

Virtual Twins for Online Clothing Shoppers

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Abstract

Individualized avatars as imitations of real customers' appearance constitute a promising concept for personalized product marketing in online shopping. However, knowledge about effective design strategies for these virtual twins to purposefully influence consumer behaviour is still incomplete. Contrary to what is often recommended, our experimental study provides evidence that maximising the personal avatar's similarity to the user is not required when shopping online for clothing.

1 Introduction and Literature

In the work reported here, the concept 'virtual twin' stands for personalized, interactive avatars that more or less accurately imitate aspects of their users' appearance. Typical usage domains are individual visualization of possible body (and health) improvements through sport and nutrition, plastic surgery, and online shopping settings where the customer is required to envision a product usage. The so-called virtual try-on concept, which constitutes the context of this research, lets such avatars wear garment products and, in doing so, provides customers individualized visualization and information about clothing products.

Digital self-representations of people are known to affect their cognition and behaviour, increasing the probability that they think and behave in predictable ways without arousing suspicion (Peña et al. 2009). In the context at hand, the challenge is to determine which the relevant characteristics of an individualized avatar are, in order to achieve desired effects on consumer behaviour. 'My Virtual Model' (MVM), that, for several years, was a popular virtual try-on solution utilizing personalized avatars, has been demonstrated to be able to raise online turnover, because consumer confidence in purchasing is improved (Calhoun et al. 2010). However, study participants voiced many criticisms about the employed avatars, and, at the same time, also rejected, as an alternative, their 3D body scans as too detailed and realistic. Another study tested two types of personalization within the options offered by MVM (Merle et al. 2012). Results showed a positive effect of model personalization on the investigated consumer behaviour-related constructs. It was suggested to investigate in more

detail how various personalization levels influence consumer reactions. More sophisticated personalized avatar renditions were used in a similar virtual try-on experiment (Suh et al. 2011). Outcomes indicate that the more closely an avatar resembles its user, the higher is the user's likeness to have positive attitudes toward their avatar, the better are the users able to evaluate the quality and performance of clothing products and the higher is their intention to use this service. However, by contrast, in a study on similarity and self-identity in advertising (Lutchyn et al. 2009), participants rated models that were less similar in appearance to them as more trustworthy, attractive, likeable and even as more similar to themselves. In summary, existing research on the design of virtual twins in online shopping settings to purposefully influence consumer behaviour is incomplete and somewhat inconsistent. This paper presents preliminary findings of an according, further experimental user study.

2 Method

We used a between-subjects design, with 59 female students from a German university participating in a laboratory experiment. They were on average 24 years old, ranging from 20 to 35 years. All of them had experience purchasing clothing online, and the bigger part of them enjoyed home shopping for clothing and was satisfied with its utility. A prototype, typical online shop was used as stimulus. It offered contemporary and fashionable women's clothing items in six popular apparel categories. The shop was augmented with a 'virtual try-on' feature, providing a highly realistic try-on of clothing items in a 3D virtual reality space by dressing a personalized avatar with digitized versions of the garments (Blum et al. 2010).

Each participant was randomized to one of three groups that varied the characteristics of the virtual twin: (i) high personalization (individualized head and face imitation, photorealistic style); (ii) typical, non-famous fashion model (idealized, photorealistic style); and (iii) an abstract look-and-feel of the avatar (cf. Figure 1). These conditions covered a broad spectrum of fundamental categories of visual appearance. We used high-quality visualizations in true 3D, so far only present in comparable quality in one other study (Suh et al. 2011). It is important to note, that all the avatars retained the individual body measures of the customers. This ensured a comparable 3D presentation of the clothing across the groups, so that the three conditions differed only in the above-named characteristics of the avatars.

All the participants completed a typical shopping task with multiple parts using the stimulus shop, and with a focus on the use of the try-on of clothing using the avatar. The aim was to allow the participants to experience the avatar concept, to familiarize them with it and to let them develop an individual attitude towards its use, in the role of potential customers.

After experiencing the shop with the personal avatar, the participants completed several psychometric, Likert-style scales, designed to measure specific consumer behaviour-related, attitudinal constructs. We collected well-investigated factors that effect purchase behaviour, ranked them, and selected the most significant ones as the factors for the theoretical model of this research. In addition to more utilitarian qualities, we also added experiential factors.

The first category was attitudinal measures: ‘Shopping enjoyment’ as affective response, ‘decision support satisfaction’ as cognitive response, plus ‘attitude towards the website’ as a general attitudinal evaluation. The second category concerned the utilitarian value of personalized, avatar-augmented clothing shopping and was gauged via a ‘website informativeness’ construct. Furthermore, as the purpose of the virtual twin is to emulate the product experience possible and common in retail stores, a so-called ‘telepresence’ construct was taken into account. It provides a subjective perception of how closely the online sensory information and interaction with the product (with the help of and via the personalized avatar) approximates information and interaction with a real product in a brick-and-mortar store. The third category of purchase-related consumer behaviour was ‘perceived risk’, that relates to the nature and amount of uncertainty perceived by a person in making a particular purchase decision. Also, an ‘avatar similarity to self’ scale operationalized the congruence between virtual twin and own self-concept. We expected this dimension to vary consistently between the three personalization groups.

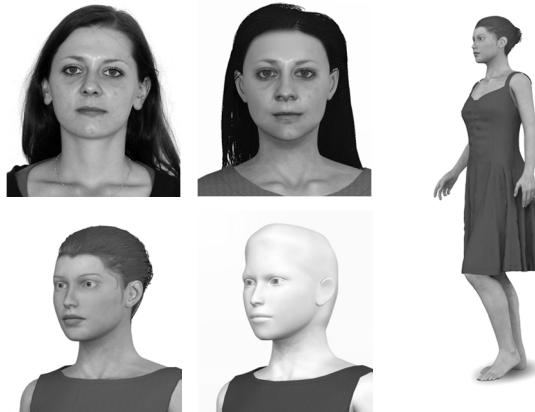


Figure 1: Portraits of a participant and the three avatar types, and complete virtual try-on scenery

3 Results and Discussion

Differences between the three avatar groups (varying in the degree of personalization) were analysed with the help of analysis of variance (ANOVA). Rather surprisingly, no significant effect of the avatar group on each of the six factors website informativeness, attitude towards the website, decision support satisfaction, shopping enjoyment, telepresence and perceived risk of purchase, could be found (despite the rather homogenous sample). Admittedly, 20 respectively 19 subjects per group is a relatively small number. Indeed, we conducted power calculation and expected a large effect, according to Cohen’s rule of thumb, due to the results reported in the above-mentioned literature and, also, for the sake of practical significance of a possibly existent effect. Furthermore, our available resources restricted us. Interestingly, we could neither identify any significant differences concerning avatar similarity to self

between the three groups. But, considering this factor as independent variable in a simple regression model, regression analyses for each of the following regressor variables revealed that avatar similarity to self predicts (1) informativeness ($\beta = .40$, $p < .01$), (2) attitude towards the website ($\beta = .41$, $p < .01$), (3) shopping enjoyment ($\beta = .37$, $p < .01$) and telepresence ($\beta = .37$, $p < .01$). In our data, it does not predict decision support satisfaction and perceived risk of purchase. Furthermore, in none of these cases, a significant regression model resulted, when considering avatar group as additional regressor.

We can conclude from these results, that avatar similarity to self is an important predictor for certain major consumer factors that have been shown to influence purchase behaviour. At the same time, manipulation of avatar similarity to self seems not to be as straightforward as maximising avatar personalization when striving for highest effects. Obviously, other factors (more strongly) influence the users' individual perceptions of similarity to self of their virtual twin. We hope to find explanations for this from the collected qualitative data (we interviewed all participants with open-ended questions). First findings indicate that in the context at hand – online shopping for clothing – a convincing imitation of individual body measures, as provided to all the participants in our experiment, is of utmost importance to the customer, and that potential effects of other avatar characteristics may be overlaid by this.

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