The Impact of Gender/Sex on Innovation and Novel Technologies (iGIANT)

Gender and sex impact every aspect of our daily lives. "Gender" refers to a person's self-representation as male or female based upon social interactions and "sex is based upon an individual's genes. Understanding and using these definitions correctly has become more complicated by the enhanced knowledge of the influence of the environment on gene expression (epigenetics). Thus, sex and gender are sometimes used interchangeably.

While I was working as a Senior Policy Advisor for the White House Office of Science and Technology Policy (OSTP), I developed a concept to initially employ roundtables to explore the impact of gender/sex on innovation and novel technologies (iGIANT). During a roundtable, stakeholders with a gender/sex-specific product, program, policy or protocol share best practices and are encouraged to serve as "ambassadors for innovation". As ambassadors, stakeholders from government, industry, academia, professional societies and advocacy groups can further enhance awareness of the need for gender/sex-specific design elements for their own sector and others. Sectors include health, information technology (IT), transportation and retail.

Agencies and organizations, including the National Institutes of Health and NASA, have polices on the inclusion of gender and sex in research studies. Men and women can present with different disease symptoms, courses and responses to therapeutics. Understanding the impact of gender and sex on health can enhance precision medicine (https://www.whitehouse.gov/precision-medicine) as well as disease prevention and health promotion strategies.

The Office on Women's Health within the Department of Health and Human Services hosted the first health iGIANT roundtables on July 15/16, 2015 in Washington, DC. Over 30 organizations and agencies which have a gender/sex-specific design element related to health came together to discuss best practices as well as challenges and opportunities to advance the iGIANT. There was a robust discussion about the need for gender/sex-specific research policies, medical devices, pharmaceuticals, curricula, and even clinical practices.

Research has also shown that women and men interact with their environments differently. This is reflected in safety profile reports from the automobile industry. The American Journal of Public Health published a study in 2011 which showed that women were 47% more likely to suffer more severe injuries compared to men, even after adjusting for weight and height, in motor vehicle accidents. The differences in female neck strength and musculature, seating posture and head restraint position contributed to these findings. In October 2015, a transportation iGIANT roundtable, hosted by J and B Medical Supply in Detroit, will examine these issues from a scientific and an engineering perspective.

It is an exciting time to move from the research bench to the design of car seats, cockpits, computer keyboards, personal protective equipment, and even athletic gear. These are just a few examples where sex/gender can have an impact on ergonomics. For example, more apparel, sporting equipment and home repair tools are branded for use by women or men because of gender/sex-specific designs which improve function and not just appearance. Stanford University will host an IT iGIANT roundtable in September 2015 and the Laura W. Bush Institute/Texas Tech University will host a retail iGIANT roundtable in November 2015. Additional institutions have offered to host future iGIANT roundtables. Information from these sessions is available at https://genderedinnovations.stanford.edu.

A symposium with participants from the roundtables will convene at Stanford University in 2016. During this event, best practices from all the sectors will be highlighted to further advance the dissemination of knowledge and partnership formation. There will also be an announcement of iGIANT prizes for outstanding innovation to be awarded at the next symposium in 2017. The iGIANT roundtables, symposia and prizes will promote and accelerate the development of gender/sex-based design elements which may improve work efficiency and the safety and quality of life for men and women.

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