The effect of the appearance of our self-representation in a virtual world on our behavior: a survey

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ABSTRACT
Our self-representation in a virtual world can influence our behavior and actions there. This survey studies the existing literature in these aspects, and concludes on the impact of your virtual appearance on your behavior. The process applied involves the analyses of key points relevant to body ownership, virtual reality, embodiment, and human behavior.

ACM Classification Keywords
H.5.1. Information Interfaces and Presentation (e.g., HCI): Multimedia Information Systems: Artificial, augmented, and virtual realities; I.3.7. Computer Graphics: Three-Dimensional Graphics and Realism: Virtual reality; J.4 Social and Behavioral Sciences: Psychology

Author Keywords
Embodiment; body ownership; human behavior

INTRODUCTION
Virtual reality (VR) can immerse us in virtual worlds. By tracking head movements and looking down we can see a virtual body spatially coincident with our own and our brain has this perceptual illusion that this alternate virtual body is our own, the so-called feeling of body ownership. The body ownership illusion comes from the famous "Rubber Hand Illusion"[1]. As technology is evolving, we are able to create and customize our virtual representations. We can see the world from a different point of view, like the one of an elder person, or a person from a different race than them, height or size. As our virtual representation changes, so as our behavior and this is explained through the Proteus Effect which states that the personality associated with the digital representation influences participants´actual real-time behavior [4].

VIRTUAL SELF-REPRESENTATIONS AND BEHAVIOR
It has been demonstrated that embodiment of light-skinned participants in a dark-skinned virtual body significantly reduced implicit racial bias against dark- skinned people, in contrast to embodiment in light-skinned, purple-skinned or with no virtual body [3]. In another study, participants assigned to more attractive avatars in immersive virtual environments were more intimate with confederates in a self-disclosure and interpersonal distance task than participants assigned to less attractive avatars and participants assigned taller avatars behaved more confidently in a negotiation task than participants assigned shorter avatars [4]. In a study by Kilteni et all. [2], 36 Caucasian people participated in a between-groups experiment where they played a West-African Djembe hand drum while immersed in IVR and with a virtual body that substituted their own. Only those with the Casual Dark-Skinned representation showed significant increases in their movement patterns for drumming compared to the baseline condition and compared with those embodied in the Formal Light-Skinned body. Moreover, the stronger the illusion of body ownership in the Casual Dark-Skinned condition, the greater this behavioral change.

CONCLUSION
It has been showed that through VR technology, new research opportunities arise in the sectors of body representation and how a person perceives the virtual body he feels he owns. The investigation of the psychological, behavioral and attitudinal consequences of such body transformations remains an interesting problem with much to be discovered.

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