Towards Lenses for Reviewing Playfulness in HCI

Nathalia Campreguer França
Salzburg University of Applied Sciences
University of Salzburg
Salzburg, Austria
nathalia.campreguerfranca@fh-salzburg.ac.at

Ferran Altarriba Bertran
Escola Universitària ERAM
Universitat de Girona
Salt, Catalonia
Gamification Group
Tampere University
Tampere, Finland
ferranaltarriba@gmail.com

Bernhard Maurer
Salzburg University of Applied Sciences
Salzburg, Austria
bernhard.maurer@fh-salzburg.ac.at

ABSTRACT

From playful design methods to artifacts that facilitate experiences of play, playfulness has been widely explored in HCI. However, this heterogeneous field of research lacks common ground – from a methodological, theoretical, as well as design perspective – which in turn creates problems that hinder related research outcomes. Towards common ground on playfulness, we propose these five lenses for reviewing, synthesizing, and critically engaging with literature: area of implementation, targeted audience, type of contribution, methodology, and motivation. To spark a discussion around the lenses, we probe them on a pilot review of CHI Play literature and discuss their relevance to future literature reviews that work towards making sense of the state of playfulness in HCI.

CCS CONCEPTS

• **Human-centered computing → HCI theory, concepts and models**.

KEYWORDS

lenses, playfulness, literature review

ACM Reference Format:
Nathalia Campreguer França, Ferran Altarriba Bertran, and Bernhard Maurer. 2024. Towards Lenses for Reviewing Playfulness in HCI. In *Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (CHI EA '24), May 11–16, 2024, Honolulu, HI, USA.* ACM, New York, NY, USA, 8 pages. https://doi.org/10.1145/3613905.3650888

1 INTRODUCTION

Research in Human-Computer Interaction (HCI) is known for its interdisciplinarity. Consequently, it is natural for its sub-areas of research to include myriad perspectives grounded theoretically or methodologically in different fields [35]. Playfulness is a prominent area of research in HCI that draws from, for example, education, social sciences, game studies, psychology, and others [14]. The relationship to these diverse areas of research forms the discourse that establishes playfulness as a growing research area in HCI.

Given the growing heterogeneity of HCI's engagement with play and playfulness, we argue that there is a need for common grounding in this space. What is the state of play in HCI? What methodologies, methods, and tools do researchers employ? Why do they design for play, and for whom? Those and many other questions need to be answered if we are to understand what (and how) we are doing as a play(ful) research community.

Recent works have reviewed specific layers of playful HCI design and research, such as social play [52, 60], active play [23], game research [14, 27, 39, 48], gamification research [45], playful human-food interaction [4, 7], and methods at CHI Play [1, 65]. However, we have not found a comprehensive review that looks at the field holistically and from multiple lenses. We see that as a limitation that hinders our and other researchers' capacity to make an impact: identifying from where and how studies on playfulness draw knowledge can help us understand what are the theoretical and methodological foundations in the field. Additionally, it will help us identify what are the positions developed within playfulness in HCI and how they relate to other disciplines. We also see great potential in articulating to whom playfulness researchers address their work and their motivation for designing playfulness.

Thus, we have an agenda of overcoming those limitations and contributing to establishing productive common grounds in playful HCI. To that end, here we propose five lenses for analysing the literature on playfulness in HCI: area of implementation, targeted audience, type of contribution, methodology, and motivation (see details in section 2). Building on these lenses, we reviewed a body of playfulness-related research published at CHI Play as a first step towards establishing a base to inspire future broader sense-making efforts in playful HCI. As a pilot review for an initial test of the lenses, we scoped our definition of playfulness as an *attitude* without the *activity* of play, which means that we excluded most game-related work from the corpus (more details in section 3). To be clear, the goal of this paper is not to provide an analysis of the literature itself; instead, we aim to probe our in-progress lenses of analysis, discuss them with the games and play community within CHI, and strengthen them so they can be implemented in future work (which should include a broader definition of playfulness). This late-breaking-work aims to facilitate a discussion around which lenses could be used to review literature centered on playfulness in HCI and how to best employ them. In the next sections, we unpack our approach to the literature review, present the preliminary findings from our pilot review, and discuss the implications of the lenses to future studies in the same area.

CHI EA '24, May 11–16, 2024, Honolulu, HI, USA

2 DEFINING LENSES FOR REVIEWING PLAYFULNESS IN HCI

In our work, we faced issues such as making sense of multiple definitions of playfulness, understanding the different motivations to use playfulness in HCI, and identifying the methodological underpinnings of published work. We referred to the literature for inspiration to approach our motivating concerns, leading to five lenses for reviewing playfulness in HCI. In the next paragraphs we will describe the meaning and related work to each lens.

2.1 Area of Implementation

The *area of implementation* lens inquires into where playfulness is implemented. That is, it looks at its sub-field of application, e.g. health, education, or human-food interaction. We draw inspiration from studies that, despite researching specific applications of playfulness, identified such sub-fields of implementation. For example, Altarriba Bertran and colleagues listed application domains in Human-Food Interaction (HFI) [3, 4, 7], O'Donnell et al. classified the literature on gamification into areas of research to evaluate the multidisciplinary quality of the field [45], and Carter et al. grouped CHI publications on games with normative benefits towards a specific area (e.g. health or education) [14]. In line with these studies, we used an open coding approach to allow unforeseen categories to emerge directly from the data.

2.2 Targeted Audience

This lens was inspired by recent work that discusses diversity in HCI research [16, 24, 28, 37, 46, 57, 58]. Understanding for whom we design playfulness is a first step towards reflecting on diversity in the field. The *targeted audience* lens uses an open coding approach to examine the intended receivers of the proposed playful intervention; that is, the end-users of an application or system. For studies that involved study participants (interviews, focus groups, workshops, etc.), we also took note of those, since, in some cases, they differed from targeted users.

2.3 Type of Contribution

The *type of contribution* lens looks at which type of contribution is provided by playful HCI publications, e.g. novel interaction modality, design implications, novel design method, etc. The categories are based on Wobbrock and and Kientz's seven research contribution types in HCI: empirical research, artifact, methodological, theoretical, dataset, survey, and opinion [68]. During the analysis, we observed that *empirical* contributions could be divided into two other categories, similar to the classification used at CHI 2016: "empirical study that tells us about how people use a system" or "empirical study that tells us about people" [68]. To understand if there is a difference in numbers between these two approaches, we divided the category *empirical* into *empirical - artifact* and *empirical - people*. Due to the attention given to the pitfalls and benefits of "implications for design" to research in HCI, we included it as an extra category [11, 22, 30, 35, 47]. In this lens, it is likely that one same publication presents multiple types of contribution. To address that, the lens allows for sorting into multiple categories.

2.4 Methodology

The *methodology* lens looks at how researchers use playfulness not only as an object of design but also as a way of enacting the design process itself. By methodology we mean any identifiable set of grounding theories, lenses, frameworks, collection of methods, or procedures for a design process or study. Our motivation to include a classification of methodologies resonates with existing efforts to review methodological approaches in the field (e.g. review the use of the Game Experience Questionnaire[39], methods to research game streaming [27], Statistical Significance Testing [65], and the transparency of measurement reporting [1]). These studies used pre-coded terms based on existing literature for their reviews. In contrast, we decided to use an open coding approach to uncover the diversity of sub-areas present in the sample, which would be limited otherwise.

2.5 Motivation

The *motivation* lens looks at the underlying reasons driving the implementation of play. It uses pre-defined terms for classification: hedonic, eudaimonic, and problem-oriented. The first two terms are based on Sharp and Thomas' distinction of the hedonic and eudaimonic roles of games [54]. *Hedonic* refers to playful experiences with no "additional forces or reasons beyond their enjoyment" [54]. In contrast to *hedonic*, *eudaimonic* experiences provide an extra outcome than the experience itself, they promote well-being. The *problem-oriented* category covers studies that provide a solution to a pre-defined problem, e.g., a tool to motivate people to exercise or a design that helps people reflect on sustainability.

3 APPROACH TOWARDS LENSES FOR REVIEWING PLAYFULNESS IN HCI

To test the efficiency of the lenses, we applied them in a pilot review of CHI Play proceedings. A pilot review means that the analysis performed here is not meant as a comprehensive literature review but rather as a stress-test of the lenses. In the next sections, we define our view on playfulness (which determined the scope of this pilot review), describe how we build the corpus, and explain how we analysed the data.

3.1 What do We Mean by Playfulness?

Although play and playfulness have been used interchangeably in the literature, we adhere to the definition of playfulness as a playful *attitude* - being fun, creative, social, engaging - without the actual *activity* of play [5, 6, 13, 56]. For example, telling jokes is a way to playfully engage with language, and asking Siri silly questions is a fun way to interact with the virtual assistant. Both examples do not have the activity of play as a goal but rather being social or having some fun by disrupting the use of technology. In that sense, playfulness can be present in the activity of play, for example, when kids get together in playgrounds or someone plays video games. However, here we can still make a distinction between playfulness as an *attitude* versus play as an *activity*. In this pilot review, we adhere to the use of playfulness as an *attitude*.

3.2 Database and Corpus

The body of research at CHI Play was chosen as a starting point for this pilot review, as it is a community that traditionally has been centered around games and play in HCI. Research at other conferences might also engage with playfulness, however, we decided not to include them to focus on probing our lenses within the scope of a pilot for a short paper. We searched proceedings from the establishment of the conference in 2014 until 2022. The ACM Digital Library was the database used to collect publications that fall into the area of playfulness as an *attitude*. To achieve this, we eliminated, for example, publications that explicitly focused on game mechanics or places specifically designed for play. Even though a few publications do implement games in their studies, the focus of their contribution (methods for playfulness) is still relevant to our area of interest. We stress the importance that future studies include a holistic view of playfulness by analyzing publications that focus both on playfulness as the *attitude* and as the *activity*. Nevertheless, in this pilot review we chose to work with a sample of publications to keep the analysis manageable and in accordance with our goal of testing the lenses. Our preliminary results help us reflect and iterate on the lenses, rather than provide a comprehensive overview of the literature.

The terms in the search query were snowballed from an unpublished scoping review on playfulness in HCI performed by the first author on the ACM Digital Library and Google Scholar [69]. This is not an exhaustive list but it serves the purpose of this pilot literature review. We used the following query to search the ACM Digital Library by publication title, filtering results by the proceeding series "CHI PLAY: Computer-Human Interaction in Play".

(playfulness OR play OR playthings OR "participatory play" OR playfication OR "playful experience design" OR "playful participatory practices" OR playable OR plex OR "playful experiences framework" OR "player-centered design" OR "player centered design") AND NOT game*

It returned 195 results on April 21, 2023.

3.3 Selection Criteria

The first author screened the corpus by title and abstract based on the criteria below. Borderline publications were skim-read in full and a decision was made accordingly. From 195 publications returned by the search at the ACM Digital Library, 109 were removed by title, 29 by abstract, and 20 after a full skim-read. Thirty seven publications remained for analysis.

Exclusion criteria:

- Focused only on game aspects: mechanics, players, application of games, or play in games;
- Focus on places specifically designed for play (e.g. playgrounds) and doesn't address playfulness directly;
- Session details, talks, doctoral consortium papers, workshop proposals, and interactivity session publications.

Inclusion criteria:

- Implements or researches playfulness as an *attitude* of play;
- New methods or evaluation of existing methods for measuring playfulness in the context of games, but that can be applied to other non-game-oriented scenarios.

3.4 Data Analysis Procedures

The 37 publications that remained from the selection were analyzed through an affinity diagram [29]. The initial labels were generated by reading each article and annotating their content in relation to the five lenses (area of implementation, methodology, type of contribution, targeted users, and motivation). Since we started our analysis from the perspective of the five lenses, the top-most level categories referred to them. Considering our data comes from categorizing the content of research articles, we slightly adapted the affinity diagram recommendations to fit our data format (e.g., the annotations are not written in the first person). The first author performed the first round of analysis. The initial diagram was then presented to the other authors, who discussed and iterated the categories one more time. The authors used the online tool Miro [1] to categorize the annotations digitally.

4 PRELIMINARY RESULTS: REFLECTING ON THE LENSES FOR REVIEWING PLAYFULNESS IN HCI

The main contribution of this paper is to establish and reflect on a set of lenses to review playfulness in HCI literature. These lenses can be applied in future work to synthesize the literature on playfulness in HCI, working towards establishing a productive common ground in this area of research. Furthermore, we invite the research community to engage with the findings discussed below to move towards a more conscious, reflexive field of research.

4.1 Area of Implementation

This lens highlights the multidisciplinary character of research on playfulness. Playfulness has been implemented in diverse areas such as *player and user experience* (N=6) [10, 12, 20, 21, 25, 62], *education* (N=7) [8, 15, 19, 32, 52, 55, 70], *entertainment* (N=8) [2, 9, 33, 36, 40, 42, 51, 63], *health and well-being* (N=7) [26, 31, 38, 44, 50, 61, 64], and *human-food interaction* (N=9) [7, 17, 18, 34, 41, 43, 59, 66, 67]. Consequently, studies tend to draw concepts and methodologies from these respective areas. In the pilot review, the lens performed as expected: highlighting the sub-fields of research on playfulness. However, we observed that publications within different sub-fields performed differently from each other when compared across the other lenses. For example, studies on health described their targeted audience in more detail than the ones in human-food interaction. It would be beneficial for future studies to provide an additional comparative analysis of the sub-fields. This alternative organization of the findings can showcase how sub-areas of research perform in comparison to each other, stressing opportunities for collaboration.

4.2 Targeted Audience

We could not identify the target audience in 14 papers [2, 8, 19, 32–34, 36, 41, 42, 50, 51, 59, 66, 67]. Papers that had a contribution such as testing a method, discussing a new concept, or literature reviews and did not discuss a specific audience were classified under *research* (N=9) [7, 9, 12, 21, 25, 40, 43, 44, 62]. We considered that they explicitly establish a conversation with the research community, which, as a result, is their main target. The remaining papers target

[1] https://miro.com/app/board/uXjVM-m5hx4=/?share_link_id=359040768611

the audiences: *children* (N=8) [15, 18, 20, 31, 38, 52, 55, 70], *visitors of social or cultural events* (N=3) [40, 61, 63], and *people with a health condition* (N=3) [10, 26, 64].

Even for the publications that explicitly described the group of users or participants they engage with, we noticed a lack of reflection on the implications of designing for these communities or even how their characteristics (physical, social, economic, etc.) influenced the proposed work. Here we see connections to Spiel's [58] provocations for embodied interaction, which is very relevant to be investigated in the context of play research. They provide a collection of points for reflection that researchers should engage in their work to *"[...] rattle and challenge our complicity with dominant power structures and as a starting point towards dismantling the oppressive norms implicitly and explicitly guiding our designs."* [58, p. 10] Himmelsbach et al. [28] also noted that simply understanding the user group of a project is a step that might lead to more diversity-awareness in the first place. Such reflections would make the work around playfulness more conscious of current discussions in the broader HCI community regarding representation and inclusion.

4.3 Type of Contribution

Empirical research - people (N=7): [19, 26, 31, 38, 55, 63, 64], *empirical research - artifact* (N=6): [10, 32, 33, 41, 50, 59, 67], and *artifact* (N=13): [19, 31, 40–43, 50, 55, 59, 66, 67] were the most prominent types of contribution. Our analysis didn't find publications that contribute a *dataset* (N=0). About one third of the publications provide a set of *implications for design* (N=10): [19, 31, 40–43, 50, 55, 59, 66, 67]. In all cases, the *implications for design* followed a main contribution, e.g., *artifact*, *opinion*, *empirical - artifact*, or *empirical - people*. The use of *implications for design* in our sample agrees with Reeves' argument that they are "an attempt to meet others at the interface of disciplines" [47]. Yet, we believe that this category should be better investigated in an in-depth and more comprehensive study. The contribution types *theoretical* (N=1) [52], *methodological* (N=5) [12, 18, 21, 25, 62], *survey* (N=2) [7, 52], and *opinion* (N=3) [17, 43, 44] were less prominent.

Based on these findings, we are confident in saying that CHI Play needs more theoretical and survey contributions on playfulness as an *attitude*. Nevertheless, it is pressing that future studies review and compare all applications of playfulness (as an *attitude* and as an *activity*). This lens can also highlight possible imbalances in types of contribution published in different conferences and journals. For example, it can help identifying if theoretical or methodological contributions for playfulness are published in other conferences or even other fields of research (in contrast to CHI and CHI Play, or the field of HCI). It would be interesting to engage with similar questions to the ones made by Carter et al. [14, p. 35]: *"Is CHI, as its name suggests, a 'parent' conference for CHI Play? And if so, what kind of parent is it? Is CHI Play for research marginalized from mainstream HCI that does not sufficiently reflect the 'values' of HCI (or at least, CHI reviewers)? Is the purpose of CHI Play to legitimate the discipline of PCI as a subset of HCI, or as an independent field of work in a similar fashion to CSCW?"* As a step towards a common ground for playfulness in HCI, we side with Seaborn and colleagues' manifesto for research synthesis in HCI [49, 53]. Particularly her argument for game user research at CHI Play is valid for playfulness: research synthesis will validate the field of study and enrich primary research; it will add to both primary and secondary research; and the community should adopt established tools and protocols [53].

4.4 Methodology

Table 1 illustrates the diversity of methodologies we identified. During the analysis, the lack of detailed descriptions for methodologies was very prominent. This led the authors to perform a second step in the analysis to understand if there was a correlation to the publications' format (work-in-progress/spotlight track, short paper, or full paper). We expected that, in some cases, work-in-progress (WIP) publications would not provide a robust description of their methodology due to the in-progress state of the work and the restricted number of pages. However, in our findings WIPs and full papers performed similarly in relation to their methodology – meaning that several full papers missed aspects in that area. Table 2 provides an overview of the publications divided by the type of publication and how in-depth the methodology is described. We kept the categories *study procedure* (N=12) and *not identified* (N=3) from the previous step and re-organized the remaining publications into *no dedicated section* (N=11) and *fully described* (N=11). For publications in the *no dedicated section* category, we identified their approach from theories, concepts, or methods mentioned in the introduction, related work, or discussion sections. For example, [67] describes its design process where they were inspired by the dimensions of the Playful Experience Framework (PLEX). In that case, the PLEX framework was noted as their methodology, even though the authors didn't explicitly state it.

Our results stress the need for dedicated literature reviews that analyse the types of methodologies used in the context of playfulness in HCI. Such in-depth analysis can identify the plurality of approaches in the field and help researchers build a common language for reporting methodologies. We also want to emphasize that the results presented here would benefit from a cross-comparison with other lenses. For example, we did not account for the fact that some of the publications where no methodology was identified are opinion papers, which can mislead into thinking that they lack methodological rigor. The publications' metadata should be considered by future studies implementing the lenses proposed here. Additionally, we suggest including an overview of the results of the lenses altogether to provide a means of comparison. We leave a few questions for future work that could not be answered in the scope of our preliminary analysis: do different types of contributions require different levels of methodological reflection? Are study procedures strong enough methodological grounding? Is there a lack of theoretical positioning?

4.5 Motivation

The most interesting finding of this lens is not how many papers are in each category but rather how difficult it was to define their motivation. Most publications did not explicitly discuss their motivation to use playfulness. The publications were classified as *eudaimonic* (N=7): [7, 8, 18, 20, 34, 38, 52]; *hedonist* (N=13): [17, 32, 33, 36, 40–44, 51, 63, 66, 67]; and *problem-oriented* (N=17): [2, 9, 10, 12, 15, 19, 21, 25, 26, 31, 50, 55, 59, 61, 62, 64, 70].

Table 1: Identified methodologies and respective sources.

Methodology	publications
Co-Design	[61]
MDA Framework	[62]
Card-Based Design	[9]
ICAP Learning Framework	[8]
Soma Design	[42]
Means-end Theory	[62]
Embodied Interaction	[44]
Mathematical Play Framework	[55]
Three Phase Model of Open-Ended Play	[20]
Embodied Cognition	[55]
Otherworld Framework	[2]
Focused Climate Approaches	[25]
Playfication	[38]
Social Play Theory	[52]
Situated Play Design	[18, 38]
Helfferich's Method of Qualitative Analysis	[64]
Hexad Framework	[63]
Improvisation Game	[40]
Endogenous and Integrated Fantasy Design	[70]
echnology-mediated Audience Participation (TMAP)	[33]
Intrinsic Motivation Inventory	[70]
Systematic Literature Review	[7]
Player Identification Inventory	[70]
Describes the Study Procedure	[15, 19, 21, 26, 31, 32, 36, 41, 50, 51, 59]
PLEX Framework	[10, 12, 66, 67]
No Methodology Identified	[17, 34, 43]

Table 2: Number of publications divided by type and how in-depth their methodology is described.

How in-depth is the methodology described?	Work-in-Progress and Spotlight Track	Short Papers	Full Papers
Not identified	[17, 43]	-	[34]
Study procedure	[15, 26, 36, 50, 51]	[21]	[7, 19, 31, 32, 41, 59]
No dedicated section	[8, 18, 20, 33, 38, 40, 44, 63, 66]	[70]	[67]
Fully described	[10, 25, 42, 61, 62]	[2, 9, 55, 64]	[12, 52]

We encourage future reviews of the literature to reflect on studies' motivation for using playfulness by critically analyzing the content of the publications (e.g., using content analysis in addition to categorization methods). Such analysis could provide examples from the literature and propose a framework to help authors clearly describe their motivations for researching playfulness. Reflecting on motivation has an impact on making sense of the multitude of approaches in HCI by relating studies' use of playfulness to their methodology (which often comes from a field outside of HCI, e.g., education, health, etc.). Moreover, it would contribute to an interesting debate around the meaning of playfulness, particularly in relation to its distinction from playfulness as the *activity*. We believe that the lack of reflection on the motivation to use playfulness is partially related to the fact that the concept of playfulness itself is very plural, with multiple interpretations across the literature. In relation to the use of playfulness, we could also not easily identify where in the design process playfulness was used. For example, if it was used in the process of designing (e.g., playful ideation methods), if it was the object of study (e.g., observing play), or if it was a goal of the final design (e.g., creating an artifact that invites play or a playful experience). For future work, an extra category could be used to prompt: where is playfulness implemented in the design process? Which elements of the design elicit playfulness and how?

5 FUTURE WORK AND CONCLUSION

We invite other researchers to discuss, expand, and question the reflections shared here, as we plan to continue this work in the future by incorporating critical and diverse views from the community. We see a great opportunity to investigate how the many WIPs evaluated in this pilot review follow up their discussions, since these publications alone give only a partial view of the studies. We are also intrigued about how results would differ if the five lenses we

proposed were applied to other conferences, such as DIS, TEI, IDC, or CHI. Furthermore, future studies should consider looking into SIGs and workshops, since those can offer an overview of which communities exist and how they evolve throughout the years. We also encourage future work to provide a cross comparison between the lenses, opposed to investigating them individually. Although both approaches offer benefits, we understood that the lenses complement each other to highlight the many correlations between different aspects of playfulness. More importantly, there is the opportunity to map out related concepts, theories, methodologies, and methods to enrich the understanding of playfulness in play studies. Other studies should also consider including game-related publications, since those also deal with the topic of playfulness. This can help us make a parallel between the scope of research on playfulness in games and outside that context. Apart from the focus on reviewing the literature on playfulness, we see a lot of opportunity to strengthen the framework proposed here. Our goal is to open a conversation to critically analyze and iterate the lenses. This can be done by proposing new directions to the content of the lenses and engaging the community by, for example, interviewing playfulness researchers to enhance the credibility of the framework. By sharing these initial considerations, we hope to spark ideas for work that investigates and discusses these issues in-depth to contribute to a more conscious, value-driven, and reflexive approach to playful HCI. The lenses proofed to work for us in unveiling the aspects in the literature discussed. Further, this shows what they can offer as a tool for reviewing existing research in the field and positioning one's own work, ultimately contributing to common ground in regards to using the term playfulness.

ACKNOWLEDGMENTS

We would like to thank Alina Itzlinger, Jeanette Falk, Mascha Beuthel, and Eleni Economidou for their valuable feedback on previous iterations of this paper. We also thank the anonymous reviewers for their comments and contribution with ideas for future work.

This research was funded in part by the Austrian Science Fund (FWF) DFH 12-N. For open access purposes, the author has applied a CC BY public copyright license to any author accepted manuscript version arising from this submission.

REFERENCES

[1] Lena Fanya Aeschbach, Sebastian A.C. Perrig, Lorena Weder, Klaus Opwis, and Florian Brühlmann. 2021. Transparency in Measurement Reporting: A Systematic Literature Review of CHI PLAY. *Proceedings of the ACM on Human-Computer Interaction* 5, CHI PLAY (Oct. 2021), 233:1–233:21. https://doi.org/10.1145/3474660

[2] Ferran Altarriba Bertran, Ahmet Börütecene, Oguz 'Oz' Buruk, Mattia Thibault, and Katherine Isbister. 2020. MESMER: Towards a Playful Tangible Tool for Non-Verbal Multi-Stakeholder Conversations. In *Extended Abstracts of the 2020 Annual Symposium on Computer-Human Interaction in Play* (Virtual Event, Canada) *(CHI PLAY '20)*. Association for Computing Machinery, New York, NY, USA, 168–172. https://doi.org/10.1145/3383668.3419872

[3] Ferran Altarriba Bertran, Samvid Jhaveri, Rosa Lutz, Katherine Isbister, and Danielle Wilde. 2018. Visualising the Landscape of Human-Food Interaction Research. In *Proceedings of the 2018 ACM Conference Companion Publication on Designing Interactive Systems*. ACM, Hong Kong China, 243–248. https://doi.org/10.1145/3197391.3205443

[4] Ferran Altarriba Bertran, Samvid Jhaveri, Rosa Lutz, Katherine Isbister, and Danielle Wilde. 2019. Making Sense of Human-Food Interaction. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. Association for Computing Machinery, New York, NY, USA, 1–13. https://doi.org/10.1145/3290605.3300908

[5] Ferran Altarriba Bertran, Elena Márquez Segura, Jared Duval, and Katherine Isbister. 2019. Designing for Play that Permeates Everyday Life: Towards New Methods for Situated Play Design. In *Proceedings of the Halfway to the Future Symposium 2019*. ACM, Nottingham United Kingdom, 1–4. https://doi.org/10.1145/3363384.3363400

[6] Ferran Altarriba Bertran, Elena Márquez Segura, and Katherine Isbister. 2020. Technology for Situated and Emergent Play: A Bridging Concept and Design Agenda. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)*. Association for Computing Machinery, New York, NY, USA, 1–14. https://doi.org/10.1145/3313831.3376859

[7] Ferran Altarriba Bertran, Danielle Wilde, Ernő Berezvay, and Katherine Isbister. 2019. Playful Human-Food Interaction Research: State of the Art and Future Directions. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY '19)*. Association for Computing Machinery, New York, NY, USA, 225–237. https://doi.org/10.1145/3311350.3347155

[8] Zhiyu Bai, Boyi Liu, and Kevin Lee. 2019. Piggy Banksy: A Transformational Playground for Social Change Through Playful Co-Creation. In *Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Barcelona, Spain) *(CHI PLAY '19 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 349–356. https://doi.org/10.1145/3341215.3356254

[9] Tilde Bekker, Linda de Valk, Pepijn Rijnbout, Mark de Graaf, Ben Schouten, and Berry Eggen. 2015. Investigating Perspectives on Play: The Lenses of Play Tool. In *Proceedings of the 2015 Annual Symposium on Computer-Human Interaction in Play* (London,United Kingdom) *(CHI PLAY '15)*. Association for Computing Machinery, New York, NY, USA, 469–474. https://doi.org/10.1145/2793107.2810328

[10] Andreas Bischof, Kevin Lefeuvre, Albrecht Kurze, Michael Storz, Sören Totzauer, and Arne Berger. 2016. Exploring the Playfulness of Tools for Co-Designing Smart Connected Devices: A Case Study with Blind and Visually Impaired Students. In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Austin, Texas, USA) *(CHI PLAY Companion '16)*. Association for Computing Machinery, New York, NY, USA, 93–99. https://doi.org/10.1145/2968120.2987728

[11] Alan F. Blackwell. 2015. Filling the big hole in HCI research. *Interactions* 22, 6 (Oct. 2015), 37–41. https://doi.org/10.1145/2830317

[12] Marion Boberg, Evangelos Karapanos, Jussi Holopainen, and Andrés Lucero. 2015. PLEXQ: Towards a Playful Experiences Questionnaire. In *Proceedings of the 2015 Annual Symposium on Computer-Human Interaction in Play* (London,United Kingdom) *(CHI PLAY '15)*. Association for Computing Machinery, New York, NY, USA, 381–391. https://doi.org/10.1145/2793107.2793124

[13] Ian Bogost. 2016. *Play Anything: The Pleasure of Limits, the Uses of Boredom, and the Secret of Games*. Basic Books, New York.

[14] Marcus Carter, John Downs, Bjorn Nansen, Mitchell Harrop, and Martin Gibbs. 2014. Paradigms of games research in HCI: a review of 10 years of research at CHI. In *Proceedings of the first ACM SIGCHI annual symposium on Computer-human interaction in play (CHI PLAY '14)*. Association for Computing Machinery, New York, NY, USA, 27–36. https://doi.org/10.1145/2658537.2658708

[15] Shengyen Tony Chen, David Borland, Marc Russo, Ryan Grady, and James Minogue. 2014. ASPECT sinking and floating: an interactive playable simulation for teaching buoyancy concepts. In *Proceedings of the First ACM SIGCHI Annual Symposium on Computer-Human Interaction in Play* (Toronto, Ontario, Canada) *(CHI PLAY '14)*. Association for Computing Machinery, New York, NY, USA, 327–330. https://doi.org/10.1145/2658537.2662978

[16] Yiqun T. Chen, Angela D. R. Smith, Katharina Reinecke, and Alexandra To. 2023. Why, when, and from whom: considerations for collecting and reporting race and ethnicity data in HCI. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (Hamburg,Germany) *(CHI '23)*. Association for Computing Machinery, New York, NY, USA, Article 395, 15 pages. https://doi.org/10.1145/3544548.3581122

[17] Yoram Chisik, Patricia Pons, and Javier Jaen. 2018. Gastronomy Meets Ludology: Towards a Definition of What It Means to Play with Your (Digital) Food. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Melbourne, VIC, Australia) *(CHI PLAY '18 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 155–168. https://doi.org/10.1145/3270316.3272056

[18] Yoram Chisik, Marie-Monique Schaper, Ferran Altarriba Bertran, Ruxandra Lupu, Laetitia Barbu, Laia Turmo Vidal, Erik Nilsen, Saumya Gupta, and Cristina Valero. 2021. Through the Zoom Glass: Drawing Design Inspiration from Mediated Playful Interactions with Food and Child Personas. In *Extended Abstracts of the 2021 Annual Symposium on Computer-Human Interaction in Play* (Virtual Event,Austria) *(CHI PLAY '21)*. Association for Computing Machinery, New York, NY, USA, 294–300. https://doi.org/10.1145/3450337.3483452

[19] Amy Shannon Cook, Steven P. Dow, and Jessica Hammer. 2017. Towards Designing Technology for Classroom Role-Play. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (Amsterdam, The Netherlands) *(CHI PLAY '17)*. Association for Computing Machinery, New York, NY, USA, 241–251. https://doi.org/10.1145/3116595.3116632

[20] Ciera Crowell, Joan Mora-Guiard, and Narcis Pares. 2018. The Role of Context in Defining Play. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Melbourne, VIC, Australia) *(CHI PLAY '18 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 407–413. https://doi.org/10.1145/3270316.3271538

[21] Alena Denisova, A. Imran Nordin, and Paul Cairns. 2016. The Convergence of Player Experience Questionnaires. In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play* (Austin, Texas, USA) *(CHI PLAY '16)*. Association for Computing Machinery, New York, NY, USA, 33–37. https://doi.org/10.1145/2967934.2968095

[22] Paul Dourish. 2006. Implications for design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '06)*. Association for Computing Machinery, New York, NY, USA, 541–550. https://doi.org/10.1145/1124772.1124855

[23] Nicole E M Vickery, Yuehao Wang, Dannielle Tarlinton, Alethea Blackler, Bernd Ploderer, Peta Wyeth, and Linda Knight. 2022. Embodied Interaction Design for Active Play with Young Children: A Scoping Review. In *Proceedings of the 33rd Australian Conference on Human-Computer Interaction (OzCHI '21)*. Association for Computing Machinery, New York, NY, USA, 293–306. https://doi.org/10.1145/3520495.3522701

[24] Jeanette Falk, Moritz Kubesch, Anna Blumenkranz, and Christopher Frauenberger. 2023. Three Design Directions for a Diversity Computing Design Space. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (Hamburg,Germany) *(CHI '23)*. Association for Computing Machinery, New York, NY, USA, Article 89, 16 pages. https://doi.org/10.1145/3544548.3581155

[25] Cornelia Gerdenitsch, Daniela Wurhofer, Pascal Klöckner, Simone Kriglstein, and Manfred Tscheligi. 2019. Organisational Climate Fostering Playfulness: Introducing the Gamification Climate Scale. In *Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Barcelona, Spain) *(CHI PLAY '19 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 413–420. https://doi.org/10.1145/3341215.3356292

[26] Kathrin Gerling, Kieran Hicks, Laura Buttrick, Chris Headleand, Ben Williams, Jason Hall, Kymeng Tang, Luc Geurts, and Wei Chen. 2018. Potential and Limitations of Playful Technology to Support Infant Feeding. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts (CHI PLAY '18 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 431–437. https://doi.org/10.1145/3270316.3271519 7 citations (Crossref) [2023-05-15] event-place: Melbourne, VIC, Australia.

[27] Erik Harpstead, Juan Sebastian Rios, Joseph Seering, and Jessica Hammer. 2019. Toward a Twitch Research Toolkit: A Systematic Review of Approaches to Research on Game Streaming. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY '19)*. Association for Computing Machinery, New York, NY, USA, 111–119. https://doi.org/10.1145/3311350.3347149

[28] Julia Himmelsbach, Stephanie Schwarz, Cornelia Gerdenitsch, Beatrix Wais-Zechmann, Jan Bobeth, and Manfred Tscheligi. 2019. Do We Care About Diversity in Human Computer Interaction: A Comprehensive Content Analysis on Diversity Dimensions in Research. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. ACM, Glasgow Scotland Uk, 1–16. https://doi.org/10.1145/3290605.3300720

[29] K. Holtzblatt, J.B. Wendell, and S. Wood. 2005. *Rapid Contextual Design: A How-to Guide to Key Techniques for User-Centered Design*. Elsevier Science, San Francisco, CA, USA.

[30] Kasper Hornbæk. 2015. We must be more wrong in HCI research. *Interactions* 22, 6 (Oct. 2015), 20–21. https://doi.org/10.1145/2833093

[31] Ruth Sancho Huerga, Jennifer Lade, and Florian Mueller. 2016. Designing Play to Support Hospitalized Children. In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play* (Austin, Texas, USA) *(CHI PLAY '16)*. Association for Computing Machinery, New York, NY, USA, 401–412. https://doi.org/10.1145/2967934.2968106

[32] Charlene Jennett, Ioanna Iacovides, Anna L. Cox, Anastasia Vikhanova, Emily Weigold, Layla Mostaghimi, Geraint Jones, James Jenkins, Sarah Gallacher, and Yvonne Rogers. 2016. Squeezy Green Balls: Promoting Environmental Awareness through Playful Interactions. In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play* (Austin, Texas, USA) *(CHI PLAY '16)*. Association for Computing Machinery, New York, NY, USA, 389–400. https://doi.org/10.1145/2967934.2968102

[33] Fares Kayali, Oliver Hödl, Geraldine Fitzpatrick, Peter Purgathofer, Alexander Filipp, Ruth Mateus-Berr, Ulrich Kühn, Thomas Wagensommerer, Johannes Kretz, and Susanne Kirchmayr. 2017. Playful Technology-Mediated Audience Participation in a Live Music Event. In *Extended Abstracts Publication of the Annual Symposium on Computer-Human Interaction in Play* (Amsterdam,The Netherlands) *(CHI PLAY '17 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 437–443. https://doi.org/10.1145/3130859.3131293

[34] Michinari Kono, Osamu Kabashima, Norio Sasaki, and Junichi Yamaoka. 2020. Pre-Eating Play: Fabrication Experiences for Playful Human-Food Interaction. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (Virtual Event, Canada) *(CHI PLAY '20)*. Association for Computing Machinery, New York, NY, USA, 160–168. https://doi.org/10.1145/3410404.3414228

[35] Vassilis Kostakos. 2015. The big hole in HCI research. *interactions* 22, 2 (2015), 48–51.

[36] Zhuying Li, Jacob Sheahan, Yan Wang, Stefan Greuter, and Florian 'Floyd' Mueller. 2019. InsideOut: Playing with Real-Time Video Images of the Gastrointestinal Tract via Imaging Capsules. In *Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Barcelona, Spain) *(CHI PLAY '19 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 501–509. https://doi.org/10.1145/3341215.3356291

[37] Sebastian Linxen, Christian Sturm, Florian Brühlmann, Vincent Cassau, Klaus Opwis, and Katharina Reinecke. 2021. How WEIRD is CHI?. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (Yokohama,Japan) *(CHI '21)*. Association for Computing Machinery, New York, NY, USA, Article 143, 14 pages. https://doi.org/10.1145/3411764.3445488

[38] Elena Márquez Segura, Annika Waern, Luis Parrilla Bel, and Laia Turmo Vidal. 2019. Super Trouper: The Playful Potential of Interactive Circus Training. In *Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Barcelona, Spain) *(CHI PLAY '19 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 511–518. https://doi.org/10.1145/3341215.3356282

[39] Alistair McLean and Robert Jarvis. 2018. Electric Sheep: Designing Improvised Musical Play. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Melbourne, VIC, Australia) *(CHI PLAY '18 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 247–256. https://doi.org/10.1145/3270316.3272057

[40] Alistair McLean and Robert Jarvis. 2018. Electric Sheep: Designing Improvised Musical Play. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Melbourne, VIC, Australia) *(CHI PLAY '18 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 247–256. https://doi.org/10.1145/3270316.3272057

[41] Yash Dhanpal Mehta, Rohit Ashok Khot, Rakesh Patibanda, and Florian 'Floyd' Mueller. 2018. Arm-A-Dine: Towards Understanding the Design of Playful Embodied Eating Experiences. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play* (Melbourne, VIC, Australia) *(CHI PLAY '18)*. Association for Computing Machinery, New York, NY, USA, 299–313. https://doi.org/10.1145/3242671.3242710

[42] Maria F. Montoya, Rakesh Patibanda, Christal Clashing, Sarah Jane Pell, and Florian 'Floyd' Mueller. 2022. Towards an Initial Understanding of the Design of Playful Water Experiences Through Flotation. In *Extended Abstracts of the 2022 Annual Symposium on Computer-Human Interaction in Play* (Bremen, Germany) *(CHI PLAY '22)*. Association for Computing Machinery, New York, NY, USA, 120–126. https://doi.org/10.1145/3505270.3558324

[43] Florian 'Floyd' Mueller, Tuomas Kari, Rohit Khot, Zhuying Li, Yan Wang, Yash Mehta, and Peter Arnold. 2018. Towards Experiencing Eating as a Form of Play. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Melbourne, VIC, Australia) *(CHI PLAY '18 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 559–567. https://doi.org/10.1145/3270316.3271528

[44] Florian 'Floyd' Mueller, Zhuying Li, Tuomas Kari, Yan Wang, and Yash Mehta. 2018. Towards a Coming Together of Transhumanism and Play. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Melbourne, VIC, Australia) *(CHI PLAY '18 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 549–557. https://doi.org/10.1145/3270316.3271527

[45] Nicholas O'Donnell, Dennis L. Kappen, Zachary Fitz-Walter, Sebastian Deterding, Lennart E. Nacke, and Daniel Johnson. 2017. How Multidisciplinary is Gamification Research?: Results from a Scoping Review. In *Extended Abstracts Publication of the Annual Symposium on Computer-Human Interaction in Play*. ACM, Amsterdam The Netherlands, 445–452. https://doi.org/10.1145/3130859.3131412

[46] Yolanda A. Rankin and India Irish. 2020. A Seat at the Table: Black Feminist Thought as a Critical Framework for Inclusive Game Design. *Proc. ACM Hum.-Comput. Interact.* 4, CSCW2, Article 117 (oct 2020), 26 pages. https://doi.org/10.1145/3415188

[47] Stuart Reeves. 2015. Locating the 'big hole' in HCI research. *Interactions* 22, 4 (June 2015), 53–56. https://doi.org/10.1145/2785986

[48] Raquel Robinson, Katelyn Wiley, Amir Rezaeivahdati, Madison Klarkowski, and Regan L. Mandryk. 2020. "Let's Get Physiological, Physiological!": A Systematic Review of Affective Gaming. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY '20)*. Association for Computing Machinery, New York, NY, USA, 132–147. https://doi.org/10.1145/3410404.3414227

[49] Katja Rogers and Katie Seaborn. 2023. The Systematic Review-lution: A Manifesto to Promote Rigour and Inclusivity in Research Synthesis. In *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems* (Hamburg,Germany) *(CHI EA '23)*. Association for Computing Machinery, New York, NY, USA, Article 424, 11 pages. https://doi.org/10.1145/3544549.3582733

[50] Morva Saaty, Derek Haqq, Devin B Toms, Ibrahim Eltahir, and D. Scott McCrickard. 2021. A Study on PokéMon GO: Exploring the Potential of Location-Based Mobile Exergames in Connecting Players with Nature. In *Extended Abstracts of the 2021 Annual Symposium on Computer-Human Interaction in Play* (Virtual Event, Austria) *(CHI PLAY '21)*. Association for Computing Machinery, New York, NY, USA, 128–132. https://doi.org/10.1145/3450337.3483481

[51] Betty Sargeant, Justin Dwyer, and Florian 'Floyd' Mueller. 2018. The Storytelling Machine: A Playful Participatory Automated System Featuring Crowd-Sourced Story Content. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Melbourne, VIC, Australia) *(CHI PLAY '18 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 285–294. https://doi.org/10.1145/3270316.3272052

[52] Laura Scheepmaker, Christopher Frauenberger, and Katta Spiel. 2018. The Things We Play with Roles of Technology in Social Play. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play* (Melbourne, VIC, Australia) *(CHI PLAY '18)*. Association for Computing Machinery, New York, NY, USA, 451–462. https://doi.org/10.1145/3242671.3242695

[53] Katie Seaborn. 2023. Super Synthesis Pros., or Why CHI PLAY Needs Research Synthesis. In *Companion Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY Companion '23)*. Association for Computing Machinery, New York, NY, USA, 235–237. https://doi.org/10.1145/3573382.3616051 event-place: Stratford, ON, Canada.

[54] John Sharp and David Thomas. 2019. *Fun, taste, & games: An aesthetics of the idle, unproductive, and otherwise playful.* MIT Press, Cambridge, Massachusetts.

[55] Ekta Shokeen, Nihal Katirci, Janet Bih Fofang, Amber Simpson, and Caro Williams-Pierce. 2020. Unpacking Mathematical Play within Makerspaces using Embodied Cognition. In *Extended Abstracts of the 2020 Annual Symposium on Computer-Human Interaction in Play* (Virtual Event, Canada) *(CHI PLAY '20)*. Association for Computing Machinery, New York, NY, USA, 365–369. https://doi.org/10.1145/3383668.3419909

[56] Miguel Sicart. 2014. *Play matters.* The MIT Press, Cambridge, Massachusetts.

[57] Rachel Charlotte Smith, Heike Winschiers-Theophilus, Daria Loi, Rogério Abreu de Paula, Asnath Paula Kambunga, Marly Muudeni Samuel, and Tariq Zaman. 2021. Decolonizing Design Practices: Towards Pluriversality. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems* (Yokohama,Japan) *(CHI EA '21)*. Association for Computing Machinery, New York, NY, USA, Article 83, 5 pages. https://doi.org/10.1145/3411763.3441334

[58] Katta Spiel. 2021. The Bodies of TEI – Investigating Norms and Assumptions in the Design of Embodied Interaction. In *Proceedings of the Fifteenth International Conference on Tangible, Embedded, and Embodied Interaction (TEI '21)*. Association for Computing Machinery, New York, NY, USA, 1–19. https://doi.org/10.1145/3430524.3440651

[59] Yi Ling (Ellie) Tai, Deepti Aggarwal, and Rohit Ashok Khot. 2020. Reconnecting with Food through Dining Play. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (Virtual Event, Canada) *(CHI PLAY '20)*. Association for Computing Machinery, New York, NY, USA, 334–348. https://doi.org/10.1145/3410404.3414231

[60] Khoa Dang Tran, Alethea Blackler, Bernd Ploderer, and Nicole E M Vickery. 2023. Intergenerational active play: a scoping review. In *Proceedings of the 34th Australian Conference on Human-Computer Interaction (OzCHI '22)*. Association for Computing Machinery, New York, NY, USA, 88–96. https://doi.org/10.1145/3572921.3576217

[61] Emmanuel Tsekleves, Andy Darby, Adrian I. Gradinar, and Marcia T. Smith. 2014. Exercising playfully: co-designing fun ways of keeping active in the park. In *Proceedings of the First ACM SIGCHI Annual Symposium on Computer-Human Interaction in Play* (Toronto, Ontario, Canada) *(CHI PLAY '14)*. Association for Computing Machinery, New York, NY, USA, 447–448. https://doi.org/10.1145/2658537.2661316

[62] Vero Vanden Abeele, Lennart E. Nacke, Elisa D. Mekler, and Daniel Johnson. 2016. Design and Preliminary Validation of The Player Experience Inventory. In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Austin, Texas, USA) *(CHI PLAY Companion '16)*. Association for Computing Machinery, New York, NY, USA, 335–341. https://doi.org/10.1145/2968120.2987744

[63] Maria Vayanou, Angeliki Antoniou, George Loumos, Antonios Kargas, George Kakaletris, and Yannis Ioannidis. 2019. Towards Personalized Group Play in Gallery Environments. In *Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Barcelona, Spain) *(CHI PLAY '19 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 739–746. https://doi.org/10.1145/3341215.3356313

[64] Georg Volkmar, Dmitry Alexandrovsky, Jan David Smeddinck, Marc Herrlich, and Rainer Malaka. 2020. Playful User-Generated Treatment: Expert Perspectives on Opportunities and Design Challenges. In *Extended Abstracts of the 2020 Annual Symposium on Computer-Human Interaction in Play* (Virtual Event, Canada) *(CHI PLAY '20)*. Association for Computing Machinery, New York, NY, USA, 398–402. https://doi.org/10.1145/3383668.3419893

[65] Jan B. Vornhagen, April Tyack, and Elisa D. Mekler. 2020. Statistical Significance Testing at CHI PLAY: Challenges and Opportunities for More Transparency. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY '20)*. Association for Computing Machinery, New York, NY, USA, 4–18. https://doi.org/10.1145/3410404.3414229

[66] Yan Wang, Zhuying Li, Robert Jarvis, Rohit Ashok Khot, and Florian 'Floyd' Mueller. 2018. The Singing Carrot: Designing Playful Experiences with Food Sounds. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Melbourne, VIC, Australia) *(CHI PLAY '18 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 669–676. https://doi.org/10.1145/3270316.3271512

[67] Yan Wang, Zhuying Li, Robert S. Jarvis, Angelina Russo, Rohit Ashok Khot, and Florian 'Floyd' Mueller. 2019. Towards Understanding the Design of Playful Gustosonic Experiences with Ice Cream. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (Barcelona, Spain) *(CHI PLAY '19)*. Association for Computing Machinery, New York, NY, USA, 239–251. https://doi.org/10.1145/3311350.3347194

[68] Jacob O. Wobbrock and Julie A. Kientz. 2016. Research contributions in human-computer interaction. *Interactions* 23, 3 (April 2016), 38–44. https://doi.org/10.1145/2907069

[69] Claes Wohlin. 2014. Guidelines for snowballing in systematic literature studies and a replication in software engineering. In *Proceedings of the 18th International Conference on Evaluation and Assessment in Software Engineering (EASE '14)*. Association for Computing Machinery, New York, NY, USA, 1–10. https://doi.org/10.1145/2601248.2601268

[70] Tengjia Zuo, Max V. Birk, Erik D. van der Spek, and Jun Hu. 2020. Exploring Fantasy Play in MathMythos AR. In *Extended Abstracts of the 2020 Annual Symposium on Computer-Human Interaction in Play* (Virtual Event, Canada) *(CHI PLAY '20)*. Association for Computing Machinery, New York, NY, USA, 413–417. https://doi.org/10.1145/3383668.3419882