

The Psychological Impacts of Cyberlife Engagement

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Abstract

This essay synthesizes scientific research across two decades on the influence of cyberlife engagement on cognitive processes, mental and physical health, and interpersonal interactions, highlighting the increasingly pervasive presence of digital innovation in society. New possibilities afforded by the integration of technology in commerce, relationships, therapy, and education are discussed, as are prevalent topics of interest within cyberpsychological research. We present an analysis of the positivity with which information and communication technology is portrayed in scientific literature since its emergence in society and discuss important future directions of study as technology's presence and influence continue to grow on an exponential scale. Last, we present current voids in cyberpsychological research, focusing particularly on the question of digital culture, or the impact of cyberlife engagement on global cultures as both geographical and custom-based barriers are traversed with increasing ease.

Since its emergence in society, the impact of information and communication technology on its human users has been dichotomized. On the one hand, it is often heralded for its ability to foster efficiency and productivity both within and outside the workplace. On the other hand, it has raised concerns over the potential harm to personal privacy, social interaction, and global security. For more than a decade, this "Internet paradox" has further framed technology as a vehicle for communication that can easily traverse geographical distance, and yet might also reduce social involvement and subjective well-being (Teske, 2002).

As technology becomes increasingly prevalent in global society, so do publications concerning the scientific study of technology and its impact. The field of cyberpsychology has since emerged in scientific literature to better understand the nature of human interaction with—and through—technology, as well as the psychological impacts stemming from these

digital interactions. Cyberpsychology is known by a diverse set of names including Internet psychology, digital psychology, and media psychology, all of which similarly focus on the effects of information and communication technologies on social life and internal processes. Despite its name, the study of cyberpsychology extends far beyond the realm of psychological literature; fields such as cybernetics, sociology, education, human–computer interaction, developmental psychology, industrial–organizational psychology, and marketing are also key stakeholders in this emerging topic.

CYBERLIFE ENGAGEMENT IN CYBERPSYCHOLOGY

In this essay, we review psychological research on the impact of cyberlife engagement. Here, we define *cyberlife* as an individual's use of, presence in, and interaction with cyberspace, including the use of the Internet, social networking sites, e-mail, and virtual Internet-based communities. Cyberlife engagement therefore describes a human user's engagement with any form of cyberlife, as opposed to the use of any device that relies on technology (e.g., hearing aids and digital clocks). To capture a wide variety of relevant research, we conducted a literature search across a variety of journals accessible through EBSCOhost using author-supplied keywords *psychology AND technology OR computer* OR cyber* OR internet OR online OR phish* OR e-mail* OR email* OR facebook or myspace OR "social network*" OR media*. In addition, we indexed all articles published from main cyberpsychology journals including *Computers in Human Behavior*; *Journal of Computer-Mediated Communication*; *Media Psychology*; *Cyberpsychology, Behavior, and Social Networking*; and *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*.

Of the search results—which comprised 182 peer-reviewed publications—the widest proportion of articles was based on surveys and self-report data (43.16%), followed by experimental research (16.84%) and theoretical discussions addressing cyberpsychological concepts and developments (15.79%). Notably, a vast majority of articles (80.35%) were analyzed at the level of the individual, although these studies have represented a wide variety of countries over the last 20 years. To date, only a marginal number (1.16%) of articles have compared cyberlife engagement on the national level. Nevertheless, this level of analysis is growing in popularity as sociological approaches in cyberpsychology are growing more prevalent. Because these articles were not directly relevant to the psychological study of cyberlife engagement, they were omitted from our discussion in the following section.

KEY PSYCHOLOGICAL VARIABLES

Across publication venues and research domains, the psychological variables of interest in cyberpsychological research fall under three main areas (Figure 1). First, cognitive processes account for research on attention and memory, productivity, learning, speech perception, and the use of and exposure to technology (e.g., digital literacy). Second, well-being and mental or physical health includes studies pertaining to psychological well-being, intervention effectiveness, physiological processes, and problematic behaviors. Third, interpersonal adjustment comprises research on self-concept processes, affective processes, and social interaction. Of these three areas, studies on mental or physical health constitute the most widely published areas of cyberpsychological research (49.23%), followed distantly by research into cognitive processes (27.69%) and interpersonal adjustment (23.08%).

In recent years, psychological variables of increasing prevalence in the literature include learning, self-processes, and social interaction. In contrast, research on problematic behaviors both online and as aided through technological devices is on the decline, as is research on psychological well-being (Figure 2). Overall, although cyberpsychology was largely dominated by research on cognitive processes in the late 1980s (i.e., learning in classrooms with computer access), interest in interpersonal adjustment is on the rise as the influence of social networking sites, online dating, and text-based communication on human interaction grows ever more important each year.

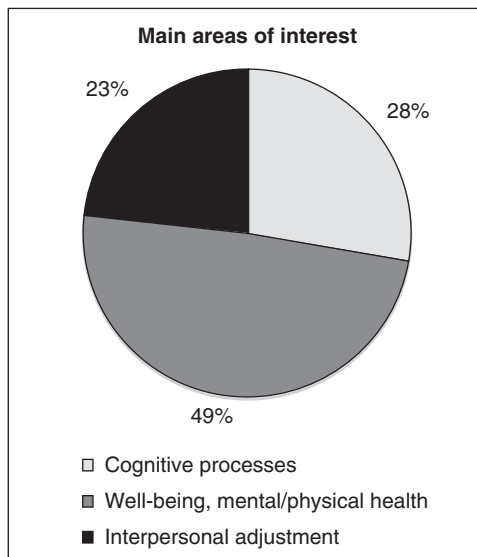


Figure 1 Frequency of main areas of interest returned in literature search.

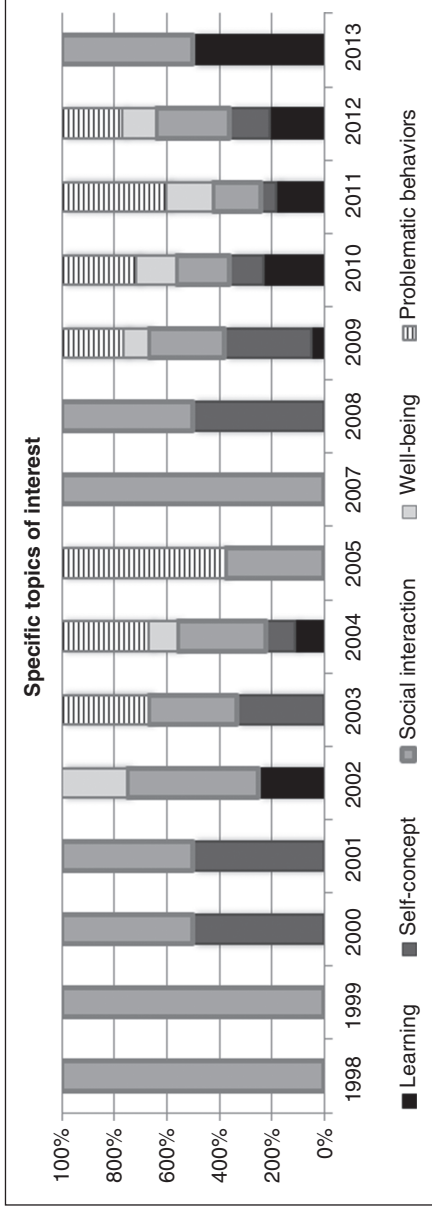


Figure 2 Frequency of specific psychological variables of interest as a percentage of total for learning, self-concept, social interaction, psychological well-being, and problematic behaviors.

THE VALENCE OF CYBERLIFE ENGAGEMENT

With the emergence of any new technology comes a fresh wave of attention regarding the impact of cyberlife engagement on daily life. The valence with which the public portrays technological advancements may vary widely across time and disciplines depending on the nature of the advancements in question. Here, we refer to the psychological use of the term *valence*, meaning the intrinsic attractiveness or aversiveness (i.e., positive or negative valence) associated with a given target. In this sense, valence is affective, concerning the positive or negative emotions that technology's presence may evoke in society. To observe these longitudinal trends, we analyzed the valence (i.e., positive, negative, and neutral) of the outcomes of cyberlife engagement based on the conclusions drawn by the authors of the articles. For articles with more than one outcome of interest (e.g., cognitive processes as well as affective processes), we coded positivity or negativity as a ratio of all outcome valences.

Within our search results, some areas of research appear to portray technology predominately in a positive light. Education, for example, has more or less consistently depicted cyberlife engagement favorably for the new possibilities it affords learning environments, teaching styles, and student comprehension. Exciting new possibilities including virtual learning environments have drawn attention to the ubiquity, affordability, and ease of implementation of online courses and tutoring opportunities (Knight, 2010). Because virtual learning environments support learning that is self-regulated rather than driven by in-person contact with professors and classmates, studies suggest that students are adopting a more active investment in learning outcomes and motivation (Barber, Bagsby, Grawitch, & Buerck, 2011; Sottolare & Proctor, 2012).

The practice of gamification—that is, the use of video games to teach educational concepts in a memorable and interactive way (Domínguez *et al.*, 2013; Yu-Liang, 2010)—became increasingly prevalent in school systems across developed nations. By the early 2000s, it was not the use of technology in the classroom but rather outside it that brought educational technology to the forefront of cyberpsychological research once more. Digitally mediated distance education such as massive open online courses (MOOCs) have grown exponentially in popularity since their emergence in 2008, and are now offered by approximately 90% of all higher education institutions (Kruger-Ross & Waters, 2013; Mackness, Mak, & Williams, 2010). The implications of earning a degree without being physically present in a college setting are a topic of debate among scholars and parents alike, as is the ease with which students are able to use outside resources (e.g., textbooks and notes) during Internet-based exams.

Online education is not, however, limited solely to secondary or higher schooling. Groups unaffiliated with school systems or universities are increasingly using technology to implement targeted interventions and training courses ranging from managing disease and hospital climate (Irvine *et al.*, 2012; Klein & Card, 2011) to alcohol use prevention during pregnancy (Tzilos, Sokol, & Ondersma, 2011).

Industrial–organizational psychology, on the other hand, has most frequently published cyberpsychological research on the detrimental effects of technology in the workplace, including studies on cyberloafing (i.e., the recreational use of computers or the Internet during work hours; e.g., Whitty, 2004; Zoghbi-Manrique-de-Lara, 2012). In addition, the disciplines of criminal and forensic psychology have focused on cybercrime and cybersecurity issues on human users, online organizations (e.g., e-commerce, banking companies), and national governments. As the incidence of cybercrime has grown on a worldwide level (Kigerl, 2012), so too has the concern of cyberwarfare between nations (Weinberger, 2011), highlighting the importance of research into computer and network infrastructure and predictors of human intentions to cause digitally mediated harm.

Social psychology and clinical psychology appear to portray cyberlife engagement as mixed blessings, in which approximately equal publications present positive and negative outcomes of technology use on psychological processes. Clinical research has begun to focus on online interventions to increase efficiency and accessibility of Internet-based therapy. As early as the late 1990s, the term *therap-e-mail* was used to refer to counseling services provided via text-based mediums as a way of overcoming power imbalances between clients and therapists. Although originally received with skepticism (Castelnuovo, Gaggioli, Mantovani, & Riva, 2003; Murphy & Mitchell, 1998), recent research suggested that merely writing about emotional experiences produced positive outcomes in both physical and mental health (Sheese, Brown, & Graziano, 2004). In younger populations, the influence of peer participation in such interventions has proven beneficial in intervention retention rates and psychological outcomes, looking specifically at eating disorders, exercise motivation, and alcohol use in college students (Bauer, Moessner, Wolf, Haug, & Kordy, 2009; Crutzen *et al.*, 2009; Sidman, Fiala, & D'Abundo, 2011). Due to the recent influx in mobile device usage, counseling psychologists are seeking to integrate counseling and mobile technology to strengthen these benefits when conducted through digital mediums (Warren, 2012); however, this lack of face-to-face interaction with licensed clinicians brings to question the standardization of Internet-based psychological and behavioral interventions. Consequently, new research seeks to set guidelines in the practice and evaluation of cybertherapy (Proudfoot *et al.*, 2011), although the efficacy of such guidelines has yet to be established.

It would not, however, be accurate to state that text alone can produce psychological and behavioral changes as drastic as those caused in physical—rather than purely technological—contexts. For more than a decade, immersive virtual environments, commonly referred to as *virtual reality*, have been used to recreate realistic settings for use in video gaming and recreational sports, rehabilitation and specialized training programs (Blascovich & Bailenson, 2011; Riva, 2009; Rizzo *et al.*, 1999; Wiederhold & Wiederhold, 2003).

Social psychologists have been interested in the use of chat rooms and online forums for dating, “singles bars,” and sexual chatting (Mills, 1998). In the years since, online dating has grown in popularity around the world, regardless of age or demographic (Alvarez, 2012). Concerns regarding the veracity of online dating profiles have instigated research into motivations for and outcomes of relationship formation based entirely online, although with mixed findings. While recent communications research posits that deception is rarely perceived and therefore poses dangers to other dating site users (Toma & Hancock, 2012), research into marital satisfaction and divorce rates across relationships that originated either online or offline suggests that online dating may facilitate happy, long-lasting marriages more frequently than offline relationships (Cacioppo, Cacioppo, Gonzaga, Ogburn, & VanderWeele, 2013). One possible cause for this finding is the unimportance or even lack of information pertaining to physical appearance or status, which may inaccurately attract or deter potential mates regardless of personality compatibility.

Beyond online dating, social psychological research has explored friendship and self-disclosure tendencies through blogging (Gurak & Antonijevic, 2008), discussion boards (Kovatcheva & Kommers, 2004), and specialized online communities for target groups (Hume & Bressers, 2009; Leung *et al.*, 2011). Across Internet mediums, results suggest that self-disclosure and online relationship formation—both romantic and friendship-based—produce similar psychological benefits as social support in in-person contexts.

HISTORICAL PERSPECTIVES ON CYBERLIFE ENGAGEMENT

Over time, however, the valence with which cyberlife engagement is portrayed in scientific literature has varied largely as a function of emerging technologies, new inventions, and increased accessibility of most digital modalities. In the mid-1980s, for example, technology was depicted more positively with a focus on its potential for increased efficiency and productivity. Computers were, in essence, viewed as little more than glorified calculators (Burden, 1984) and therefore construed as a tool rather than a source of direct societal, psychological, and behavioral change.

By the turn of the 1990s, increased lay access to the Internet and e-mail transformed computers from predominately word-processing machines into a means of two-way communication rather than a one-way recipient of user commands. In addition, the Internet became a highly important source of information accessible at the click of a mouse, including the Web's first search engines (e.g., *W3Catalog*, *Aliweb*, *JumpStation*; Koster, 1994), which could be used to access educationally and occupationally relevant information with greater ease than library catalogs and print indices.

Over the course of the 1990s, however, the increased use of technology as a communication medium yielded a reactionary period in which the very nature of human interaction began to undergo a rapid change. The advent of multimedia e-mail (i.e., embedding graphics and sound), chat rooms, forums and online communities, and multiplayer online gaming seemed to induce apprehension in older generations. This gradual change precipitated a novel research focus to the ways in which interactions through digital mediums differ from those that take place in physical life. A key component of this interest was the anonymity inherent in digital communication, which some researchers predicted would lead to a decreased sense of social inhibition when interacting with other Internet users (McKenna & Bargh, 2000). Attention shifted toward cybersex and sexual media content, cybertherapy and online interventions, and multimedia content, particularly video hosting websites like *ShareYourWorld* and—much later—*YouTube*. By the early 2000s, it became apparent that the viewing and sharing of Web-based video would far exceed the standard television, which brought to question the ease with which children and teenagers could access not only mature content but also popular media depicting celebrities, models, and adult behavior in a potentially harmful light. For example, search engines and online magazine websites provided young women with increased access to unrealistic depictions of ideal beauty. Consequently, research began to suggest that media consumption through online forms posed a heavy impact on body image and self-esteem (H. D. Posavac, S. S. Posavac, & Weigel, 2001; Tiggemann & Miller, 2010).

As the decade wore on, so too did advances in Internet-based communication such as social networking sites, which have since become a predominate target of Internet traffic. More recent studies indicate that 91% of Internet access on mobile devices and 79% on desktop or laptop computers can be attributed to social activities (Rainie, 2011). Whereas less than two decades previous technology was construed as a source of productivity, it was now confounded with time spent on globally accessible websites devoted solely to conversation, much of which contributed to the increasingly negative valence of cyberlife engagement portrayals within scientific literature. It is not surprising that research into online self-disclosure and trust garnered increased

attention, nor that school systems and educational organizations sought to convert socially oriented Internet communities to a classroom-purpose tool. A recent survey found that a vast majority of teachers consider these digital mediums to be a major impact on their ability to access content, resources, and materials for teaching (92%); to interact with parents (67%) and students (57%); and to complete and grade assignments (73%; Purcell, Heaps, Buchanan, & Friedrich, 2013).

However, even within educational technology and developmental psychology—both of which have published vast quantities of cyberpsychological research depicting technology in a positive light—has come the rising concern of cyberbullying, or the use of the Internet or mobile technologies to cause intentional psychological harm to a peer. Whereas traditional bullying requires that the student being bullied be physically present and in a situation conducive to bullying, cyberbullying can take place regardless of time or geographical location. Furthermore, the openness of teenagers and young adults with respect to online privacy increases the ease with which they can be found through search engines and social networking sites (Qing, 2010; Rigby & Smith 2011). Although cyberbullying is of widespread concern, it has posed the greatest threat for students with developmental or intellectual disabilities (Didden *et al.*, 2009), further adding to the negative valence with which cyberlife engagement has been portrayed in the last decade.

Also during the 2000s, the dawn of online shopping posed both a benefit and a threat to Internet users. Within a short span of time, the increased transmission of credit and debit card information through online venues brought into question the ease with which phishing and identity theft could be carried out online. *Phishing* can be defined as the malicious use of deception to acquire personal or financial information by masquerading as an established online organization (e.g., banking institution and online entity; Dhamija, Tygar, & Hearst, 2006). Although technology was—and continues to be—a crucial means by which such deception can take place, it has since been put to use in the fight against cybercrime by tracking phishing and identity theft activity on a global scale and working to decrease vulnerability to and credibility of such activity.

Across the time span of our literature search, it would therefore appear that although technology was first portrayed in a highly positive light when its primary purpose was to aid in productivity within education and the workplace, as its ubiquity and overarching influence has grown in daily life so too has research into the negative impacts of cyberlife engagement on psychological processes. Common research questions now include *how much is too much?* and—as mobile applications and websites are now being developed for toddlers and young children—*how young is too young?* Indeed, some

recent studies have begun with the assumption that technology's presence in human life is inherently detrimental and seeks to remedy this seeming fact (Hastie, Chun, & Nian-Shing, 2010; Wong, 2010). In response has come the recent evolution of *positive technology*, a new field within cyberpsychology that seeks to identify the beneficial impacts of cyberlife engagement on affective quality, personal experience, and social connectedness (Botella *et al.*, 2012; Riva, Baños, Botella, Wiederhold, & Gaggioli, 2012; Wiederhold & Riva, 2012). It remains to be seen whether positive technology will remedy the negative tone so frequently adopted when researching and communicating technology's impact in future years.

FUTURE DIRECTIONS IN CYBERLIFE ENGAGEMENT

With every year, technological innovations continue to grow at a seemingly exponential rate. As the number of Internet-accessible devices per person rises ever higher, so does the extent to which the average user begins to juggle between devices. In recent years, research on media multitasking has attracted attention regarding predictors and outcomes of dividing attention across multiple applications, browser tabs, computer monitors, and methods of communication. It is expected that, following the publication of a recent study suggesting that media multitasking is related to depression and social anxiety (Becker, Alzahabi, & Hopwood, 2013), additional research will explore the ramifications of digital juggling across cognition (i.e., attention, cognitive load, distractibility; Levine, Waite, & Bowman, 2012), social outcomes, and psychopathology.

Although far from new in cyberpsychological research, studies of the preference for technological communication have grown in prevalence as members of younger generations adopt—and are more partial to—conducting conversations through digital mediums. This physical removal from social situations has become a notable concern in the social psychological, communications, and sociological communities, because as methods of interaction continue to shift online, the very nature of social dialogue begins to blur, as does the establishment and preservation of close relationships. Of particular concern is the effect of social networking websites, which now accounts for a considerable proportion of digital communication, on self- and interpersonal perception. Users are now given considerable power in managing others' impressions through photos, status updates, and often carefully monitored information reflecting a chosen selection of their social, occupational, or personal lives. As such, it is expected that future research will continue to explore the impact of cyberlife engagement on social interaction and connectedness.

With the publication of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition came a flurry of discussion on the establishment of Internet Addiction Disorder and Internet Gaming Disorder (American Psychiatric Association, 2013). Although the concept of Internet addiction is not a, particularly, novel one, the evolution of computer and gaming graphics, computing speed, mobile devices, and digital accessibility around the world has brought about an ever-increasing interest in users' attachment to technology and its many venues (Essig, 2012; King *et al.*, 2012; Ran *et al.*, 2010). Of particular interest have been the physiological and neurological bases of this attachment, and whether Internet Addiction Disorder psychologically manifests itself in the same manner as behavioral or substance use addictions. It is possible that increased exposure to the Internet and computer or video games contributes to a long-lasting alteration in reward sensitivity not unlike changes stemming from substance dependence. Indeed, recent research indicates that participants who were asked to engage in a computer game displayed significantly reduced dopamine receptor activity compared with control participants (Weinstein, 2010). If this effect is exacerbated in users with long-term Internet or game addiction, this reduced dopamine response to digital stimuli may indicate sensitization—and therefore increased addiction—to cyberlife engagement.

CONCLUSIONS AND DIGITAL CULTURE

Regardless of age, ethnicity, occupation, or purpose, technology has become an integral part of daily life on a global scale. Digital innovations make possible the integration of cyberspace and the classroom, the dating world, the social network, and even the immersive physical reality in which we live; however, the valence with which this integration is portrayed in scientific literature has worsened as technology's place in society grows ever more ubiquitous, instinctual, and crucial across most life domains. Even so, it is unquestionable that cyberlife brings members of diverse populations together irrespective of city, country, or even continent of origin. How, then, is cyberlife engagement altering the very foundations of culture on an international level?

In the 1960s, communications philosopher Marshall McLuhan accurately predicted that the Internet, at that point in its nascent stage as ARPANET, would so closely connect every population that our world would become a village (McLuhan, 1964). This "global village" has grown increasingly intimate with the development of the World Wide Web, globally accessible online communities, and the increasing reliance of organizations on electronic communication with clients and employees around the world. It remains to be determined precisely how cyberlife engagement has impacted

our conceptualization of culture; however, it is possible that as geographic barriers are crossed through digital mediums, so too are cultural divisions. The consequences of this integration of lifestyles, customs, traditions, and values may generate what futurist Alvin Toffler termed *the law of raspberry jam*, in which culture—as it is spread across a wider surface—grows ever thinner. It is therefore imperative that future research explore the cultural differences and ramifications of cyberlife engagement, and the ways in which technology impacts diverse populations on the level of the individual, city, state, and nation.

On its widespread emergence in society as little more than a tool, computers were largely construed as a means by which both productivity and convenience could be exploited. Over the decades, however, the universality and pervasive presence of digital modalities has transformed technology from an instrument to a medium of communication, idea, education, counseling, business, crime, and addiction. It goes without question that technology—across devices, modes, and purposes—is here to stay, as is the integration of physical and digital realities. Not only must we, as human users, evolve to interact with our rapidly changing societies, but we must also work to better understand the ever-developing nature of human interaction as a whole, as well as the psychological impacts posed by our engagement with the cyberworld.

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VIRGINIA S. Y. KWAN SHORT BIOGRAPHY

Virginia S. Y. Kwan received her PhD from UC Berkeley (2002), taught at Princeton University (2002–2009), and is an Associate Professor at Arizona State University. Virginia's major research interests revolve around the broad content areas of social-perception processes, which she studies on three levels: (i) self-perception, (ii) interpersonal perception, and (iii) group perception. She has developed a research program that examines social perception using multiple methods, multiple cultures, and multiple species. Her research has appeared in the top theoretical and empirical journals in psychology, including *Psychological Review*, *Psychological Science*, *Journal of Personality and Social Psychology*, *Journal of Personality*, *Journal of Experimental Social Psychology*, and *Experimental Brain Research*. Virginia's accomplishments have been recognized by a number of awards and honors, including Psychological Science's Rising Star (2007), Fellow of the Center for Advanced Study in the Behavioral Sciences (2004–2005), the Best Article published in the *Journal of Research in Personality* (2002), Theoretical Innovation Prize (2002), the Inaugural Sage Young Scholars Award (2008), and Early Professional Career Award (2012), Division 52, International Psychology, American Psychological Association. Virginia has also contributed her time generously to the professional societies, serving as the Treasurer and Secretary of the International Society for Self and Identity (2003–2006), as elected member of the committee on International Relations in Psychology (2012–present), and

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Jessica E. Bodford received her BS with Highest Honors in Psychology, BA in Spanish, minor in Information Systems, and certification as a Carolina Research Scholar at the University of North Carolina at Chapel Hill. She currently works with Dr. Virginia Kwan as a graduate student of Arizona State's PhD program in Social Psychology. Her primary research interest resides in the area of digital culture, exploring the dual impact of cyberlife engagement on various facets of social resilience, or a person's ability to cope with personal or societal stressors. In past and ongoing research, she has examined the impacts of social networking, text-based communication, and technological exposure on social processes such as trust, relationship quality, academic persistence, and life satisfaction within and across cultures. She is the recipient of the National Science Foundation Graduate Research Fellowship, which supports her current and forthcoming research on cyberlife engagement.

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