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BrightHearts - the development and evaluation of an application for training children in the use of biofeedback assisted relaxation for the management of pain and anxiety

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The BrightHearts app has been developed to teach children biofeedback assisted relaxation techniques (BART) to manage pain and anxiety in health care settings. This digital artwork which responds to changes in heart rate transmitted via a wireless pulse oximeter was developed through an interactive design process incorporating qualitative data from health professionals and children and prototype exhibitions in hospital waiting areas. The final iteration of the work used in the pilot trial comprised an iPad app used in conjunction with a custom-built bluetooth 4.0 wireless pulse oximeter, that measures and transmits inter-beat interval data that is then used to control the changes in the appearance and sound of the app. In contrast to object and/or character driven visuals used in many computer games and biofeedback displays, BrightHearts focuses the user's attention on the gradual changes in a 'mandala' like circular interface encouraging a more relaxed quality of engagement. Users can contract successive layers of overlapping circular shapes using gentle, sustained exhalations. The more relaxed they become, the slower their average heart rate and the more layers they can draw inwards toward the center of the screen. BrightHearts has been successfully piloted for the management of procedural pain and anxiety in children aged 7-18 years and for the management of pain and anxiety associated with vaccination in a school based vaccination programme for adolescents. BrightHearts is currently being evaluated in three reandomised controlled trials including a study evaluating the efficacy of BrightHearts for managing chronic pain in children with cerebral palsy.

Biography

Angie Morrow is a Specialist in Paediatric Rehabilitation. She completed her PhD in 2010 and is Head of the Brain Injury Service at the Children's Hospital at Westmead, Sydney, Australia. Her research interests include the role of applications in the delivery of paediatric health services and consumer engagement in the design and development of health interventions.

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