Integrating Virtual World Spatial Presence into Constructivist Learning

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  - Theoretical foundations
- Proposed Research
- References

What is presence?

Presence is defined as "...the subjective experience of being in one place or environment, even when one is physically situated in another". (Witmer & Singer, 1998)

"...the experience of presence is a complex, multidimensional perception, formed through an interplay of raw (multi)sensory data, perceptual-motor activity and various cognitive and emotional processes ..." (Ijsselsteijn & Harper, 2000).

How does spatial presence in VEL's effect and impact learning?

Spatial presence in VEL's is generally considered to benefit learning by enabling first person experiences and by manipulation of media to provide multiple points of view (Chittaro & Ranon, 2007).
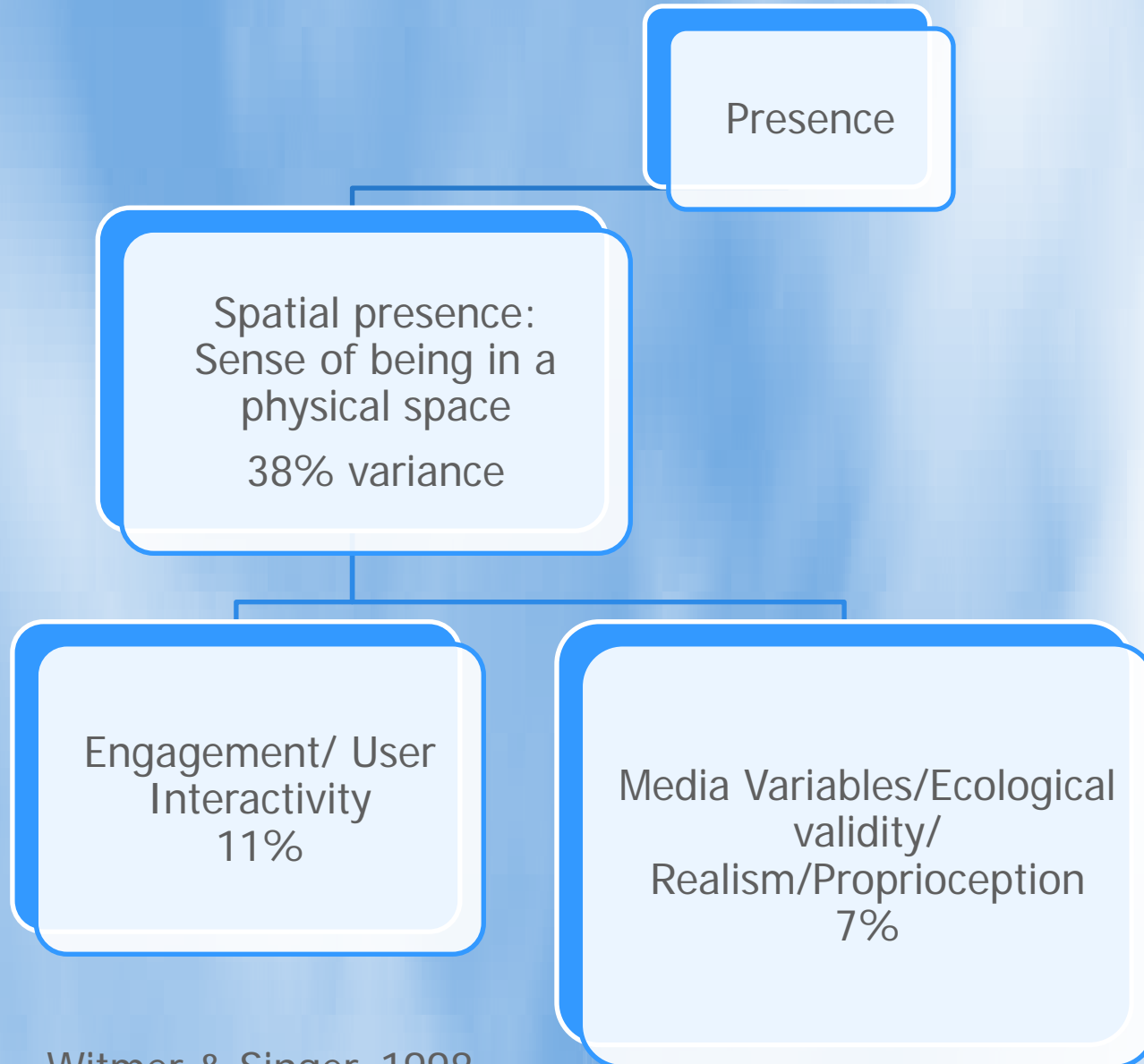
How does spatial presence in VEL's effect and impact learning?

- Some of the most intriguing observations made from research into spatial presence in VEL's are its effects on higher thought processes:
  - conceptual understanding, creating mental models (Chittaro & Ranon, 2007; Kontogeorgiou, Bellou, & Mikropoulos, 2008; Limnou, Roberts, & Papadopoulos, 2008; Zacharia, 2007)
  - problem-solving (Cai, Lu, Zheng, & Li, 2006; McClean, Saini-Eidukat, Schwert, Slator, & White, 2001)
  - metacognitive and abstract thinking (Antonietti & Cantoia, 2000; Cai, et al. 2006)
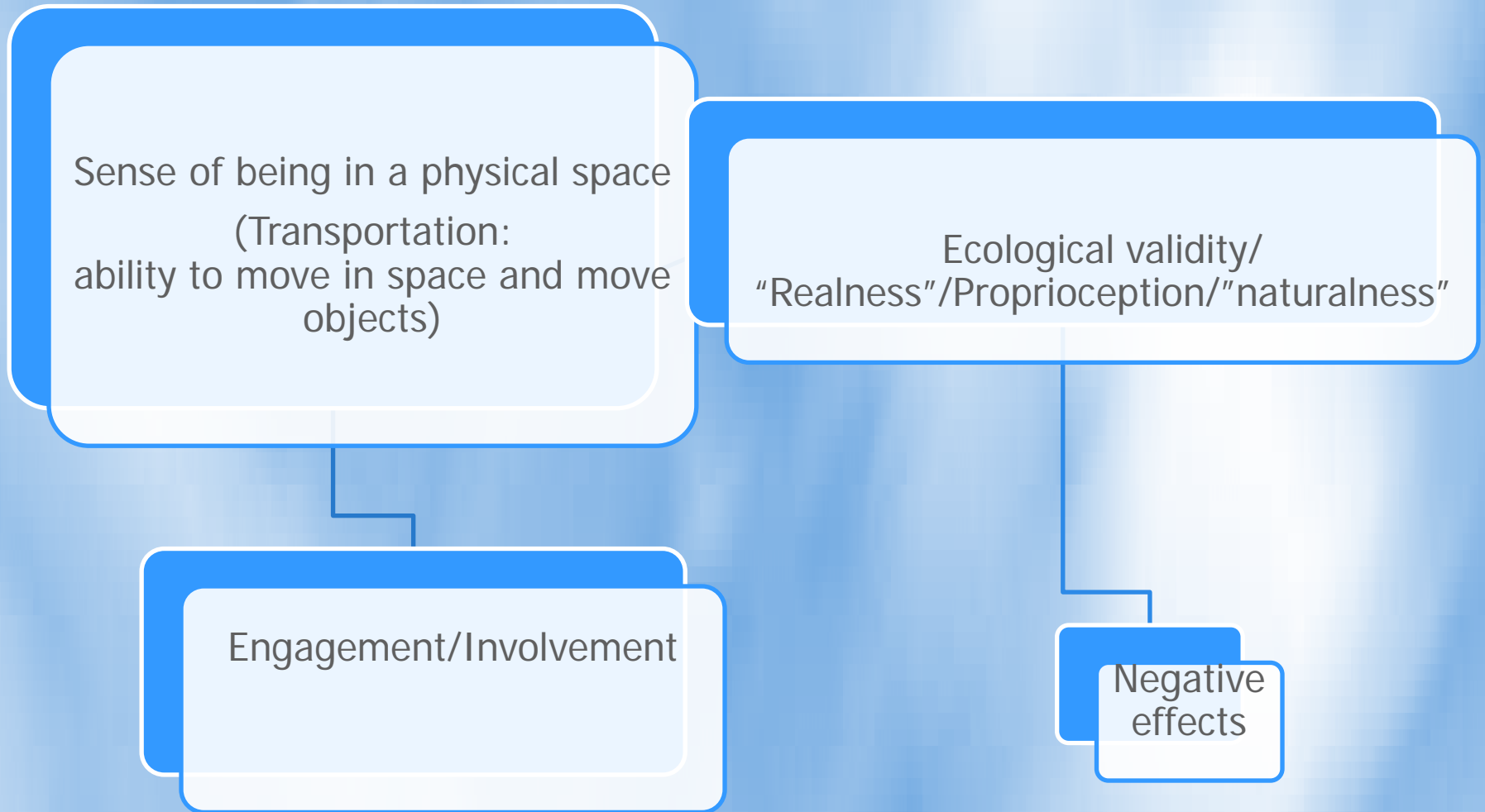
How should we design VEL's to facilitate learning?

- Components of spatial presence
- Theoretical foundations
- Existing research
- Further research needed

Presence

Presence

Spatial presence:
Sense of being in a
physical space

38% variance

Engagement/ User
Interactivity
11%

Media Variables/Ecological
validity/
Realism/Proprioception
7%

Witmer & Singer, 1998

Spatial Presence - Factor analytic studies

Sense of being in a physical space
(Transportation:
ability to move in space and move objects)

Ecological validity/
"Realness"/Proprioception/"naturalness"

Engagement/Involvement

Negative effects

Lessiter, Freeman, Keogh,
and Davidoff (2000); Schubert, Friedman, and Regenbrecht (1999)

Design Components of Spatial Presence

Sense of being in a physical space
(Transportation:
ability to move in space and move objects)

Sensory Factors:
Ecological validity/Media variables

User Control/Interactivity

Theoretical Foundations for Spatial Presence

Sensory Factors:

Ecological validity/Media variables

(Display)

User Control/Interactivity

Theoretical foundations: Gestalt theories of visual perception, multimedia theory, cognitive load theory, Dual coding theory

Theoretical foundations: constructivism, Cognitive flexibility theory

Low Interaction Tutorial

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