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PRESENTER ABSTRACTS

ACADEMY OF NEUROSCIENCE FOR ARCHITECTURE

Using Visual Neuroscience and Perception to Design Daycare Centers in Belgium

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1. ABSTRACT

In the last decade, there has been renewed interest in the effects of the environment on mental health and well-being. In recent years, this interest has broadened from a focus on the external environment to include the internal environment of personal and community spaces. In a unique international collaboration between experts in visual neuroscience/perception, child development, and design, we are creating a set of visual interiors for child daycare centers in Belgium. Our designs are inspired by visual development data (including our own), showing that 1) the visual system of infants/children has a restricted range of visual sensitivities, responding best to patterns that are coarse and of high contrast, and 2) infants/children prefer to look at certain visual patterns, for example, those that are symmetrical, consist of primary colors, are textured, and contain social meaning (for example, faces). Our daycare designs are also inspired by a large body of work documenting which types of overhead lighting, colors, and visual patterns enhance mental well-being (for example, scenes from nature). Then, using industrial and product design methods, the scientific ideas are translated into practical and intuitive spaces. To test the effectiveness of these interior spaces, the well-being of infants/children will be tested before and after exposure to these spaces. Well-being will be assessed using the Vineland Adaptive Behavior Scale (VABS), a parent questionnaire that scores adaptive behaviors in infants/children (ages 6 months to 3 years), including daily living skills and socialization. For older children in the daycare center (ages 4 – 5 years), we are developing a questionnaire in which the children themselves can answer questions about aspects of their own well-being, such as their level of energy, happiness and confidence. This assessment is an adaptation of the standardized and validated Warwick-Ediburgh Mental Well-Being Scale used in adults. In addition to promoting engagement, well-being and visual development, these designs and their implementation in Belgium raise cultural awareness regarding the impacts of the environment, including community spaces, and facilitate interaction and integration between experts in the field of visual neuroscience, mental health, child development and design.

2. AUTHOR BIOS

Dr. Karen Dobkins got her PhD in Visual Neuroscience with Dr. Thomas Albright. For her thesis, she used neurophysiological methods in rhesus moneys to investigate how the primate visual system encodes different aspects of visual stimuli, including color and motion. Since obtaining her PhD in 1992, she has been conducting studies that elucidate neural mechanisms underlying visual development in infants and children, as well as the effects of visual experience on visual development. Most relevant to the current paper, in 2002, she led a team to design Tailored Visual Environments for the "MC Corporation" based in Tokyo, Japan.

Roy Verbakel: Born in Eindhoven, the Netherlands, Roy Verbakel obtained his degree as an industrial and product designer at Design Academy Eindhoven in 2012, well known as the spill of the Dutch Design movement and mentioned by the NY Times as the most important design school in the world. He started his design business in the Netherlands and now designs products and services in Antwerp, Belgium. Roy Verbakel's work combines principles from design and embodied cognition, inspired by the idea that "poetry moves and science evolves". His designs touch the relationship between a product and its user and the position of the user in its environment, highlighting the poetic meaning behind the primary function of design.

Dr. Gail Heyman is an expert in child development who is on the faculty at UC San Diego and at Zhejiang Normal University in China. She has investigated the roles of a wide range of environmental factors in shaping psychological outcomes among children in different cultures, including factors associated with academic success, moral reasoning, and positive relationships. She collaborated with Dr. Dobkins in designing Tailored Visual Environments for the "MC Corporation" based in Tokyo, Japan.