Designing for Social Participation in the Virtual Universe

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Abstract

Increasingly, our emotional connections, artistic experiences and playful escapes are migrating to the virtual world. Virtual environments and online communities are growing and becoming more commonplace in society; for many, they are already a primary means of social interaction. This experiment is a preliminary investigation into the underlying emotional motivation behind participants in the IMVU virtual universe. We seek a deep understanding of why these users choose to spend their time and money to take part in creating this online community. Our collaborative research team includes members from the areas of engineering, design, psychology and communication. Our need-finding interactions with users both inside and out of the IMVU environment have given us insight into the role of avatars, creative expression and social interaction in the virtual world. We assess how users manipulate their social identity and exercise their influence to achieve personal fulfillment online. The full experiment offers compelling implications for creating effective design interventions in team-based engineering and design classes, particularly those involving distributed collaboration, as well as for those pursuing compassion, empathy and social change by design.

1.   Introduction

This paper explores the social interactions and emotional behaviors of those individuals who participate in virtual environments. In particular, we study the users of the online community IMVU. IMVU is a "social game and entertainment site where millions of people meet, chat, play games and have fun" [1]. Online virtual communities, particularly those using avatars, are playing an ever-increasing role in users' personal, professional and academic lives [2,3]. Several studies have examined the social dynamics of online communities such as Second Life and massively multiplayer online role-playing games (MMORPG) [4,5,6,7] and have considered the lasting impact on users in a social and emotional sense [8,9,10,11]. While other studies have explored user motives and the aptness of avatars in general in encouraging richer virtual social interactions [12,13], few have directly considered how the design of such online communities influences these interactions and how it might be tailored to align with user motives.

The motivation for this study is to understand why users are attracted to participate in the IMVU community and the ways in which the design of the IMVU environment accommodates this participation. In a broad sense, this work will inform further design considerations for online communities where social participation is to be integrated. A human-centered design philosophy focuses our attention on the personal responses and reactions of individuals who use IMVU as a tool for satisfying their underlying needs.

Given the nature of the IMVU community, we chose to focus on identifying underlying user motives as expressed socially and in relation to virtual goods [14]. Toward developing a measure of social identity [15,16], we consider sociality; the social behavior of IMVU users and whether or not they are escapists who engage in primarily disingenuous interactions or "connectivists"

who are more interested in forming authentic relationships. We also consider activity; an IMVU user's relationship to virtual objects and whether there is a tendency to create goods or to consume goods in the virtual environment. Additionally, our research team examined the role of power: to what extent users express a sense of self-worth and self-confidence while on or offline. Previous studies have shown that power (or "potential influence") is crucial in the virtual world for its relationship to self-promotion, prestige, and status [17,18,19].

Originally, our team believed that a "virtual universe" such as IMVU would be filled with individuals who would showcase polarizing behaviors along our variable spectra. We predicted that users would lean more towards the extremes of each spectrum: escapist or connectivist, creator or consumerist. We suspected that many individuals were drawn to IMVU due to boredom or a lack of self-confidence in real life. However, as a research team we were careful to avoid influence from what we perceive as society's stigma against virtual communities and some perceived notions that users are extreme or withdrawn from society [7]. We tried to remain aware of our biases throughout our planning process, attention to methods, and the construction of our survey.

In this paper, we review the 1120 responses from our 50-question survey and share discoveries that appear to dispel many of these negative dispositions associated with avatar-based websites. The IMVU users from our sample come from an incredibly diverse background, and demonstrate broad levels of sociality and activity in both the real world and online. Individuals also seem to find a higher sense of power in IMVU, and experience more positive emotions like happiness, confidence and contentedness on the site than they do while off of it. Each of these variables and their possible implications for designing social participation will be addressed.

2.   Methodology

In designing the initials steps of our study, we considered how to most feasibly reach our target audience of IMVU users. We narrowed our scope to a U.S.-only audience for practical purposes such as reducing the chance of language barriers and nuances relating to cultural differences. We determined that the most efficient and direct way to contact IMVU users would be through the use of familiar channels and a voluntary online survey.

Drawing heavily upon the work of Nick Yee, we compiled a detailed 50-item online survey to send out to users to investigate their usage of IMVU and their relationship to their avatar. In the process of collaboratively developing each of the questions, we took into careful consideration the language and structure of each question, the implications of each possible response, and the sequence in which the questions were asked. During the initial phase of development, we also consulted in person with an upper level manager at IMVU to assess the sensitivity and value of each question. What we ended up with was a comprehensive survey that includes, but is not limited to, questions about user's age, gender, occupation, location, relationships, education, moods, traits, attitudes, and activities in real life and IMVU.

We initially invited a total of 25,000 users to complete the survey, and received a total of 1,120 responses within the five days the survey was open. This preliminary survey helped us narrow down potential variables, test some of our initial hypotheses, and more accurately identify the

demographics of U.S. IMVU user base.

2.1 Variables

Our team established four variables with which to classify the social behaviors and motives of IMVU users, both in real life and on IMVU (see Table 1) [2]. Each variable can be represented by a small spectrum between two extremes, enabling more accurate classification. Our goal is to determine the interaction, if any, between two or more of the variables.

Table 1: Variable definitions

Sociality (SO)	Represents a range of social behaviors that are characterized on a continuum with bipolar extremes: "escapist" (fantasy-based, disingenuous or antisocial) interactions at one extreme, and "connectivist" (authentic, genuine or prosocial) interactions on the other
Activity (AC)	Represents a user's relationship to the virtual objects within the IMVU environment. The scale ranges from consumer activity (purchasing goods) to creator activity (creating goods), which are both explicit activities in the IMVU environment
Power (PO)	Linked to responses that express a sense of self-worth or self-confidence, including power motives
User Intensity (IN)	Tracks the extent to which a user is personally invested in IMVU (in terms of time, money, etc.)

2.2 Coding/Analysis

Questions (whenever possible) were coded to reflect an integer score between -2 and 2 for Sociality and Activity, and between 0 and 2 for Power and User Intensity. For a given variable, the coding is assigned with zero representing "definitely not," one representing "arguably so," and two representing "definitely so." For example, a response indicating that a person prefers to chat with big groups is a definite indicator of connectivism and would be scored two points toward Sociality. A characteristically escapist response (such as "I prefer to just listen in") would have been scored a negative two for this factor. This coding allows us to assign overall scores in Sociality, Activity, Power and User Intensity for each user by factoring in data from all the questions. All questions were categorized as relating to real life, IMVU, or both, although not all questions were assigned a value for Sociality (SO), Activity (AC), Power (PO) or User Intensity (IN). Those questions are not entered into our preliminary analysis.

2.3 Procedure

The survey was launched on Tuesday, November 30th 2010 to an audience of 25,000 U.S.-only IMVU users. The survey was hosted on a third-party website and the link was distributed through internal IMVU channels by IMVU's community outreach manager. The purpose of the survey was not explicitly disclosed, as to maintain the integrity of the responses. Users were offered 1000 IMVU credits (nominally valued at $1USD) in exchange for completing the survey. Our first data set includes 1120 unique responses, which we ran a preliminary analysis

on using MATLAB and Microsoft Excel. A small portion of the survey representing non-IMVU specific questions was later administered to a smaller non-IMVU user group to determine "general population norms" for our variables. Beyond analyzing all the surveys according to our four variables, we are in the process of identifying and contacting certain interesting individuals for one-on-one interviews.

2.4   Participants

Out of 1120 total respondents, 691 indicated their gender as female, 416 as male, and 11 as transgender. Two respondents did not report their gender. The male to female ratio reported by IMVU is approximately 7:3, suggesting that our sample is highly representative of IMVU's overall user base. 341 users reported that they are under 17 years old (30.4%), 444 between 18-25 (39.6%), 173 between 26 and 35 (15.4%), 103 between 36 and 45 (9.2%), 42 between 46 and 55 (3.8%), and 14 over 55 years old (1.3%). 3 respondents omitted their age. All users reside within the United States, including every region (as delineated by time zone). When asked for their occupation, 309 responded unemployed (27.6%), 230 have full-time jobs (20.5%), 202 indicated that they were full-time students (18%), 166 have part time jobs (14.8%), 89 are part-time students with a job (8%), 83 are homemakers (7.4%), 27 are retired (2.4%), 6 are in the military/armed services (0.5%), and 8 did not indicate their occupation.

3.   Results

The survey was distributed to a sample population of 25,000 US-based active IMVU users. In total, 1,120 individuals completed the survey in exchange for approximately $1 in IMVU credits (a response rate of about 4.5%, not including partial completions). Though the survey had 50 questions total, only the 26 questions directly corresponding to our four primary variables were entered into the preliminary analysis. Coding the responses to these questions allowed us to score each user on Sociality, Activity and Power (as expressed in and outside of IMVU) and in overall User Intensity. For our preliminary analysis we analyzed the relationships between the variables visually and by means of a correlation matrix.

Though we had expected to see some grouping of individuals at the extremes of Sociality (escapist and "connectivist"), this trend was not apparent in the self or IMVU case. In fact, the variable was widely distributed across all ranges with a mean at about the center of the range (see Figure 1). In addition, there were no obvious trends as far as a "shift" in user behavior when comparing real-life behaviors to those in IMVU; the number of people who exhibited an increase in Sociality in the IMVU environment was about evenly balanced with those who experienced a decrease. The population was normally distributed about a central mean for both Sociality scores, with no apparent grouping or trends (see Figure 2).
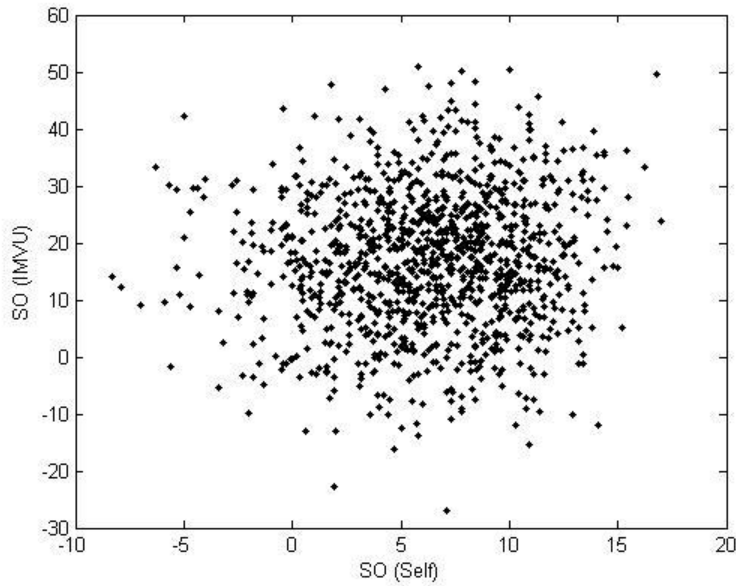
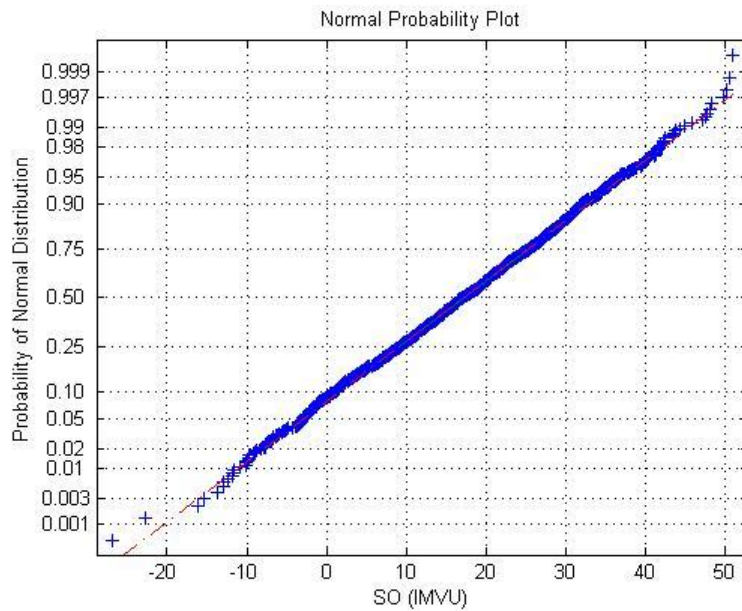*Fig. 1: Respondents scored all over the map in Sociality.*

Fig. 2: Sociality scores in the population are normally distributed to a high degree of probability.

Sociality scores did, however, exhibit several interesting correlations with several of the other variables under consideration. Our single strongest correlation observed was between Sociality outside of IMVU and Power outside of IMVU ($r = 0.57, p = 0.00$). There was a somewhat weaker correlation between Sociality outside of IMVU and Power within IMVU ($r = 0.34, p = 0.00$), as well as for Sociality outside of IMVU and Activity outside of IMVU ($r = 0.32, p = 0.00$). Sociality within IMVU did not exhibit any such trends.

In our first coding of the survey, several of the questions were "double-coded" as possibly indicating two motives (for example, a response such as "Confident" could indicate both positive Power and Sociality). We were concerned that this might have explained some of the correlation between these variables, so we ran the analysis again with all double-coding removed. Thankfully, all of our correlations held independently of the double-coding (though they decreased in strength somewhat, as we expected).

Unfortunately the score for Activity outside of IMVU had too few questions associated with it to create a high-resolution variable. All responses were binned into scores of 0, 2 & 4. As such, we were unable to make a meaningful comparison of Activity inside and outside of IMVU. However, the Activity score in the IMVU environment did show a moderate and significant correlation with Power in IMVU ($r = 0.42, p = 0.00$) and a slight yet significant correlation with Power outside of IMVU ($r = 0.20, p = 0.00$).

The Power variable exhibited the most pronounced relationships with other variables, as well as being the only variable that had a coherent transition pattern from outside of IMVU to within the IMVU environment. Overall, 85.5% of users reported an increase in Power when in the IMVU environment. This increase was not small, either: the average increase in Power inside IMVU was about 50% overall (see Figure 3). In addition, Power outside of IMVU exhibited fairly strong and significant correlations with both Sociality outside of IMVU ($r = 0.57, p = 0.00$) and Activity outside of IMVU ($r = 0.50, p = 0.00$) (see Figure 4). The relationship between Power inside and outside of IMVU ($r = 0.55, p = 0.00$) also suggests that there is some coherent behavior occurring here. Power within IMVU had similar (though slightly weaker) relationships with Sociality outside of IMVU and Activity in both cases.
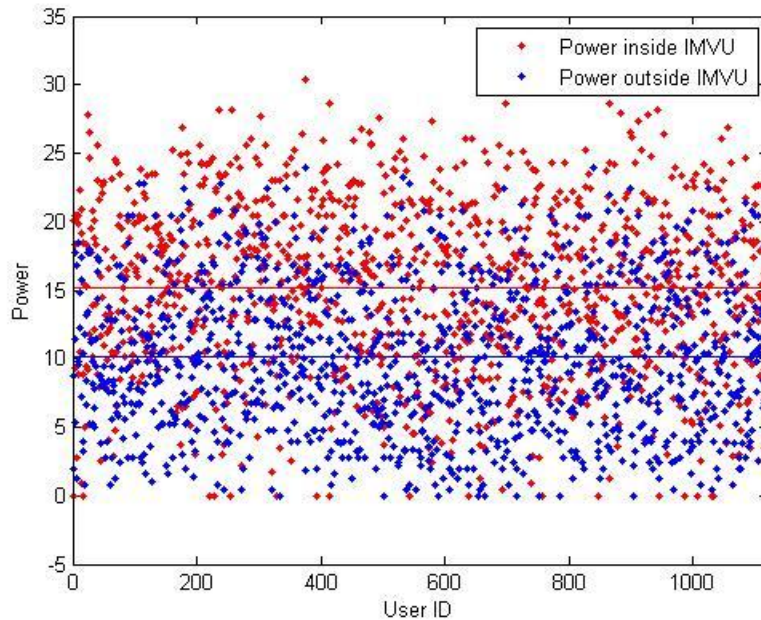
Fig. 3: Power showed a 50% increase on average, with 85.5% of the population experiencing an increase in the IMVU environment.
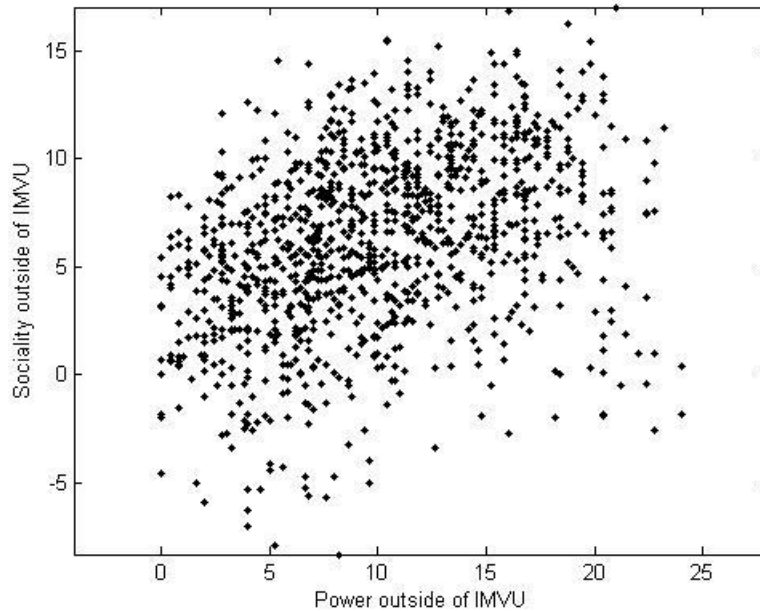
Fig. 4: Power outside of IMVU showed a moderate correlation with Sociality outside of IMVU.

The results of our correlation analysis showed that User Intensity did not trend with any of the other variables. Though there was substantial variation in User Intensity in our sample, this variation does not appear to coincide with any of the other variables. As such, it is a fully independent variable that may not help us much to understand user motives (if no particular motive appears to influence it one way or another). Similarly, assessing any of these variables by gender did not reveal any trends or significant differentiation along gender lines.

Two questions on the survey that asked, "how does your daily life make you feel?" and "what feelings do you associate with your avatar?" allowed us to compare the frequency of reporting for each feeling inside and outside of the IMVU environment. Feelings that were reported higher in the IMVU environment were Happy, Relaxed, Free, Calm, Connected, Excited, Wealthy, Safe, Comfortable, Confident, Creative, Important, and Ambitious. Feelings that were reported more frequently outside of IMVU were Sad, Stressed, Cautious, Angry, Lonely, Bored, Poor, Scared, Awkward, Insecure, Uninspired, Worthless and Lazy (see Figure 5). A follow-up survey allowed us to determine that the general profile of feelings reported by IMVU users (outside the IMVU environment) is not significantly different from that of the general population.
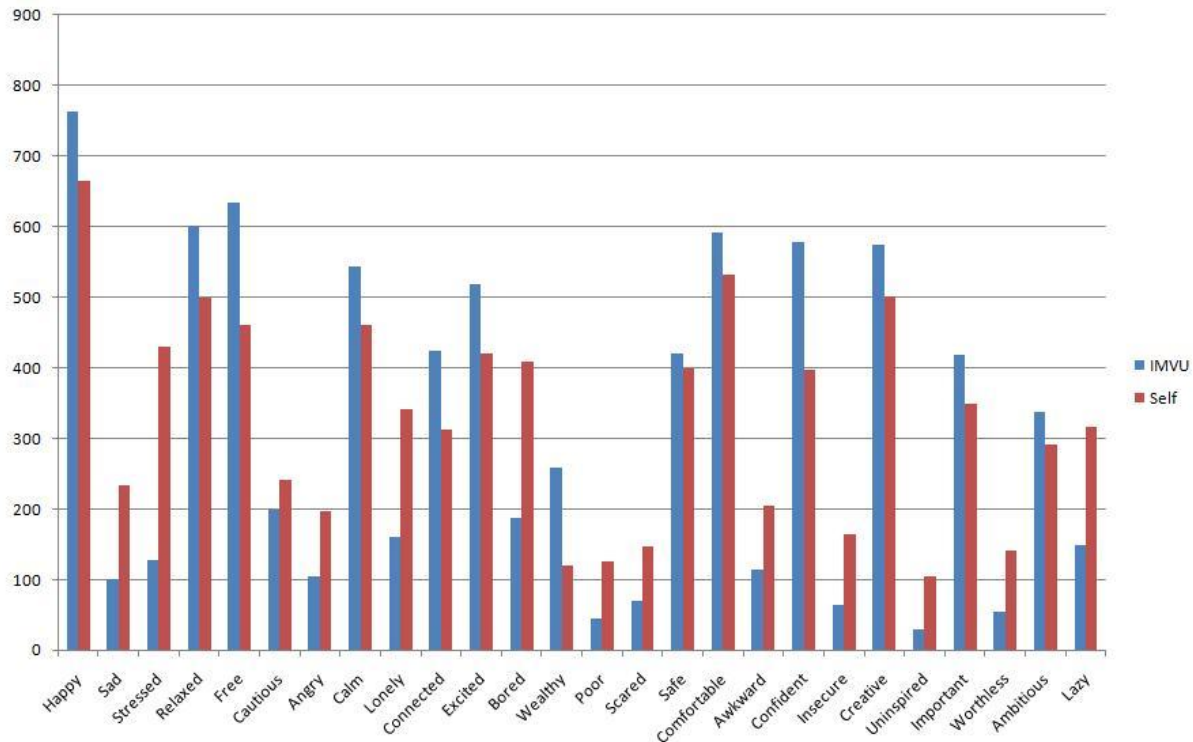
Fig. 5: Qualitatively "positive" feelings were reported substantially more often in the IMVU environment, while "negative" feelings were reported higher outside of IMVU.

4.   Discussion

Though we did not necessarily see the polarizing trends we had expected, we do believe that the data contains promising trends with substantial implications for how and why virtual worlds such as IMVU become and remain extremely popular with users.

Of particular interest was our finding that 85.5% of users reported an increase in our "power" variable when in the IMVU environment, in comparison to their sense of power in the real world. (The power variable is determined by answers to questions about self-worth. self-confidence, and power motives). We believe that this is a major explanatory variable in terms of why users enjoy their IMVU experience; enough to return repeatedly and to spend time, money and energy on their avatars, virtual relationships and environments. This seems to hold true for users who engage in all types of sociality/activity behaviors over a large range of user intensities.

It is most encouraging that there is an overall "boost" in feelings of self-confidence in a broad swath of the user population. Of course, there is the extent to which the self-selecting group of members who are attentive and responsive to short-term IMVU announcements (such as our survey call) is likely to exhibit a positive bias for IMVU. What is particularly interesting is that a very wide variety of these users are largely sharing a single response: when they are in the IMVU environment, they *feel more confident about who they are*, regardless of what they are doing. Previous studies have offered a similar result that people do not fundamentally change

their behavior online, but may become more outgoing and uninhibited [20,21]. Whether these effects, and specifically which effects, can carry over to the self in real life remains to be seen [8]. Regardless, it speaks to the success of the design of the IMVU environment in creating a virtual universe that affords the opportunity for and real experience of empowerment to its users. We are interested to continue to investigate what these successful design elements are in particular; we believe that this will contribute to a general understanding of how to design for social participation and empowerment in the participative Internet as a whole.

Responses to questions about feelings on IMVU and real life show that individuals had heightened positive sentiments when online, as well as markedly reduced occurrences of negative sentiments. Specific feelings that were reported more frequently in the IMVU environment were Happy, Relaxed, Free, Calm, Connected, Excited, Wealthy, Safe, Comfortable, Confident, Creative, Important, and Ambitious. Feelings that were reported more frequently in real life were Sad, Stressed, Cautious, Angry, Lonely, Bored, Poor, Scared, Awkward, Insecure, Uninspired, Worthless and Lazy. This pattern suggests that individuals associate IMVU (and perhaps other online communities) with more qualitatively positive moods, experiences, feelings and perhaps an improved sense of self through their avatar [4]. Though this is not necessarily surprising, given that users do repeatedly choose to dedicate their time and energy to engaging with the IMVU community, it is reaffirming to see such overt boosts to qualitatively positive self-descriptions and emotions. We also pleasantly surprised to find that there was generally higher reporting of positive feelings both outside and inside of the IMVU environment, suggesting a population that generally considers itself happy, confident and creative. This not only presents a strong challenge to the negative, antisocial stereotype of users of these communities, it also counters research citing medical concerns for individuals in a society demonstrating extensive digital activity [5].

Where we had originally suspected IMVU users to exhibit polarization on our Sociality and Activity spectra, the results show no apparent or significant trending. Additionally, there were no obvious trends as far as a "shift" in user behavior when comparing real-life behaviors to those in IMVU; the number of people who exhibited an increase in Sociality in the IMVU environment was about evenly balanced with those who experienced a decrease. While the surprisingly normal distribution of Sociality scores may be in part due to the limited validity of self-reporting, we must also keep in perspective that human beings cannot and should not always be categorized under stereotypical labels such as "escapist." This finding is particularly important to remember for the purposes of future investigations where similar presumptions about the "typical" member of a virtual community might cloud our interpretations of their characteristics, motives, or lifestyles.

However, there is still an extent to which the IMVU experience is fundamentally social, and this element (as well as the relationship between avatars and virtual goods) cannot be disregarded from our future analysis. In place of our definitions for Sociality, Activity and Power, we propose that individuals can be differentiated according to a certain "strength of presence" in any given context. Strength of presence includes a fundamentally social element, or underlying sense of social identity (who are my friends? how confident am I in my identity/role?) with a notion of influence (feelings of power or control, or holding sway over others). It is something that is both experienced by the individual and perceived by others. The

Power result may indicate that IMVU users have an opportunity to enhance their strength of presence by manipulating their social identity and influencing others in the virtual environment [22,23]. Notably, this effect could be obtained equally by creators or consumers, as well as escapists and connectivitists; this may be the reason why we did not find meaningful trends in Sociality and Activity so far. Our future work will develop the notion of strength of presence and how it is related to social identity and influence in the virtual universe.

User Intensity did not show significant correlation with any of the other variables. Money spent on virtual goods and overall time spent on IMVU appeared to have little to no impact on whether the user felt social, active or powerful on or offline. As such, we are considering user intensity as an independent variable that may or may not be useful in understanding user motives. One point for further analysis will be to see if higher-intensity users report a proportionately larger rate of reporting of positive feelings within IMVU. We might also reconsider definition for the term "user intensity;" now we realize that money and time spent on IMVU does not necessarily indicate enthusiasm for one's overall experience in IMVU, and that if it does, it does not necessarily correspond with a particular set or type of behaviors in IMVU. In future studies, it may be important to alter our definition of how a user invests in a website that is less dependent on personal resources, perhaps also adjusting for time spent as a proportion of overall time available (e.g., unemployed users versus full-time employees) so our questions and results may more accurately track user behavior.

Finally, we consider the impact of our research on design teams in academia, established industry and start-ups. While some believe that internet use makes people less creative [6], our findings suggest a creative promise and emotional connection through expression and motivational strength during on-line community participation. Related research on power motives [7] and parallel results on motivation, inner experience [8] inform.   Further compilation of the data will explore the implications of our findings on engagement and classroom team dynamics; as well as interventions for design based engineering teams.

As our study progresses, we will continue to analyze the preliminary survey comparing experiences in IMVU with other demographic factors - gender for example - and exploring particular design parameters of the site. We have not yet analyzed IMVU-specific behaviors in correlation with self-reported positive feelings, or been able to subdivide the population in a meaningful way (though there are outwardly identifiable groups in the IMVU community). Adjustments to our definitions and a shift in focus to "strength of presence" will be reflected in future survey calls. In addition, we are in the process of contacting individual users to learn more about their personal stories and experiences in IMVU, and perhaps to investigate the possibility of tracking individual experiences and feelings during particular IMVU visits/activities.

We have already seen increasing usage of avatars and virtual environments in education and socialization, and the trends seem to suggest that this will continue. Engaging users and gaining creative and social momentum online will likely become the dominant means for collaborative learning and work in the future (if it has not already). Understanding how we can engage users in a way that is beneficial to them in very fundamental ways (as influencing their social identity, their feelings, or their sense of self-worth) will give us insight into how online

interactive platforms should be designed to achieve this effect and promote personal engagement.

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