

DIVINE EMBODIMENT IN VIRTUAL ENVIRONMENTS: EFFECTS ON POWER AND MORAL DIMENSION

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Background: Studies highlight the potential of virtual embodiment illusions in shaping individuals' perceptions, attitudes, and behaviors, a phenomenon that people refer to as the Proteus effect.

Aims: Building upon this research, we investigated the impact of embodying an anthropomorphic representation of the Christian God on sense of power (research stream 1, RS 1, composed of Study 1 and Study 2) and moral standards (RS 2, composed of Study 3 and Study 4), assuming that being virtually God led people to perceive themselves as more powerful and influenced moral conflict experiences, leading participants to feel entitled to interfere in human fate.

Method: In RS 1, we first examined participants' reactions to a life-threatening event and then asked them to evaluate their physical abilities while embodying the God-avatar or two human control avatars. Each participant experienced all the three avatars in a within-subject design. In Study 1, we presented them with an unexpected ground collapse, measuring physiological response (Skin Conductance Response, SCR, and Beat Per Minute, BPM) and emotional self-report states. In Study 2, we asked participants to evaluate the maximum distance they thought they could jump and we measured the reported estimated distance. In RS 2, we observed participants resolving moral conflicts using both a text-based moral dilemma version and an immersive version. In Study 3, we presented participants with 30 text-based moral dilemmas with two possible resolutions (i.e., deontological or utilitarian) while they were embodying both the God-avatar or a control human one in a within-subject design. We measured participants' resolution, related-feelings, reaction time and physiological reaction (SCR and BPM). In Study 4, we implemented the Trolley and the Footbridge dilemma in the virtual environment and required the participants to act in the scene to solve the dilemma while embodying the God-avatar or a control human in a between-subject design. The same measures of Study 3 were administered.

Results: Study 1 showed that when participants were embodying the God-avatar exhibited distinct physiological responses, i.e., a reduced skin conductance response ($p = 0.03$) and a deceleration of heart rate ($p = 0.01$); Study 2 showed that in the God-avatar they reported empowerment of their physical abilities ($p < 0.01$). Overall, the results of RS 1 suggested that participants may have experienced an increased sense of invulnerability and power while embodying the omnipotent agent. In Study 3, the God-avatar did not seem to have an impact on the experience and resolution of the textual dilemmas. In Study 4, we found the God-avatar to affect BPM ($p = .02$) when participants chose the utilitarian resolution in the Trolley dilemma, and led to perceive the utilitarian resolution in the Footbridge dilemma as more moral ($p = .02$). In the Footbridge dilemma, we found that the more the participants perceived God as benevolent, the more they experienced guilt

($p = .03$), shame ($p = .05$) and the less they evaluated the utilitarian resolution as moral ($p < .05$). Overall, the results of RS 2 suggested that participants may feel more involved in the scene when they embodied the supreme moral-judge, but that the representation they have of the character is a crucial factor to consider if we want to investigate the Proteus effect on the moral dimension.

Conclusions: Overall, our research significantly contributes to advancing knowledge in the field of the Proteus effect. It prompts us to consider the domains, conditions, and tasks for which virtual embodiment works and is most effective when it involves characters to whom complex personality traits and social roles are attributed.

Keywords: Virtual embodiment illusion, Proteus effect, Moral decision making, Threat reaction

Publications:

Frisancho, A., Schepisi, M., Tieri, G., & Aglioti, S. M. (2022). Embodying the avatar of an omnipotent agent modulates the perception of one's own abilities and enhances feelings of invulnerability. *Scientific Reports*, 12(1), 21585. <https://doi.org/10.1038/s41598-022-26016-1>

Frisancho, A., Schepisi, M., Tieri, G., & Aglioti, S. M. (*under review*). Does embodying a divine avatar influence moral decisions? An immersive virtual reality study.

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