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Information and Communication Technology in Child Welfare: The Need for Culture-Centered Computing

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This article discusses the introduction of information and communication technology (ICT) in the California child welfare system. Drawing from anthropological literature, the authors emphasize the role of work practice and context associated with new ICT implementation. This case study uses a documentary-historical approach to analyze interviews with 386 workers who used the Child Welfare Services/Case Management System (CWS/CMS) between 1997 and 2005. Data show the implementation of CWS/CMS impacted the work practice of the welfare system. The authors recommend culture-centered computing for future developments and upgrades of ICT in child welfare.

Key words: California, child welfare, community of practice, culture, information and communication technology (ICT), management

Technology has created new ways of working in many workplaces, including child welfare agencies. Along with the development and adoption of Information and Communication Technology (ICT) in various social work settings, some have called for more attention to ICT in research and training (Perron, Taylor, Glass, & Margerum-Leys, 2010). Furthermore, Zhang and Gutierrez (2007) noted that the studies in American social work literature do not always discuss the reaction of users to ICT implementation in the workplace. In Australia and the United Kingdom, on the other hand, recent ethnographic research has shown that poorly designed ICT implementation in child welfare sometimes leads to unintended or harmful

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consequences for both service workers and clients (Broadhurst et al., 2010; Gillingham & Humphreys, 2010; Peckover, Hall, & White, 2009; Peckover, White, & Hall, 2008; White, Hall, & Peckover, 2009). The impact of ICT on workplace interactions has been similarly studied in fields such as educational psychology (Roth & Lee, 2007) and business (Zuboff, 1988).

In contrast to past work dominated by organizational theory, we engage with work from the field of anthropology to provide fresh insights for understanding ICT in child welfare work. Social work research has recently drawn from anthropology for linguistic analysis of interview data (Carr, 2010), to understand African-American kinship relations (Miller-Cribbs & Farber, 2008), to understand kin relationships in older adult housing transitions (Perry, Andersen, & Kaplan, 2013), and to advocate for the importance of the body for domains of social work practice (Tangenberg & Kemp, 2002). Given the importance within the social services sector towards professionalization (Perry & Ellett, 2008), modernization (Peckover et al., 2008) and computerization (Moses, Weaver, Furman, & Lindsey, 2003), we argue that ICT implementation in child welfare in the U.S. warrants further attention to promote optimal adoption and utility by workers in the long run.

The Development of and Response to ICTs in Child Welfare

Though today ICT use is diffuse across child welfare work, for instance in New York some workers take casenotes using mobile technologies (Cresswell et al., 2007), the adoption of ICT overall has been challenging. In the 1980s and 1990s, advocates for children expressed concern that the de-professionalization (i.e., hiring of workers without professional degrees) of child welfare work led to increased risk of abuse, neglect, and mortality (Broadhurst et al., 2010; Perry & Ellett, 2008). In response, some states began requiring professional training and introduced ICT in the workplace to improve services to clients. In step with the advent of the information age, "there has been a major expansion of the use of computers for the handling of information associated with social work practice" (Sapey, 1997, p. 803). The introduction of ICT into child welfare agencies in the United States was intended to achieve better

efficiency and to manage delivery of services more effectively (Moses et al., 2003; Parrott & Madoc-Jones, 2008). This is consistent with a recent review article that argues, "managerial interests dominate ICT application in child welfare" (Treageagle & Darcy, 2008, p. 1484).

The literature notes that some child welfare workers have been reluctant to adopt ICT into their professional practice (Parrott & Madoc-Jones, 2008; Treageagle & Darcy, 2008). This reaction to ICT implementation within child welfare and in social work, more generally, has several explanations. Some propose that "reluctance to engage with ICT has been founded on realistic concerns that ICT might play a role in de-professionalizing and depersonalizing the social work task" (Parrott & Madoc-Jones, 2008, p. 186). This is ironic, given that ICT implementation was undertaken in agencies that expressed a commitment to re-professionalize social work. Others attribute ICT resistance to the issue of power, with child welfare workers perceiving ICTs primarily as instruments of management and accountability, instead of as a genuine asset to facilitate decision making and to improve services to families (Gillingham & Humphreys, 2010). Taken a step further, others argue that ICT implementation in child welfare work practice has resulted in a "digital Taylorization" of work (Rideout, 2008), in which, "the work in social work is increasingly being ordered, devised and structured by academics, policy makers and e-technicians far removed from the day-to-day encounters which practitioners have with the users of services" (Garrett, 2005, p. 545). These critical studies suggest incongruence between ICT design and the actual work environment of child welfare workers. This has been referred to as a "poor fit" of the system to the workplace (Semke & Nurius, 1991), with poor fit typically manifested as staff resistance to the ICT (Parrott & Madoc-Jones, 2008).

Until now, studies of ICT in child welfare have been focused on the potential efficiency gains offered by technology, rather than assessing the cultural fit of the technology to work practice, which historically requires regular interpersonal interactions between clients and workers. For example, in their study of the adoption of decision-support technology, Foster and Stiffman (2009) found that child welfare workers resisted use of the technology because they preferred and were more comfortable with normative ways of working, which they deemed

reliable and were unwilling to replace with new technology. Concurrently, the preference of child welfare for human sources of information rather than digitally accessed data has been echoed in other case studies (Gannon-Leary, 2006). Research has found that child welfare agencies, like many human service organizations (HSO), experience ICT resistance, especially when accompanied by staff anxiety and concerns about worker autonomy (Moses et al., 2003). Investigations of the relationship between organizational culture and ICT development more broadly in social services raise similar issues (Carrillo, 2005; Cronley & Patterson, 2010).

While ICT was introduced to improve services, recent ethnographic research from Australia and the UK shows that ICT implementation in child welfare work sometimes leads to unintended or harmful consequences for both service workers and clients. These include the reconfiguration of child welfare work in a way that constrains professional practice (White et al., 2009); ICT design and maintenance activities triggering the latent conditions for case worker error (Broadhurst et al., 2010); and the use of ICT resulting in security and confidentiality concerns (Peckover et al., 2008; Peckover et al., 2009). Similarly, other research shows that, "far from supporting a practice which is centered on the contexts in which children live and the concerns which professionals might have about them, the new ICT systems are having the effect of distancing professionals from the lived day-to-day experiences of the people with whom they work" (Hall, Parton, Peckover, & White, 2010, p. 409). Caseworker feedback on ICT use in child welfare work shows ICTs to be time consuming in a way that detracts from the provision of quality social services. In this way, ICT implementation is interpreted as "a burden that interferes with their core missions" (Zhang & Gutierrez, 2007, p. 221). Together, these case studies suggest the need for more user-centered design of ICT systems, based on the cultural context of caseworker preferences. The next section extends the social-work-specific discussion of ICT by engaging the broader literature of the anthropology of work and technology to enhance understanding of culturally specific concerns.

Anthropological Frames for Understanding Work, Technology and Learning

Anthropology has developed a rich tradition of ethnographic study of work and cultures (Jordan, 2003), which includes attention to the impact of technology on work environments (Hakken, 1993). The introduction of computers, and, more recently ICT, into social life is referred to as “computerization” or, “the process through which computers become integrated into the ways that humans handle information” (Hakken, 1991, p. 407). Anthropological research shows that computerization and technological change in work environments are social processes (Hakken, 1991; Howard & Schneider, 1988), and social structures among work groups are not easily transformed by the introduction of new technology (Baba, 1999; Howard & Schneider, 1988; Kunda, 1992). For example, Baba’s study of information technology across American work organizations found that, “informal means of relationship management, created spontaneously by work groups as a way to achieve their objectives and protect themselves from harm, form a deeply rooted and tenacious social infrastructure that is not easily brushed aside by technology alone” (Baba, 1999, p. 344). Anthropological studies of work and technology have also shown that the relationship between technology and culture is complex (Batteau, 2010), and failure to appreciate the relationship between these two factors can result in critical consequences for work organizations, such as commercial air travel accidents (Batteau, 2001).

To explore the determinants of successful ICT adoption in child welfare, we consider Etienne Wenger’s concept of *communities of practice*. Wenger states that communities of practice are “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (Wenger, McDermott, & Snyder, 2002, p. 4). There are three fundamental elements that form the basic structure for a community of practice:

- A common domain or sense of identity among its members (joint enterprise)

- A community that fosters interactions and relationships (mutual engagement)
- A practice or set of frameworks, ideas, tools, information, styles, language, stories and documents that community members share (shared repertoire). (Wenger, 1998; Wenger et al., 2002, pp. 27-29)

According to Lave and Wenger (1991), a community of practice learns in a manner that is situated within a particular social and physical environment unique to that community. They call this historical-cultural theoretical model of learning “situated learning” (Lave & Wenger, 1991). In this model, situated learning is relational and negotiated. Situated learning is a useful frame for appreciating that learning activities within child welfare work practice, such as those requisite in new ICT implementation, are context-specific. This is akin to Hakken’s (1993, p. 125) point that the success of ICT implementation has less to do with technology itself than with mediating social and cultural constructions of the work context. The aforementioned research on ICT implementation provides new ways for social work to interpret dissatisfaction with and resistance to ICT as related to socio-cultural explanations.

To further analyze the difficulties of ICT adoption in child welfare work practice, we borrow from Hakken’s concept of “culture-centered computing” or information technology system development that gives explicit focus to the cultural contexts of the development process (Hakken, 1991). Apart from assisting in future ICT development or upgrades in child-welfare work, the concept of ‘culture-centered computing’ is useful in appreciating how understanding the professional context of child welfare work—including a given agency’s existing work activities, information sharing patterns, and social dynamics—is critical in the design of ICT for child welfare workers. Lack of cultural sensitivity to the work context may explain an agency’s acceptance of or reluctance toward new ICT or ICT updates.

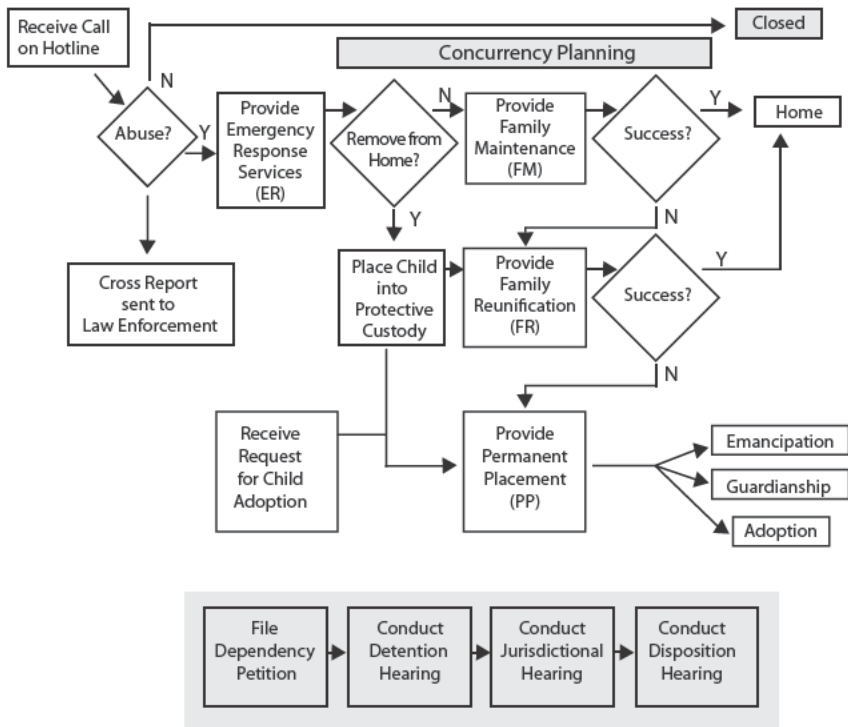
Research Context: Child Welfare Services / Case Management System (CWS/CMS)

The adoption of California’s statewide child welfare statewide management information system occurred after efforts

to re-professionalize child welfare workers. In 1989, the state partnered with schools of social work to establish the California Social Work Education Center (CalSWEC) to administer a federal title IV-E stipend program on behalf of the graduate schools there. Through the program, schools worked with CalSWEC to recruit students with a commitment to working in a public agency and with multilingual and low-income communities. The first class graduated in 1993 and was required to serve at least two years as public child welfare workers thereafter. Formal pre-service training and other on-the-job training provided opportunities for situated learning, including use of the new case management software and the system reorganization called CWS/CMS.

Figure 1: Child Welfare Process based on Department of Human Services Advance Planning Document (California Department of Social Services, 2006)

Child Welfare Services: High-Level Process



The implementation of CWS/CMS began in 1997 and was in place in all 58 California counties by 1998. One motivation for the system was to track abusive parents who moved to different counties to avoid the law (Brown, 2002). Prior to implementation, social workers in child welfare kept documentation in paper files and often did not even have a computer at their desks because work happened in the field. The technical specifications of CWS/CMS were limited partly because the World Wide Web had only launched in 1995. As Windows-based desktop software, CWS/CMS was designed for child welfare workers to input data on PCs which were synchronized with the state's server over an Intranet system with limited bandwidth, rather than the Internet, due to security considerations. Counties that had laptops or mobile devices required that they be taken into the office for synchronization. See Figure 1 for a description of the contemporary child welfare business process (California Department of Social Services, 2006). Figure 1 shows the relevance of the community of practice framework. For example, it illustrates a joint enterprise among law enforcement, clients, child welfare workers, and the courts. The workflow from a hotline call to emergency response, concurrent planning, and closure is an example of mutual engagement. The values, regulations, and procedures that frame the documentary storage and business process in CWS/CMS constitute a shared repertoire.

Early on, an independent evaluation of CWS/CMS found that, despite initial apprehension, the new system had little effect on perceptions about the agency (Weaver, Furman, Moses, & Lindsey, 1999). The changes in perceptions that the evaluation found included "Time spent in telephone contacts related to clients," which dropped from 19.6% to 17.1% and "Doing documentation related to clients," which rose from 30.2% to 34.1% ($p = 0.05$). The evaluation of CWS/CMS also found that workers spent more time alone and less time with co-workers. Additionally, the relationships with supervisors became less supportive and more performance oriented and created tension due to the demands of using CWS/CMS to review and approve case decisions (Weaver et al., 1999). Although initial challenges to implementation were resolved, the ongoing frustrations with the \$122 million-per-year CWS/CMS led the California Department of Social Services (CDSS)

to propose a new web-based system to cut costs, involve community partners, and integrate with systems in other states to conform to new Federal child outcome requirements (California Department of Social Services, 2006). Although the state (California Department of Social Services, 2006) wanted to upgrade, this project was put on hold due to budget constraints (California Department of Social Services, 2011). While several options exist, the recommended web-based approach to achieve Federal compliance combines customized and off-the-shelf software, which will cost \$170 million (California Department of Social Services, 2012). Planning restarted in 2012 and the revised system is projected to begin deployment in 2015 (California Department of Social Services, 2013). There is still time to reflect on the initial implementation of CWS/CMS in advance of the planned upgrade. How can an anthropological frame for understanding work, technology and learning explain the change in relationships between clients and child welfare workers during the first few years of implementation? How do these lessons inform potential upgrades to the system?

Method

This case study is a documentary-historical approach (Crabtree & Miller, 1999) that involves a secondary analysis of archival data from a child welfare worker retention study. These data consist of semi-structured interviews with child welfare workers and supervisors who were graduates from a master's in social work program and whose education was supported by stipends from the California Title IV-E program. CalSWEC collected 386 interviews between 1996 and September 2005 to determine why these child welfare workers either remained or left their agencies. CalSWEC has since closed the study. The respondents answered a series of 18 questions about motivations for entering child welfare, current working conditions, and suggestions for improving the Title IV-E program. CalSWEC asked respondents what they liked most and least about their jobs during their payback period. The interviews were transcribed and organized in nVivo 6.0 and made available for secondary analysis (Jacquet, Clark, Morazes, & Withers, 2008; Smith & Clark, 2011).

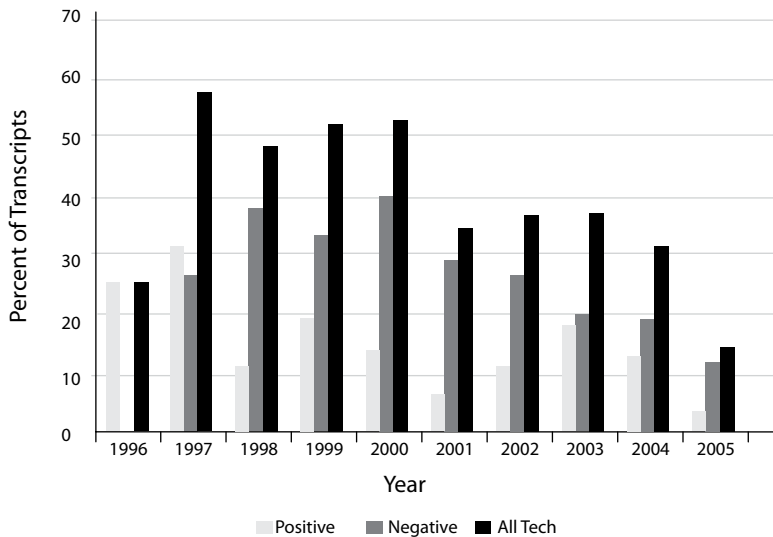
Our analysis built on legacy coding from previous studies by Clark, Jacquet, Morazes, Smith, and Benton (2006) and Morazes, Benton, Clark & Jacquet (2009). We used applied qualitative data analysis methods that encouraged iterative analysis of data in the context of existing theory and literature (Crabtree & Miller, 1999). In this study, "code" means a set of words representing concepts which were, in turn, organized into overall themes. For example, if respondents mentioned computers or technology in response to the question, "What did you like least about your job?" the first author classified these statements as negative. In contrast, if respondents mentioned computers in response to what they liked about their job, the first author coded each instance as "positive." We also analyzed other sections from the interviews. During a second review of the interview data, the first author used constructs from the literature of science and technology studies as axial codes. At that stage we received feedback from anonymous reviewers recommending a different theoretical framework for interpreting the data. During the third data review, we used frameworks from the anthropology of technology in the workplace, specifically the community of practice and culture-centered computing. The authors prioritized two themes for analysis: (a) changes in the community of practice between co-workers and with clients; and (b) introduction of technology for saving time and money and how this affected management of workers and cases across distances from agency to clients' homes.

Results

Descriptive statistics. See Figure 2 for a bar chart presenting the percentage of positive and negative discussions of technology found in archived child welfare worker interviews by year. A respondent may have both positive and negative comments about the use of technology. The positive bar is the number of positive statements, divided by the number of respondents for that year. The negative bar is the number of negative statements, divided by the number of respondents that year. The all-tech bar is the sum of the other two bars. In 1996, implementation had not yet begun, but three respondents discussed the pre-planning. For the last eight years, respondents made

more negative statements than positive. Discussions of technology peaked in 1997 and fell to about five statements in 2005. By that time, students would have been exposed to the system during their master's degree programs, especially during their field placement, because the system release became stable and training was institutionalized. No one mentioned technology or computers when asked what they liked about their jobs. However, 38 respondents identified computers when asked what they liked least about their jobs. People could give more than one response, so the results do not sum up to 100%. Related to technology, there were twice as many negative statements than positive (54 vs. 95). Positive statements were much shorter and often mentioned in passing.

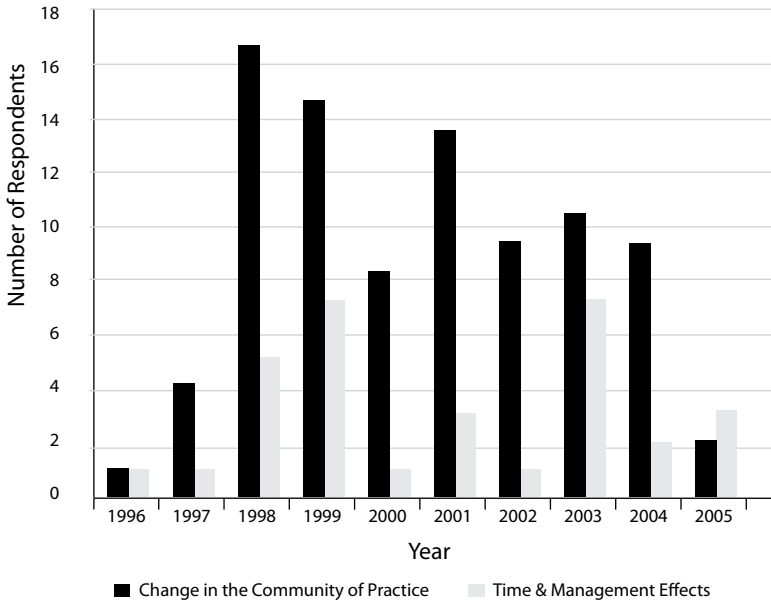
Figure 2: Percentage of Child Welfare Worker Interviews Mentioning Technology by Year.



One might assume that people who quit their jobs would be more likely to complain, and that those who stayed might be more positive about technology. In this sample, the reverse was actually true: 78 stayers (25%) complained about technology while only 41 stayers made positive comments (13%). In contrast, 13 leavers (16%) made positive remarks about technology and 19 leavers (23%) made negative comments.

See Figure 3 for the changing frequency of the subset of technology-related discussions that we categorized thematically as “change in community of practice” and “time and management effects,” which will be discussed in depth in the next the section. The largest number of technology codes discussing changes in community of practice occurred in 1998, which is not surprising, given that this was one year into system implementation. Discussions of time and management effects peaked in 1999, shortly after completion of the introduction, and in 2003, the year advance planning began for system upgrades (California Department of Social Services, 2006). As mentioned earlier, discussions of technology fell to about five respondents in 2005 at a time when students would have been exposed to the system during their master’s degree programs because system training had been institutionalized.

Figure 3: Number of Child Welfare Worker Interviews Mentioning Technology by Year and Theme



Change in the Community of Practice

Our first theme, “change in the community of practice” includes statements that describe how the introduction of CWS/

CMS shifted the culture of professionals whose historic role had been interacting with people face-to-face to operators of a technologically-mediated interface between the clients, supervisors, and the courts. One major change child welfare workers reported was the shift from paper case notes to the requirement to input notes directly into CWS/CMS. Several respondents wished that they had more clerical support to either do the data entry in the office or to join them at a home visit. One social worker lamented the change in technology from pen and paper to computer saying:

I didn't have enough computer skills to keep up with the writing and the documentation, [...] because that was a change from my first time as a social worker where you had hand-written documentation and transcribers to the point where you were doing that yourself on the computer.

In other words, the new technology presented a challenge, but had the same purpose as hand-written case notes. In contrast, not all counties eliminated clerical positions, leading one social worker to comment that the clerical staff members kept their jobs because they had a better union.

A second change within the community of practice was that workers began documenting each other's behavior:

Because of the politics, it got more and more big-brotherish. People were recording phone conversations—noting the time you spent on the computer. You had to record the percentage of time you were doing paper work versus the amount of time you spent with clients. You did not feel like a professional.

For this social worker, a punitive system of collecting evidence of co-worker behavior replaced a tradition of mentorship and mutual support among co-workers.

A third change in the community of practice involved the struggles of older, more experienced co-workers. Some Title IV-E graduates had worked for many years before obtaining a MSW and were at a disadvantage, because they were not comfortable with the new technology. For example, one social

worker left the county in part because of resistance to learning CWS/CMS. When discussing a new job this respondent said, "I have more input; I can express my creativity more. I have paperwork but no, I don't even have a computer, a lot less paperwork, and there's more flexibility, more room for innovation." In other words, this worker implied that, by moving to a smaller organization, the worker rediscovered a social work ethos that valued input, creativity, and innovation. Other respondents expressed concern about the loss of experienced workers because they were the ones who have the actual social work skills needed to solve problems with families in the field.

Finally, the most important change in the community of practice, as mentioned by the interviewees, was that the increased time spent using CWS/CMS took time away from serving children and families. One respondent estimated that CWS/CMS doubled the amount of time it took to do a case report. Others estimated that time spent on CWS/CMS took between 20% and 80% of their time. Some of the explanations given for this included inadequate training, slow computers, frequent system downtime and the large number of menu options to navigate in the system. This led some social workers to characterize their situation as paradoxical. For example, one reported feeling tension between the time needed to meet with children and families to prevent abuse and neglect, and the time required for documentation for the court in CWS/CMS. Another worker described the tension of changing roles with clients as akin to managing a dialectic, in other words, opposing social forces. This respondent also spoke of going through a role transition from being a social worker to being a police officer to being a computer user. This points out the contradiction between a social worker's helping role and the enforcement role that requires extensive computer documentation. Respondents implied that they felt they were no longer doing social work.

Time and Management Effects

Our second theme, "time and management effects," refers to participants' responses to the time and cost saving potential of CWS/CMS. Some effects relate to efficiencies needed to manage workers and caseloads across California's large counties. For management, technological change is justified to help

practitioners reach physically, linguistically, and economically isolated families. Some respondents noted that child welfare needed an expensive system to run like a modern business.

First, the CWS/CMS changed case management by giving users immediate access to information for assessing program performance. For example, one administrator noted that she, "could help the county within minutes to develop a report and extract data, and give a comprehensive profile of all children in the family reunification program, or the length of time it took for a child to return home." CWS/CMS provides a digital representation of children in families that could be used by county administration, the courts and other institutions.

Second, as a result of ICT, some management shifted from mentorship and clinical supervision to task supervision, which involved the assignment of cases and management of deadlines. In a few counties, a social work license was required to be promoted to supervisor. Some counties did not offer clinical supervision and others outsourced it to consultants. One respondent complained that CWS/CMS absorbed much of the clinical supervisor's time and made it difficult for some to obtain licenses and advance in their careers.

Third, some supervisory interactions with staff moved from face-to-face to digital. Prior to system deployment, social workers gave paper reports to their supervisors for approval. CWS/CMS required that reports be delivered electronically, thereby changing the technological mediation between workers and supervisors. Some in our sample reported that they missed having a supervisor to go to for answers, felt that supervisors did not understand how much time it takes to enter data into the computer, or claimed that supervisors were never seen in the office.

Several respondents only worked with CWS/CMS instead of with clients. For example, one had been promoted to supervisor and put in charge of CWS/CMS training and quality assurance, saying "I have no contact with the problems of clients anymore. I don't see that as I did when I was a county worker, I don't hear it. What I hear now is reconfiguration of computers and images and servers and hosts, something totally different." This administrator also mentioned the positive aspects of technology and how "social workers were very resistant at the beginning but now they are very receptive to this change."

Fourth, some respondents made statements to suggest a “poor fit” of the system to the workplace (Semke & Nurius, 1991). Although the state invested in the CWS/CMS to improve compliance with federal reporting standards, one worker noted employees want to be child welfare workers and not do data entry. Other workers said that the state paid them good salaries and paid for an expensive graduate education for them to spend a large percentage of their time doing clerical work. Another worker compared use of the system to processing mortgage paperwork. Still others complained that the system was like an audit machine, or that the worker does not know how the information will be used, or expressed confusion about whether it would be the right set of information for making sound decisions.

In summary, some reported feeling that the system saved time and money, and others disagreed. While some counties had sufficient budgets, others were struggling with layoffs or had to cut contracts with community-based service providers. Some respondents reported the belief that resources could have been better spent by putting more social workers in the field or using funds for prevention efforts.

Discussion and Conclusion

The community of practice is a plausible frame for interpreting and assessing the introduction of ICT in child welfare work. As discussed in the previous sections and shown in Figure 3, worker response to the CWS/CMS implementation only began to improve after four years of integration into work practice. We argue that this was an example of situated learning that was influenced by the degree to which the implementation affected work practice. The finding that use of CWS/CMS was one of the aspects of work that child welfare workers liked least is similar to findings from other case studies of ICT in child welfare (Gillingham & Humphreys, 2010; Hall et al., 2010; Zhang & Gutierrez, 2007). We propose that the introduction of CWS/CMS changed the shared repertoire of child welfare work, including ideas of the type of work needed, as well as the way workers practiced mutual engagement with clients and related to each other in the workplace. This is consistent with social work literature that has documented the

risks associated with having less time to spend with clients as a result of ICT implementation. For example, Treageagle & Darcy (2008, p. 1491) note that “the positive, change-developing, and life-enhancing aspects of the relationship between worker and client may be diminished by decreased face-to-face contact.” This shift in roles and responsibility has been described in the literature as a change in social work from being a profession about the “social” to one that manages the “informational” (Parton, 2006). We surmise that these and other changes associated with the implementation of CWS/CMS suggest the importance of greater consideration for the end user when developing or updating ICT in child welfare work.

The second theme we identified from our analysis is the impact of management’s implementation of technology to save time and money. This is a resonating point in other studies wherein case workers experienced a form of “digital Taylorization” (Rideout, 2008). Findings are reminiscent of Broadhurst et al. (2010) in that CWS/CMS facilitates the process of child removal but does not help with the other system interventions. While this “managerialist” (Treageagle & Darcy, 2008) use of ICT is similar to the experience of ICT implementation in other English-speaking countries, respondents in this study displayed more ambivalence about the technology, with some even voicing potential benefits to the profession and community. Additionally, the implementation of CMS/CWS changed the act of supervision to include a new class of specialized trainers of CWS/CMS, consistent with the findings of system relationships to agency power structure in Semke & Nurius (1991). In at least one case, an agency outsourced its clinical supervision to free up a supervisor’s time to meet the demands of CWS/CMS. This is important because good supervision and agency support for clinical licensure are associated with longer worker retention (Clark, Uota, & Smith, 2013; Jacquet et al., 2008). Ideally, CWS/CMS should not take away needed face-to-face time between workers and supervisors. In an organization pressed for resources, whether labor, time, hours or money, technology is idealized as a way of reducing long-term costs and freeing up staff time. However, for some agencies in the State of California, new technology did not necessarily save workers time in the first few years of use, nor did agencies simply accept the amount of time it took for

CWS/CMS adoption. While the authors acknowledge the importance of ICT use, we argue that prospective system design and evaluation in child welfare agencies need to ensure that ICT does not compromise required home visits and follow up services that are still essential. System design should also take into consideration the need for workers to complete the professional licensure requirements for promotion.

Based on our thematic findings, we draw from anthropological concepts of work and technology and a theoretical model of learning (Lave & Wenger, 1991; Wenger, 1998) to propose socio-cultural explanations for Californian child welfare workers' responses to CWS/CMS implementation. We argue that Californian child welfare workers in this case study constitute a community of practice. For instance, they shared a common professional identity—a joint enterprise serving children and families. The child welfare workers were engaged in interactive relationships with other members of the community, called mutual engagement in the community-of-practice framework, which included mentorship time with supervisors. Finally, at the time of implementation, the members had a shared repertoire of ideas, tools, information and ways of working, primarily organized via a paper-based filing system, which was situated in a particular social and physical environment of work (face-to-face interaction with clients).

Drawing from Lave and Wenger's (1991) theoretical model of learning, we interpret the caseworkers' initial resistance to and dislike of CWS/CMS, and delayed acceptance of the ICT, as an example of situated learning. Batteau's (2010, p. 48) work on the relationship between culture and technology states that, "when a new technology arrives, the recipients are negotiating its usefulness and its scale, and a redefinition of sociality and identity that it implies." In this way, ICT implementation is a social process (Hakken, 1991; Howard & Schneider, 1988), whereby users either accept, adjust to or reject new technology. Findings from this case study corroborate the view that CWS/CMS implementation into California's child welfare work has involved a social process of negotiation: negotiation of ICT acceptance to be sure, but moreover, negotiation of the identity of child welfare workers as a cultural group. For the adopters of CWS/CMS, the identity of child welfare work was forced to

change from what was traditionally a face-to-face interactional work activity with clients to a more autonomous, information-driven work activity, mediated by technological infrastructure. While respondents discussed their dissatisfaction with these changes, they also acknowledged the organizational and reporting benefits of using CWS/CMS. Through the process of incorporating CWS/CMS into their community of practice, Californian child welfare workers negotiated their acceptance of the ICT over time.

Limitations

We present an interpretation of the social adoption of technology using a documentary-historical approach (Crabtree & Miller, 1999). The first limitation is that the secondary data used in this analysis was collected for the purpose of assessing child welfare worker retention and did not directly explore the understanding of the use of ICT. This case study is not intended to evaluate CWS/CMS and the archival interview data did not include any questions to prompt respondents to discuss it. It is not possible to conduct follow up interviews because the CalSWEC retention study closed after 2006. Accordingly, it is outside the focus of this article to draw a conclusion about the efficacy of CWS/CMS. A second limitation is that these data are not intended to be generalized to all child welfare workers in California.

Recommendations for Practice and Research

These limitations notwithstanding, this article contributes by giving focused descriptions of changing relationships and workplace practice as perceived by some of the participants. These descriptions highlight specific examples of system implementation issues that can be addressed in future upgrades. Finally, these interviews are analyzed using anthropological concepts of technology and learning theory, a first for the social work literature.

Current recommendations for ICT design in child welfare work include a need for tools that are focused on the worker's work environment, needs and preferences (Broadhurst et al., 2010; Foster & Stiffman, 2009; Gillingham & Humphreys, 2010; Hall et al., 2010; Peckover et al., 2008). As Sapey states,

unless social workers do become involved in the ways in which new technologies are used within organizations, they will fail to influence its impact upon their clients and may further fail to control the way in which computers affect the nature of social work itself in the future. (1997, p. 803)

To that end, we suggest adopting an anthropological approach to ICT design and implementation in child welfare work. This entails consideration of the cultural conditions of child welfare work, or performing what Baba calls a "cultural risk assessment" that would lead to "an understanding of the role of social relations in current work processes and the changes that should be expected given technology deployment plans" (Baba, 1999, p. 343). An assessment of cultural risk is akin to Hakken's concept of "culture-centered computing," developed from case study findings showing that "system development approaches that give conscious attention to the broad cultural dynamics within which computers are to operate lead to systems that work better than those that don't" (Hakken, 1991, p. 420). This culture-centered approach would allow workers to map out the system flow in the daily work process as they experience it, so that they can ensure that ICT developments or upgrades are a good fit and contain the information needed to obtain support from the court for the best outcomes for children and families.

Additionally, a cultural risk assessment would fit with the culture of child welfare because the workers use other risk assessment tools daily. Specific to California child welfare work, we propose that future deployments and developments of CWS/CMS should attempt to be more conscious of training and changing social relationships and shared repertoire within the field. To sustain mutual engagement, this should include dedicated time for face-to-face clinical supervision following CWS/CMS implementation, as support from supervisors has been shown to be a significant variable in worker retention (Jacquet, Clark, Morazes, & Withers, 2008). We also recommend ongoing situated learning and integration activities following implementation, such as periodic cultural assessments of the impact of CWS/CMS on case worker activities and job satisfaction.

Finally, we suggest that further qualitative research be done on the effects of new or upcoming ICTs in social services generally, since such research has been minimal within American social work journals and the costs of ICT implementation are high. For example, mobile devices such as tablets and smart phones are being rapidly adopted among consumers. These tools have the potential of providing real-time, secure access to information for child welfare workers and their clients. On the other hand, such ICT may also open child welfare workers up to problems related to personal safety, information security, and privacy concerns. Research with a culture-centered approach can determine what kinds of ICT would be a good fit for the community of practice that is child welfare.

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