (Zuo, Hope, & Jones, 2014, p. 28).

Recently, an American group of researchers (DeLong, Wu, & Park, 2012) have completed extensive analyses of touch preference with more than 100 students. Though our current project does not specifically study touch preference, as we concentrate more on open reflection through tactile experiences, there are many similarities. Firstly, DeLong et al. mention awareness as an important parameter for both the designer and the user. Secondly, the research emphasizes the importance of educating both groups in order to create more viable and pleasing textile surfaces.

In 2001, a British research group published the results of their experiments with users' verbal reflection on the tactile sensing of garment textiles (Moody, Morgan, Dillon, Baber, & Wing, 2001). This study shows that the users' verbalization can roughly be divided into two categories, i.e. an "objective" description of the surface structure, and a "subjective" description of the emotional experience that the individual participant associated with the tactile sensing of a specific piece of textile. These experiments differ from the ones described in this article because we eliminated vision from our experiments.

## Experience

In this section we take a closer look at what constitutes an experience and how scholars in the field of fashion and textiles connect experience to sustainability issues.

First, we draw on the American philosopher, psychologist and educational reformer John Dewey to identify what constitutes an experience. Dewey's thinking influenced several Bauhaus teachers, and today his writings are still relevant to design education and design research (for example, Dalsgaard, 2014; Rylander, 2012; Reynolds, 1997). Dewey connects experience not only to memory and time but also to the future in the respect that; "Every experience both takes up something from those which have gone before and modifies in some way the quality of those which come after" (Dewey, 1938, p. 35). Later, Victor Margolin, Professor in Design History, takes up this quote remarking that; "... thus experience can become richer and deeper the more awareness and understanding are brought forward from the past" (Margolin, 2002, p. 41). Margolin also points to the importance of making

connections between products and user experiences in order to discern the qualities that result in satisfying use. He remarks that awareness of the relationship between products and personal experience may be a way for people to engage in improving quality in their lives (Margolin, 2002, p. 55). Recently, Zuo et al. have stated that sensory experience “is the core of aesthetic appreciation of products” (Zuo et al., 2014, p. 27).

Human experiences and emotions are also the subject of many scholarly writings within the field of participatory design and co-design, and lately the subject has become part of the fashion and sustainability discourse as well. For example, Niinimäki & Koskinen (2011), refer to Donald Norman’s three levels of experience when they discuss “the reflective level” as the highest form of processing experience cognitively, since this level comprises “feelings, emotions, self-image, personal satisfaction, memories and cognition” (see also Norman, 2004). Drawing on Chapman (2005), the authors also point out that the reflective level is fundamental for discursive engagement. According to Niinimäki and Koskinen, these elements may be central in changing the current consumption of fast fashion towards a more “healthy” sustainable fashion future.

Building on the notion of experience by Dewey and Margolin, we decided to stage our experiments around tactile sensibility applying a participatory methodology. This is also in line with Niinimäki and Koskinen’s ideas for changing the current fashion system, as well as related to the method of cooperative inquiry mentioned by Fletcher and Grose (Fletcher & Grose, 2012, p. 158).

## Research Methodology and Dialogue Tools

Engaging with blindfolded users and giving them a tactile experience that involves their hands and their whole body demands a methodological approach that not only engages the participants in the tactile sensation but also encourages them to have an open dialogue and reflect on the experience. Therefore, we decided to draw on methods developed in the field of Participatory Design (Greenbaum & Kyng, 1991; Schuler & Namioka, 1993; Simonsen & Robertson, 2013). Traditionally, Participatory Design (PD) focused on the relationship between humans and information

technologies, but over the years, researchers and designers have developed a rich variety of methods, techniques and tools supporting PD in many different fields. Thus, it suits our research very well since one of the core issues in PD is the engagement with users. Simonsen and Robertson define PD as “a process of investigating, understanding, reflecting upon, establishing, developing, and supporting mutual learning between multiple participants in collective ‘reflection-in-action’” (Simonsen & Robertson, 2013, p. 2).

One approach that we used to trigger conscious reflection-in-action is based on the interviewing technique called the Repertory Grid (RG) originating from psychotherapy (Kelly, 1955; Fransella, Bell, & Bannister, 2004). The RG technique is developed to establish a dialogue with “selected elements”. In psychotherapy the “elements” are typically the client’s circle of friends and acquaintances. In the field of design the elements can be a selection of materials, objects and other items deemed relevant for the purpose of the dialogue. The procedure of the RG is also structured in a specific way. The use of triads in particular has proved to be useful when the focus is on verbalizing different types of sensory experiences. The “triadic difference” is structured so the participant, from a selection of three elements, answers the question: How do two of these elements resemble each other as opposed to the third element? For a more in-depth description of RG in relation to textile design, see Moody et al., 2001; Homlong, 2006, and Bang, 2013.

The methodology applied in the Awareness experiments is an elaboration on Bang’s approach to RG. We tested textile samples as well as full scale garment probes, inviting the participants to enter into an open dialogue with the researcher. The most significant difference and/or elaboration is that our experiments are experience-oriented as opposed to goal-oriented.

Looking at the application area for our research from a PD perspective, the aim is to change fashion and textile design education by including methods to further awareness of product experience and to encourage user engagement in teaching. The Awareness pilot study is a step in that direction. One PD method includes: application area, perspective and guidelines such as techniques, tools and principles



for organization (Bratteteig, Bødker, Dittrich, Mogensen, & Simonsen, 2013, p. 118). Our tools constitute the textile material samples and the specially constructed garments. The techniques used involve tactile sensation with hands and body and the Repertory Grid technique. The principles for organization are a staged experience combined with follow up interviews.

## The Awareness Project

The Awareness Project began as a qualitative pilot study at the Design School Kolding in 2012. Up to now, we have conducted a series of experiments starting with tactile exploration of textile samples using the hands, followed by full scale garment probes, and then moving into wardrobe studies and finally, real life testing of specially designed garments over a period of six months. Parallel to the experiments we have conducted follow up interviews and collected feedback. In this article, we focus only on the textile samples experiment and the full scale garment probes.

The starting point for the project was a discussion in the research team about how designers might help promote increased sustainable behaviour by creating awareness of the users' own actions. We were interested in the educational perspective of engaging with young users who are at a stage in life where norms, values and behaviour are taking form. This is in fact what is at stake when we teach sustainable design to fashion and textile students. Here, new ways of thinking and acting are essential, if the students want to challenge and develop the profession. Therefore, we decided to develop new participatory tools and to test them with local high school students before implementing this approach in our teaching.

## The Repertory Grid Experiment – Tactile Sensation with Hands

In the textile samples experiment we decided to use a variant of the RG technique described above. The purpose was to direct the participants' attention to tactile sensibility as a vital part of garments, and to gain insight into young users' ability to express an unusual tactile experience using their own words.

The Repertory Grid Experiment was carried out with six high school students aged 18 to 20. The participants and their teacher came to visit us at the Design School

during one of their weekly lessons. This gave us a period of 60 minutes to conduct the experiment. We divided the participants into three groups of two and each session lasted approximately 15 minutes. Additionally, each participant was photographed wearing one of their favourite garments and interviewed about what they particularly liked about it. This was audio recorded whereas the RG Experiment was video recorded. Here, we describe only the RG Experiment.

For the RG Experiment we chose to work with a selection of 15 material samples. The selection criterion was that they should represent different textures and fibres. In advance, we prepared five triads each consisting of three different fabrics. Our intention was to construct triads open to interpretation and conversation.

The two participants in each group were blindfolded in order to ensure maximum focus on tactile sensing. They were given one sample at a time and had approximately 30 seconds to feel each of them. After three samples, they took turns explaining which two samples they found were more alike and which one was different. Due to time constraints, only the first group completed five triads; the second and the third group completed three triads. We invited the high school students back after school to finish the experiment but due to the long distance between the two schools and homework commitments, it was not possible to gather again. We also tried to find a new date but despite their interest, we did not succeed.



Figure 1. Participants in the Repertory Grid Experiment exploring textile samples. In order to ensure maximum focus on tactile sensing the participants are blindfolded.

#### Material Characteristics

The two participants in each group were able to describe their sensations and most often to argue in favour of their opinions, but did not always agree about the experience. In one of the groups, participant A, for instance, thought that sample number one and sample number three had the most similarities, since both were thick, while sample two was very thin. Participant B, on the other hand, thought that sample one and two were most alike because they were smooth, whereas sample three was rough. Both answers are equally valid and demonstrate the individual interpretation of a sensory experience.

#### Tactile Experience

Some participants were extremely probing and manipulated the material with their hands and fingers in different ways; also shaking it to hear the sound of it. They also touched the inside of their forearms where the skin is more sensitive to get a better sensation of the material. At one point, participant C made use of her lips and face, caressing herself with the fabric. The verbal explanation from participant C was also more comprehensive and occasionally very imaginative, and there was no doubt that to her these tactile experiences engendered a high degree of emotions, including pleasure, as well as disgust and puzzlement.

For instance, C reacted with strong disgust to a viscose/silk velour fabric:

“... no, no ... ugh this one I don't like to touch, it's disgusting, I cannot stand it ... it feels like my hands are getting mealy ... just a bit like dead animal or something like that and then a bite of mealy apple that is just born too early.”

It is worth mentioning that the reverse side of the velour feels a bit hard due to the dense weave and the hard spun yarn, whereas the front side has a soft pile. D did not agree at all and found touching the velour to be a pleasant experience.

### Visual vs. Tactile

The participants were not allowed to see the textiles until after the experiment, and they were highly surprised that several of the samples that had appealed to them while blindfolded did not live up to their expectations visually. This experience gave rise to a dialogue about tactile and visual experiences and reflections on the dominance of vision.

### The Garment Experiment – Tactile Sensing and the Body

The Garment Experiment was considered a natural step following the Repertory Grid Experiment, because tactile sensing of garments includes the whole body and not just the hands. A new group of high school students between the ages of 15 and 17 was invited to visit the Design School to engage in different activities. Here, we focus only on the activities related to the Garment Experiment. Four girls agreed to wear the specially designed garments and six volunteered as helpers. We video recorded the experiment and the follow up interviews with the wearers as well as the helpers.

Seven garments had been constructed for the experiment. Four of them were sewn together vertically with two different kinds of materials on the right and the left side. The remaining three outfits were dresses sewn together horizontally with one material on the upper body and one material on the lower body. The garments were designed in such a way that people of different sizes and builds could fit into them. Visual parameters were disregarded in the stitching, choice of colours and patterns;

focus was on different cuts and the selection of five different woven qualities of material.



Figure 2. Three of the seven garments that were designed for the Garment Experiment.

Here, we briefly describe the testing of the seven garments by four participants. First, the test person was taken to a dressing facility and asked to undress, keeping her underwear on. Next she was blindfolded by the helpers who proceeded to dress her in one of the garments. Entering the video recording room, the test person was asked: How does this garment feel? While exploring the textile material and garment with her hands against the body, she described the sensory experience. Afterwards, the helpers followed her to the dressing room and, while still blindfolded, dressed her in the next garment.

### Garment Experience

The test persons came up with various descriptions of the same garment. Some were related to the feeling of comfort or discomfort, for example:

“Here it doesn’t itch because it doesn’t really touch the body. It itches only where it’s sitting close to the skin.”

“It’s extremely nice to wear ... and it feels nice and light, also the material.”

“It feels like it’s beautiful because I have a feeling that its cut makes me look good.”

These quotes reflect what Niinimäki and Koskinen refer to as part of the garment experience.

### Material Characteristics

Others were addressing the materials’ softness, hardness and weight:

“On one side of the body there is a very soft fabric one is almost not able to feel and then there is the other side that is harder. But in a way, I think it’s cool that two materials are mixed in this way. The body is challenged through the two different forms of fabrics that touch it. You start thinking about it.”

### Visual vs. Tactile

By the end of the session, the four test persons together with the helpers told us how they had experienced the experiment. For instance, the participants reflected on how they normally choose garments based on the look, and how participating in this blindfolded experiment was a very different and unusual experience. One of them gave us this feedback:

”You got a totally different feeling of the clothes and focused on the sensing of it instead of the look. I was very surprised to see the garments, because they were so different from what I had imagined. It was interesting to see how important the look is when you buy clothes.”

She also stated: “I think it’s an interesting project and it has definitely had an impact on my shopping habits. Previously I thought much about materials, but now I think about them even more.”

## Analysis

The purpose of the experiments was to find out whether or not an unusual experience of tactility and garment fit could evoke reflections connected to the participants' everyday life, and thus create more awareness about textile quality and own actions related to selecting garments as well as shopping habits. Interviews about favourite and non-favourite garments were conducted during both workshops. By connecting the experiments with the participants' previous experiences of textiles and clothing, which we learned about in the interviews, we established a reference frame in which the meaning of the experience could be articulated and discussed.

The table below gives an overview of the experiments in terms of set up and staging. The main findings are summarized.

	<b>The Repertory Grid Experiment</b>	<b>The Garment Experiment</b>
<b>Perspective</b>		
Focus area	Using material samples to create attention to tactile sensibility as a vital part of garments	Using garment-like samples to create attention to embodied experience
<b>Set-up</b>		
Participants	Six, aged 18-20 Three groups of two	Ten, aged 15-17 Four wearers, six helpers
Place	Design School Kolding	Design School Kolding
Data	Video recordings and follow up interviews	Video recordings, interviews and follow up questionnaires
<b>Staging – guidelines</b>		
Tools	A total of 15 material samples, 13 woven or knitted One paper-like non-woven One sponge rubber	A total of seven garments Two different materials in each garment
Techniques	Exploring three samples, one at a time One group explored five triads Two groups explored three triads Reflecting aloud during probing	Exploring one garment at a time Reflecting aloud during probing
Principles for organization	Participants are blindfolded, sitting Probing with finger tips and hands, but also face, arms, etc.	Participants are blindfolded, standing Bodily probing through wearing and exploring with hands
<b>Main findings</b>		
Material characteristics, examples	Thick, thin, smooth, rough	Softness, hardness, weight
Emotions, examples	Pleasure, disgust, puzzlement	Comfort, discomfort
Tactile vs. visual	The samples looked different than expected from the tactile sensation	The garments looked different than expected from the tactile/bodily sensation
General feedback after experiment	The participants reflected on own wardrobe and shopping situations	The participants reflected on own wardrobe and shopping situations

As shown in the table, the participants expressed the experience of material characteristics and emotions throughout both experiments. This resembles findings from other studies conducted by Moody et al. (2001) and Bang (2013). Our experiments indicate that blindfolding the participants triggered imagination, intensified the tactile sensation, and supported a rich dialogue with the use of metaphors, comparison with previous tactile experiences and the evocation of memories.

In the first experiment, the Repertory Grid technique proved to be a highly useful framework for examining the participants' experiences of tactility. Even though they conducted the experiment in pairs, they were able to express their experiences individually. They also took the opportunity to probe the textile samples in various ways; with fingers, face, and forearms. Thus, it is confirmed that the technique offers a path to rich verbal reflection on experiences with textiles. In later experiments, it may be valid to discuss the degree of complexity and the number of fabrics. With limited time available, it was not possible to carry out thorough follow up conversations.

There was a high degree of complexity in the Garment Experiment, and it is not possible to make a general comparison of the participants' reactions to each outfit. In general, the specially designed garments allowed the participants to explore different materials and garment fits through a bodily experience. They were able to express not only material characteristics but also emotional aspects of the experience. The fact that they were blindfolded allowed the participants to focus solely on the embodied experience of materials and fit. In the future, we will consider how to structure this type of experiment within a more rigorous framing and rework the procedure of the follow up questionnaire.

The Awareness Project was completed as a pilot study. We decided to continue with wardrobe studies and real life garment testing and later on return to refine the procedure, tools and techniques in the experiments discussed in this article. One of the main reasons for this decision was the availability of a new group of high school students that had accepted to participate in the studies that stretched over a period



of six months. Engaging young users in this type of research is dependent on when they are willing to participate.

## Discussion

So far, the two experiments show new ways of establishing dialogue between users and designers as well as furthering reflection and verbalization of areas within the perception of textile and fashion products.

We initiated the Awareness Project suggesting that by inviting users to explore tactility through unusual experiences, a “transformational strategy” in fashion and textile design might be possible. If we briefly return to Niinimäki and Koskinen’s thoughts about “beauty of clothing”, this is a concept which might be useful to explore further. Especially the quotes from the Garment Experiment indicate that the participants were able to reflect on “the feeling of comfort, the weight of the material against the body and pleasant touch”. Such information is crucial to designers who want to play a role as transforming agents “educating skilled users” and concerned with creating new approaches to fashion building on sustainable values.

In the section about transformational strategies, the need for a new paradigm in the life cycle of fashion and textiles was accounted for by scholars in consumer studies and design research. In these fields, it is widely agreed that a stronger focus on the use phase can contribute to a more sustainable approach to garment consumption.

The question we raise and explore in this article is whether a participatory approach to fashion and textile design through tactile sensibility and garment fit may pave the way to such a new paradigm and eventually contribute to changes in the fast fashion system. If we look at the engagement of the young users, we suggest that this kind of interaction experience can be an alternative way to offer information and/or education in support of reflective choices in shopping and use situations. Thus, these tools and techniques may have the potential to impact on sustainable behaviour, change young people’s attitudes and ultimately influence their actions not only when shopping but also to support emotional attachment in the use phase.

Thus, we may claim that our experiments contained the elements that Dewey finds so important in an educative experience. In his words, "Continuity and interaction in their active union with each other provide the measure of the educative significance and value of an experience" (Dewey, 1938, pp. 44-45). Johnson (2013), drawing on Dewey, puts it this way: "... qualitative dimensions of experience results from the fact that, ... there is always both a what is experienced and a how things are experienced, and the how is present to us as felt qualities" (Johnson, 2013, p. 40). This is in accordance with the present study where the participants articulate the tactile qualities as well as the emotional aspects of the experience.

### Concluding Remarks

Throughout the Awareness Project we have developed and explored a method that reflects on and verbalizes areas of fashion and textile design which are often considered the "tacit knowledge" of the disciplines. In the experiments described and analysed in this article we set out to develop and explore tools and techniques for staging and supporting insight through tactile experience. The analysis indicates that the young users are able to reflect on material properties as well as emotional aspects connected to wellbeing and memories. Furthermore, in follow up interviews they are able to discuss ways in which vision often dominates the tactile experience in garment consumption. Thus, involving young users can provide the designer with valuable insight and vice versa.

Based on these experiments it is likely that an embodied participatory dialogue building on the combination of user experience and tactile sensibility can be further developed into didactic tools to support a "new design paradigm". Therefore, a next step will be to implement a participatory methodology in our teaching to enable fashion and textile students to reflect more consciously on user engagement throughout the design process. Thus, we plan to invite our students to develop the tools and techniques described in this article further. Long term we hope that the tools and techniques may assist the profession in understanding and designing for a higher degree of satisfaction in the use phase. Thereby, the education of future fashion and textile designers can support change and transformation of today's fast fashion towards more sustainable futures.

## References

- Albers, A. (2000). *Selected writings on design*. Middletown: Wesleyan University Press.
- Bang, A. (2013). The repertory grid as a tool for dialog about emotional value of textiles. *Journal of Textile Design Research and Practice*. 1(1), 9-26.
- Bratteteig, T., Bødker, K., Dittrich, Y., Mogensen, P., & Simonsen, J. (2013). Methods: Organising principles and general guidelines for participatory design projects. In J. Simonsen & T. Robertson, (Eds.). *Routledge international handbook of participatory design*. New York, NY: Routledge, Taylor & Francis Group.
- Chapman, J. (2005). *Emotionally durable design. Objects, experiences & empathy*. London: Earthscan.
- Cranz, G. (2013). Somatics and aesthetics. In R. Bhatt (Ed.). *Rethinking aesthetics: The role of body in design*. New York, NY: Routledge, Taylor & Francis Group.
- Dalsgaard, P. (2014). Pragmatism and design thinking. *International Journal of Design*, 8 (1), 143-155.
- DeLong, M., Wu, J., & Park, J. (2012). Tactile response and shifting touch preference. *Textile*, 10(1), 44-59.
- Dewey, J. (1938, reprint 1997). *Experience & education*. London: Simon & Schuster.
- Fletcher, K. (2008). *Sustainable fashion & textiles – Design journeys*. London: Earthscan.
- Fletcher, K., & Grose, L. (2012). *Fashion & sustainability – Design for change*. London: Laurens King Publishing.
- Fransella, F., Bell, R., & Bannister, D. (2004). *A manual for repertory grid technique*. Chichester: John Wiley & Sons.
- Greenbaum, J., & Kyng, M. (1991). *Design at work: Cooperative design of computer systems*. Hillsdale: Lawrence Erlbaum Associated, Publishers.
- Gwilt, A., & Rissanen, T. (Eds.). (2011). *Shaping sustainable fashion*. London: Earthscan.
- Homlong, S. (2006). *The language of textiles. Description and judgement on textile Pattern composition*. PhD thesis, Acta Universitatis Upsaliensis Uppsala, Uppsala.
- Kelly, G. (1955). *The psychology of personal constructs. Volume one: Theory and personality*. New York, NY: Routledge.
- Klepp, I. (2008). *Clothes, the body and well-being: What does it mean to feel well dressed?* Oslo, SIFO – Statens Institutt for Forbruksforskning.

Klepp, I. (2001). *Hvorfor går klær ut af brug?* (In Norwegian). Oslo: SIFO – Statens Institutt for Forbruksforskning.

Klepp, I., & Bjerck, M. (2014). *A methodological approach to the materiality of clothing: Wardrobe studies*. *International Journal of Social Research Methodology*, 17(4), 373–386

Krüger, H., Planthinn, D., Dahl, E., & Hjort, T. (2012). *Guidelines II - A handbook on sustainability in fashion*. Copenhagen: The Sustainable Solution Design Association, SSDA.

Laitala, K., & Klepp, I. (2011). Environmental improvement by prolonging clothing use period. *Towards Sustainability in the Textile and Fashion Industry*, Copenhagen 26-27 April 2011.

Margolin, V. (2002). The experience of products. In V. Margolin. (2002). *The politics of the artificial – Essays on design and design studies*. Chicago, IL: University of Chicago Press.

Moody, W., Morgan, R., Dillon, P., Baber, C., & Wing, A. (2001). Factors underlying fabric perception. In *Proceedings from 1st Eurohaptics Conference*. Birmingham, UK.

Niinimäki, K. (2011). *From disposable to sustainable. The complex interplay between design and consumption of textiles and clothing*. PhD thesis, Aalto University School of Art and Design, Helsinki.

Niinimäki, K., & Koskinen, I. (2011). I love this dress. *The Design Journal*, 14(2), 165-86.

Norman, D. (2004). *Emotional design. Why we love (or hate) everyday things*. New York, NY: Basic Books.

Pallasmaa, J. (2013). Mental and existential ecology. In R. Bhatt (Ed.). *Rethinking aesthetics: The role of body in design*. New York, NY: Routledge, Taylor & Francis Group.

Pallasmaa, J. (2005). *The eyes of the skin. Architecture and the senses*. Chichester: John Wiley & Sons.

Paterson, M. (2007). *The senses of touch. Haptics, affects and technologies*. Oxford: Berg.

Reynolds, K. (1997). Progressive ideals and experimental higher education: The example of John Dewey and Black Mountain College. *Education and Culture*, XIV(1).

Rylander, A. (2012). *Pragmatism and design research – an overview*. Gothenburg: University of Gothenburg.

Saito, Y. (2012). Everyday aesthetics and artification. *Contemporary Aesthetics*, Special volume 4.

Simonsen, J., & Robertson, T. (Eds.). (2013). *Routledge international handbook of participatory design*. New York, NY: Routledge, Taylor & Francis Group.

Schuler, D., & Namioka, A. (1993). *Participatory design: Principles and practices*. Hillsdale: Lawrence Erlbaum Associated, Publishers.

Von Busch, O. (2008). *Fashion-able. hacktivism and engaged fashion design*. PhD thesis, University of Gothenburg, Gothenburg.

Walker, S. (2006, reprint 2007). *Sustainable by design – Explorations in theory and practice*. London: Earthscan.

Zuo, H., Hope, T., & Jones, M. (2014). Tactile aesthetics of materials and design. In E. Karana, O. Pedgley, & V. Rognoli (Eds.), *Materials experience: Fundamentals of materials and design*. Oxford: Butterworth-Heinemann.