

# Origami as a PSS to make emotions tangible in benefit of human health and well-being. Focus on stress.

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## Abstract:

**1. Objective:** The main objective of the paper is to present the advancement in the current PhD research I am developing at Durham University within the Engineering school, currently in my second year. The aim of the research is to study the use of Origami to make human emotions more tangible using materials (products-objects) in benefit of human health and wellbeing. Focus on the identification and reduction of stress and the feelings associated with it. Well-being is the state in which a person's function of his somatic and psychological activities are good and beneficial. Emotional states such as stress, fear, happiness, anxiety, etc. are associated to specific biochemical processes and have a specific effect on the human body (Crabtree, n.d.).

When a person for any reason stays in, or changes an emotional state, the body undergoes a series of physiological changes that affects directly its health and wellbeing. So, to have an integral wellbeing one should be able to take on account all the elements that conform it, not only the material, but also the emotional part. The aim is to develop a sustainable project focused in promoting human health and wellbeing by proposing a Product Service System (PSS) that will be validated through a methodology that can be replicated and contribute to the overall knowledge of emotions in the engineering and design fields.

Origami will be tested with a specific scientific designed methodology that will be based in engineering and design that will unify aspects of neurofeedback and the biology of emotions. Also the benefits of the use of the hand will be included as supporting evidence on how Origami can be useful for stress identification, management, and reduction. Research showing the existence of nervous circuits that link movement, cognition, and function of the adrenal medulla to stress management may also be relevant in designing a solid testing methodology.

**2. Introduction to the project and the importance of emotions in human health and wellbeing:** Humans perceive and conceive the material things in relation to the experience they have from themselves with the world that surrounds them. Emotions are the ones that mold these experiences (Brun, 2007, pp. 1–3). But the fact that humans are in equal parts rational and emotional beings has been disregarded and neglected in past decades. It was not until the early 70's that because of the research inspired on Theory of Emotion by Tomkin, done by Carroll Izard and Paul Ekman, that the interest in the field of human emotions resurged (Campos, 1982, p. 1). Even though in the past 50 years more research has been done in this field, disciplines like Engineering and Design do not integrate fully human emotions as a key element in the solutions they propose. They consider only some aspects of emotions and information about the way they drive human action. And they apply this information to promote use, modify experience and increase sales, rather than contributing to the emotional wellbeing of people.

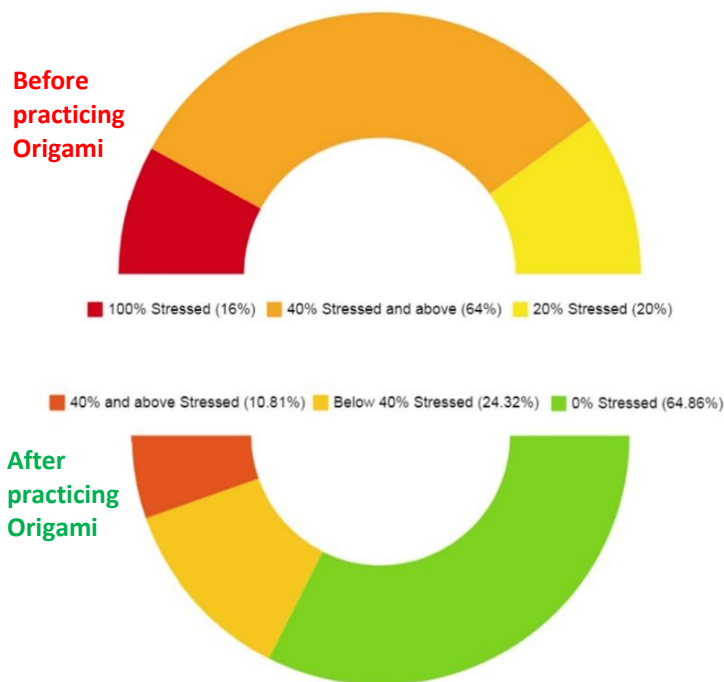
Feelings and emotions are associated to specific biochemical processes which have a direct impact in the health of people (Crabtree, n.d., pp. 2–3). Negative emotions associated with stress such as fear, and anxiety are the root cause of many pathologies such as dementias, depression, cardiovascular problems, diabetes, etc., (Shain, 2004). These negative emotions represent not only a problem for individuals but also for economies. So, **how can we make more tangible our emotions using materials (objects) to understand and manage them better in benefit of human health and wellbeing?**

**3. Origami as a tool to make emotions more tangible:** Origami besides an art, nowadays is an educational resource, a tool for a deeper understanding of geometry, creativity and innovation, but most of all, a tool for solving problems. In the past few years it has been used more and more in fields such as engineering, nanotechnology, medicine, micro robotics, mathematics and aerospace engineering and design. Many theoretical and concrete problems have been solved through the development of Origami models.

Furthermore, Origami as a therapeutic tool has been used for more than 20 years, mainly in the diagnosis and treatment of cognitive processes and abilities in children and adults (Cheng, 1995). In recent years Origami has proven to be one of the most effective activities in promoting a mindful state. Origami is a creative tool, it implies the use of the hands and improves the visuomotor coordination. The use of the hands improves fine psychomotricity which is necessary for the development of a lot of important cognitive processes such as spatial orientation and concentration amongst others. Origami improves concentration and attention of those who practice it. In a study made by the Gakken Institute of Japan it proved to generate more brain activity and brain blood flow than playing chess or puzzle making. Origami was intendedly tested against these activities which are the ones which promote more concentration and blood flow to the brain due to the cognitive functions they trigger and the use of the fingertips simultaneously (Ono, 2016).

**Mindfulness and its benefits:** Mindfulness or full attention promotes a relaxed and holistic mind over a stressed and anxious one. Mindfulness is recognized by the NHS (National Health Service in UK) as an effective treatment for stress, depression, anxiety and as a prevention treatment to promote mental well-being (Tsang, 2016). Lately there has been done many research towards activities that promote a mindful state such as drawing, solving puzzles, crafts, and activities that integrate creation with attention, but very little attention is paid to Origami as a mindful technique. Origami shows a big potential for preventing mental health problems and promoting well-being of those who practice it. Origami engages the practitioner in different levels, promoting a strong mindful state. Mindful tools help to break the vicious cycle of stressful and repetitive thoughts - which are one of the main causes of depression and anxiety – and with Origami it is possible to convert them into a rewarding and palpable outcome.

**3. First Experimentations:** In the past year, 2 Origami sessions and a survey to people who practices Origami were conducted to start assessing the effectiveness of this tool for stress identification and reduction. These sessions took place at Durham University, Newcastle University and at the British Origami Society spring convention. The results obtained showed that Origami has a great potential. Of the total 37 people who answered the stress assessment surveys in the 3 different events, at the beginning of the sessions 6 of them reported to be 100% stressed, 24 were 40% stressed and above, and 7 were 20% stressed. After practicing Origami 24 reported to be 0% stressed; 9 were below 40% stressed; and only 4 were 40% stressed or above.



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