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Abstract

Background
Using hybrid toys to deliver physical therapy is an innovative way to engage children in personalized healthcare, but we need to understand their needs in their digital-physical play experience to be able to effectively design these toys. In this explorative study we used a co-creation prototyping workshop to better understand our target group (children between 7 and 12 years old). The aims of this workshop were to understand what type of features children like in toys, which themes they are interested in, which type of play is engaging, and how they would use the technology. We asked the participants to reflect on what they like most about play, while building a prototype and discussing the rationale behind their actions.

Methodology
Ten children and seven observers (design students and professionals) participated in a co-creation workshop. The children were first asked to test three existing prototypes of hybrid toys (toys that have a physical and digital aspect) to sensitize them to the potential of building their own toys. A brainstorming session helped them choose a theme and during the prototyping session they were free to choose the material and tools that fitted their ideas. Three teams were formed, consisting of three or four children and two or three observers. The observers were in charge of facilitating and documenting the process without intervening in the ideation or conceptualization of the toy. Statements were written down by the observers based on the remarks by the children, and confirmed from video and audio recordings. The statements were transcribed and analyzed via concept mapping to categorize them and rank their importance. Finally, all children were asked to fill in a short questionnaire after the session to assess the quality of the workshop.

Results
All teams created one prototype. We gathered approximately seventy statements to map a list of requirements that can later be used when designing new hybrid toys. Results indicated that: children liked "horror" as a theme, all the prototypes had open play elements, the adoption of the technology was not challenging and the use of sounds and light was important. On this last aspect, one of the children pointed out that "it adds magic".

Conclusion
Prototyping along with the user is a process that triggers conversations about the needs and interests in the play experience of the user that otherwise might not occur.