Mobile Phone Behavior: An Emerged Discipline of Research

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INTRODUCTION

Mobile phones can now be considered as a large and diverse group of modern mobile technologies, including both hundreds of mobile hardware and devices (e.g., basic phones, smart phones, handheld computers, tablet computers) and millions of mobile software and apps (e.g., programs for making calls, sending messages, or running GPS). Mobile phones are becoming the most ubiquitous technology in the human history. Different from telephones, televisions, computers, or Internet, for the first time in the history, almost each and every of individuals ranging from young children to elderly seniors will use, have, own, or play a mobile phone in their daily lives. International Telecommunication Union (ITU), the United Nations specialized agency for information and communication technologies, reported that, from 1990 to 2013, worldwide mobile phone subscriptions grew from 12 million to 6.9 billion, with a surprisingly high penetration rate of 96%, comparing with the penetration rate of 16% for land phones, 40% for computers, and 44% for internet access (ITU, 2014).

Along with the rapid growth of mobile phone use, for more than 20 years, researchers in ergonomics, medicine, sociology, education, psychology, business, communication, law, and various other disciplines have been extensively examining how people use mobile phones and what influences mobile phone use have on people's lives. Using multiple strategies to systematically search the existing literature, we (Atkinson & Yan, 2012; Yan, Chen, & Fu, 2013) estimated that approximately 4000 journal articles published from 1991 to 2013 explicitly examined various types of human behaviors in using mobile phone across various disciplines in behavioral sciences, making mobile phone behavior research an emerged rather than emerging discipline of study.

THE PAST OF MOBILE PHONE BEHAVIOR RESEARCH

The Earliest Publication

To examine the history of the mobile phone research, it is necessary to determine the earliest publication as the formal starting point of the field. Based on our studies and consultations, Karel Brookhuis and his collaborators' (Brookhuis, de Vries, & de Waard, 1991) article entitled *The effects of mobile telephoning on driving performance* published on *Accident Analysis and Prevention* could be considered as the first published study on mobile phone behavior from the perspective of behavioral sciences and thus the formal starting point of the mobile phone behavior literature.

In this study, 12 adults participated in a three-week study. Each of them drove 1 hour every weekday. They used two modified Volvo as well as multiple measures, including lane tracker for lateral position, event reorder for a keyboard input, electrocardiogram for cardiac inter-beat-

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intervals, video camera for review mirror check, potentiometer, speed radar, and distance laser. By comparing driving while using mobile phones and driving without calling, they found (1) differences in turn control for light traffic but no difference for heavy traffic, (2) no difference steering control in for light traffic but difference for heavy traffic, (3) no difference in rear view checking for light traffic but differences for heavy traffic, (4) no difference in car following for both light and heavy traffic, but speed change delay 600 ms and braking delay 130 ms while using mobile phones, and (5) higher heart rate due to mental workload for both light and heavy traffic while using phones.

This first empirical study demonstrates two important features in the very beginning of the mobile phone behavior research. First, it chose an urgent and timely issue. It focused on driving safety rather than other common topics such as daily usage. It was published as early as 1991 when the mobile phone just started to use by ordinary users in developed counties. Second, it used rigorous experimental methods to collect multiple data rather than questionnaire survey or other commonly observed data collection methods. It is indeed pleasant to see a field of research started with such intellectual strengths.

The Exponential Growth Trend

Since 1991, the science of mobile phone behavior as a field of research has been growing exponentially. Specifically, the number of journal article publication was gradually accumulated in 1991-2004, but started a particularly rapid growth since 2005. In 2011 alone, approximately 455 journal articles were published. Leading research journals that have published studies in mobile phone behavior at least include *Accident Analysis and Prevention, Human Factors, Traffic Injury Prevention, Computers in Human Behavior, Computers and Education, International Journal of Mobile and Blended Learning,* and *Mobile Media & Communication*. Widely recognized leading researchers in the field at least include James Katz at Boston University, Rich Ling at Nanyang Technological University, David Strayer University of Utah, Matthew Schneps at Harvard University, Scott Campbell at University of Michigan, Naomi Baron at American University, John Traxler at University of Wolverhampton, Lennart Hardell at Örebro University Hospital, Mike Sharples at University of Birmingham, and Anne McCartt at Insurance Institute for Highway Safety of USA.

THE PRESENT OF MOBILE PHONE BEHAVIOR RESEARCH

The existing literature on mobile phone behavior can generally be divided into two groups, five major areas of research (e.g., mobile phone behavior in medicine and mobile phone behavior in education) and six specific topics of research (e.g., driving while calling and cyberbullying). The publications in the five major areas account for 84% of the existing literature, whereas the publications in the six specific topics account for 16%. These major areas and specific topics are mutually supplemental rather than mutually exclusive so that we can see a general picture of the emerged field of study.

The Five Major Areas of Research

Among 2799 article published in the field of mobile phone behavior, 1170 concern about mobile phone behavior in the special domain of medicine, 637 about mobile phone behavior in general rather than in a specific domain, 469 about mobile phone behavior in the special domain of education, 299 about mobile phone behavior in the special domain of social relationships, and 224 about mobile phone behavior in the special domain of business. Clearly, mobile phone behavior in medicine is the most productive area of research.

B is for Bias: From Rational Maximizer to Homo Heuristicus
Calin Valsan (2014). *International Journal of Applied Behavioral Economics (pp. 35-47).*
www.irma-international.org/article/b-is-for-bias/113838