Consumer Identification with Avatars: Business Applications and Social Computing in Immersive 3d Virtual Worlds

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Growth of Virtual Worlds

- “80% of active Internet users and Fortune 500 companies will have an avatar or presence in a virtual community like Second Life by the end of 2011.”
  - Gartner 2007  Forrester Research
- Google has a project developing “universal” avatars and related coding to permit movement between virtual worlds.
- Applications for advertising, retailing, education, business conferencing, and virtual workspaces
Various Types of Virtual Worlds

- SixDegress.com – first virtual world
- ActiveWorlds – a focus on education
- Cyworld – 18 million members in Korea
- vSide – music media and entertainment
- Kaneva – supports creativity and media
- Second Life - general
- Entropia Universe – blend of SL and WoW
Evolution of Second Life

- Collaboratively develop shared content
- Marketing resource for Linden Lab to attract residents
- Content is a tradable commodity in Linden dollars
- Content emerges as an aesthetic output
- Content is a shared experience upon to develop friendships and communities
Example: Cola Wars

- “If they (consumers) are engaged with us in virtual worlds, they will be engaged with our products in the real world”
  - John Vail, Marketing V.P. Pepsi-Cola
- Avatar Spokesperson for Pepsi: Lisa
- Avatar Spokesperson for Coke: Hank
- Jin & Bolebruch 2008; Jin & Sung 2008
Issue 1: Concept of Presence

- Lombardi and Dillon 1997
  “An illusion that a mediated experience is not mediated.”

- Applied to Avatars:
  - Choi, Miracle, Biocca (2001)
  - Biocca and Guadagno et al 2007
Issue 2: Isomorphic Preferences?
Virtual World: Real World

- Are preferences in a virtual world the same as preferences in the Real World?
- Are behavioral intentions and behaviors in virtual worlds the same as behaviors in the real world?

Application: Can market research done cheaply in virtual worlds help us learn about Real World?
Focus Groups (markettruths.com); Surveys; Prototype Testing; Virtual Test Markets.
Issue 3: Carry Over: From Virtual Worlds to the Real World

- Do experiences, memories, and perceptions acquired in virtual worlds influence perceptions, tastes and actions in the Real World?
  Bailenson, VHIL Stanford University

- Do behaviors elicited in virtual reality environments influence subsequent Real World behaviors?
  The Proteus Effect (Yee 2002)

Issue 4. Our Avatars as a reflection of our Self Concepts

- Self Concept (Malhotra 88)
- Individual’s Intended Role (Mead 1934; Sarbin and Allen 1968)
- Motivations (Bartle 96; Yee 02)
- Personality (Yee 1999)
- Levy (1959)
- Markus and Nurius (1986) – Possible Self
- Employment Counseling (Martz 2001)
- Gerontology (Waid and Frazier 2003)
- Consumer Research (Escalas and Bettman 2005; White and Dahl 2007)
- Comparison and Contrast
- Social Identity
- Potential to Experiment with Identity
Survey Methodology
Survey in Second Life

- Two surveys
- 10-15 minutes
- $150 Linden Dollars Participation Fee
  (Less than US$1)
- 197 complete surveys
Survey Avatars

- Two informal and somewhat attractive
- Two somewhat expert
Survey Booth & Sandwich Board
Survey Procedure and Representative Sample

- Intercept Survey of Locations
- Random draw of three letter pairs. Search locations. Pick every $n^{th}$ from list.
- 30.5 years; 53% female
- 75% have income less than $60,000
- Most participants had completed high school, completed their undergraduate degree, or at least spent some time in university or college (87%). 20-25 hours of leisure time per week
<table>
<thead>
<tr>
<th>Country</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>50%</td>
</tr>
<tr>
<td>China</td>
<td>3%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>9%</td>
</tr>
<tr>
<td>Canada</td>
<td>2%</td>
</tr>
<tr>
<td>Great Britain</td>
<td>7%</td>
</tr>
<tr>
<td>Belgium</td>
<td>2%</td>
</tr>
<tr>
<td>Philippines</td>
<td>4%</td>
</tr>
<tr>
<td>Germany</td>
<td>2%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>4%</td>
</tr>
<tr>
<td>All Others</td>
<td>8%</td>
</tr>
<tr>
<td>Italy</td>
<td>3%</td>
</tr>
</tbody>
</table>

\[ y = \alpha + \beta x \]

- \( x = \) I identify very much with my avatar.
- \( y = \) When my avatar ________s, it feels like I am really ______ing. 

[Strongly Disagree=1; Strongly Agree=7]

<table>
<thead>
<tr>
<th>Event</th>
<th>beta</th>
<th>t</th>
<th>R-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>happens to my avatar; happens to me</td>
<td>0.40</td>
<td>3.44</td>
<td>0.111</td>
</tr>
<tr>
<td>travels</td>
<td>0.59</td>
<td>5.28</td>
<td>0.227</td>
</tr>
<tr>
<td>makes a friend</td>
<td>0.23</td>
<td>3.08</td>
<td>0.091</td>
</tr>
<tr>
<td>dances</td>
<td>0.49</td>
<td>7.16</td>
<td>0.350</td>
</tr>
<tr>
<td>engages in a sport activity</td>
<td>0.62</td>
<td>5.65</td>
<td>0.252</td>
</tr>
<tr>
<td>falls down</td>
<td>0.62</td>
<td>5.48</td>
<td>0.240</td>
</tr>
<tr>
<td>bumps into someone</td>
<td>0.57</td>
<td>5.49</td>
<td>0.241</td>
</tr>
<tr>
<td>hugs and kisses another avatar</td>
<td>0.61</td>
<td>5.76</td>
<td>0.259</td>
</tr>
<tr>
<td>buys something</td>
<td>0.59</td>
<td>5.49</td>
<td>0.241</td>
</tr>
<tr>
<td>spends money in SL</td>
<td>0.62</td>
<td>5.02</td>
<td>0.210</td>
</tr>
<tr>
<td>writes code, time and money well</td>
<td>0.72</td>
<td>3.14</td>
<td>0.094</td>
</tr>
<tr>
<td>builds things, I feel accomplishing</td>
<td>0.63</td>
<td>3.22</td>
<td>0.098</td>
</tr>
</tbody>
</table>
Measurement of Issue 2a:
Preference Isomorphism: Commercial Activities

\[ y = \text{My preferences for ____ in SL and the RW are the same.} \]
[Strongly Disagree=1; Strongly Agree=7]

- Products: 4.854
- Store Features (Lighting, layout colors, service, etc.): 4.938
- Real-Estate Features (e.g., location, building quality, lot size, etc): 4.907
- Clothing: 4.711
- Furniture: 4.825
Measurement of Issue 2b: Preference Isomorphism: Social Activities

\[ y = \text{The _____ in SL are similar to the __________ in the Real World.} \]

[Strongly Disagree=1; Strongly Agree=7]

Activities I enjoy \hspace{2cm} 4.598
Communities I join \hspace{1cm} 4.354
People I socialize with \hspace{1cm} 4.876

May suggest acting as multiple selves, or a different self in a virtual world like Second Life.
Hypothesis 1a: Greater Identification with an Avatar Leads to Greater Preference Isomorphism: Commercial Activities

\[ y = \alpha + \beta x \]
\[ y = \text{My preferences for \_\_\_ in SL and the RW are the same.} \]
\[ x = \text{Identification with Avatar} \]
[Strongly Disagree=1; Strongly Agree=7]

<table>
<thead>
<tr>
<th>Domain of Preferences</th>
<th>( y )</th>
<th>( \beta )</th>
<th>( t )</th>
<th>R-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Products</td>
<td>0.07</td>
<td>0.69</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>Store Features</td>
<td>0.21</td>
<td>3.07</td>
<td>0.091</td>
<td></td>
</tr>
<tr>
<td>Real-Estate Features</td>
<td>0.10</td>
<td>1.33</td>
<td>0.018</td>
<td></td>
</tr>
<tr>
<td>Clothing</td>
<td>0.08</td>
<td>0.96</td>
<td>0.010</td>
<td></td>
</tr>
<tr>
<td>Furniture</td>
<td>0.21</td>
<td>2.70</td>
<td>0.071</td>
<td></td>
</tr>
</tbody>
</table>
Hypothesis 1b: Greater Identification with an Avatar Leads to Greater Preference Isomorphism: Social Activities

\[ y = \alpha + \beta x \]

\[ y = \text{The _____ in SL are similar to the __________ in the Real World. } x = \text{Identification with Avatar} \]

[Strongly Disagree=1; Strongly Agree=7]

<table>
<thead>
<tr>
<th>Domain of Preferences</th>
<th>(y)</th>
<th>(\beta)</th>
<th>(t)</th>
<th>R-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities I enjoy</td>
<td></td>
<td>0.12</td>
<td>1.60</td>
<td>0.026</td>
</tr>
<tr>
<td>Communities I join</td>
<td></td>
<td>0.17</td>
<td>1.79</td>
<td>0.032</td>
</tr>
<tr>
<td>People I social with</td>
<td></td>
<td>0.06</td>
<td>0.80</td>
<td>0.007</td>
</tr>
</tbody>
</table>

*May suggest acting as multiple selves, or a different self in a virtual world like Second Life.*
Measurement of Issue 3a:
Carry Over Effects: Commercial Activities

\[ y = \text{If } ____ \text{ in SL, it is more likely that I will } _____ \text{ in the RW.} \]
\[ \text{[Strongly Disagree}=1; \text{Strongly Agree}=7] \]

A brand has virtual presence: remember the brand \hspace{1cm} 4.938
I am satisfied with a brand: perceive the brand more positively \hspace{1cm} 4.885
I am happy with a new style of . . . clothing: try . . . the clothing \hspace{1cm} 4.598
I am satisfied with . . . a store: shop at the store \hspace{1cm} 4.680
I am satisfied with . . . a store: shop at the store’s website . . . \hspace{1cm} 4.688
Measurement of Issue 3b:
Carry Over Effects: Social Activities

\[ y = \text{If I _____ in SL, it is more likely that I will ______ in the RW.} \]
[Strongly Disagree=1; Strongly Agree=7]

Join communities: join similar communities 4.368
Enjoy various activities: enjoy similar activities 4.510
Socialize with particular types of people: socialize with similar ppl 4.979
Hypothesis 2a: Greater Identification with an Avatar Leads to Greater Carry Over Effects: Commercial Activities

\[ y = \alpha + \beta x \]

\[ y = \text{If } \ldots \text{ in SL, it is more likely that I will } \ldots \text{ in the RW.} \]

\[ x = \text{Identification with Avatar} \]

[Strongly Disagree=1; Strongly Agree=7]

<table>
<thead>
<tr>
<th>Activity</th>
<th>( \beta )</th>
<th>( t )</th>
<th>R-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual presence: remember brand</td>
<td>0.15</td>
<td>1.50</td>
<td>0.023</td>
</tr>
<tr>
<td>Virtual satisfaction: better perceive</td>
<td>0.24</td>
<td>2.70</td>
<td>0.071</td>
</tr>
<tr>
<td>LW clothing, real world trial</td>
<td>0.22</td>
<td>3.16</td>
<td>0.095</td>
</tr>
<tr>
<td>LW store satisfaction, RW trial</td>
<td>0.20</td>
<td>3.00</td>
<td>0.086</td>
</tr>
<tr>
<td>LW store satisfaction, RW web trial</td>
<td>0.50</td>
<td>6.71</td>
<td>0.321</td>
</tr>
<tr>
<td>Click on 3d virtual world, then</td>
<td>0.59</td>
<td>6.01</td>
<td>0.276</td>
</tr>
</tbody>
</table>
Hypothesis 2b: Greater Identification with an Avatar Leads to Greater Carry Over Effects: Social Activities

\[ y = \alpha + \beta x \]
\[ y = \text{If I ____ in SL, it is more likely that I will ______ in the RW.} \]
\[ x = \text{Identification with Avatar} \]
\[ \text{[Strongly Disagree=1; Strongly Agree=7]} \]

<table>
<thead>
<tr>
<th>Activity</th>
<th>( \beta )</th>
<th>( t )</th>
<th>R-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Join communities: join similar communities</td>
<td>0.56</td>
<td>5.57</td>
<td>0.246</td>
</tr>
<tr>
<td>Enjoy various activities: enjoy similar activities</td>
<td>0.52</td>
<td>6.93</td>
<td>0.336</td>
</tr>
<tr>
<td>Socialize with particular types of people</td>
<td>0.57</td>
<td>7.27</td>
<td>0.358</td>
</tr>
</tbody>
</table>
Measurement of Issue 3c: Carry Over Effects: Other

[Strongly Disagree=1; Strongly Agree=7]

I am equally as likely to provide the same quality of information in group or individual interviews or surveys in SL as ... in the RW 5.168

If I were able to try out a new product in SL before seeing it in stores, I would know better whether I wanted that product in the RW 4.568

Seeing other residents buying specific products would increase my chances of buying those products 4.726

I tend to communicate more often with people in SL whose Avatars are creative in appearance 4.305

I believe that people with uncommon appearances ... in SL are more creative 4.589
Hypothesis 3: Learning Style is a Determinant of Identification with an Avatar

Dependent Variable: Identification with Avatar

<table>
<thead>
<tr>
<th>Learn by:</th>
<th>Value</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>0.74</td>
<td>1.60</td>
</tr>
<tr>
<td>Seeing</td>
<td>0.79</td>
<td>3.08</td>
</tr>
<tr>
<td>Hearing</td>
<td>0.11</td>
<td>0.61</td>
</tr>
<tr>
<td>Doing</td>
<td>0.38</td>
<td>1.38</td>
</tr>
<tr>
<td>Interacting with people</td>
<td>0.22</td>
<td>1.02</td>
</tr>
<tr>
<td>Reading</td>
<td>0.03</td>
<td>0.13</td>
</tr>
<tr>
<td>Experiencing</td>
<td>-0.51</td>
<td>-1.83</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.563</td>
<td></td>
</tr>
</tbody>
</table>
4. Avatar Self Image

- Anchored in real self
- Slightly more attractive, younger, lighter
Meeting Friends is More Important to Residents Than Meeting Partners.
Taking Classes is More Suited to the Real World . . .
“Stepping Out” from Normal Behavior is More Suited to SL
Educational Services are more Feasible than Tax Preparation

More Spending On Avatar Appearance Than On Real Estate.
What avatars don’t do:

- 85% do not own land
- 70 do not build structures
- 70% do not make furniture or objects
- 80% do not make art
- 85% do not make or post music
- 82% do not have employment in SL
SL is a Substitute for Movies and TV.
4. Business Opportunities in SL

If a brand has a virtual presence in SL, it is more likely that I will remember that brand in the real-world.
... but residents visit stores that lack RW counterparts...
... and buy products in-world that lack RW counterparts.
Conclusions

- Greater Identification with Avatar leads to
  - Greater preference isomorphism in particular commercial and social domains
  - Large cross-over effects on both commercial and social behavior, including memory of brands, product trial, engaging in new activities
- A determinant of identification with avatar is learning style
  - Particular for Visual Learners
- Residents of virtual worlds report preference and purchase intention information reflective of their real preferences. But the sample of people is narrow.
- Important form of social computing with implications for service delivery.
- Still learning how to use it.