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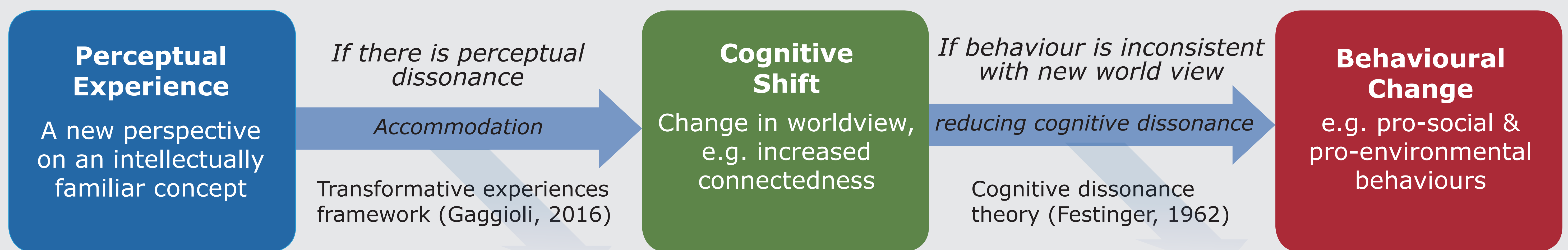
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Motivation

Positive profound emotional experiences, such as witnessing natural wonders and vastness can lead to cognitive shifts and changes to moral attitudes. These experiences are rare and thus understudied, and these experiences are also not accessible to all individuals. The immersive potential of virtual reality (VR) presents an opportunity to induce such experiences, and study their effects in a manner that is accessible to more people.

Transformational Framework



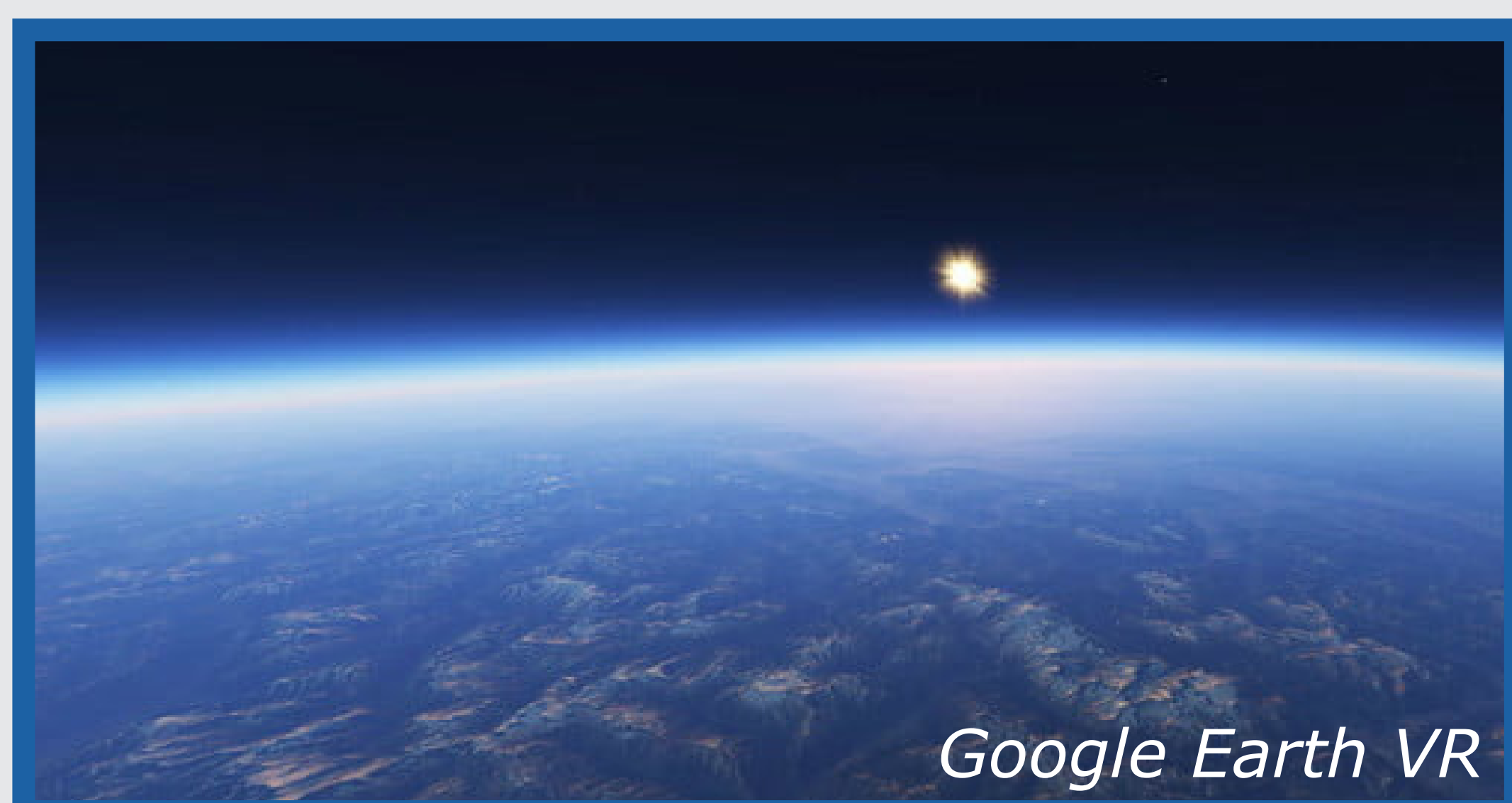
Pilot Study 1 - Awe

Measure:

- Goose bumps were recorded on the skin with a video camera, with their presence indicating moments of awe;
- Surveys included ratings (0-100 Visual Analog Scale) on the reported level of awe

Stimulus:

- 16 participants interacted with VR to travel to visit natural wonders, and orbit Earth (Google Earth VR).



Results:

- Participants rated awe 79.7 (out of 100); 43.8% of participants experienced goose bumps
- Participants who had goose bumps showed significantly higher ratings of awe than those who did not: $t(14) = 2.82, p = .014, r = .36$

Goose bump measure



Pilot Study 2 - Implicit Association

Measure:

- Implicit Association Test (IAT), assessing Inclusion of Nature in Self. IAT -computerized test of word categorization of categories "Self", "Other", "Nature" & "Build". The test produces the degree of association between "Self" and "Nature" or "Self" & "Build".

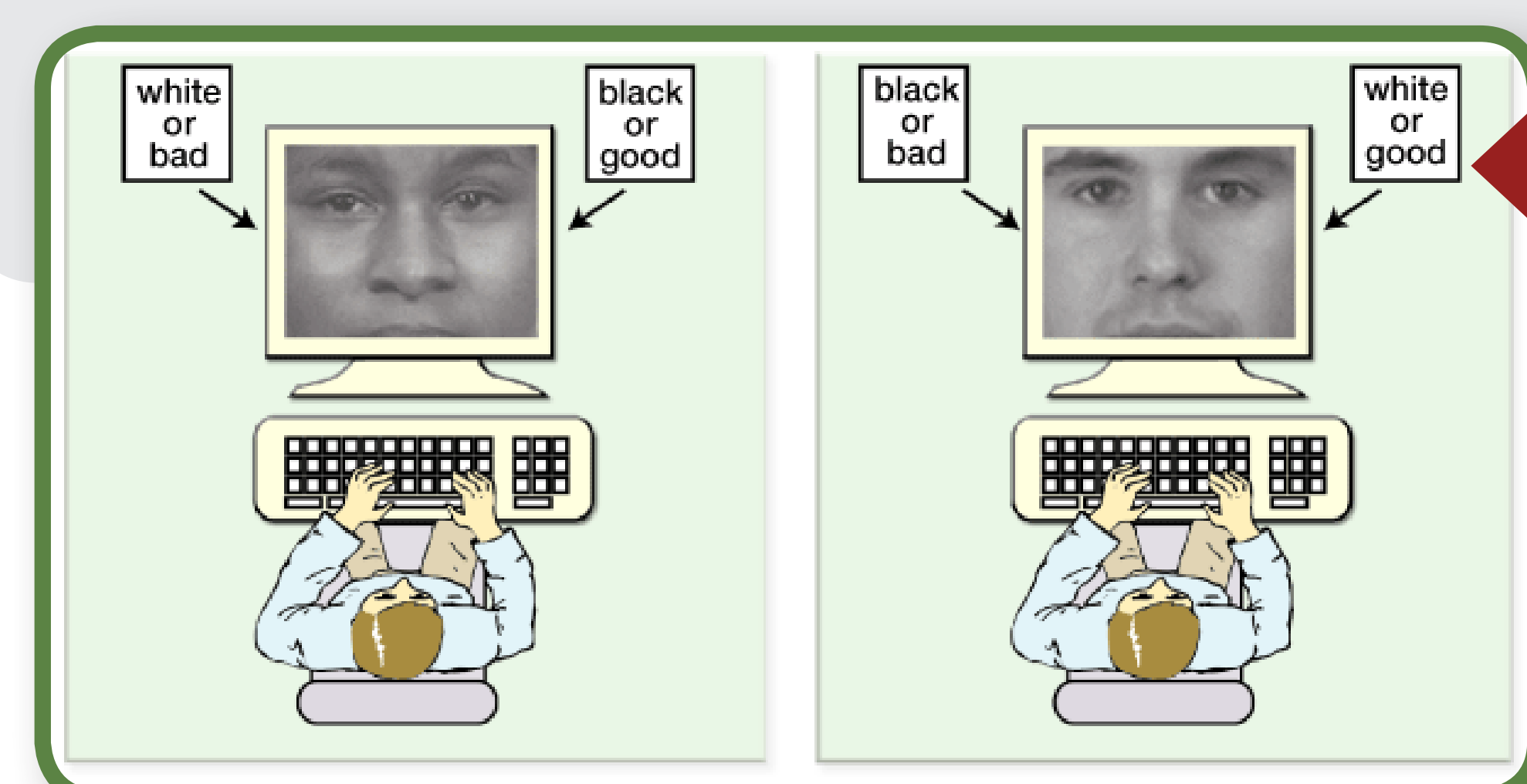
Stimulus:

- VR experience of encounter with a whale (theBlu) underwater.



Results:

- All 7 participants showed positive association between self and Nature. ($Mean D=0.69$ - "strong" association). Which is comparable to scores of environmental activists ($Mean D=0.62$) (Bruni & Schultz, 2010).



IAT measure

References:

- Bruni, C. M., & Schultz, P. W. (2010). Implicit beliefs about self and nature: Evidence from an IAT game. *Journal of Environmental Psychology*, 30(1), 95-102.
- Festinger, L. (1962). *A theory of cognitive dissonance* (Vol. 2). Stanford university press.
- Gaggioli, A. (2016). Transformative experience design. *Human Computer Confluence. Transforming Human Experience Through Symbiotic Technologies*, 96-121.