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Virtual social interactions: Evolutionary, social psychological and technological perspectives

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ABSTRACT

This paper represents an exploratory and quantitative investigation into online dating from evolutionary, psychological, and technological points of view. In the past decade, the relatively inexpensive availability of user-friendly, fast, and reliable Internet technology has appealed to millions of consumers who suddenly found themselves engrossed by this sensational medium of communication, information, consumerism, and service. The majority of Internet users tend to be either recreational or utilitarian oriented, using such medium for a wide variety of tasks ranging from corresponding with friends and significant others, information gathering, purchasing goods and services, and, increasingly so, seeking and securing suitable dating and marital partners. The following research questions constitute the driving force for the current investigation: What are the evolutionary and social psychological intricacies of online dating? What are the technological variants or dimensions that render the consumption of online dating services appealing to users? An online survey was administered to 247 subjects to explore these questions and determine the technological dimensions of virtual social interaction. Exploratory factor analysis was then conducted to analyse the data. Eight technological dimensions emerged as a result of the analysis and served as the basis for the study's technological perspectives model of virtual social interactions.

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1. Introduction

From online shopping to electronic bill pay to booking travel and lodging all the way to online dating, we, as individuals living in the 21st century, are becoming increasingly identified by online usernames, passwords, and code names (Lohse, 1998). Even though there does exist a lag between technology and culture, the sudden availability of inexpensive, fast, reliable, and user-friendly personal computers and Internet technology to mainstream consumers has changed our lives drastically and possibly irreversibly (Chen, Wigand, & Nilan, 1999). From the occasional to the everyday online user lies a spectrum along which we all find ourselves.

The current investigation attempts to identify the technological and social psychological variants of online dating by providing an exploratory and quantitative analysis of the conceptual intricacies of this virtual medium of interpersonal attraction. The resulting theorizations and conceptualizations are based on the detailed and methodical distilling of literature compiled and analysed from various studies in the fields of Management Information Systems, Psychology, and Social Psychology, as well as the administration of an online survey to 247 subjects to determine several technological factors related to online dating, based on exploratory factor analysis. Results are contextually situated within the overarching umbrella of evolutionary psychology and contested in terms of their future viability and applicability.

2. Evolutionary and social psychological perspectives

Evolutionary psychology is a broad topic concerned primarily with the study of mind and behavior (Buss, 1995, 2003, 2004; Buss & Schmitt, 1993; Cosmides & Tooby, 1987; Crawford & Krebs, 1998; Jones, 1999; Simpson & Kenrick, 1997). Evolutionary psychology could be conceptualized in terms of evolutionary theory (Alexander, 1989; Buss, 1995, 1999; Caporael, 1997, 2001; Depew & Weber, 1996; Lewin, 1998; Richards, 1987), sociobiology (Brewer & Caporael, 1990; Crawford & Anderson, 1989; Crawford, Smith, & Krebs, 1987; Kaye, 1986; Kitchoer, 1985; Wilson, 1975), inclusive fitness theory (Buss, 1995; Caporael, 2001; Cosmides & Tooby, 1987; Crawford & Krebs, 1998; Hamilton, 1964; Simpson & Kenrick, 1997), and general selection theories (Campbell, 1997; Czikó, 1995; Darwin, 1965; Donald, 1991).

Natural selection constitutes a powerful driving force that ensures the survival and success of living things. However, the principles of evolution do not necessarily have to be applied to biological entities but could also be applied to social psychological processes, such as those of interpersonal attraction in mate selection. In fact, in the past several decades, the evolutionary psychological perspective on interpersonal attraction and mate selection has gained increased attention and postulates that cross-culturally, human beings are governed by principles of attraction and mate selection that prioritize the conception, birth, and survival of their offspring. Evolutionary psychology, thus, utilizes principles of biological evolution and natural selection to understand human social behaviors.

Most evolutionary psychologies can be classified as general selection theories in as much as they utilize natural selection to explain change over time. Evolutionary or Darwinian based theories are determined by three interacting principles of change, primarily those of: variation, selection, and retention (Caporael, 2001). In the social psychological process of interpersonal attraction and mate selection, variation is defined in terms of getting oneself exposed to a pool of available mates, either directly—in face-to-face interaction settings, such as those of work, school, and leisure—or virtually, through an artificial/symbolic medium, such as online dating. The process of successfully selecting an appropriate partner, from the large number that is available in either a natural or virtual setting, takes place through the learning of courting mechanisms, through various socialization processes, in order to maximize rewards and mate's level of physical attractiveness, and, in the case of online dating, to capitalize on the many advantages offered by virtual nearness. Finally, retention refers to the initiation of viable strategies for ensuring the successful carrying out of the dating process, first virtually—by capitalizing on the many advantages offered by virtual nearness—and then in face-to-face

interactions. The ultimate purpose of retention being long-term commitment in the form of marital union.

2.1. Rewards

Humans, being social beings, are drawn to each other and are motivated to initiate social contact for various reasons, primarily out of an innate need for affiliation. We often seek others for companionship, play, and commitment and tend to be drawn to different kinds of individuals. Exchange reward hypotheses postulate that we are also attracted to those individuals with whom a rewarding relationship, or the promise of one, exists (Byrne, Clore, & Smeaton, 1986; Lott & Lott, 1974). There are two kinds of rewards: (a) direct, such as attention, emotional/psychological support, money, status, power, information, material things, sex, and other valuable commodities; and (b) indirect, such as feeling good by associating with, or being in the company of, a person who is attractive, intelligent, or humorous (Brehm, Kassin, & Fein, 2005).

Just like other individuals involved in the dating scene, virtual dates are out to establish and maintain online contacts with others—through the creation and maintenance of personal profiles—by promising an immediate or a near-future rewarding relationship. However, a big part of the online dating process involves the modification of online personal profiles, which are sometimes intentionally or unintentionally falsified, thereby misleading other online daters as to the viability of a rewarding relationship or the extent of its potential reward.

2.1.1. Physical attractiveness

Most individuals in most social settings respond more favorably to those who are viewed as physically attractive. One reason for the beauty bias is because most people find it rewarding to be in the company of physically attractive others. Such others are often perceived as more popular and socially skilled, even though this may not be so.

The technological sophistication of user-friendly Internet technology has rendered online dating a viable avenue for meeting potential romantic partners, especially through its utilization of an interactive user interface with high-quality photographic images and video clips. Through subscriptions to online dating services, virtual daters have the opportunity to not only create their customized web-sites, but also upload their best pictures and video clips, thereby manipulating their projected level of physical attractiveness and appeal.

2.2. The historical, social, and cultural evolution of dating

According to Donald (1991), there exist four major phases in the evolution of human cognition: (a) episodic culture, whereby memory is dependent on environmental cues; (b) mimetic culture, whereby the body is utilized as a medium for representation and memory; (c) mythic culture, where language development allows the construction, deconstruction, and reconstruction of narratives, which enable the expression of the fine intricacies of everyday human life, as well as the description of past and anticipation of future events; and (d) symbolic culture, characterized by hard and electronic copy storage manipulation of codified information as exemplified in the use of print and personal computers.

The evolution of the dating process could be traced through its primate antecedents, developmental sequence, cross-cultural communicative competence, and cultural specific contexts in which dating could take on different meanings (Caporael, 2001; Eibl-Eibesfeldt, 1971, 1989). Hence, the dating process progresses from a relatively simple to a more complex state. Extrapolating Donald (1991) categorization to the process of interpersonal attraction, dating, and social union formation, it can be argued that such process started out on a more temporal and instinctual basis as purely a reflection of individuals' instinctual concerns for sexual gratification, procreation, and pairing. Prehistoric hunting and gathering living was largely nomadic in nature and survival oriented. As such, the process of interpersonal mating developed on an episodic basis whereby individuals paired merely for the satisfaction of their instinctual drives (Gowdy, 1998; Janicki, 1998).

With the passage of time, however, and as stable agrarian-oriented cultures and societies evolved, episodic mating turned mimetic, whereby the focus of attention evolved from the environment to the

physical body and personhood. Agrarian living was more stable in terms of its physical locale, increased probabilities for individual survival and success, and, therefore, allowed more time for bodily concerns. Mimetic mating was primarily achieved through bodily representations, which took precedence over the much simplistic environmental concerns. For instance, individual mating was not indiscriminately determined based on the environmental availability of mates, but rather, was organized around ritualistic practices, involving elaborate props, dance, body paints, costumes, and artifacts. Such mating ceremonial practices were, in turn, encoded in memory and intergenerationally transmitted. This can be thought of as the beginning of the evolution of the culture of mating and the ancestor of contemporary dating (Donald, 1991; Griffiths & Gray, 1994; Janicki, 1998).

Prototypical mimetic agrarian cultures evolved to mythic kingdoms, empires, and civilizations, which culminated in the evolution of highly complex industrial societies organized around an elaborate division of labor. The primary determinant of such mythic societies was predicated on the social construction of highly sophisticated communicative systems of shared meanings known as languages (Deacon, 1997). Such written and oral language systems of shared meaning allowed not only the systematization of cultural processes, such as mating, marriage, and family but also, and more importantly, their codification in narratives, which were continually defined, redefined, and transmitted from one generation to the next. The evolution of detailed cultural systems of mores, norms, and folkways provided an array of proscriptions and prescriptions concerning all matters related to interpersonal relationships in general and mating and dating in particular (Axelrod, 1986; Brehm et al., 2005). For example, in the cases of the latter, various spoken and unspoken rules and regulations evolved, such as: who, when, and how to date/marry, the intricacies of the marital ceremonial procession and contract, the nature of the couple's sexual repertoire, the birth and raising of children, inheritance rules, relationships with in laws, relatives, and friends, etc. The mating, dating, and marital processes were no longer left to the probabilistic and environmental whims of physical presence/availability and satisfaction/satiation of instinctual drives (as in prehistoric episodic clans), neither were they left to the mere enactment and reproduction of simplistic rituals of the body (as in primitive mimetic tribes), but, instead, evolved to codified and highly regulated ritualistic systems that were constructed, deconstructed, and reconstructed through language (as in ancient and historic mythic cultures) (Donald, 1991; Janicki, 1998).

Mythic cultures and societies evolved to present-day postmodern postindustrial service-oriented symbolic cultures characterized by an almost exponential increase in both hard and electronic copy informative knowledge (Deacon, 1997). The widespread and relatively inexpensive availability of reliable mechanical and electronic machinery and devices coupled with the presence of effective and efficient transportation systems, reduced work hours, disposable income, and material comforts and luxuries, have all significantly contributed to the evolution of highly individualistic pleasure oriented cultures of painless problem resolution and short-term gratification. In such cultures, impersonal communication through such means as telephones, cell phones, text messages, emails, chatrooms, message boards, and webcams initially started out as viable tools to meeting the demanding ends of fast-pace modern living. Such impersonal communicative avenues, however, evolved from being mere means to an end to an end in themselves, where individuals could satisfy their emotional and psychological needs for interpersonal relatedness and sexual desires virtually and sometimes even anonymously somewhere in on the web. Here begins the evolution of the culture of online dating with technology as its major determinant (Donald, 1991; Griffiths & Gray, 1994; Janicki, 1998).

3. Technological perspectives

What are the technological variants or dimensions that render the consumption of online dating services appealing to users? To answer this question, a pilot study, followed by the present study, was undertaken. First, the pilot study was conducted with open-ended type questions to ascertain and categorize important technological factors that users deem important in online dating services. Based on the pilot, an online survey was then administered to 247 subjects to explore this question further along the technological dimensions of virtual social interaction. Exploratory factor analysis

was then conducted to analyse the data. Eight technological dimensions emerged as a result of the analysis. A discussion of the analysis, including sample, questionnaire, reliability, validity, and the various dimensions is outlined.

3.1. Sample and questionnaire

The subjects of the study were undergraduate college students in a university. Each individual had basic Internet skills to be able to browse the web. The sample consisted of 247 subjects. The sample was 59% female and 41% male, with ages ranging from 18–28 years old. An online questionnaire was given to each subject in a computer laboratory. The laboratory environment facilitated tighter control and reduced distractions and interruptions. The scales used in the study were taken from and based on Schmitt (1999) and Novak, Hoffman, and Yung (2000), following the results of the pilot study which pointed to mutual and relevant constructs of interest. Each item had a seven-point Likert scale, with the following anchors: 1 = strongly disagree, 4 = neutral, and 7 = strongly agree. Any subject who has never visited a dating or an online social interaction site was dropped from the data. Hence, there were only 247 usable responses.

3.2. Reliability

Reliability is the extent to which an item, scale, or instrument will produce the same values when given in different times, places, or populations (Cronbach, 1951; Nunnally & Bernstein, 1994). Internal consistency reliability is the degree to which individual scale items correlate with one another or with the entire scale (Nunnally & Bernstein, 1994). A scale is internally consistent if each item in a scale measures the same concept or construct. The most widely used index of internal consistency reliability is Cronbach (1951) α or coefficient α . A calculation of Cronbach's α was used to assess the reliability of the study. The conventional standard is that Cronbach's α should be .70 or higher for a scale to be considered reliable (Nunnally & Bernstein, 1994). Cronbach's α for the present study was .83.

3.3. Validity

To ensure validity, the study used previously validated and reliable scales. The scales used in the study were taken from and based on Schmitt (1999) and Novak et al. (2000). Researchers should strive to use existing and already validated scales as much as possible (Straub, Boudreau, & Gefen, 2004). Moreover, exploratory factor analysis was used to interpret and categorize the variables, as well as ascertain construct validity (Kerlinger & Lee, 2000). Construct validity deals with whether the variables are true constructs of the phenomenon under observation (Cook & Campbell, 1979). In essence, validity assesses whether a study measures what it intends to measure through the operationalization of the variables (Kerlinger & Lee, 2000).

Exploratory factor analysis with maximum likelihood extraction method with equamax rotation was used to assess construct validity. The criteria used in determining how many interpretable factors to retain are the scree test and highest contribution to the proportion for variance accounted for by a given factor. Related variables tend to group together under and load on the same factor. Within a retained factor, these variables or items in a scale are retained if the absolute value of their factor loadings are at least .50 or higher. Otherwise, an item or question is dropped from the scale. In addition, two other criteria resulted in dropping items: items loading on a factor other than the original factor as reported in the scale from the literature, or items (known as complex variables) loading on multiple factors simultaneously (a clear violation of criteria for validity (Straub et al., 2004)). The variables or scale items that are retained after conducting factor analysis are shown in Table 1.

The interpretation of the factors, based on exploratory factor analysis, was consistent with the original scales, on which they are based, as reported in the literature. Hence, the factors matched and corresponded to the factors in the original scales. For example, the first factor was interpreted as *sensory experience*, based on variables or scale items: Sn1 (engaging site for the senses), Sn2 (perceptually interesting site), and Sn3 (site lacking sensory appeal, a reverse-coded item), as shown in Table 2. The second factor was interpreted as *emotional experience*. Both factors are consistent in interpretation

Table 1

Factor loadings of retained items after factor analysis

Variables	Factors and factor loadings							
	1	2	3	4	5	6	7	8
Sn1	.81							
Sn2	.76							
Sn3	.72							
Em1		.62						
Em2		.71						
Em3		.79						
Cg1			.69					
Cg2			.70					
Cg3			.73					
Bv1				.67				
Bv2				.77				
Bv3				.73				
Cl1					.76			
Cl2					.59			
Cl3					.74			
Mm1						.72		
Mm2						.73		
Mm3						.67		
Cu1							.67	
Cu2							.78	
Cu3							.56	
Tf1								.59
Tf2								.63
Tf3								.65

with [Schmitt \(1999\)](#) scale. This was the case for the remainder of the scales: cognitive experience, behavioral experience, collaborative experience, multimedia, customization, and telepresence. A detailed discussion of the interpretation and meaning of each dimension is outlined below.

For a more logical grouping of the technological variables, the first five are grouped under two headings: virtual nearness experience (sensory, emotional, cognitive, behavioral, and collaborative experiences) and interactivity level (multimedia, customization, and telepresence).

3.4. Virtual nearness experience

Physical proximity or nearness constitutes an important factor in interpersonal attraction. In recent decades, with virtual interaction patterns gaining increasing importance, it is not unusual for individuals to attempt romantic connections through various non-traditional dating means, such as subscribing to online dating sites and using email, chatrooms, and message boards. However, such avenues of virtual nearness require prospective dating partners to coordinate their online exchanges by being in the same place (near their computer) at the same time ([Latane, Liu, Nowak, Bonevento, & Zheng, 1995](#)). In the online dating labyrinth, romantic partners are thus more likely to initiate and sustain online dating relationships with those message-posters whose dating profile not only appeals to them, but who also respond to their romantic invitations. An appealing but unresponsive online dater is of no use to anyone who wants to meet prospective dating partners on the Internet ([Wallace, 1999](#)).

Virtual nearness tends to increase the frequency of contact between prospective online daters and, by extension, the degree of their exposure to one another. In turn, the more their online exposure, the more likely it becomes for them to exchange positive online dating interactions and evaluations ([Bornstein, 1989](#)).

Table 2

Scales and items retained after factor analysis

Variable	Scale item
<i>Sensory</i>	
Sn1	The site tries to engage my senses
Sn2	The site is perceptually interesting
Sn3	The site lacks sensory appeal for me (reverse-coded)
<i>Emotional</i>	
Em1	The site tries to put me in a certain mood
Em2	The site makes me respond in an emotional manner
Em3	The site does not try to appeal to feelings (reverse-coded)
<i>Cognitive</i>	
Cg1	The site tries to intrigue me
Cg2	The site stimulates my curiosity
Cg3	The site does not try to appeal to my creative thinking (reverse-coded)
<i>Behavioral</i>	
Bv1	The site tries to make me think about my lifestyle
Bv2	The site reminds me of activities I can do
Bv3	The site does not try to make me think about actions and behaviors (reverse-coded)
<i>Collaborative</i>	
Cl1	The site tries to get me to think about relationships
Cl2	I can relate to other people through this site
Cl3	The site does not try to remind me of social rules and arrangements (reverse-coded)
<i>Multimedia</i>	
Mm1	This site provides good multimedia features
Mm2	The site has pictures, sound, and video capabilities
Mm3	The site does not provide adequate user interaction (reverse-coded)
<i>Customization</i>	
Cu1	The site makes recommendations based on my specific search criteria
Cu2	I feel I am a unique user when I interact with the site
Cu3	I believe this site is not tailor-made to my needs (reverse-coded)
<i>Telepresence</i>	
Tf1	I forget about my immediate surroundings when I use the site
Tf2	After using the site, I feel like I come back to the “real world” after a journey
Tf3	I do not feel I am in a world created by the site I visit (reverse-coded)

The online dating virtual nearness experience is defined in terms of the following: sensory, emotional, cognitive, behavioral, and collaborative or social identification with a group. The ultimate goal of such experience is to integrate all five of the aforementioned components into a holistic virtual nearness experience for the online user (Schmitt, 1999, 2003).

3.4.1. Sensory

Sensory online dating experiences include how a website engages the senses, as well as the extent to which it is perceptually interesting and appealing to virtual daters (Schmitt, 1999, 2003). Such attributes result in high-quality sensory immersion, which is an important factor in virtual dating environments—other factors also include well-designed software and highly enthusiastic and interested online daters (Whitton, 2003). For example, various online dating sites may provide an appealing online dating experience via the site (Schmitt, 2003).

3.4.2. Emotional

Emotional online dating experience has to do with the emotional aspect of online behavior. This includes how an online dating web site aims at placing virtual daters in a certain mood, encourages them to respond in an emotional fashion, and appeals to their feelings (Schmitt, 1999, 2003). Online daters range of feelings can vary from being somewhat positive to real joy and excitement when they

find themselves interacting with a user-friendly pleasing website and its product/service offerings. Restrictive or user-unfriendly website navigation results in negative emotions and reduces the likelihood of future site revisits (Dailey, 2004). Therefore, emotional responses towards a website or virtual environment, such as navigation enjoyment and convenience, are of outmost importance to virtual daters (Agrawal & Venkatesh, 2002; Lee, Kwok, & Huynh, 2003).

3.4.3. Cognitive

In a state of heightened concentration and joy during an online task, web navigation results in increased user learning about site content, and in turn that learning leads to changes in online behavior, such as increased web site visits (Skadberg & Kimmel, 2004). Cognitive experiences, characterized by rich online interactions, engage online daters in creative and provocative ways. These experiences include how a web site intrigues them, stimulates their curiosity, and appeals to their creative cognition and result in the elicitation of cognitive absorption and engagement in online daters (Agrawal & Venkatesh, 2002; Schmitt, 1999, 2003).

3.4.4. Behavioral

Behavioral experiences show users alternatives to using or interacting with sites, including changes in lifestyles and behaviors (Schmitt, 1999, 2003). Behavioral experiences include experiences outside the physical body, as in virtual reality or navigating a website that takes the online dater on a virtual dating experience. In terms of the interface, Li, Daugherty, and Biocca (2001) define behavioral simulation as animation, spatial navigation, and social simulation as the process of using agents and avatars to interact with others.

3.4.5. Collaborative

Online communication is one of the major tenets of Internet experience (Kim, Lee, Han, & Lee, 2002). Collaborative experiences contain elements from the aforementioned experiences (sensory, emotional, cognitive, and collaborative) but expand to a broader perspective, beyond the individual user, to include a group or a community (Schmitt, 1999, 2003). For example, this includes how an online dating website enables online daters to relate to and communicate with others through the website, such as via email, discussion forums, chat rooms, instant messaging, and/or e-groups. These applications employ social simulation, which is online socialization using personas, agents, or avatars for communication purposes (Li et al., 2001).

3.5. Interactivity level

In the case of online dating, interactivity with respect to digital media is the direct communication and involvement between users and an online dating system interface, in order to bring about some on-screen change (Palmer, 2002; Zhu & Kraemer, 2002). Such change can include bringing up the following: (a) personal profiles of all the online daters that subscribe to that particular site, (b) personal profiles of a restricted range of virtual daters accordingly depending on their initial tastes and preferences, and (c) different text, pictures, and video clips of the same virtual dater for closer inspection and final choosing. All of the aforementioned are done so as to meet the initial online dater's goal of finding a likable, viable, and suitable date.

In the present investigation, interactivity deals with high interactivity level, since such rich sites provide more stimulation and engagement to users (Coyle & Thorson, 2001; Palmer, 2002; Teo, Oh, Liu, & Wei, 2003). Traditionally, interactivity is defined in terms of two levels: low and high. These two levels are categorized based on the following dimensions: multimedia (which includes textual and graphical elements, sound, video, and 3D capabilities in a web site), customization, and telepresence. Low interactivity level is interactivity that utilizes only two elements that are fixed or static: multimedia textual and graphical elements (and no customization or telepresence). The textual element involves text descriptions of the personal profiles of online daters, such as static descriptions of their personal characteristics and attributes, whereas the graphical element includes the static descriptions of their various pictures and movie clips. Hence, the low interactivity level is low in terms of multimedia and has no customization options or telepresence. These latter three dimensions are

associated with a high level of interactivity. The high interactivity level includes the low interactivity level elements of multimedia (textual and graphical) and expands beyond those elements to include richer multimedia (sound and video clips), customization, and telepresence.

Ecommerce online dating companies recognize that higher levels of interactivity and content lead to a web site's success (in terms of the number of subscribers and hits), as well as to higher levels of virtual users' perceived satisfaction, effectiveness, efficiency, value, and positive attitudes towards the web site (Coyle & Thorson, 2001; Palmer, 2002; Teo et al., 2003). Hence, a highly interactive online dating user interface tends to enhance the online dating experience. Three aspects of high interactivity level of relevance and interest to this research are multimedia, customization, and telepresence. These were the variables interpreted from the factor analysis of the data.

3.5.1. Multimedia

Multimedia is the degree of media richness in a site, such as text, images, sound, video, and 3D simulations. Online daters perceive multimedia content to be important to a web dating site's success. Dealing with how an environment conveys sensory data, multimedia helps to create a sense of presence (or being there in an environment) through breadth and depth (Steuer, 1992). Sensory breadth is the amount and scope of information presented in a sensory dimension or channel at the same time, while depth is the resolution within the presentation of that information. Coyle and Thorson (2001) conclude that increased levels of multimedia, based on Steuer (1992) definition of interactivity, result in more positive attitudes towards a web site, more hits, and, therefore, more subscriptions. This constitutes the primary reason for the increased technological sophistication of online dating sites in recent years.

3.5.2. Customization

Customization is a very important user-centric function in a web site's success that permits users to make unique interface changes to create individual user experiences through tailor-made products and services (Palmer, 2002; Wind & Rangawamy, 2001). Hence, the user, and not the web site, is behind the choices and decisions—although in many cases these choices are generally made from a menu of possible selected options.

Customization includes custom-design products and the selection of different components and characteristics in a site (McKinney, Yoon, & Zahedi, 2002; Williams & Larson, 2000). For example, many online dating sites allow customers to individually tailor the various aspects of their online personal profiles, according to their own tastes and dating preferences.

3.5.3. Telepresence

When users find themselves in a virtual dating environment, they may feel as if they are transported to a real-life dating scene with all its associated characteristics of front-stage/back-stage behaviors and impression management techniques, a sensation known as telepresence (Goffman, 1959, 1974; Steuer, 1992). Since the senses of smell and taste are hard to simulate in a virtual environment, visual, auditory, and tactile simulations are the three senses that are utilized the most by online dating site creators to attract customers and increase their satisfaction. Tactile sensations can be induced via feelings of telepresence in a virtual dating environment, sensory substitution, or force feedback sensations against an input device, such as a joystick during a computer game (Sherman & Craig, 2003).

Telepresence lends itself to another cognitive concept: body boundary. Body boundary describes how individuals see the limits of their physical body, and it spans two dimensions: location and permeability (Fisher, 1986). The location refers to the boundary set by skin and outlines of body extremities, and permeability refers to barriers that prevent entry from outside elements. For example, these concepts underscore important issues in the online dating experience, such as the lack of tactile sensations against the skin of a potential dating partner (the actual feeling of touching someone) (Rosa & Malter, 2003). However, the relative anonymity, convenience, and lack of embarrassment afforded by the online dating environment are important tradeoffs that are worth forgoing some elements of reality.

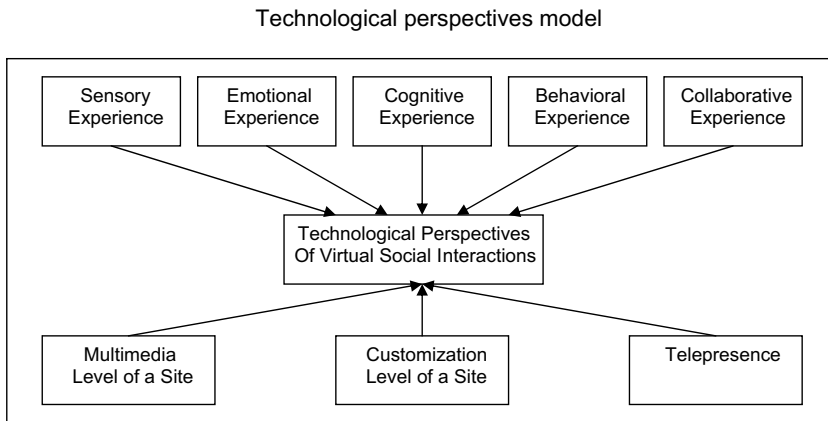


Fig. 1. Technological perspectives model of virtual social interactions.

While browsing the Internet, virtual daters may have sensations of time distortion, enjoyment, and heightened telepresence. Such heightened telepresence can, in turn, incite a flow experience, such as those immersive feelings users get when interacting with 3D games and simulations (Chen et al., 1999; Csikszentmihalyi, 1975, 1990, 2000; Novak, Hoffman, & Duhachek, 2003; Novak et al., 2000; Skadberg & Kimmel, 2004). Losing oneself in the online dating labyrinth is an experiential activity whereby virtual daters become considerably taken by the flow of their romantic consciousnesses and sub-consciousnesses. Individuals who are regular subscribers to online dating sites report that they find themselves entering this state of heightened telepresence at peak moments of their browsing routine (Cooper, 2002). In order to facilitate a sense of flow, online dating site creators go to great lengths to make their web sites appealing, stimulating, and responsive to virtual daters.

3.6. Technological perspectives model of virtual social interactions

Based on the results of factor analysis of the online survey of 247 subjects and interpretation of the factors, the present study determined a model of eight dimensions, from a technological perspective for virtual social interactions that render the consumption of online dating services attractive to users. The dimensions were sensory experience, emotional experience, cognitive experience, behavioral experience, collaborative experience, multimedia capabilities of a web site, web site customization, and telepresence feelings induced while interacting with a dating site. See Fig. 1 for the theoretical model.

4. Conclusion

During the million-year long evolutionary period of the human species, interpersonal communication processes—both verbal, such as sounds and speech; and non-verbal, such as signs, facial expressions, and body language—have evolved in increasing complexity. For example, gradual refinement in interpersonal communication behavior had led to our ability to express thoughts facially, as well as to communicate symbolically through complex languaging systems of meaning of oral, written, and pictorial variety (Kock, 2004).

The recent explosion in the symbolic use of the personal computer for initiating and sustaining effective and efficient interpersonal relationships may be also conceptualized as a sophisticated written and pictorial communicative means to our evolutionary end of emotional, psychological, and reproductive survival. For instance, online dating allows individuals to search for and secure emotionally and psychologically satisfying relationships with potential dating partners, thereby increasing their chances for reproductive survival.

Hence, the present study explored evolutionary, social psychological, and technological perspectives of virtual social interactions in terms of online dating. Based on the results of factor analysis of an online survey of 247 subjects, the present study determined a model of eight dimensions, from a technological perspective, that render the consumption of online dating services appealing to users. The dimensions were sensory experience, emotional experience, cognitive experience, behavioral experience, collaborative experience, multimedia capabilities of a web site, web site customization, and telepresence feelings induced while interacting with a dating site.

Furthermore, as personal computers (PCs) are becoming increasingly more technologically advanced and individuals more and more accustomed to their basic operations, we anticipate an even greater use of PCs for leisure and entertainment, as well as utilitarian activities. Recent advances in PC artificial intelligence, greater portability (afforded by larger battery capacities, smaller sizes, and more ergonomic structures), user-friendly software, faster processing, larger memories, higher quality in-screen images, etc., will ultimately lead to a new generation of “smart but also humane” computers with enhanced sensory, emotional, cognitive, behavioral, and collaborative features, which will better cater to the average person’s social, psychological, material, and entertainment needs.

In fact, we anticipate that in the near future, there would not only be an exponential increase in both the quantity and quality of virtual social interactions, made possible by the aforementioned PC technological advances, but, more importantly, there would begin to emerge a new breed of “PC human surrogate machines,” which, armed with sufficient and workable artificial intelligence features, will begin to perform many interactive functions previously reserved only for humans (Kurzweil, 2000, 2006). In other words, PCs will not only act as just another technologically advanced medium of communication and interaction that brings people together by reducing physical distance, computes thousands of calculations and executes hundreds of exchanges in only fractions of a second, seconds, or minutes. More importantly, they will act as intelligent human-like entities with sufficient thinking, feeling, and acting capacity to mimic many of the functions an average human performs in the context of his/her personal and interpersonal life, such as providing social support and advice to others, keeping friendly company, acting as playmates, etc.

We are already witnessing the considerable breakthrough of PCs in the recent phenomenon of secondlife.com whereby, although the person-computer interaction is still limited on the PC as a technologically advanced sensory, emotional, cognitive, behavioral, and collaborative medium—and not as the intelligent human surrogate entity mentioned above—still, the emotional, cognitive, psychological, and behavioral effects such an interaction has on those who aspire to it (as a “second life” and by extension as an escape valve from their personal lives to a make-believe world) is indeed tremendous. Consider the millions of individuals who have recently “plugged themselves into” the virtual world of second life and the millions more to do so in the near future. Therefore, we would argue the following, if second life has been having such an appeal and impact amongst individuals, imagine what “PC human surrogate machines” will do. Just like stem cell research, however, now is the time to begin pondering about all the controversies, legalities, and ethics that would be involved in the “PC human surrogate machine” debate.

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