

## Positive Technology Supports Shift to Preventive, Integrative Health

Brenda K. Wiederhold, Ph.D., M.B.A., BCIA,<sup>1,2</sup> and Giuseppe Riva, Ph.D.<sup>3,4</sup>

**W**E FIND IT GRATIFYING TO SEE the movement of psychology from the disease focus of the last 100 years to a potentially new focus on well-being for the next 100 years. The positive psychology movement, and its positive technology counterpart proposed by us and our colleagues in this issue,<sup>1</sup> may have had its official birth in 1998,<sup>2</sup> but its roots date back at least to the concept of “healthy mindedness” at the beginning of the 20th century.<sup>3</sup>

Just as positive psychology can be defined as the scientific study of human functioning,<sup>4</sup> so can positive technology be defined as the scientific approach to using technology to improve the quality of our personal experience through its structuring, augmentation, and/or replacement. Examples of such technology include:

- *Using technology to foster positive emotions:* Physiological effects of temporarily detaching from a stressful situation and taking a moment to generate a feeling in the chest that all is well may be measured by heart rate variability using one of several affordable, portable monitors such as emWave.<sup>5</sup> To help people gain such temporary detachment and generate positive emotions, virtual reality environments (replacement) are available as smartphone applications (augmentation).

Technology-assisted reminiscence uses media created from familiar voices, family photos, and detailed patient histories to create happy moments in the lives of people with dementia (structuring and augmentation). “John had advanced dementia and was very withdrawn, which made it difficult to interact and connect with him. Researching his life, we discovered he played football for a Big Ten school in the 1940s. By showing him pictures of the school’s team and playing the school’s ‘fight song,’ John engaged in limited conversation and would sing part of the song. This made him happy, and it easier for others to relate to him.”<sup>6</sup>

- *Using technology to foster engagement and self-empowerment:* A recent evaluation of assistive technologies designed to enhance the quality of life and preserve independence for veterans returning from Iraq and Afghanistan identified eight technologies useful in assisting those with sensory, cognitive, and physical disabilities (augmentation and replacement). Among these were read-

ily available technologies such as the Wii for cognitive fitness.<sup>7</sup>

Researchers designed an anti-bullying virtual intervention called FEAR NOT to enhance the coping skills of victimized children or children at risk for victimization (structuring and replacement). In a randomized clinical trial of this intervention enrolling 1,029 nine-year-old children in the UK and Germany, the researchers found a dose-response between time spent in the virtual learning environment and ability to escape bullying. Subsample analysis found a significant effect for UK children.<sup>8</sup>

- *Using technology to promote social integration and connectedness:* A study of 391 college students published last year in this journal<sup>9</sup> suggests that the number of Facebook friends and positive self-presentation may enhance users’ subjective well-being. Furthermore, honest self-presentation may enhance happiness rooted in social support provided by Facebook friends (structuring).

An earlier study<sup>10</sup> showed that 1,715 Texas college students joined Facebook Groups to obtain information about on- and off-campus activities, socialize with friends, seek self-status, and find entertainment. An important social result was that active Facebook Group users were more likely to participate in offline civic and political activities.

Just as preventive and integrative medicine is growing as we apply these principles to prevent disease, so is positive psychology an essential complement to treatment of mental illness. As a way to foster positive emotions, positive technology has a bright future, regardless of whether, as some<sup>11,12</sup> predict, positive psychology is subsumed and integrated into psychology as a whole. “Positive emotions may help us adapt by broadening our response options and building psychological and social resources for the future. Newer theories of motivation view people as actively involved in seeking out intrinsically satisfying experiences and engaged in a process of continuous development centered on needs for competence, relatedness, autonomy, and hopeful expectations for the future.”<sup>13</sup> We are grateful for the opportunity to develop positive technology that helps people fulfill this vision.

<sup>1</sup>Virtual Reality Medical Institute, Brussels, Belgium.

<sup>2</sup>Virtual Reality Medical Center, San Diego, California.

<sup>3</sup>Applied Technology for Neuro-Psychology Lab.—ATN-P Lab., Istituto Auxologico Italiano, Milan, Italy.

<sup>4</sup>Interactive Communication and Ergonomics of NEW Technologies—ICE-NET Lab., Università Cattolica del Sacro Cuore, Milan, Italy.

## References

1. Riva G, Banos R, Botella C, et al. Positive technology: using interactive technologies to promote positive functioning. *Cyberpsychology, Behavior, & Social Networking* 2012; 2:69–77.
2. Seligman MEP. The president's address. *American Psychologist* 1999; 54:559–62.
3. James W. (1902) *The varieties of religious experience: a study in human nature*. New York: Longman, Green.
4. Linley PA, Joseph S, Harrington S, et al. Positive psychology: past, present, and (possible) future. *The Journal of Positive Psychology* 2006; 1:3–16.
5. McCraty RM. (2006) Emotional stress, positive emotions, and psychophysiological coherence. In Arnetz BB, Ekman R, eds. *Stress in health and disease*. Weinheim, Germany: Wiley-VCH.
6. Kerssens C, Zamer JP. (2011) Improving quality of life, behavior and function in individuals with dementia through technology-assisted reminiscence. Paper presented at CHI 2011, Vancouver, BC, Canada.
7. Muncert ES, Bickford SA, Guzic BL, et al. Enhancing the quality of life and preserving independence for target needs populations through integration of assistive technology devices. *Telemedicine & e-Health* 2011; 17:478–83.
8. Sapouna M, Wolke D, Vannini N, et al. Virtual learning intervention to reduce bullying victimization in primary school: a controlled trial. *Journal of Child Psychology & Psychiatry* 2010; 51:104–12.
9. Kim J, Lee J-ER. The Facebook paths to happiness: effects of the number of Facebook friends and self-presentation on subjective well-being. *Cyberpsychology, Behavior, & Social Networking* 2011; 14:359–64.
10. Park N, Kee KF, Valenzuela S. Being immersed in social networking environment: Facebook Groups, uses and gratifications, and social outcomes. *Cyberpsychology, Behavior, & Social Networking* 2009; 12:729–33.
11. Gable SL, Haidt J. What (and why) is positive psychology? *Review of General Psychology* 2005; 9:103–10.
12. Wood AM, Tarrrier N. Positive clinical psychology: a new vision and strategy for integrated research and practice. *Clinical Psychology Review* 2010; 30:819–29.
13. Compton WC. (2005) *Introduction to positive psychology*. Belmont, CA: Wadsworth (Thomson Learning).

*Brenda K. Wiederhold & Giuseppe Riva*

**This article has been cited by:**