Immersive Panoramic Video: An Alternative VR Environment

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VRBH Program

VR Enhanced Treatments
Standard of Care Treatments
CG-Based VR Applications

- Cost to create
- Time to create
- Cost to modify
- Platform incompatibility
- Distribution

Might There Be Another Way?

- Use existing gaming engines
  - Speed up programming time
  - Complex, detailed environment
  - Distribution costs could be high
- Modify existing programs
  - Permission required
  - Programming required
- VR environment designer tools
- 360° Immersive Panoramic Video
Immersive Panoramic Video

- 360° view
- ‘Real World’ environment
- Works with HMDs and trackers
- Requires little programming
- Distribution costs low
- May be useful with lower complexity VR scenarios
- Fast production!

Integrated Media Systems Center, USC
Anger Study

- 360 Panoramic Video vs Flat Screen
  - Pre-post measures
    - Self-report
      - Anger
      - Presence (post-test only)
      - Self-esteem (pre-test only)
    - Physiologic
      - Heart rate
      - Blood Pressure
      - Skin Conductance
      - Peripheral Skin Temperature
      - Respiration
  - 8 Different videos
  - Future Applications

Immersive Panoramic Video

- Incited Media, Inc.
Immersive Panoramic Video

- Nicotine Craving Video

Nicotine Craving Study

- 360 Panoramic Video vs Flat Screen
  - Measures taken at baseline and pre-post waiting room, bar, and at table
    - Self-report
      - Craving
      - Presence
    - Physiologic
      - Heart rate
      - Blood Pressure
      - Skin Conductance
      - Peripheral Skin Temperature
      - Respiration
  - Future Applications
Immersive Panoramic Video

- Immersive Media Corporation

Current Dodeca™ 2000 Camera

Immersive Panoramic Video

[Image of camera and equipment]
Hierarchical Treatment Approach

Approach Building

1A
Enter Courtyard
Encounter Enemy Fire from Windows and Roof

2A
Enter Building
Encounter Enemy Fire in Room 1

3A
Search Room 2
Enemy Fire
Man Down!

4A
Extract Injured Soldier
Exit Building

1B
Enter Courtyard
Receive Friendly Response

2B
Enter Building
Search Room 1
Room Clear!

3B
Search Room 2
Room Clear!

4B
Search Remainder of House
Exit Building
Iraq World Comparison Study

- House Search
  - Immersive Video vs CG
  - Subjects: Warfighters
  - Inclusion: Tour in Iraq
  - Exclusion: PTSD
  - Self-Report and Physiological Measures of Immersion and Arousal

Other Applications
Fear of Flying

- Approach Airport
- Final Approach
- Taxi
- Take-off
- In-flight
  - Smooth Flight
  - Mild Turbulence
  - Moderate Turbulence
  - Severe Turbulence

Fear of Heights

- Shoot video on each floor
  - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
- Shoot video between floors
  - u12, u23, u34, u45, u56, u67, u78, u89
  - d21, d32, d43, d54, d65, d76, d87, d98
- “I’m ready to go straight to the 5th floor, Doc”
  - Therapist: Press “5”
  - Computer: 1, b12, b23, b34, b45, 5
- “Um, let’s go back to the 2nd floor, please”
  - Therapist: Press 2
  - Computer: d54, d43, d32, 2
Fear of Public Speaking

- From podium
  - Video1 of audience during introduction
  - Video2 of audience applauding
  - Video3 of audience listening attentively
  - Video4 of audience laughing appreciatively
  - Video5 of audience mildly bored
  - Video6 of audience bored with some talking
  - Video7 of audience with everyone talking to each other
  - Video8 of audience booing
  - Video9 of audience walking out of auditorium

Bladder ‘Shyness’

- ....
Branching Functionality

Limitations

- No patient controlled movement in the environment (yet)
- No complex behavioral tracking
- No data capture
- No interaction with objects/people in the environment (yet)
- Visible breaks between video segments
- Still pricy!
Strengths

- 360° view
- ‘Real World’ environment
- Fast production!
- Works with HMDs and trackers
- Requires little programming
- Distribution costs low
- Useful for low to medium complexity VR scenarios