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Individual and professional development in the digital age

Towards a conceptual model of virtual worlds for organizations

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Abstract

Purpose – The current paper aims to embrace an interdisciplinary approach to illustrate some of the ways in which virtual worlds expanded upon the individual, social and professional options of employees in organizational settings.

Design/methodology/approach – Through an extensive literature review, the paper compiles the latest and most fundamental research capturing relevant concepts from the fields of psychology, pedagogy, management and human-computer interaction.

Findings – The current conceptual model incorporates individual- and group-level outcomes associated with virtual world participation, along three primary dimensions, namely self-reference, role experimentation and social capital, accounting for potential variation based on the extent of organizational engagement.

Practical implications – The three proposed dimensions elaborated in the current model, including reflexivity/transference, role playing/role identification, and group collaboration/virtual teams, enable organizations to understand the likely outcomes of their virtual presence from the perspective of their structural and social attributes.

Originality/value – The proposed conceptual model offers a theoretical base for academics and practitioners to expand upon and develop concrete practical examples and cases.

Keywords Organizational behaviour, Professional development, Virtual teams, Personnel development, Role playing, Virtual worlds

Paper type Conceptual paper

Introduction

The rapid emergence of numerous 3D online worlds provided individuals with new ways for interaction, information sharing and general communication (Golub, 2010; Kollman and Lomberg, 2010). Given their unique and innovative features, it is not surprising that virtual worlds attract millions of users (Hua and Haughton, 2009; Castronova, 2007). On an individual level, these settings opened the door towards new identity experiences, and with it drastically changed the former conditions for defining the human self (Cerulo, 1997). On an organizational level, virtual worlds enabled companies to experiment with innovative tools through which they could enhance their business endeavours, and also understand important aspects of online behaviour more fully (Pichardo, 2008). Firms like IBM, Coca Cola and Nike were amongst the enthusiastic pioneers choosing to establish their online presence in the particular virtual world of Second Life, and utilized this medium to conduct market research, hold business meetings, and engage in online conferences (Messinger *et al.*, 2009).

In addition to their clear benefits, including their easy access or entertaining nature, it is important to recognize that these innovative settings may provoke a variety of

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considerations, even leading to certain potential shifts in our thinking. On the one hand, with the emergence of virtual environments, certain aspects of dominant and long standing psychological, educational and managerial theories developed under more traditional conditions may be brought into question (Wyld, 2010). On the other hand, the complexity characterizing virtual world participation is likely to necessitate an approach that encapsulates a diverse set of distinct perspectives and builds on multiple disciplines; a particular challenge for those academics and managers who represent areas where single disciplinary expertise has been the norm (Fox *et al.*, 2009).

While an increasing body of work investigates the impact of virtual world presence from the perspective of individuals (Eisenbeiss *et al.*, 2012; Sutanto *et al.*, 2011; Barnes and Pressey, 2011), research exploring the organizational benefits associated with different forms of virtual participation remains relatively scarce (Landers and Callan, 2012). For example, despite the rapidly growing literature exploring more traditional types of virtual teams (Johnson *et al.*, 2001; Bergiel *et al.*, 2008), there is very little work focusing on specific features characterising teams established within 3D virtual space. Additional difficulties tend to arise from trying to decipher an optimal extent and level of engagement for organizations, with no clear guidelines offered to date (Wyld, 2010). Similarly, many of the early entrants and more entrepreneurial organizations were eventually forced to abandon these virtual settings, as at the time they were not sufficiently familiar with these relatively young and complex technologies (Gartner Research, 2008; Yoon and George, 2013).

The current paper contributes to the literature by addressing specific ways in which organizations can take advantage of virtual worlds to advance the skills and competencies of their staff, bridging relevant concepts from theoretical frameworks based in the areas of psychology, education and organizational behaviour. We begin by introducing basic features of virtual worlds, along with their organizational implications, and follow it up by a review of their potential impact on psychological, educational and managerial theories. In the final section, we present our conceptual model and elaborate upon outcomes and competencies that are likely to accompany virtual world participation, accounting for potential variation in based on the extent of organizational engagement. Throughout the discussion of our model, we place particular emphasis on offering practical considerations and implications for organizations. We conclude the paper by noting certain limitations and suggesting future directions.

Virtual worlds and their organizational implications

Beginning in the late 1990s, numerous virtual environments emerged, including multi-user domains or dungeons (MUDs) and chat rooms (Turkle, 1995), providing relatively simple text-based settings for individuals with an interest in role-playing activities (Stone, 2001). In contrast to these earlier forms of user-generated contexts, virtual worlds are substantially more complex computer mediated 3D environments, characterized by highly appealing visual design and high quality graphics. These persistent social spaces that allow their users to engage in synchronous interactions with each other – as well as with their virtual environment through their avatars (Schroeder, 2008; Thomas and Brown, 2009), enable their participants to create, shape and modify their digital surroundings, and personalize a variety of features based on their own preferences and desires (Mobach, 2008). Virtual worlds tend to be perceived

as integrated and symbolic environments to which individuals render special meaning, as they offer unique experiences and potentials that differ substantially from the offline existence of their user base (Lemma, 2010; Bardzel and Odom, 2008). In line with his cultural theoretical framework, Wark (2002) argues that individuals' relations to virtual environments can be characterized by three qualities. First, people tend to focus on those dimensions of digital spaces that separate them from the offline world. Second, virtual environments serve as potential spaces, as they are considered to be a base for producing new forms of knowledge or content. Finally, individuals approach digital spaces as an integrated series of virtual dimensions that can be seen as connected to each other.

Virtual worlds consist of two major categories (Papagiannidis *et al.*, 2008). In game-oriented virtual worlds, such as World of Warcraft or Star Wars, events and actions are determined on the basis of a pre-generated storyline, and user experiences are characterized by special quests and various characters, while adhering to certain rules (Taylor, 2006). In socially-oriented virtual worlds, such as Second Life or Active Worlds, there are practically no restrictions imposed, nor do these environments operate with a pre-determined storyline (Spence, 2008). Instead of focusing exclusively on aspects of game playing, users in socially-oriented virtual worlds can engage in a variety of social interactions of their choice, as well as can partake in role-playing and in various economic and professional activities (Bell, 2008).

Despite certain differences, the two types of virtual worlds share five common fundamental characteristics. First, from the perspectives of psychology, these environments are immersive 3D spaces that generate an intense sense of being present (Lee, 2004). Users can enter virtual worlds and interact with other characters through their own avatars, and are able to manipulate and change their environment according to their preference. These combined elements were shown to induce a strong sensation of presence on behalf of participants, who tend to feel that they really exist inside the particular virtual world (Jin, 2011). Second, participants can embody their virtual characters by constructing and subsequently modifying their avatars. This notion of embodiment grants individuals the opportunity to truly take part in the given virtual world and to experience the corresponding sense of presence together with other members around them (Muri, 2003). Third, according to Thomas and Brown (2007), embodiment enables users to engage in a play of imagination, by being able to create and customize their characters as well as their environment, in accordance with their fantasies and creativity. Fourth, from the perspectives of education, virtual worlds can be considered special learning environments (Thomas and Brown, 2009; Zheng and Newgarden, 2012), brought upon by the deep engagement between the user and the setting, the social elements of the online space, the immersive nature of virtual worlds, and the concept of embodiment (Tynes, 2007). And finally, from the perspectives of business and management theories, virtual worlds have been shown to serve as optimal groups for role playing activities. Individuals participating in virtual worlds can try out different roles and organizational functions, through which they can reconstruct and further refine their existing work roles and identities, and even experiment with new ones (Dunn and Guadagno, 2012).

Second Life is currently one of the most well-known and popular platforms among socially-oriented virtual worlds. Not surprisingly, studies that explore the unique characteristics of Second Life users are increasing, predominantly in the social scientific domain (Mancuso *et al.*, 2010). However, only a few studies to date focus specifically on the potential implications of Second Life for organizational behaviour (Wyld, 2010)

and management (Goel *et al.*, 2013), despite numerous potential benefits derived from this line of inquiry. For instance, Second Life has been shown to offer a wide range of opportunities for identity and role experimentation, with critical implications for social behaviour and team functioning (Lortie and Guitton, 2011). Similarly, by engaging themselves in a wide range of shared avatar-mediated interactions that incorporate acts of consumption and creation simultaneously, Second Life has the ability to extend the boundaries of real world learning (Li *et al.*, 2011). Finally, taking advantage of its ability to facilitate professional interactions amongst individuals, Second Life may serve as an optimal base for employee training, decision simulations and professional development (Goel *et al.*, 2012). In summary, companies may benefit greatly from participating in innovative online platforms in a variety of ways. In the following section, we elaborate further on each of the three focal disciplinary areas, exploring the influence exerted by the innovative characteristics of virtual environments.

Perspectives of psychology: virtual identity and experimentation

Beyond its obvious offline everyday role, human identity is heavily characterized by roles that an individual has to assume in a given situation, as well as within the broader societal context (Gecas, 1982). Under normal conditions, human beings are capable of reacting appropriately to their surrounding social environment, and even more importantly, of being reflexive (Gilbert and Sliep, 2009). According to Gergen (1999, p. 50), reflexivity is "the attempt to place one's premises into question, to suspend the obvious, to listen to alternative framings of reality, and to grapple with the comparative outcomes of multiple standpoints". Reflexivity is a relational entity, in that it is manifested through sequences of social relationships, and relies on the history of social interactions formed with others. While the overall process has been viewed as constant for decades, the external conditions in which identity formation takes place have recently undergone a substantial evolution (Turkle, 1999).

Prior to the current global and digital era, individuals only needed to satisfy a small number of roles throughout their lives, and were usually not required to change their behaviours and mentalities as quickly and radically in order to respond to the expectations of their social realities (Zizek, 2004). Similarly, identity formation has long been viewed as a stage-like process, advancing through predictable steps at specific junctures of an individual's life (Erikson, 1959). In contrast, postmodern times demand substantial flexibility and multiplicity regarding the personality of individuals (Schwartz *et al.*, 2005). More specifically, virtual worlds tend to further diversify our quest for identity development, even beyond the intensity and complexity characterizing everyday life, by provoking additional levels of self-reflection, and by enabling users to simultaneously possess multiple selves that can be modified at any time (Koles and Nagy, 2012). Building on the above mentioned notions of presence (Lee, 2004), embodiment (Muri, 2003), role-playing (Dunn and Guadagno, 2012), and play of imagination (Thomas and Brown, 2007), virtual environments provide their users with the opportunity to try out, customize and experiment with different identities, as well as help them to cultivate these identities in a culturally acceptable fashion (Nakamura, 2008).

In addition to the individual-level considerations, the social aspects of virtual worlds also play an important role in the formation of identities and assumption of roles. By entering a virtual reality, individuals begin to spontaneously react to the online social environment, and in turn begin to shape it as well. They form their virtual selves not only

in accordance with their inner needs, but also by reflecting upon others' reactions and responses elicited via their virtual identities. In this respect, through experimentation, individuals are able to test certain desired elements of their identities, which they then either incorporate into their self-concept or alternatively reject (Kim *et al.*, 2012). Some researchers argue that in addition to our actual selves, we may possess various possible and ideal selves that are likely to surface under appropriate circumstances (Markus and Nurius, 1986). While these conditions rarely emerge in real life situations, they are a lot more feasible in virtual settings (vanDellen and Hoyle, 2008). For example, through the complete removal of physical characteristics in online space, individuals with perceived physical impediments, such as race, gender, physical attractiveness or disabilities, may find ways in which to overcome their fears of social interactions (Cabiria, 2011). From this perspective, virtual worlds serve as optimal platforms for creating, sustaining and cultivating possible and ideal selves; endeavours which often cannot be experienced within the boundaries of more traditional offline conditions (Sung *et al.*, 2011).

Perspectives of education: training and innovative collaboration

Being special learning environments, virtual worlds have been shown to provide rich training and developmental opportunities for individuals. In their extensive review of the literature, Hew and Cheung (2010) found that virtual spaces tend to foster communication, spatial simulations, and experiential learning; all of which are advantageous for educational purposes. Virtual worlds have been found to be particularly ideal training grounds for management education and leadership development (Reeves *et al.*, 2008), presenting organizations with new online spaces to hold instructional sessions for their employees in an innovative, compelling and cost efficient manner (Jang and Ryu, 2011), enabling greater flexibility and enhanced productivity (Greenfield and Davis, 2002). By enabling users to interact with each other simultaneously through the convenience of their computers, meeting rooms and other work-related social places can be amplified within virtual settings. Beyond the more apparent physical and structural modifications, online interconnections also have the potential to change the more traditional social relationships that often characterize workplaces in real life settings (Scott, 2008), offering new dimensions to foster creativity amongst employees (Whitty and Carr, 2006).

Beyond their individual use, social and collaborative learning has been highlighted as a particular area where virtual world environments can be exploited from the perspective of organizations and educational institutions alike. Given its ability to enhance student learning and engagement, group learning has become an important element of traditional classroom instruction, with particular attention to business education, as practicing managers need to understand the dynamics underlying successful group formation and management (Benbunan-Fich and Hiltz, 2003). However, real world experiential learning is often challenging and difficult to accomplish due to space, time and cost-related constraints, with current distance education and e-learning practices only able to incorporate online text, audio- or video-based materials (Duncan *et al.*, 2012). Franceschi *et al.* (2009, p. 75) suggest that virtual worlds may provide optimal solutions that foster group collaboration, by offering "aspects of full body appearance, gestures, locomotion, directional voice [. . .] and a strong sense of being in the same place".

Another related notion, virtual teams, received a great deal of attention (Berry, 2011), given the increasing demand on individuals to interact with each other efficiently, regardless of their physical, geographic or temporal situations (Ebrahim *et al.*, 2009;

Saunders *et al.*, 2004). Similarly to experiential learning, traditional virtual teams tend to have certain limitations, inherent in their exclusive use of classic collaboration tools, such as social media and e-learning platforms (Sadri and Condia, 2012). In contrast, immersive virtual environments enable their users to engage in synchronous interactions that take place in real time (Erenli and Ortner, 2011), and allow individuals to transfer their real life problems and decisions from offline situations to cyberspace (Allen and Demchak, 2011), where they can find the most optimal solution in a consistent, supportive and predictable environment (Williams *et al.*, 2011). In fact, the ability of users to act upon their virtual environment enables them to learn by doing, as opposed to simply learn by reading texts and hearing others' instructions (Hew and Cheung, 2010), which is in line with the increasing recognition that in most optimal learning environments, the learner plays an active role in his or her knowledge generation (Dickey, 2011). As a more indirect benefit, Mancuso *et al.* (2010) found that Second Life users were able to improve their emotional and intellectual self-esteem, learning orientation and motivational factors through the supportive atmosphere of this particular virtual world. Finally, identities constructed in virtual worlds serve as filters through which individuals can render positive emotions to certain intended learning objectives, further supporting effective and constructive educational outcomes (Adams *et al.*, 2011).

Perspectives of business and management: role playing and professional development

Management scholars have long provided valuable insights concerning the impact of relationships on several work-related phenomena, including productivity and performance (Morrison, 2002; Sherony and Green, 2002). Building on the work of Brewer and Gardner (1996) and Sluss and Ashforth (2007) proposed a model for relational identity, which incorporates the notions of identity and identification, and emphasizes the variability in the extent to which individuals are able to identify themselves with different roles (i.e. being an employee versus being a parent). In this sense, organizations can be considered places where individuals may need to redefine themselves to fit the organizational context, particularly in comparison to their existing social connections outside of the workplace.

On a social level, work environments tend to expose their staff to numerous tasks that require intense communication (Bart and Carroll, 2001), effective teamwork, and successful role identification (Bélanger and Watson-Manheim, 2006); endeavours that may pose great demands on employee capabilities (Grant and Hofmann, 2011). For satisfactory collaborations, employees need to use relevant psychological and behavioural strategies to regulate their emotions, and position themselves appropriately with respect to roles and relationships. As a consequence, the successful management of relational identity has important implications for organizations, including emotional, social and cognitive support on the positive end (Wheeler, 2008), and various work-related challenges, disruptive behaviours and burn out on the negative one (Mesmer-Magnus *et al.*, 2011). In a quest to overcome this complexity and tackle the multiple roles and tasks faced by individuals, virtual worlds can offer creative and innovative approaches to successful engagements and interactions.

In fact, virtual environments have been shown to provide fruitful grounds for a variety of activities, including role-playing, which is particularly advantageous for

organizations (Chapman and Stone, 2010). Socially-oriented virtual worlds provide numerous places specifically allocated for this purpose, where individuals can easily assume the role of any profession or organizational function. Although game-oriented virtual worlds entail more fantasy-like settings, they nonetheless allow their users to impersonate favourite characters, to partake in a story that takes place in real time, and to continuously incorporate the reflections of a real and responsive audience (Guitton, 2012). Employees in these virtual settings can interact with each other in novel ways, while advancing their work-related skills and competencies easily and in a collaborative fashion (Zheng and Newgarden, 2012; Fiol and O'Connor, 2005). Importantly, employees can maintain their connection to their workplace even in their physical absence; a notion that may carry a variety of positive implications (Granger and Schroeder, 1996; Larsen and McInerney, 2002). For instance, it has been proposed that managing work-related relationships from a distance enables individuals to use virtual environments as defensive objects, through which they can avoid or at least more efficiently cope with stressful events generated by their physical presence in the workplace (Mersky, 2008).

From a collective perspective, van der Land *et al.* (2011) suggest that 3D virtual environments provide optimal settings to form and sustain virtual teams in creative and efficient ways. First, virtual teams established in virtual worlds can be managed more effectively than more traditional teams that tend to be confined by standard telecommunication technologies. Second, participants tend to strive in such cooperative, dynamic and trustworthy social environments (Fülbrunn *et al.*, 2011; Allen and Demchak, 2011), especially in a relatively young cyber society, where customs, laws and the overall culture are yet to stabilize and crystallize (Paul, 2009). Third, research suggests that those social tendencies that are fundamental to virtual meetings and team building sessions may inadvertently alleviate internal conflict among team members (Ellis *et al.*, 2008), enabling the establishment of common schemas to problems and norms that are crucial factors for effective collaboration (Rentsch *et al.*, 2010). Finally, in those virtual worlds that possess their own economic systems, such as in the case of Second Life, organizations may find alternative ways for managing incentives and motivating employees in an innovative fashion, taking advantage of the vast product base and sophisticated labor market (Chesney *et al.*, 2009). In sum, exercising careful planning and implementation, organizations can use virtual worlds to advance their employees' work-related skills and competencies, improve internal social dynamics, and in turn enhance their firm's social capital.

Towards a conceptual model of virtual worlds for organizations

Based on the above review, it is clear that virtual worlds have introduced new dimensions in a variety of disciplinary fields. In our analysis, we focused exclusively on the areas of psychology, education and management, identifying specific ways in which virtual worlds expanded upon the personal and professional options of individuals. Building on this literature, we now turn to introducing our conceptual framework, highlighting specific anticipated employee level outcomes associated with virtual world participation. We propose three separate yet interconnected dimensions; namely self-reference, role-experimentation and social capital. In order to increase the practical applicability of our model for organizations, we differentiate between firms as a function of their likely extent of virtual participation. More specifically, we separate the expected outcomes associated with each organizational dimension to account for

the range between those companies that intend to undertake full immersion, and move the majority of their operations online; and those that envision a more sporadic participation, using virtual settings predominantly for more confined and clearly identifiable purposes (Figure 1).

Self-reference

The first dimension of self-reference entails those experiences and options that characterize virtual environments, which are different from the offline existence of users, yet have the potential to feed into their real life selves and abilities. The two poles represented in this dimension encompass reflexivity and transference. Regarding the first pole, the construction of a specific avatar has been shown to provoke and elicit self-reflexivity, derived from the tremendous amount of freedom and flexibility that typify the creation and maintenance of virtual characters (Wolfendale, 2007). This in turn may enable individuals to explore and understand their selves more fully (Kim and Sundar, 2012), as well as to incorporate certain desired or previously unexplored self-aspects. Although this task tends to be predominantly individual in nature, the social encounters that are at the core of virtual worlds nonetheless play an important role. More specifically, the immediate social feedback that tends to be offered on behalf of other inhabitants may serve as useful guidance, and may help individuals realize their motivations, emotions and aspirations more fully (Oliver and Carr, 2009).

The other pole along this dimension represents the notion of transference, which has been suggested as one of the most essential benefits derived from virtual world usage from individual and professional perspectives alike (Wang, 2011). This term captures the ability of users to transfer their experiences from one world to the other, and in turn allows virtual as well as real life settings to exert a mutual influence on roles, skills, and general identity features (Gonzales and Hancock, 2008; Jin, 2011). For instance, virtual worlds present individuals with a great variety of problems, puzzles and challenges that participants need to overcome in order to succeed and be effective (Adams *et al.*, 2011). Building on the results of their intensive case study approach, Cram *et al.* (2011) argue that in those problem-solving situations that take place in virtual settings, individuals are capable of analyzing complex scenarios and examining potential solutions from various angles, prior to committing themselves to the actual decision process envisioned to take place in offline conditions. In this sense, virtual worlds enable experimentation with new strategies and problem solving approaches, without exposure to failure, financial risk, or any other negative potential implication for real life business performance (Reynolds *et al.*, 2010).

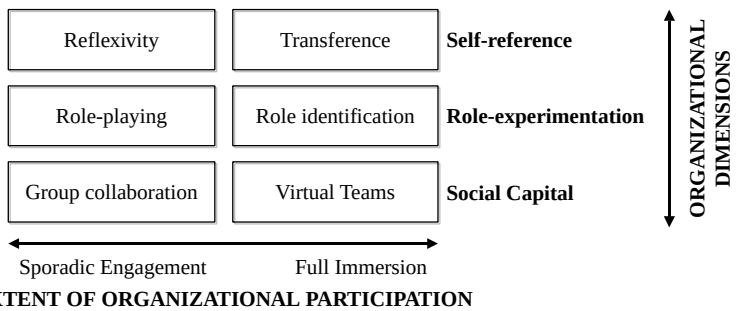

Figure 1.
Conceptual model of employee-level outcomes associated with virtual world engagement along the three organizational dimensions of self-reference, role-experimentation and social capital, accounting for the continuum of organizational participation

Similarly, these set of online experiences may enable users to respond more efficiently and accurately to situations and problems in the real world (Thomas and Brown, 2009), via applying those skills and competencies they previously acquired in virtual settings (Zheng and Newgarden, 2012). For instance, Chandra and Leenders (2012, p. 474) found evidence in support of a potential cross between offline and online barriers that take place in a cyclical fashion, suggesting that "user innovation in Second Life often breeds opportunities in the real world, which later spurs more opportunities and entrepreneurial acts inside the Second Life platform". In summary, available evidence suggests that virtual worlds may assist organizations with their professional development efforts, without placing their firm at jeopardy (Martin *et al.*, 2010). Furthermore, by developing new social skills in virtual team building and work sessions, employees and managers may become more efficient in conflict management and more assertive in their work place, even in real life settings (Bergiel *et al.*, 2008). Finally, certain technical attributes, such as the screenshots and video recording features characterizing virtual worlds, together with the social and professional notions of reflexivity and transference, are likely to facilitate the evaluation of employees and assessment of their learning outcomes in a time and cost efficient manner (Chapman and Stone, 2010).

Role-experimentation

The second dimension of our conceptual model captures those experimental elements that extend beyond the virtual self, and thus enable activities that revive around the assumption of roles, ranging between role-playing and role-identification. As indicated above, virtual worlds can serve as optimal grounds for role-playing activities, even when involving certain roles that may be challenging or even impossible to assume in offline settings (Barnes and Pressey, 2011). In fact, individuals have been shown to render positive emotions to role-playing engagements, with particular attention to online ones, given their ability to generate unique, novel and exciting experiences (Hrastinski and Watson, 2009). In addition, by assuming roles that differ from one's normal allocations, individuals may gain further insights concerning their own and others' roles, responsibilities, perspectives, and points of view (Sogunro, 2004). Finally, role-playing engagements may enable users to revisit previously encountered problems and situations with more objectivity, complexity and detail, in turn further empowering their learning and development (Börner *et al.*, 2012).

These role-playing engagements may be beneficial for organizations for a variety of reasons. On the one hand, the inherent anonymity characterizing virtual worlds may give users a heightened sense of reassurance and safety, and in turn encourage them to engage in more flexible and liberal experimentation, even with entirely novel tasks (Chodos *et al.*, 2009). This may be particularly advantageous when training for new roles or functions, necessitating a move beyond employees' existing skill sets and comfort zones (Cornelius *et al.*, 2011). On the other hand, role playing engagements may enable individuals to temporarily assume the post of managers or other associates, and freely experiment with their duties and responsibilities, without provoking conflicts inside the organization. In this sense, virtual worlds can present individuals with challenging, innovative and complex problems, and enable them to experiment with various solutions, even ones that can later be applied to real world scenarios (Sims, 2007). The element of self-experimentation may have further important implications for the purposes of

occupational identity formation, referring to certain ways in which individuals define and relate to themselves as workers (Aupers, 2007). In fact, developing a highly individualized and dynamic occupational identity has been suggested as an important antecedent of overall career success and satisfaction, particularly in the current digital era (Skorikov and Vondracek, 2011). Moreover, by incorporating one's work history with desired and possible future directions, occupational identities may have a strong influence on the self-concept of individuals, as well as on various aspects characterizing their potential future actions and behavior (Kielhofner, 2007).

The other pole along this dimension concerns the notion of role-identification, referring to an advanced and elaborate form of role play, in which users are able to assume new roles, while also discovering previously unexplored ideal self-aspects. Role identification is more permanent when compared to simple role play, and while its establishment requires more extensive amounts of time and effort, several beneficial implications may be identified, with particular attention to linking the virtual with the offline setting. For example, though role identification, individuals may be able to re-establish their role-based relationships within the greater organizational context, and even achieve a stronger understanding of organizational values (Jang and Ryu, 2011). Furthermore, positive role identification has been linked to the effective management of social relationships inside the organization (Sluss and Ashforth, 2007), which – if viewed in the context of virtual world participation – may expand upon the offline benefits and expose individuals to new relational, social and motivational aspects. Finally, newly acquired virtual world-based competencies can easily serve as analogies and in turn be viewed as transferrable knowledge, even for the purposes of real life applications (Henderson *et al.*, 2012).

Social capital

The third and final dimension captures the predominantly social- and group-level elements associated with virtual world participation, with a strong emphasis on organization-wide professional interactions and group dynamics, ranging between group collaboration and virtual teams. Focusing on the functions of communities and their information sharing attributes, social capital tends to emphasize the structural and functional characteristics of human relationships (Putnam, 1995). Nahapiet and Ghoshal (1998) defined three dimensions of social capital; the first capturing the predominantly structural elements, highlighting the connections formed between actors in a given social network; the second focusing on the relational elements, with particular attention to those aspects of personal relationships that entail trust and group identification; and the third incorporating cognitive elements, and emphasizing those representations, such as goals and visions, that over time become shared amongst actors.

In comparison to more traditional individual and organizational arrangements, cyberspace enabled the expansion of social capital beyond the offline world to virtual settings; including social networking sites (Ellison *et al.*, 2007) and virtual worlds (Williams *et al.*, 2008). For instance, Zhong (2011, p. 2360) found that "frequent in-game social interactions and enjoyable social experience in MMORPGs [*Massively Multiplayer Online Role-Playing Games*] are beneficial to gamers' social networks in the virtual world". Similarly, Huvila *et al.* (2010) demonstrated that Second Life appears to empower the building of social capital and the facilitation of information sharing among users. The social aspects of virtual environments have also been shown to foster knowledge

sharing through social ties, reciprocity and identification (Chiu *et al.*, 2006), serving as a fruitful theoretical base for modeling knowledge production in virtual world communities, as well as offering a practical base for facilitating efficient rewards and motivations (Chang and Chuang, 2011).

In addition to the general expansion of social capital, the participation of organizations in virtual space is likely to initiate a process of revitalization in terms of previously established social, informal and professional relationships within the workplace. On the one hand, individuals can engage themselves in group collaborations in order to share information and coordinate activities. On the other hand, organizations can establish and maintain virtual teams in which members can focus on a variety of work-related problems. Group collaboration tends to be viewed as an inherent part as well as a key feature of virtual worlds, with slightly different forms appearing in game as well as socially-oriented virtual communities, including the formation of guilds in World of Warcraft (Williams *et al.*, 2006) or the thematically organized groups in Second Life (Messinger *et al.*, 2009). Virtual teams tend to be more unique in that they are characterized by intense, elaborate, and continuous group collaboration, and the core focus tends to be concentrating on work and specific organizational outcomes (Peters and Manz, 2007). Both types of network based joint efforts can be easily adopted from an organizational standpoint, and depending on the extent of engagement, can be positively exploited for the long-term and sustainable management of the firm's social capital.

Conclusions and future directions

The purpose of the current paper was to review some of the complex ways in which organizations and their employees may benefit from participating in virtual environments. Our extensive assessment of the literature emphasized that virtual worlds can serve as optimal platforms for organizational development and learning (Chandra and Leenders, 2012). With our conceptual model, we offered specific ways in which firms may engage in a journey towards innovative team building and personnel development, ultimately enhancing the human capital of their organizations. More specifically, we have illustrated that through the notion of self-reference, employees can understand their selves and roles more fully, as well as transfer problems between real world and virtual settings. Furthermore, we emphasized the importance of virtual worlds in terms of their ability to encourage open and flexible role play and enhanced possibility for role identification. Finally, we showed that these interactive 3D platforms provide optimal grounds for group collaboration as well as virtual team construction and management.

Our review and conceptual model point to further practical implications associated with the exposure of organizations to virtual worlds. First, these innovative online settings may serve as a good platform to implement team based, departmental, or even organization wide training programs during a period when training and development may not be the main priority for firms, given their likely cost implications. Second, the overall atmosphere at the work place may improve, as employees may be excited about learning new and cutting edge skills in a highly innovative setting. In fact, the creative and playful nature of virtual worlds may have potentially advantageous indirect consequences, enhancing work efficiency, employee productivity, and overall climate (Mancuso *et al.*, 2010; Li *et al.*, 2011). Similarly, the flexibility of virtual worlds is likely to enable organizations to establish their workplace with a desired social atmosphere – with the potential input from employees – and thus re-organize previously established

work relationships. Third, the competencies organizational members are able to assume may easily translate to real life settings, enhancing the overall capabilities of the staff. For instance, these open environments may enable members to experiment with complex organizational problems without having to consider personal or situational obstacles, in turn allowing the organization to engage in realistic economic simulations in a cost effective manner (Cyphert *et al.*, 2013). Finally, substantial savings may be realized in the long-term, by being able to organize cross-national teams in an easy and expedite fashion.

In addition to outlining a variety of benefits, it is important to also consider potentially negative consequences associated with virtual world participation. In fact, many researchers conclude that virtual environments, and virtual worlds in particular may entail negative outcomes for their users (Wack and Tantleff-Dunn, 2009; Smahel *et al.*, 2008; Kerbs, 2005), including addiction (Lu and Wang, 2008), cyberloafing (Ugrin and Pearson, 2013) and blurring the optimal line between fantasy and reality (Gilbert *et al.*, 2011). Importantly, organizations need to exercise extensive care and control when establishing their presence on virtual platforms, and provide sufficient initial training as well as continuous monitoring (Griffiths, 2009, 2010). Finally, companies need to gain a good understanding of the ways in which virtual worlds may influence human motivation, in order to use these environments appropriately, constructively, and for adaptive purposes (Fang *et al.*, 2009; Kahai *et al.*, 2012).

Given their novel, innovative and interdisciplinary nature, virtual worlds present an area with the ability to provide an unusually broad set and variety of useful takeaways (Wyld, 2010). However, in order to understand potential implications associated with virtual world usage more fully, it is useful to embrace a diverse set of perspectives. The current paper incorporated the three primary disciplinary areas of psychology, education and management in detail, with the understanding that these proposed dimensions are not exhaustive. Hence, future work should incorporate additional areas of interest in order to further assist organizations in their planning and execution of their virtual world entry and participations. Furthermore, building on the current conceptual framework, future research should present and evaluate concrete examples and case studies, and establish best practices for companies to utilize and exploit.

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