Virtual Research Integrity

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INTRODUCTION

As the world becomes increasingly focused on virtual communications and as global researchers increase their use of virtual environments for conducting research, collecting data, analyzing data, and disseminating, publishing research findings, the need for acute attention to the integrity of their research efforts and the protection of human subjects is imminent. This article focuses on the issue of integrity and ethics associated with the use of virtual environments in conducting social science research, that is, research involving human subjects. The United States Office of Research Integrity (ORI) has clearly delineated Responsible Conduct of Research (RCR) principles for researchers (Steneck, 2007). Likewise, countries around the world have adopted clearly defined responsible research practices and identified international research integrity principles (NSF, 2012) and scholarly integrity concerns such as plagiarism, data fabrication, and falsification of records (Office of Science and Technology Policy, 2005). The increasing use of the Internet and virtual environments within international research partnership projects and the increasing globalization of science and social science research efforts have prompted the need for examining issues, risks, and challenges associated with Virtual Research Integrity (VRI) within a global context. The focus of this article includes three objectives relative to the topic of Virtual Research Integrity: (1) Define and examine the concept of virtual research integrity relative to U. S. and global considerations of research principles within responsible conduct, research misconduct and ethics issues, data integrity issues, literature reviews, and dissemination and publication of research findings; (2) Describe the implications of virtual research integrity for researchers, including appropriate behaviors, actions, and considerations for conducting virtual research projects; and (3) Provide insight into future perspectives for future virtual researchers regarding the development and integration of future technologies, future research topics and practices, future global research efforts, and future researchers within a virtual world.

BACKGROUND

Public concern for research misconduct and public access to the Internet simultaneously emerged in the late 1980s in the United States. However, the connection of concern for responsibly conducting research using the Internet or responsibly conducting research focused on the Internet did not surface until the late 1990s (Buchanan & Zimmer, 2013). A decade later (2000) Internet usage began including new and more public and personal rather than business and workplace uses, including social web venues, public communication arenas, and other virtual environments. Researchers and scholars interested in preserving the principles and qualities of ethical research activities began examining virtual environments relative to research integrity concerns. The Office of Research Integrity (ORI, 2007) in the United States assumed a lead role in preserving research integrity within virtual environments while International Research Ethics (IRE) boards worldwide developed global procedures and principles (Buchanan & Zimmer, 2013; NSF, 2012). The term, virtual integrity, emerged in 2012 as a forecast of the potential issues and concerns associated with the rapidly increasing uses of the Internet and virtual environments (Wright, 2012). Perhaps the greatest issue or concern associated with the emergence of virtual environments as a viable venue for social science researchers is the assumption that conducting research within virtual environments follows the same considerations as conducting research within face-to-

face environments. Eyon, Schroeder, and Fry (2009) conclude that researchers who conduct research from a distance using online or virtual environments face difficult research integrity challenges that are easily controlled or dispelled in face-to-face research venues. Although there are efforts underway to provide uniform international or global regulations regarding research integrity concerns, current research integrity principles and practices are not universal and vary considerably from country to country (Global, 2012). These major concerns are described within the context of specific issues, controversies, and problems surrounding the use of virtual environments for conducting research. Preserving the integrity of the research process while ensuring the protection of human subjects who serve as research participants are paramount needs for the consideration of researchers and scholars dedicated to conducting research whether in face-to-face or virtual environments. This premise is the basis for the discussion of Virtual Research Integrity.

VIRTUAL RESEARCH INTEGRITY

Virtual Research Integrity (VRI) refers to the use of computers and/or the Internet for conducting research with honesty, accuracy, objectivity, and attention to the protection of human subjects (Steneck, 2007; Malakoff, 2012). Related terms to VRI include derivations of the term within international venues. For example, journal editors of the *Journal of Virtual Worlds Research* (2013) have suggested that the term, virtual world research, refers to the characteristics of virtual reality arenas but focused on non-gaming aspects of virtual environments such as research aligned with pedagogy, quantitative, qualitative, cultural and social aspects of virtual reality efforts (see Additional Readings). The Joint Information Systems Committee (JISC) of the United Kingdom examined the term Virtual Research Environment (VRE) across several continents and more than 20 countries, and provided an international consensus description of a VRE as a virtual community utilizing virtual programs and virtual international constituents engaged in research efforts (Carusi & Reimer, 2010). Additionally, the Global Research Council (2013) is a virtual organization devoted to the global effort to provide collaboration with specific principles for promoting research integrity efforts worldwide. The

arduous task of promoting worldwide VRI is filled with issues, controversies, and problems associated with several aspects of virtual environments, research integrity concerns, and the international consideration of the protection of human subjects.

Issues, Controversies, Problems

Issues of access, identity, and privacy pervade virtual environments. Various perspectives from the literature and current information regarding each of the following issues, controversies, and problems relate to virtual research integrity: (a) obtaining informed consent; (b) online fraud or plagiarism; (c) data fabrication and falsification of records; (d) using online posts or blogs for research purposes; (e) human subject based research using second life or other virtual environments (Williams, 2012); (f) confidentiality and identity protection (anonymity) in survey research within virtual environments (Rhodes & Weiss, 2013); (g) collecting and transferring data in online environments or security issues; (h) viral sampling, defined as the exponential participation rate that occurs when a trusted member of a study population deems research study participation important or interesting and shares this with the population without the researcher first identifying and contacting members of the study population (Palys & Atchison, 2012); (i) web mining, defined as the set of techniques used to extract existing content, structure, and usage data from the Internet based on human understandable information and machine understandable semantics (Sivakumar & Ravichandran, 2013); (j) reporting and reviewing research (blinded peer reviews); and other issues.

Eyon, Schroeder, and Fry (2009) highlighted several challenges confronting researchers who conduct research from a distance using online or virtual environments rather than face-to-face venues. One challenge is the use of virtual environments for conducting experimental research projects. Using virtual environments and virtually created research subjects rather than real human beings to simulate experimental research efforts has strong advantages, that is, the experimental research procedures are free from the issue of potential harm to human subjects and there is unlimited and open access to participants for accommodating the need for control and experimental groups involved in the research. However, the responsible

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