# Sharing the Office, Sharing the Care? Designing for Digitally-mediated Collaborative Childcare in the Workplace

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## ABSTRACT

This paper presents findings from a participatory design process for a collaborative childcare service based on co-worker participation and supported by a digital sharing platform. We conducted semi-structured interviews, focus groups and co-design workshops with 41 employees and HR managers of six knowledge organizations. We investigated their views on participative forms of welfare, the factors that can sustain or hinder collaboration among co-workers and the role technology can play in sustaining these practices. The findings shed light on perceived values and potential barriers of social and organizational arrangements as well as the mediating role of interpersonal trust, social exchange and reciprocity. Furthermore, the results provide insights on how digital platforms can support orchestration and management of collaborative practices grounded on employee participation and on the interplay between work and family life spheres.

## CCS CONCEPTS

• Human-centered computing → Collaborative and social computing; Ethnographic studies.

## KEYWORDS

Work-Life Balance, Childcare, Reciprocal Exchange, Workplace, Knowledge Organizations.

## 1 INTRODUCTION

Managing work and family life responsibilities is a challenging issue both for individuals and organizations. Conflict between the two life domains is associated with negative effects for the individual and their families [22]. Work-life balance is problematic in particular for women, who still carry most of the family work and pay the highest toll on working carriers. According to a recent study of the European Commission [16], caring responsibilities are reasons for inactivity for almost 31% of inactive women while this is only the case for 4.5% of men. This happens to knowledge workers too (see for example [4, 6, 19]) for whom the boundary between the working and the private spheres is blurring [1], specifically because of the demands of this type of work including the atypical working patterns and the ubiquitous presence of digital technology [14, 26, 33]. From a management perspective, the enactment of policies to support balance of work and life roles may be beneficial to employees' performance [8, 22] and these effects are not direct but rather mediated by employee wellbeing [25]. Furthermore, the beneficial effects are not mediated by gender (that is, on female employees only) and not either by family responsibilities, provided that the policies are accessible and known.

In order to cope with the increasing challenges of balancing work and family duties, alternative forms of welfare are emerging. New forms of socializing care that leverage on community networks and on "alternative" social arrangements - enhanced or facilitated by new web-based digital tools - are seen as a viable solution to these challenges, not in view of replacing welfare state provisions but for complementing them. In this changing landscape, knowledge organizations are investigating more participative forms of welfare and family-friendly practices in order to promote gender equality and to retain employees [17] as part of Corporate Social Responsibility (CSR) initiatives [10].

Building on work-life balance initiatives deployed within organizations and on alternative forms of welfare provision rooted in social collaboration [24], this paper explores employees and managers perspectives toward collaborative childcare services to be deployed in the workplace, leveraging co-worker communities and the opportunities offered by digital platforms.

We follow an action regulation perspective on work-life balance that explicitly foster an interplay between work and family life spheres rather than reducing conflict between the two and that posits that people can jointly attain work and family goals by using different action strategies [16].

The paper reports findings from a socio-technical investigation exploring organizations' and employees' views on new forms of socialization of childcare in the workplace as part of a set of work-life balance policies.

Our epistemological stance is a practice-based perspective [36] by taking into accounts existing practices (both formal and informal ones) of childcaring in the workplace while at the same time (potential) users are involved in a co-design process to support and eventually change these practices, also with the support of collaborative platforms. Specifically, in the co-design process, the following two aspects were explored:

- The extent to which childcare might be integrated in the workplace as a collaborative effort among co-workers;
- How technology might support the practice of collaborative childcaring with co-workers.

Our findings contribute to the ongoing research on workplace communities in relation to social challenges, namely the work-life balance issue. We also contribute to shed light on how new collaborative forms of welfare could emerge in workplace settings and the role technology might play in sustaining innovative practices in the workplace grounded on employee participation.

## 2   BACKGROUND AND RELATED WORK

This work focuses on the exploration of bottom-up approaches for the collaborative sharing of childcare in the workplace, exploring the role of technology and considering the cultural and organizational context in which these approaches might be deployed.

### 2.1   Sharing Networks and Collaborative Practices

Collaborative consumption initiatives often entail "the use of networked tools to enable a range of sharing, exchange, and co-use practices" [23]. In this respects, online peer-to-peer exchange involves "the transfer of valued goods, services, or information in exchange for other valued resources. The form of the exchange is crucial to understand outcomes, since the form of interaction defines the level of uncertainty and risk that individual face" [23]. There are several types of social exchange that strongly impact on the type of social arrangement that online platforms might sustain, on trust building and participation. The direct exchange entails peers directly exchanging resources, both through negotiation (e.g.: buyers and sellers) or through reciprocity (do not involve explicit agreement - e.g.: borrow). In our work we focus instead on indirect forms of social exchange, also called generalized exchange: "the reward that an actor receives [...] is usually not directly contingent on the resource provided by that actor" In this case the recipient is a group and the individual contribute to a collective effort. People provide "valued resources

to others with no expectation of a repayment or benefit from the same person" [23]. Studies suggest a link between the exchange structure and a number of benefits, such as the emergence of gratitude and generalization of solidarity [13, 19]: On the other side, studies on peer-to-peer exchange showed that a number of challenges exist: focusing on the childcare context, Lampinen et al. [23] discuss how the main barrier for the adoption of a peer-to-peer exchange within a community of single parents was related "to balancing efforts to attract a critical mass of users with the desire for trusted relationships between network members". Besides, a sense of community should exist in order for members to trust each other and engage in social exchange [8].

Several studies also looked at timebanking, a particular type of indirect exchange where participants exchange time [2, 11, 20]. Carroll et al. [11] defines timebanking as a "generalized exchange of time for services among community members, mediated by a database that records services contributed and received". Studies reported a number of benefits of timebanking [2, 20]: (i) it allows marginalized citizens to participate in economic exchange, since all member's time is treated as equal, (ii) it also creates opportunities for new relationships and for strengthen bonds among community members, (iii) it fosters skills acquisition and self-sufficiency in its members.  Studies also pointed out the limitations of timebanking, for instance Bellotti and colleagues [2] showed how the metaphor of the "bank" seems not well suited to convey some of the most important aspects of timebanking, such as community development and social care.  This is reinforced by studies showing suggesting that heterogeneous motivations exist to participate in such exchanges: not only altruistic motivation but also the development of skills and personal contacts (Carroll 2017). Beside, a number of other challenges have been identified, such as the uncertainty about services that can be swapped through timebanking services, the issue of availability of members with particular skill sets, the uncertainty about persons providing the service, hence a matter of measuring and managing reputation [13], the sense of indebtedness, vulnerability and other social-psychological barriers [15] that results in participants motivated to participate by altruistic reasons but that have greater difficulties in asking for help in return [28]. Bellotti et al. [2] elaborate on this issue in their work on timebanking: some of the people they interviewed seemed to perceived that obtaining a service in a time-banking service is like receiving a favour by other participants. Asking for a favour might be embarrassing and thus restrict the participation to the service [2]. Besides, another limitation is the lack of awareness of one's own skills: "several of the participants struggle with recognising what skills they have to offer and in recognising that their skills have value" [28].

### 2.2   Shifting Boundaries and Innovation in the Workplace

Although initially the issue of work-life was defined as the lack (or a reduced) conflict between work and family duties [35], more recently it has been suggested that this balance might be recognized in an effective contribution to the sphere of working and the sphere of family consistently with own's life priorities [13]. A recent analysis [31] synthesizes the literature in work-life

balance as proposing four different conceptualizations: two referring to spill over between work and family roles and two referring to the balance between these two roles.

Recent years showed an increasing interest toward workplace innovation in terms of "new and combined interventions in work organisation, human resource management and supportive technologies" [31], reflecting the profound transformations of work. An interesting aspect concerns the blurring of boundaries between the private and the work-related spheres. From one side, technology has become a constant presence in people's life and the same devices are used for both private and work-related issues. On the other side, the blurring of life into work is more and more significant in terms of how it affects people's ways of setting and working boundaries [14]. As pointed out by Ciolfi and Lockley [14], "such shifting boundaries in people's lives are tied to shifting definitions and models of work and non-work. New forms of labour and of employment, particularly in knowledge-intensive sectors such as the gig economy, mean that freelancers, portfolio workers and professionals working in split roles or multiple part-time roles are dealing with almost constant blurring: of work spaces, times and tasks". Work and life areas are also blurred because of the relationships that develop in the work setting.

These distinctions are rarely made in studies of work relationships. A useful categorization, particularly when investigating social support, is according to the level of intimacy, and it is hypothesized that these different categories reflect differences in the nature of support and cooperation given by co-workers. Studies [18, 29] have shown the heterogeneity of friendship relationships among co-workers, identifying different categories, such as "social friends" whose relationship develop also in extra-professional settings; "friends at work" who interact together over work or socially at work, but who are not invited home or and do not engage in joint leisure activities outside the work setting; "workmates", whose interactions are mainly task-oriented and develop through formal work contacts and finally "conflict relations", co-workers who are actively disliked. Positive friendships at work can offer a variety of benefits for the workers, including tangible or practical help, informational help, social integration and affirmation [18]. For these reasons, as part of innovative practices in management and organization behaviour, many companies are taking actions for supporting networks of employees that are based on social relationships, such as friendship or reciprocal relations [3].

With respect to childcare, an increasing number of companies provide employees with work–family support policies, such as paid parental leave, childcare resources and on-site childcare facilities. Meta-analysis has demonstrated that work-family support policies have a positive relationship with job satisfaction, affective commitment, and intentions to stay [8]. In parallel, several sharing economy platforms, such as Sitly, Bsit, Yoopies, Parcapp, and Peerby support childcare services among friends, neighbours or professionals (such as babysitting and nanny services), and the reuse and sharing of toys and children's clothes.

The combination of innovative childcare policies in the workplace and the use of sharing platforms supported by collaborative practices is the subject of this study.

## 3 THE STUDY AND THE CO-DESIGN PROCESS

The investigation followed a participatory design approach [12], characterized by a perspective of inclusivity and a full recognition of the value of engaging in the research process for all intended and potential beneficiaries of the intervention [9]. We framed our work as a participatory initiative in which knowledge workers and HR managers perspectives contribute to the definition of a socio-technical workplace interventions.

### 3.1 Study Background and Context

Our work has been conducted as part of a larger initiative jointly promoted by six organizations based in Trento, Italy (some are public entities and some private companies) to support the development of work-life balance policies for their employees.

Since several years, these organizations, with the partial support of the local government, are experimenting different actions and policies for improving work-life balance and increasing women participation in the labour market.

In particular, each year summer camps, called Camps 0-100, are organized at the premises of two of these organizations to support families of employees in child caring during the summer school break (Figure 1). The HR departments with the support of an external professional company organize these camps. Although professional educators are employed to plan and supervise children activities, the organizations promote and reward employees' participation at the camp initiatives. Parents employees (and to some extent other employees too) can propose specific activities for children (related to their professional expertise or their hobbies) or support the professional educators in more mundane activities (for example, supervision of the children during lunch). The participation of employees is reported as part of the Social Corporate Responsibility plan of the organizations and the participating employees are rewarded with a discount of the summer camp fees for their children. This initiative has been the starting point for a co-design process aimed at evolving the Camps 0-100 toward a collaborative approach, supported with digital technology, with an increased and more structured participation of parent employees.



**Figure 1. Children involved in Camps 0-100 organized as part of work-life balance initiatives**

The community of parents and workers (including HR managers) involved in this study are member of knowledge-based organizations [26]. Not only the main product of such organizations is entirely knowledge, but also the activities and processes within the organization are oriented toward sharing and creating knowledge. Work conditions in the organizations considered in this study is characterized by flexible working time arrangements, permanent work contracts and back office tasks. We are thus not targeting nomad workers, freelancers or remote employees.

## 3.2    Participants and Methods

In order to explore and promote innovative practices within a workplace community, different actors and stakeholder need to be engaged so that they may appropriately take part in the design process. The participatory process includes three phases.

As a first action, we involved institutional stakeholders, in particular six HR managers, to negotiate employees' engagement in the study and to understand their views as representatives of regulated institutions.  Next, the needs of parent employees and their attitude toward collaborative forms of childcare have been explored through 10 semi-structured individual interviews: among other aspects, we sought for previous experiences with peer-to-peer support among parents and technologies already used to coordinate with other parents for reciprocal support. Finally, two co-design workshops (involving a total of 25 employees) have been organized to explore potential uses of technology and reflect on opportunities and criticalities offered by a digital solution.

Overall, 41 employees of the organizations were involved in the study (see Annex A for an overview). All were parents with children aged 3 to 13 years old, 22 participants were women and 13 were men. Twenty-nine (29) participants were in the 35–45 age category, the youngest participant was 30 and the oldest 55.

### 3.2.1   Involvement of institutional stakeholders

As a first step for the definition of the collaborative childcare initiative, institutional stakeholders were involved to understand their views as representatives of regulated institutions, to negotiate the access to the field and ensure management approval.

A focus group has been organized with six managers from the HR departments of the organizations (Figure 2). The focus groups had the goal of exploring the activities of the different various organizations for supporting work-life policies, to explore criticalities they experienced and for collecting feedback about the activation of shared childcare initiatives. Attention has been paid to explore how organizations value the participation of employees to welfare initiatives the motivations as well the barriers behind this.

### 3.2.2   Elicitation of needs and attitudes of parent employees

Ten individual interviews were conducted with employees (6 mothers, 4 fathers) of the organizations where Kids Summer Camps were organized in the past. Five of them also volunteered



**Figure 2. Two moments of the co-design process:  focus group with HR managers (left), and one of the co-design workshops organized with working parents (right).**

for Camps 0-100 organized within their organization. During the individual interviews, the following dimensions were investigated: i) work-life balance strategies adopted and criticalities experienced, ii) the role of informal support to manage childcare and the role of other parents in coping with work-life balance issues; iii) motivations and barriers toward reciprocal social support with other parents; iv) trust related issues in sharing childcare, v) attitudes toward self-organizing childcare within the workplace and the role organizations might play, vi) experience and attitude toward technology supporting collaborative childcare initiatives.

### 3.2.3   Co-design of the collaborative platform

We run two workshops that engaged other 25 parents working in the organizations (16 F, 9 M). All participants were parents of children aged 3 to 13 years. Ten (10) of them had previous experience in participating in the summer Camps 0-100  as volunteers, 10 registered their children to the Camps 0-100 but never volunteered on the activity, and the rest never participated to childcare initiatives organized by their organization.

A scenario-based design approach [12, 32] was adopted to foster an active participation in the definition of the requirements. Scenario-based design consists in presenting and discussing stories of people undertaking activities in a given context, that represent a specific problem or technology in use with different purposes [5]. Scenarios usually represent in a narrative or visual form the following element: i) user's goals and motivations, ii) tasks that need to be accomplished, iii) interactions (social and mediated), iv) a specific context (temporal, spatial, cultural). The advantage of presenting scenarios rather than involving users in actual testing the solutions come from the fact that scenarios are at the same time concrete—presenting an interpretation of a design solution—and flexible—that is easily revised or elaborated [12].

Four scenarios were created to explore parents' views, values and practices on the use of digital platforms to organize collaborative childcare. Appendix B ("Scenarios Description") presents the other scenarios and all the dimensions investigated in the co-design workshops, an example of scenario discussed with parents is the following:

*"Hannah (38) has a son of 8 and a daughter of 10 y.o. As schools break up for Easter, she is looking for childcare over the week of Easter holidays. While speaking to Meredith, a colleague of her, she discovered a new*

*platform that can be used to organize childcare among co-workers. Hannah decides to give a try and asks Meredith for more information on the platform. Meredith promptly send an email to Hannah, including an invite to join the platform. Hannah receives the email and sees that there are other parents looking for child care during the Easter break. She also sees that the group is already scheduling activities for the week of Easter. They already have found the location (an area of the ACME company organized for hosting children), she also noticed that some co-workers already marked their availability on the shared calendar."*

This scenario focuses on the employee's first experience with the platform and on how she would deal with the idea of organizing child care on a time-sharing arrangement, using a digital platform to coordinate with other parents. The scenario also explored the ecosystem of actors that should be activated to organize such initiatives: Who is responsible of the platform? Who manages the groups? Who can support the coordination of camps?

## 4 RESULTS

The verbal reports from the interviews and the notes from the workshops were analysed using a thematic analysis approach [7] and iteratively negotiated and refined for consensus in the research team. In the following sections we present the main themes that emerged from this analysis.

### 4.1 Co-creating Childcare Services in the Workplace: Values and Barriers

Overall, both interviews and workshops highlighted a positive attitude of employees toward the idea of socializing childcare within work organization. Participants appreciated a participative model where employees can share the organization of childcare activities, actively contributing in defining the period in which parents need more support (for instance during the summer school break) and the type of activities more suited to accommodate employee's participation in these collaborative activities. A number of motivations emerged during the interviews. First, participants endorsed the idea that these initiatives might introduce their children to participate more actively in the daily routine of their parents, giving the opportunity to better understand what their parents do at work. Secondly, employees' participation in childcare activities might also provide an opportunity for valuing personal skills such as creativity, openness and team work. Childcare organized in forms of "educational laboratories" may become as reported by a participant *"a context where employees can show other aspects of their personality, skills that remain often invisible"* (P8). In this context, soft skills could be enhanced and promoted. It was suggested by several participants that these activities could improve the quality of the organizational context, with a positive impact on the company itself they can trigger an organizational change and contribute to the development of a more inclusive workplace.

Similar positive arguments were brought by the HR managers at the institutional stakeholders focus groups about employees involvement mentioning the need to support work-life balance as

a way of improving organizational climate and to indirectly promote the organization: *"[...] the offers of these kind of services make an organization more attractive and eventually there is an advantage in terms of branding [..]"* (P2). Several initiatives were discussed and in particular the Camps 0-100 were identified as the most successful examples related to childcare. The HR managers tended to recognize the power of informal social networks and the strengths given by informal word-of-mouth among co-workers as engagement strategy.

Besides the positive aspects, a number of barriers and limitations have been mentioned during the interviews and the workshops. First, employees that already took part into self-organized childcare activities reported the big effort required for coordinating, organizing and managing the activities. They all stressed the fact that a critical mass of employees is needed to make the initiative sustainable. Besides, some criticalities related to the specificities of social relations of co-workers emerged. Through the interviews, we explored how networks of co-workers could develop to organize childcare in the workplace. We first asked participants to reflect on the situations and contexts in which reciprocal support exist with other parents. Different types of networks were mentioned, such as neighbourhoods (or in general people living in close proximity), with parents whose children attend the same school or the same after-school activities (sport or recreational activities, etc.). In these cases, the reciprocal support is framed as ad-hoc support for last-minute emergencies, pick-up children and accompanying them to after-school activities or playdates. Support among parents is mostly grounded on the children network: the relationship between children became the trigger to promote parents' exchange. During the group discussion, participants also elaborated on the impact of the organizational culture and the perspective of employees and managers toward work-life balance issues. In some organizations, employees set boundaries between private life and professional life and this entail that extra-professional activities (e.g. such as fitness activities) could not find a proper space in the workplace. In other organizations, the boundaries between private and professional spheres are blurred and the management promote the integration of these two life domains. Employees also expressed concern in relation to the overlapping of professional and private relationships with co-workers. Considering the scenario of collaborative childcare in the workplace, participants discussed potential conflicts between their roles of parents and employees: for example, a conflict between children of employees with hierarchical relation among them may cause embarrassment but, in extreme cases, it might also determine long term effect on careers. On a similar perspective, some participants argued that demonstrating extra-professional skills (like acting or clowning) might be positively impact the workplace climate, but for others it might also be seen as detrimental to the professional reputation.

When speaking about the reciprocal support within the professional community, another barrier mentioned is the fact that the activity is based on the network of employees and not of children. This can be a limitation, because, as reported by one of the informants *"[...] at a certain point, children independently decide how to spend their extra-school time"* (P9). Children might

prefer to spend time with children they already know (e.g. schoolmates and friends), instead of socializing with children of their parents' colleagues. Conflicts between parents' and children's needs might arise, representing a potential limitation to the participation of shared childcare in organizational contexts. Moreover, the geographical distribution of employees residing at different distances from the workplace could entail logistic costs that employees would carefully consider before looking at the workplace as an appropriate context for child caring.

Also, HR managers considered some potential issues in sharing childcare activities among co-workers. Regarding the active participation of employees in the organization of the childcare service, a complete self-organized program was deemed difficult to implement given concerns about potential insurance implications and the difficulty of guaranteeing the quality of the childcare service. Indeed, in the summer Camps 0-100, employee participation remains a problematic issue, and despite the compensations, only few employees are directly engaged in the activity. Another key aspect mentioned by HR experts was the need to clearly differentiate the initiatives formally proposed by the organization from those that are simply endorsed or externally supported, since the former ones require an assumption of responsibilities by the organization.

## 4.2 Alternative Social Arrangements for Childcare

The investigation explored also the type of social and organizational arrangement that may sustain collaborative childcare in the workplace. Our participants stressed the fact that an initiative, possibly mediated by a digital platform, should be guaranteed both by the organization itself (to demonstrate the value and the quality of the proposed service) and sustained by a lively and active informal network of employees. A direct peer-to-peer informal approach is considered appropriate only for short and contingent support among co-workers, but a number of criticalities exist to make it sustainable in the long term. If a structured and longitudinal commitment is foreseen, a strong synergy between the institution (e.g. the company HR department) and the community of employees might be required. Participants agreed that a bottom-up process is needed in promote the organization of childcare initiatives, with a consequent endorsement from the organization that guarantees the quality of the initiatives, providing space and other resources needed for organizing the childcare activities, managing the legal issues, and finally recognizing the value and contribution of employees that participate to these initiatives.

With respect to employees' engagement, participants expressed diverse perspectives: from one side some of them would prefer to receive a formal invitation from the organization to join the initiatives, while, on the other side, other employees would prefer a more informal organization, based on voluntary engagement and grounded on informal contacts, word of mouth and face-to-face interaction. Informality is seen as a requirement for raising interest toward the childcare initiatives and for creating a community of people pursuing a common objective. As a participant explained: "*[in the organization] there is a network of*

*co-workers that share the same issue of managing their children during the summer vacation, so we have to help each other... the reason why I decided to volunteer [in the summer camp] is the friendship I have with a colleague of mine. I trust her and I know she will take care of my children as I would do*" (P10).

On the other side, participants also recognized the shortcomings of informal engagement and of word of mouth as a communication channel since it might not guarantee the inclusion of employees that are not part of the existing networks.

Reflecting on communication and coordination mechanisms, participants agreed that an informal environment is needed in order to sustain employees' engagement. A negative attitude emerged toward social networking through digital services: almost all participants agreed that another social media would not help them in organizing new activities. Instead, they prefer to manage this type of initiatives in an informal and face-to-face manner, in order also to increase trust among active members. Among the risks of introducing technology in this context, participants also mentioned the risk of "bureaucratizing" the process, that should instead be separated from daily work processes. As a participant explained: "*I don't like the idea that technology could mediate this activity. I use it [technology] every day in my job and this [shared childcare] should be different. Technology would bureaucratize something that should not be bureaucratized. Maybe technology can be useful (...) for coordinating the activities*" (P9).

From the point of view of the HR managers, as noted above, an adequate balance between a top-down approach and a fully collaborative approach was considered crucial for the fulfilment of these types of initiatives. The use of a digital platform was deemed important in several ways. First, it might support coordination among the many actors involved at the different stages of the initiative: from the planning to the final delivery. Second, it could be used to support HR managers in collecting the needs of employees and quickly assess the interest toward specific solutions. Third, it could support a more personalized communication: employees receive many emails every day and the HR managers struggle to get their messages through. Finally, it could help in valuing talents and skills of employees: as one of the managers reported "*[these initiatives] are difficult to run because they are not core to the organization, they are organized because there is widespread awareness and sensitivity toward the topic of work-life balance [...] but these initiatives often overload the same people [...] they [the activities] live thanks to the volunteers, because, at the end, these are employees that share their passions*" (P5).

## 4.3 Social Exchange and Reciprocity

Another theme that emerged was the different expectations held by the employees concerning the social exchange and the type of reciprocity. Most of the participants do not expect direct reciprocity but they do expect to be supported by those who they have supported in the past - "*if I do a favour to another parent I don't expect that this parent will reciprocate but I do expect that someone [in the same community] will help me if I have a trouble*" (P2). Participants agreed that there is a tacit expectation, but they

suggest that it should remain unstated. It is important that a collaborative and supportive environment exists, in order to ensure a balanced support among the members of a community. Making the exchange visible and explicit in terms of debts and credits is considered as something that can disrupt the stability of the community - *"It would not be nice to show who does more than other. Like saying 'hey, I did two turns and you did one [...] ' No, it doesn't work. Then it's clear that a balance should be found. I expect that if I give support twice then someone will support me in return."* (P12).

Beside time, participants expressed their interest in sharing not only time but also other resources, including books, toys or even money. Some parents agreed that they could volunteer providing resources or money instead of competences or time - *"in this way I feel that everyone can contribute to the overall initiative"* (P8).

## 4.4 Trust and Engagement

Interpersonal trust is crucial, and this is facilitated by knowing each other personally. The interviews and the workshops explored how trust might develop in the work setting around childcare and different perspectives on this issue were collected. Few of the participants said they would desire to know the volunteers personally since these volunteers/colleagues can be perceived as not trustworthy. As a participant explained: *"I am ashamed to say, but I would not entrust my children to my colleagues without precautions (...) I would prefer a parent who I know for a while and who I trust enough"* (P7).

Most of the participants, instead, agreed that they do not require to know in person who will take care of the children during the activities, as they trust the organization and its services - *"when I subscribe my son to the summer labs, I do not ask who will take part in the activities."* (P8).

Finally, different perspectives emerged concerning the participation of an external educator to the childcare initiatives. Some of the employees engaged stated that they would participate to collaborative childcare only if an external educator is involved. In particular, external educators might encourage the participation of those people interested in volunteering but that do not feel adequately prepared to deal with groups of children. Having external professionals involved in the childcare activities may support a group of working parents in coordinating the initiative and in assuring a high quality to the service. Besides, a professional educator can assure continuity of the child care since the volunteer employees cannot devote full time to these activities, they could provide professional care for younger children (3-6), they could provide expertise to manage relational aspects and potential issues (e.g. conflicts, etc.). As a participant reported *"(an educator) is needed because you face several types of children (...), and if you have to deal with upset kids or those that are nostalgic for their parents, you don't have the adequate competences to manage that (...) There are issues that only educators can manage (....) otherwise you risk that children climb a tree and hurt themselves"* (P4).

An educator was also deemed necessary because of the potential conflicts that could emerge with other parents when the care of children is involved. As a mother explained discussing the cons of informal support among parents *"I'd prefer an educator rather than the mother of my daughter's friend... because it's difficult to have a dialogue with her if something goes wrong (..) this entails a weakening of the relationship... I think everyone of us has her own expertise"* (P3).

On the other side, some of the participants reported negative experiences with some professional educators during the Camps 0-100 and they believe that well-motivated parents might do a better job. For some of them, adults can manage autonomously a small group of children, without the need of a professional educator. A number of preconditions were mentioned for an autonomous social organization, such as an adequate number of adults that can share turns and support each other during childcare activities, specific training on safety-related issues and health-related problems children might have (e.g. food intolerance, etc). Besides, they expressed the need to be practically supported by the organization in organizing childcare in the workplace (e.g. finding the proper spaces, managing insurance aspects, etc.). They also expressed the importance to receive support from an external professional in case of need (e.g. to deal with conflicts among children or among co-workers, etc). For other participants, parents might replace an educator only for less demanding tasks and activities (for example, welcoming and supervising free play activities), and with adequate training on security issues.

## 4.5 Sharing Personal and Sensitive Information

During the investigation we explored opinions and reactions about sharing personal information and information about their child(ren) with other volunteers and co-workers. Regarding their personal data, participants preferred not to share personal basic information. They would like to share only the information that is strictly required for the childcare activity. As mentioned before, employees were concerned toward the use of digital social network. Regarding information of their children, they mentioned different types of personal data related to children that can be relevant and should be managed in different ways:

- Health-related information (such as allergies, food intolerances, clinical conditions) should be shared through the system only to those who will actually take part in the childcare activity. This information should be also printed in order to avoid oversights.
- Information about children behaviours or other sensitive information (such as learning difficulties or specific fragilities) should not be communicated through the platform but personally between the parent and the person taking care of the child in order to remain confidential.
- Interests and passions of the children can be optionally shared through the platform, but this information should not be mandatory.

The participants also agreed to avoid an open evaluation of activities or people. They believe that the organization (and specifically the HR department) should in this case oversee and take action if needed (e.g. if there is any issue with a particular

activity or volunteer).Information on past activities (type of activities, used materials, etc.) might be kept and stored within the system, also to help volunteers in planning future childcare activities.

## 5 DISCUSSION

Our work contributes to the ongoing debate on socio-technical innovation within specific communities, in particular exploring how collaborative childcare services might be deployed in work settings and the role of technology in facilitating employees' engagement. The findings point out indications on how to infrastructure top-down and bottom-up approaches to create the socio-technical environment for shared child care in the workplace. The findings also explored the role of digital tools for supporting the practice of collaborative childcaring with co-workers, exploring trust, reciprocity and information sharing.

### 5.1 Orchestrating Collaborative Childcare Practices in the Workplace

The analysis showed the mediating role of the organization in supporting social collectives and to guarantee trust among community members. The official role of the organization is considered crucial, by both HR experts and employees, in order to guarantee the quality of the initiative and to provide an official endorsement for the activities. Trust is indeed perceived as a main element in the collaborative practices, and it is mediated by workplace context but also by colleague relations. In particular, findings suggested that trust should be sustained through informal face-to-face interaction among co-workers. Participants acknowledge the importance of offline encounters and the possibility to have open and informal interactions with other parents participating to the collaborative childcare. In this respect our findings support the idea of developing hybrid community engagement based on a constant back and forth between online and offline interactions [25].

In weighting pros and cons of collaborative initiatives, participants considered security issues, their competences as parent, the potential conflicts between the professional and the private sphere, the effort in terms of time to devote to these activities. Concerning the type of arrangement and the actors that should be involved, different perspectives emerged, in particular in relation to the support of a professional educator. In this view, the type of arrangement envisaged can be understood in terms of co-creation, that refers to the delivery of social services through the collaboration and partnership among communities and agencies In a co-production initiative, people choose to contribute time and effort in the production of services that were previously the responsibility of professional actors or organizations alone [34]. This may eventually bring to a pluralist model of governance and provision of welfare services, based on public-private networks, where citizens may play more active roles as co-producers of services [30]. While previous studies [30, 34] refer mainly to public administrations and services, the same stance might apply to large private organizations too.

In this model, collaborative childcare and parents' engagement might be seen as a collective action where informal and tacit agreements among members could regulate individual participation without resorting to an "accounting" metaphor brought in by time-banking approaches [2].

Similarly to the findings of Bellotti and colleagues [2], we also found a scepticism with respect to an explicit recognition of debits and credits although aspects related to the pressure to reciprocity were clearly raised as well as the need to express gratitude toward the co-workers. Yet, in our case, the dimension of workplace brought another line of discussion: if the organization explicitly endorses the employees participation, there is an expectation that this participation should be recognized, in some way, in the employee's assessment.

Related to this, providing personal information and user profiles of members is crucial in collaborative platforms to raise trust among people and enhance new connections. Sharing personal information could also be important to coordinate group activities and to value participants skills and talents. On the other side, sharing personal information may raise a number of issues related to privacy, especially when children are involved. Security and trust in the process can be achieved by a careful design of the information sharing mechanism and of the management of privacy and sensitive data.

### 5.2. Setting Work-Life boundaries

There are two broad approaches for managing the personal-professional boundary [19, 27]: *segmentation*, which entails reinforcing the boundary or separating the personal and professional domains, and *integration*, which entails blurring this boundary or allowing domains to overlap. The current changes in the nature of work, the increasing use of technology, and the shift in the workforce demographics have provided the potential for more integration of these life domains [21]. Our study pointed out different perspectives on this aspect and shed light on factors that might sustain the integration of life domain in the specific case of collaborative childcare in the workplace. Literature already showed the heterogeneity of relationships that can developed in the workplace and the potential conflict between them [3, 18, 29]. The overlapping of work and family spheres and, in particular, the engagement of employees in extra-professional activities, have consequences on the social relationships, especially in contemporary workplace associated with blurred work–life boundaries [29]. These changes can serve as potential enabler for sharing childcare practices among work friends, or act as barriers for people who would not trust co-workers enough to share childcare responsibilities.

### 5.3 Technology, coordination and activity management

In exploring the role technology could play in this context, participants expressed concerns about social networks and messaging apps. These are perceived as tool for online communities while it emerged as a strong value the possibility and the need of face-to-face encounters. There is a strong motivation

to avoid digital technology that facilitates only online communication in spite of physical encounters. Face-to-face encounters are essential for the childcare service but are also an important part for setting trust among parents, for preventing conflicts and, in general, for solving organizational and logistic issues.

There were several requests not to create "just another social network". Indeed, most of the participants already use social networks (e.g. Facebook) and instant messaging apps (e.g. Telegram or WhatsApp) to coordinate childcare activities, but while these tools are considered effective for promoting and advertising the activity to a wider audience, a lack of support is felt for what concerns the event planning and time management.

In this respect, participants envisioned a system that support different types of users, e.g. with different permission levels, and that support both online and offline interaction [25].

Although the attitude of employees was generally positive toward a digital support that encourage participation and simplify coordination tasks, a clear negative perspective on a "social network" for co-workers also emerged. Work relationships are heterogeneous and co-workers may include quite different relationships, ranging from close friendship to active dislike, that entail different and flexible degree of intimacy [3, 29]. While high-intimacy work relationships will involve a higher frequency of activities, both social and work-related, disliked co-workers will be avoided in social but not work-related activities. This heterogeneity should be considered in the design of technology that aims at connecting co-workers to accomplish common tasks which is not strictly related to professional tasks.

## 6 CONCLUSIONS

This work has explored organizations' and employees' views on new forms of socialization of childcare in the workplace as part of a set of work-life balance policies. The results highlighted perceived values and limitations both from the management's and the employees' perspective. Social exchange and trust building emerged as the prominent themes in participants' narratives, and digital tools are mainly expected to support coordination and activity management, instead of providing social networking services.

 Limitation of the results of this study is that the sample comes from one single country (i.e. Italy) and consider a specific workplace context (i.e. knowledge organizations). For such limitation it would be useful to extend the study to include a greater range of ages, nationalities and work contexts.

Moreover, future research is needed to deeply explore the actual appropriation and use of digital tools and services for supporting practices of collaborative childcare with co-workers. As suggested by our investigation, research examining this topic should carefully consider the shifting boundaries between work and family life and the complex dynamics of friendships, roles and social relationships that characterize communities in the workplace.

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# A   OVERVIEW OF STUDY PARTICIPANTS

| Code | Gender | Age | Occupation | Activity |
|---|---|---|---|---|
| P1* | F | 45-50 | HR administrator | Focus Group |
| P2* | F | 50-55 | HR administrator | Focus Group |
| P3* | M | 50-55 | HR administrator | Focus Group |
| P4* | F | 40 - 45 | HR administrator | Focus Group |
| P5* | F | 45 - 50 | HR administrator | Focus Group |
| P6* | F | 40 - 45 | HR administrator | Focus Group |
| P7 | M | 40 - 45 | Software developer | Ind. Interview |
| P8 | M | 35 - 40 | IT support specialist | Ind. Interview |
| P9 | F | 40 - 45 | Project manager | Ind. Interview |
| P10 | F | 40 - 45 | Senior researcher | Ind. Interview |
| P11 | F | > 45 | Senior researcher | Ind. Interview |
| P12 | F | > 45 | Project manager | Ind. Interview |
| P13 | M | > 45 | Senior researcher | Ind. Interview |
| P14 | F | 40 - 45 | Senior researcher | Ind. Interview |
| P15 | F | 40 - 45 | Technical support specialist | Ind. Interview |
| P16 | M | 40 - 45 | Technical support manager | Ind. Interview |
| P17* | F | 40 - 45 | HR administrator | Workshop |
| P18* | F | 35 - 40 | HR administrator | Workshop |
| P19 | M | 40 - 45 | Administration manager | Workshop |
| P20 | M | 35 - 40 | IT support specialist | Workshop |
| P21 | F | 40 - 45 | Business analyst | Workshop |
| P22 | F | 40 - 45 | Administration manager | Workshop |
| P23 | M | 35 - 40 | NGO operator | Workshop |
| P24 | F | 40 - 45 | Education manager | Workshop |
| P25 | F | 35 - 40 | Project manager | Workshop |
| P26* | F | 35 - 40 | HR administrator | Workshop |
| P27* | F | 40 - 45 | HR administrator | Workshop |
| P28 | M | 35 - 40 | Administrative manager | Workshop |
| P29 | M | 40 - 45 | Education manager | Workshop |
| P30 | M | 40 - 45 | Technical support specialist | Workshop |
| P31 | F | 40 - 45 | Project manager | Workshop |
| P32 | F | 35 - 40 | Administrative assistant | Workshop |
| P33 | F | 40 - 45 | Diversity manager | Workshop |
| P34* | F | 40 - 45 | HR administrator | Workshop |
| P35 | M | > 45 | Senior researcher | Workshop |
| P36 | M | 40 - 45 | Technical support specialist | Workshop |
| P37 | F | > 45 | Administrative manager | Workshop |
| P38* | F | 35 - 40 | HR consultant | Workshop |
| P39 | F | 35 - 40 | Executive assistant | Workshop |
| P40 | F | 30 - 35 | Researcher | Workshop |
| P41 | M | 40 - 45 | Senior  Researcher | Workshop |

*Human Resources (HR) Experts / Stakeholders

# B   SCENARIOS DESCRIPTION

### #1 Scenario: "Hannah discovers a service that supports employees in organizing childcare within her organization with other colleagues

*Topics / Issues addressed:*
1) Perceived opportunities and barriers, considering the double role of parents and employees of an organization.
2) Values associated to socializing childcare with own colleagues;
3) Orchestrating bottom-up and top-down approaches: which is the role played by the organization?

### #2 Scenario: "Sharing own time to organize childcare within an organization"

*Topics / Issues addressed:*
1) Attitude toward sharing time to organize childcare activities within own organization.
2) Barriers and value of sharing own time: tensions between professional and personal sphere.
3) Define the type of participation foreseen by employees: would they organize childcare activities autonomously? which role should the organization play?
4) Are there criticalities in collaborating with colleagues to organize childcare?
5) Measuring "time": in which way should time allocated managed? Should time exchanges be explicit/visible?

**#3 Scenario: Creating own profile and sharing personal information: adults and children**

*Topic/ Problem addressed by the scenario:*

1) Which information would participants share about themselves? which data about their children (health related data, behaviour, etc.)?
2) 2) Which is the role of technology in protecting privacy? Which information should other employees have of people engaged in childcare activities?
3) Relation between personal data sharing and trust

**#4 Scenario: Dealing with an emergency situation: a different type of childcare activities in the workplace**

*Topic/ Problem addressed by the scenario*

1) Managing a contingent childcare need in workplace
2) Opportunities given by having a dedicated space for childcare within own organization: how would parents use this space? Which are the characteristics that this space should have to meet parents'/employees' needs?
3) Which are the criticalities of bringing children in a workspace? How support can be asked to colleagues? which is the role of technology?