

Technological opportunities for procedural justice in welfare administration: A review of available apps

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Abstract

Welfare agencies are increasingly turning to technology to facilitate information-sharing and communication with users. However, while the administrative, governmental and material effects of technological advances have been examined, research has yet to explore how welfare users could make use of technology for their benefit. In this article, we examine the extent to which available technologies allow Australian separated mothers to assemble and provide data to government agencies in order to pursue procedural, and therefore substantive, justice in child support and welfare contexts. We find that no currently available apps provide separated mothers with technological affordances

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suited to this purpose. As a result, we find that existing child support and welfare data practices reinforce the social hierarchies that exist post-separation, whereby low-income single mothers are financially and socially disadvantaged, while welfare administrators and non-compliant ex-partners accrue savings and discretionary benefits as a result of existing bureaucratic data gaps and omissions.

Key words

Australia, child support, procedural justice, technological affordances, welfare administration

Introduction

This article takes up the ‘electronic turn’ (Garrett, 2005) in human service and welfare provision, heeding Hansen and colleagues’ (2018) call for research into the role of technology in the public sector. However, unlike previous research, we shift the analytical gaze away from the experiences and interests of policymakers (Henman, 2010) and practitioners (Bradt et al., 2011; Devlieghere et al., 2017) to foreground the opportunities available to welfare system users. As a result, we acknowledge Noble’s (2016) critique that technology studies have typically employed deterministic perspectives that have sidelined the ‘interlocking, structural, and globalized sites of oppression’ such as gender, race, class and disability.

To explore the opportunities that technologies, such as apps, could provide welfare users, our study focuses on the administration of Australian child support and related welfare processes. These processes have been described as extremely onerous and disempowering (Natalier et al., 2016; Natalier, 2018) given that they suffer significant administrative data gaps (Cook et al., 2015), while simultaneously relying on child support recipients, overwhelmingly women (Qu et al., 2014), to collect and provide large volumes of data to decision-makers. Here we examine whether existing technologies can empower welfare users, assessing: (1) what apps are currently available to support separated mothers to collect and report relevant information; and (2) the extent to which existing apps are relevant to the Australian child support and welfare issues that these women experience. Our findings have relevance to separated mothers and advocates internationally, as child support non-compliance is a significant issue across contexts (Hakovirta, 2011; OECD, 2011), and women bear disproportionate responsibility for managing the consequences of non-compliance.

We regard the data included in child support decision-making systems, or lack thereof, as opening up or closing down opportunities for procedural justice, which Dorfman (2017: 197) regards as the fairness of ‘the process that

rights claimants experience during adjudication'. While government records of child support, benefit payments and taxation supplement data provided by Australian parents (Department of Social Services (DSS), 2018), research indicates that the kinds of data that Australian government agencies collect and use in child support decision-making do not capture the issues of concern to low-income separated mothers (Cook et al., 2015). The availability of relevant data, and the extent to which women are able to provide such data to decision-makers is of prime importance. In response, we examine whether existing apps could assist low-income separated mothers to assemble and report relevant information – what Martin and colleagues (1997) refer to as the 'interactional affordances of technology'.

The affordances of technology available to women engaged in Australia's child support system provide evidence of technology's role as a socially organising force. For example, low-income single mothers with low literacy levels, those from non-English speaking backgrounds, those experiencing child support as a means for ex-partners to perpetuate control and manipulation, and time-poor separated mothers may be least able to take up technological affordances. Yet, women with such intersectional disadvantages are most likely to be engaged with state welfare and child support bureaucracies.

In a context where domestic violence is the leading cause of homelessness for Australian women and children (Australian Institute of Health and Welfare, 2018), research has noted the time poverty and high rates of psychological distress experienced by single mothers, particularly those receiving income support (Cook, 2012; Butterworth, 2003; Strazdins et al., 2016). At the same time, the experiences of single mothers foregrounded in the most recent Australian Digital Inclusion Index (Thomas et al. 2018) noted their higher likelihood of reporting online experiences as disempowering. The researchers posited that this was due to their high levels of engagement with government portals that are often unreliable and difficult to navigate (Australian National Audit Office, 2015; Sleep and Tranter, 2017). As such, our analysis contributes to wider discussions of the role that technology plays in welfare administration within the context of intersectional disadvantages that shape and structure single mothers' online experiences.

In order to examine these issues, we provide an overview of the administrative organisation and decision-making requirements of child support in Australia, which sets out the data that women have responsibility to collect and report. We foreground the nature of current data collection practices that render invisible the experiences of low-income separated mothers and result in child support and welfare decisions that buttress the existing social order. Before doing so, however, we first describe research on the social organisation of administrative decision-making systems and the possibilities that technology provides in this arena.

Technologies of administration and procedural justice

An emerging body of research has examined the uptake of information technologies (IT) by welfare agencies and users, arguing that technology is not a neutral tool in the administration of welfare programs, but rather, plays an active role in shaping what can be known and understood about welfare populations and problems (Cook et al., 2015; Hansen et al., 2018). These critiques sit alongside analyses of technology – in particular of the internet and social media tools – as a presumably white, middle-class, male space, reflecting and reinforcing these social structures and interests (Brock, 2011; Daniels, 2015; Kendall, 2002; Noble, 2016). Taken together, research has illustrated digital divides across a range of social cleavages, including gender, class, race, literacy and disability (Bradt et al., 2011; Cook et al., 2015; Daniels, 2015; Hansen et al., 2018; Noble 2016; Thomas et al., 2017, 2018; Warschauer, 2004).

Given the intersectional social context in which IT use occurs, Hutchby (2001: 442) states that ‘sociologists need to see that social processes and the “properties” of technological artefacts are interrelated and intertwined, and need to analyse the ways in which they are’. This includes an analysis of the opportunities technologies afford to either ‘foster stratification and marginalization or development and equality’ (Warschauer, 2004: 210). According to Hutchby (2001: 442), empirical analyses of technologies need to be grounded in ‘a conception of the constraining, as well as enabling, materiality of technology as a worldly object’, whereby technologies are constructed and read as texts. Hutchby argues that developers seek to impose particular meanings and constrain alternate interpretations by users. Users, on the other hand, read technological artefacts with their own purposes in mind, producing meanings that may lie beyond the developers’ intentions. A focus on the opportunities that technologies provide users orients researchers to how particular technologies can enable or disable action in certain political and administrative spaces. As Daniels (2015: 1379) notes with respect to Shih’s (2006) study of Asian tech-workers’ experiences, structural disadvantages can be navigated around by those who are discriminated against, ‘but it does little to shift the overarching structure’ of technology use and design.

Examining both Shih’s (2006) and Daniels’ (2015) insights into ‘navigating around’ technological biases, in this study we examine how the opportunities afforded by technology may lie outside designers’ intended uses or the users they imagine, and the extent to which these affordances can be enabled or constrained by the system’s features and their alternate uses. The intended meanings and uses of apps available to separated parents shape, but do not entirely fix, possible opportunities. In this respect, we regard technologies, such as apps, as providing what Gibson (1979) refers to as ‘affordances’, which are the possibilities objects provide for action within

context. These affordances are not just functional, but also relational, in that not everyone is equally able to take up the opportunities provided. In our case, the opportunities made possible for women to provide data relevant to the administration of their child support case and achieve procedural justice exist within the classed and racialised context of their lives and their experiences of abuse and disability.

The opportunity for users to take up affordances made possible by technology are thus socially bounded and exist in reference to users' previous experiences, cultural conventions and intersectional relations of power (Daniels, 2015; Mirchandani et al., 2005; Noble, 2016; Vicente and López, 2010; Warschauer, 2004). Here, technologies can play a pivotal role in reimagining or reinforcing the social order. In order to apply these insights to our empirical case study, we now turn to describe child support administration in Australia, including the problems faced by low-income separated mothers. We do so in order to contextualise the affordances of 'official' data records and women's ongoing need for procedural justice.

Child support data and administration

Child support is typically money paid by a non-resident parent to a resident parent to support children following parental separation. In 2016, there were over 600,000 single-parent families in Australia, 83 per cent of which were headed by women (Australian Bureau of Statistics, 2017). Australian single parent families are increasingly and disproportionately likely to experience poverty (Australian Council of Social Services and the Social Policy Research Centre, 2016), in part due to child support reform (Vu et al., 2014).

Parents in Australia, like elsewhere, are encouraged to transfer payments privately and subsequently private payments now comprise more than half of the caseload (House of Representatives Standing Committee on Social Policy and Legal Affairs, 2015). Other countries with administrative child support systems, including the United Kingdom (UK), also encourage parents to transfer payments privately; however, research from Australia (Cook, 2013) and the UK (Allbeson, 2017) indicates that these payments can be problematic.

Each parent's share of overnight care is crucial to the calculation of child support in Australia's formula-based system, as is often the case in the United States of America (USA) and elsewhere (Skinner, et al., 2007). While the agreed upon sharing of care is incorporated into child support calculations, we examine the common and gendered experience of deviations from such agreements (Qu et al., 2014), including how such deviations are to be recorded and included in administrative decision-making. One example of a (typically undocumented) deviation is known as 'maternal drift', whereby children spend more time in the care of the mother than child support assessments

recognise. In such instances, parents' personal records must be relied upon when payment issues arise, as administrators have no oversight of actual care-time. However, there is little evidence of how personal data are recognised and responded to by decision-makers in these types of cases.

Administratively, the Child Support arm of the Department of Human Services (DHS) has no physical branches, and front-line staff at broader 'Centrelink' welfare service centres have no role in administering child support policy, despite significant material interactions between the two policies. There is no scope for direct contact between welfare 'customers' and the bureaucracy; rather, child support 'customers' can generally only engage with administrators via phone, or through the DHS's online portal, with documentation and 'evidence' to be provided electronically or via post. These data submission processes are particularly important to low-income separated mothers, as they need to provide ongoing accounts of their payment and care practices to the DHS so that their benefits and child support entitlements can be adjusted accordingly. However, for most parents, no IT system exists to facilitate data capture, storage and reporting, and in lieu of countering 'official' data, government practice typically regards all payment and contact patterns to be 100 per cent compliant (DHS, 2018). As a result, separated mothers often forego reporting their 'actual' experiences and face reductions to their welfare benefits, as these are linked to assumed receipt of child support (Cook et al., 2015).

Importantly to this policy context, and unlike in court-based systems existing in the USA, Canada and much of Europe (Skinner et al., 2007), there is no automatic right in Australia to challenge an administrative child support assessment in court. As such, given Australia's almost exclusively administrative approach, we focus on the 'Change of Assessment' (CoA) process, which is a predominantly voluntary process that parents can access to seek to have their child support liability amended away from the formula calculation. As this process involves establishing that there is something 'special' about the case that has a financial implication, Australian parents must provide significant data, including a broad array of supporting documentation, to substantiate their claims. Moreover, the history of child-contact and child support payments outlined previously may be relevant to this process, as these are issues that could well impact on deciding a 'fair' outcome. For Australian separated mothers, compiling supporting data to ensure the fair application of administrative processes can be onerous and time-consuming, placing further demands on already time and resource poor parents (Natalier et al., 2016). While contextually unique to Australia, separated mothers' data needs are likely to be similar to other contexts where parents can seek a re-assessment of their child support arrangements either through the courts or via an administrative process.

Despite the importance of child support payments to low-income women's financial security (OECD, 2011), and despite Australia's administrative

child support system being self-described as world-leading (House of Representatives Standing Committee on Family and Community Affairs, 2003), payment issues and inequities exist which are disproportionately borne by low-income separated mothers. Australian child support debts exceed \$1.35 billion (House of Representatives Standing Committee on Family and Community Affairs (2003), which is a figure that excludes the 54 per cent of cases where child support is transferred privately between parents and regarded as fully compliant (House of Representatives Standing Committee on Social Policy and Legal Affairs, 2015; DHS, 2018).

One of the primary problems experienced by low-income separated mothers is that child support is regarded as income in the calculation of cash Family Tax Benefit payments. For the purpose of these calculations, Centrelink regards private child support transfers as paid in full (House of Representatives Standing Committee on Social Policy and Legal Affairs, 2015); unfortunately, women often have difficulty refuting this presumption and are not readily informed that they can do so (Cook, 2013). Child support irregularities then have significant implications for women's financial security across a range of contexts, as explained in the following scenarios.

Child support underpayments

While child support payment 'actuals' can be used in Centrelink calculations, women's benefits are often, instead, calculated using 'expected' payments (DHS, 2018). Women are often unaware that they can challenge Centrelink's imputed data and often do not have adequate records of their private payment receipts (Cameron, 2014; Cook et al., 2015). Such women receive less child support and benefits than they are entitled to, significantly reducing their already low incomes. Women's state housing rent is also calculated based on this higher, 'expected' income, which further exacerbates financial stress. At the same time, women's total 'expected' income may render them ineligible for concession cards, corporate hardship provisions from utility or other companies, or emergency relief assistance (Branigan, 2004). On each front, it is difficult for women to counter the incorrectly imputed data held about them, particularly for those with language, time, cognitive, or resource difficulties.

Maternal drift

A key component of the child support formula is each parent's relative share of overnight care (DSS, 2018). The greater the payer's share, the less child support is due to be paid. However, research demonstrates that in shared-care situations, children tend to 'drift' to greater maternal care over time (Qu et al., 2014). In many cases, child contact and child support assessments are

not amended to recognise these changes (Cook et al., 2015). This can be due to: a lack of knowledge; a lack of data with which to demonstrate change over time; or fear that doing so may renew court proceedings or place women at increased risk of harm or abuse (Macdonald, 2012). As a result of maternal drift, separated mothers bear greater child-related costs, but are very likely to receive less child support than they are entitled to and a smaller proportion of Family Tax Benefits than their care proportion dictates. Often women do not have a record of their care-time reality, so are unable to achieve amendments to their child contact or child support assessments, or have their reality recognised by the courts or government agencies (Natalier et al., 2016).

Opportunities for manipulation

Given the potential consequences of underpayment and maternal drift, child support and care-time can become means for ex-partners to exercise control beyond the couple relationship (Cameron, 2014; Macdonald, 2012). Interviews with separated mothers (Cook et al., 2015; Natalier et al., 2016) have revealed that ex-partners may, for example, decline to pick up children on their designated days, leaving mothers unable to go to work. Child support payments may be withheld, paid in part, paid late, or come with 'strings attached' such as regarding child contact arrangements or requiring they be spent only on particular items; all of these situations hamper low-income separated mothers' ability to budget, pay bills, or avoid debt collection or eviction processes.

What research on women's experiences of the Australian child support system and associated financial processes reveals is that child support comprises an important part of separated mothers' household income, but that mothers are often inadvertently financially penalised within government and other financial decision-making systems, as they are unable to 'prove' their financial and care-time reality. There is currently no easy way for women to evidence income or care-time variations to government departments, or more broadly when dealing with legal professionals, employers, utility companies, landlords or banks. At present, women must provide an emotional account of their plight, typically over the phone to a call centre worker, in a process that many avoid due to its humiliating nature (Natalier et al., 2016). As a result, mothers receive less child support and government benefits than they are entitled to, which increases family poverty, exacerbates debt management and payment difficulties, and reduces women's sense of financial control (Branigan, 2004; Cameron, 2014; Macdonald, 2012).

Given these experiences, it is unsurprising that child support is consistently one of Australia's most complained about government services (Commonwealth Ombudsman, 2017). As Dorfman's (2017: 205) work suggests, such complaints may align with public perceptions of procedural justice:

A strong connection seemingly exists between notions about procedural justice and the perceived legitimacy of and deference given to legal and governmental institutions. Subjects who believe that they have been treated in a procedurally fair manner are more likely to think highly of the institutions they have dealt with.

However, pursuing correct entitlements within Australia's child support and benefit systems is often difficult, due to the system's inability to recognise and respond to data on child support and child contact actuals, and the disproportionate burden of work and responsibility that women must dedicate to this often futile task. These data blindspots compound women's disadvantage, as systemic data gaps mean that no evidence is available to policymakers to substantiate the issues women face (Cook et al., 2015). Policy and administrative reform are unlikely as a result.

To increase their chances of achieving procedural justice, it would be useful if women could easily compile and submit a record of their child support payment and shared care 'actuals' to the relevant decision-making bodies. While there exist several apps designed to facilitate communication between parents across households, or to provide information to separated parents, it is unclear what affordances these existing technologies provide low-income single mothers. In this article, we review eight existing apps to determine if and how they may be appropriate for use by separated mothers to track and submit 'actuals' data.

Methods

A list of potentially relevant apps was identified by searching the Apple App Store and the Android Google Play Store using the key words: 'child support', 'child maintenance', 'child money', 'child support domestic violence' and 'child support financial abuse'. These searches returned a seemingly endless list of results, as results are not limited to exact search terms, but are widened to include other seemingly relevant items. As such, an exact number of results is not provided within either platform.

To limit this preliminary review to a reasonable number, the first 200 returned apps on each platform were screened for relevance to the project aims, and excluded if they were not focused on separated family finances and care. The search logics yielded apps about disability support, divorce and children's games; for example the 'Children with Autism & Disability' parent guide, 'Penguin Pairs' matching game, and 'New Jersey Divorce Magazine' apps. Such apps were immediately marked out as irrelevant to the study at hand. Within the first 200 search results on each platform, 35 Apple apps and 24 Android apps were seemingly relevant to the topic at hand. These apps

were then subjected to a detailed review with inclusion and exclusion criteria applied to select the final sample.

Apps were included if they focused on post-separation finances or post-separation child contact. Apps were excluded if they served solely as a child support liability calculator, where parents could enter their income and contact information for a particular legal or administrative jurisdiction to receive an estimate of their child support liability. Geographic context of the app was not an exclusion criteria. For example, we did not exclude apps that were made in the USA and were aimed primarily at separated parents in that country, as we sought to assess the relevance of all existing apps available to Australian mothers. But, while information technologies can dissolve geographic boundaries and allow Australian mothers to take up affordances available within the global app market, apps were excluded if they were tightly bound to a particular policy context, such that they were irrelevant to Australian women. The majority of apps eliminated at this stage were USA-based child support payment calculators, as each American state has a separate child support formula and system (Keith, 2016). The function of these apps was solely to provide an estimate of the child support liability to be paid or received, and as such these apps were not relevant to Australian single mothers' data recording, storage and reporting needs.

Applying the inclusion and exclusion criteria resulted in nine Apple apps and six Android apps for possible review. Two of these apps were duplicates, available on both platforms, bringing the total number of apps included at this stage to 13. Of these, however, four apps were then eliminated, as they required the user to have an active child support case with the relevant legal or administrative jurisdiction, all of which were in the USA. One further app (*Our Family Wizard*) was eliminated, as it was only available to locally based clients of the administering organisation. As a result, a total of eight apps were reviewed.

Our analysis involved the adaptation of heuristic analysis, typically used to assess website designs, in order to explore the functionality of web applications currently available for separated parents to manage post-separation parenting. The approach was influenced by the best practices first developed by Jakob Nielsen (2000) in his foundation text, *Designing web usability*, but applied to the study of web applications for use on mobile devices. In adapting Nielsen's work, two analytical processes were performed for each included app. These comprised: (1) a description of their technical characteristics; and (2) a review of the interactional affordances provided by the app with respect to the child support and contact issues faced by Australian separated parents.

The technical review consisted of documenting: the development of the app, including the year of release and the year of its most recent update; availability, including the platforms supported, cost and access limitations; and user engagement, which included the number of downloads and user rating.

This final category was available primarily for apps from the Android Google Play Store, as the Apple App Store does not provide download information, although a general rating is provided.

The review of each app's interactional affordances entailed three processes. First, each app's features were documented, representing the developer's 'intended' uses of the technology. The app's features were derived by downloading and using each app as intended and documenting the tools available. Second, to document the user's perspective, including the possible, yet perhaps unintended uses of each app within the context of Australian child support administrative processes, we recorded what each app made possible and impossible with respect to data input and output functions and the social context in which these affordances existed. Third, our analysis then focused on the opportunities for procedural justice that these apps afforded.

Results

The results of each of the technical characteristics and available features of each app are outlined in Table 1.

We then combine the first two analyses under the heading, 'Affordances relevant to child support administration'. These results present a picture of whether there are any existing app products available to meet Australian women's data collection and reporting needs, in lieu of government or social service support. We then explore the intended and unintended uses of these apps in the section, 'Affordances for procedural justice', where we describe the social parameters that make these affordances possible or impossible.

Affordances relevant to child support administration

There exist two broad categories of apps relevant to separated parents' financial and care-time management (see Table 2), comprising informational and interactive apps – which further divide into apps focused primarily on the transfer and management of finances across households, and those that have the additional function of facilitating the sharing of care.

First, the three apps developed by or in conjunction with legal practices served merely as information and referral apps. This type of app was almost exclusively informational, with only one app (*myFamilyLaw*) providing any interactive features.

The other five apps can be regarded as interactive apps, which can be divided into a further two types. First, *SupportShare* and *Support Pay* comprise a sub-category focused on parents' financial management. These apps allow users to input child-related expenditure, including uploading receipts, and assigning

Table 1. Technical characteristics of included apps.

<i>Development</i>	<i>Child Support Web</i>	<i>myFamily Law</i>	<i>Support Pay</i>	<i>Go Log</i>	<i>2houses</i>	<i>Child Support Specialists</i>	<i>Support Share</i>	<i>Co-Parent Log</i>
Year released	2011	2013	2014	2015	2015	2016	2017	Unknown
Last updated	September 2011	August 2014	September 2017	June 2016	August 2017	September 2017	September 2017	August 2014
Developer/seller	VernerLegal	Russell Boulton/ Global Network Group	Support Pay	XMR Enterprises Inc.	2houses	Child Support Specialists/ Appsome Ltd	Mathew Vandervoort	Steve Babineau/shift-eight generation
<i>Availability</i>								
Platforms Supported	Apple	Apple and Android	Apple and Android	Apple	Apple and Android	Apple	Apple	Android
Cost	Free	Free	Free, but some content limited to premium subscriptions of US\$4.99–\$7.99/month)	A\$4.49	In-App Purchases, subscription of A\$107.88/year	Free	Free	Free, but request for donations and banner ads included
Limitation	Only relevant to US cases	Only relevant to Australians	Only for US cases	Only accepts US addresses when forming user profiles	None	Only relevant to Texans	None	None
<i>Engagement</i>								
User rating	4+	2.0	3.8	4+	3.0	4+	4+	3.0
No. of downloads	Unknown	Unknown	10,000–50,000	Unknown	10,000–50,000	Unknown	Unknown	10,000–50,000

Table 2. App features with respect to child support data needs.

<i>Information</i>	<i>myFamilyLaw</i>	<i>Child Support Specialists</i>	<i>Child Support Web</i>	<i>SupportShare</i>	<i>Support Pay</i>	<i>Go Log</i>	<i>2houses</i>	<i>Co-Parent Log</i>
Provides basic information about child support	X	X	X					
Provides location-specific child support formula and/or legal information	X	X	X					
Provides legal contracts and links to legal documentation	X	X	X					
<i>Calendar</i>								
Single user diary/calendar					X		X	X
Ability to sync calendars across user accounts							X	X
<i>Communication</i>								
Can message other user accounts							X	X
Uploads SMSs from phone								X
<i>Financial management</i>								
Ability to manually input financial records				X	X	X	X	X
Ability to sync financial transaction records across user accounts				X	X	X	X	X
Ability to upload receipts/proof of payment				X	X	X	X	X
Ability to facilitate payments					X			
<i>Data management</i>								
Ability to store notes/other information	X					X	X	
Can create care and/or financial records				X	X	X	X	X
Can export care and/or financial records						X		X

the amount or proportion of expenditure to be paid by the other parent. Notification emails are then sent to the other parent, informing them that a payment is required. If the other parent wishes, they can create a linked account within the app and note items as 'paid' or they can add their own expenditures.

The final three interactive apps (*Go Log*, *2houses*, *Co-Parent Log*) each include features that enable expenditures to be recorded and shared between parents, as described previously; they include additional calendar and communication features that allow parents to document their care arrangements, record changes to these patterns, and correspond with the other parent.

Affordances for procedural justice

Two potential relational barriers arise from our review of available technologies. These are: (1) the potential lack of ease with which women could assemble information, and (2) the potential inability to compile and export data.

First, the apps had very limited, or no capacity to intervene in or improve women's child support and care-time records, as the data that were collected were largely irrelevant to the child support issues women faced, or were cumbersome to use, other than recording each parent's share of school or medical expenses, which could support a CoA application. This is not surprising given that no app was specifically designed to intervene in this policy context; however, there remains no option available for separated mothers who are looking for a solution to the problems they experience.

The apps had few features beyond notifying ex-partners of bills that needed to be paid. There was very little scope, as part of the normal transfer of cash payments via the department, for the automatic sharing of costs between parents by way of a credit against child support (DSS, 2018). Any other sharing of expenses can only be achieved through the CoA process, or by agreement. None of the apps was designed to facilitate the capture of data necessary for inclusion in these policy processes, nor could they import payment records and expenditure on such items that were agreed to be shared from financial institutions.

With respect to tracking deviations from expected care-time, the three apps with calendar features could be used for this purpose, but not in an easy-to-use manner. No app allowed women to easily flag deviations from specified care-time arrangements, and neither of the two apps with export features allowed users to compile or export their calendar entries.

For payment deviations, all of the interactive apps allowed users to manually input financial transactions, such as the amount that the other parent should pay as child support that month. These transactions could then be marked as 'paid', or remain outstanding. Payment transactions could be viewed on all of the interactive apps, but there was no scope for women to compile or export a list of paid and unpaid payments.

Given the generic nature and jurisdictional ambivalence of the interactive apps, it was not possible for these apps to connect to administrative welfare systems to import child support payments and care-time expectations. Women using these apps could manually reconcile what the department recorded as being paid for either expenses or child support, or what was expected to be paid in agreements. However, such administrative work is unlikely given the knowledge, time and resource constraints experienced by separated mothers.

As the above examples demonstrate, women's inability to easily compile and export relevant data with which to counter erroneous administrative decisions is a most pressing issue, and one for which no immediate technological solution is available. The failure to provide significant reporting features means that these apps provide few affordances to separated mothers, and do not allow them to intervene to have decision-makers recognise that unpaid, sporadic or partial child support payments or child contact diverge from agreements. Our analysis sought to discern what technologies were available that could assist these women in their pursuit of procedural justice. Our finding is that there are few, if any, options available, entrenching the gendered status quo whereby women are disadvantaged and disempowered within current administrative (Cook et al., 2015) and technological regimes.

Discussion

Our analysis sought to examine the intended and possible appropriated uses of apps available to child support users in Australia. Through examining these apps, we sought to identify the extent to which their functional and relational characteristics provided affordances to women to achieve procedural justice, such as by correcting erroneous administrative accounts of their child support reality, or to support their use of CoA processes. To this end, and following Hutchby (2001), our analysis identified the constraining and enabling materialities of these existing technologies.

The majority of the apps reviewed provided highly technical yet generic legal and policy information that assumed a high degree of financial, legal and policy literacy. To the extent that the apps permitted more interactive functionality, such as attempting to facilitate parental sharing of child expenses, they assumed a degree of parental cooperation that belies the reality of women engaged in Australia's child support system (Qu et al., 2014). While the apps reviewed here were designed to support separated parents, they typically assumed that payment and care-time data were unproblematic and were not to be provided to state bureaucracies or other decision-making bodies in cases of dispute.

The informational and relational assumptions contained within the apps thus reflected the needs of those most enabled within state and post-

separation relationships – i.e., women with high-levels of literacy, positive post-separation relationships and either no benefit receipt or unproblematic engagement with state bureaucracies. This is the subset of women who will find these apps most useful. The imagined users of these apps, while not typically gendered, were positioned as middle class, free from physical, cognitive or psychological disability and English-speaking. As a result, the affordances these apps provided were best able to be taken up by those who least required them, and least able to be taken up by the single parent welfare population who could benefit from them the most. These findings confirm previous researchers' claims that technological offerings exist within – and often serve to reinforce – interlocking structural relations of gender, class, race, abuse and disability (Brock, 2011; Daniels, 2015; Kendall, 2002; Mirchandani et al., 2005; Noble, 2016; Shih, 2006; Warschauer, 2004).

The information and interactive apps reviewed here either provided legal and policy information in highly technical detail, or were devoid of any information about how the assembled information could be used. This is a result of the differences between the intended uses of these apps, and their unintended uses, such as by low-income child support recipients in their quest for procedural justice. Currently, Australian research reports women's lack of awareness of the interactions between child support and Family Tax Benefits, and Centrelink's failure to inform women of their rights in this regard (Cameron, 2014; House of Representatives Standing Committee on Social Policy and Legal Affairs, 2015). Thus, new apps that seek to facilitate procedural justice in this policy arena could provide specific advice regarding child support debts, financial abuse and Centrelink interactions and prompt users to record and then collate and assemble information that may be beneficial to substantiating their claims.

Extending the discussion of intended uses, the apps reviewed here positioned separated parents as requiring information about laws and policies, or requiring tools to facilitate payments and care-time sharing. Across jurisdictional contexts, these accounts conceive of post-separation parenting as unproblematic and cooperative, where 'problems' can be corrected either through increased information, or parents being 'on the same page', achieved through shared calendars and financial records. Again, the imagined users of these apps ignore dimensions of disadvantage, and in particular the intersectional nature of these, in ways that defy the reality of the majority of separated parents engaged with Australia's welfare system.

At a structural level, the problems that imagined users face are not seen as involving the state. This is despite payments being deeply entwined with benefit payments in administrative systems, such as those operating in many American states, New Zealand and Australia (Skinner et al., 2017) – i.e. countries where all of the reviewed apps were developed. Further, these apps do not regard or respond to separated parenting as a problematic and con-

tested process, whereby the state is involved in the arbitration of competing truth claims, or the withholder of relevant information (Cook et al., 2015). This worldview serves the interest of app developers, payers and the state, for whom the current state of affairs brings no material hardship or penalty. However, for low-income separated mothers with discrepant child support payments or care-time arrangements, or who need to have payments or care-time re-calculated to ensure a fair assessment, the technological construction of post-separation parenting as unproblematic, cooperative and unrelated to welfare administration renders women unable to articulate or address their concerns. Here, currently available apps are productive of women's lack of procedural justice, as an exclusive focus on unproblematic post-separation relationships erases the concerns of those for whom child support is a site of ongoing contest and control (Natalier, 2018).

To return to Hutchby (2001), our findings demonstrate that apps are not neutral tools; rather, these technological artefacts are entwined with the social processes and hierarchies that they serve and reflect. While the reviewed apps allowed women to assemble and record information about limited aspects of their experience, it was typically not possible for these accounts to feed easily into administrative processes that have been the typical focus of technological administrative research (Henman, 2010; Hansen et al., 2016). The asymmetrical nature of current administrative burdens fall disproportionately on low-income women, who are ill-informed of their child support and welfare entitlements, and currently not well serviced by available apps. Unfortunately, this replicates and reinforces hierarchies in social, political and technological domains. These technological processes and the users they assume sideline the interlocking, structural disadvantages faced by single mothers (Brock, 2011; Daniels, 2015; Kendall, 2002; Noble, 2016). As a result, the affordances that such technologies could provide, and the procedural justice they could enable, are also rendered impossible along the familiar lines of gender, race, class and disability that reflect and buttress the existing social hierarchy. Given that the intended, and unintended uses of the apps reviewed here did not afford women with opportunities to access procedural justice, we agree with Wajcman (1994: 3) who asks:

what if, rather than technology being neutral, it is the result of a series of specific decisions made by particular groups of people in particular places at particular times for their own purposes? And if it can be shown that political choices are embedded in the very design and selection of technology, then we can begin to think of technology as something we might shape consciously.

Drawing on the work of critical technology scholars, our analysis reveals how technologies play an active role in maintaining the status quo along intersectional lines of gender, race, class, abuse and disability. With respect to the

subordinate financial and social position of low-income separated mothers, we find that their data needs were not acknowledged in existing technologies that assume unproblematic, middle-class, English-speaking users, and as such they were unable to intervene in decision-making processes. These concerns will resonate with women across jurisdictions where child support payments interact with welfare benefit amounts (Natalier et al. 2016), where private payments are promoted (Allbeson, 2017) and where shared care results in the scaling of child support liabilities (Hakovirta and Rantalaiho, 2011).

Conclusion

Our analyses examined the technical characteristics and relevance of eight apps that could be useful to separated mothers seeking procedural justice in the administration of their child support case. The apps covered informational and interactive needs relevant to parents' finances and care of children; however, no app was ideally suited to meet the needs of low-income mothers who face financial burdens when child support and care-time deviate from what is recorded in official datasets or where a fair assessment can only be achieved through the CoA. While some apps provided information about post-separation legal issues, and others provided means to document care-time and financial practices, no app combined these features in a way that allowed women to gain additional knowledge about child support and welfare decision-making and data needs, and then act on this information by developing and reporting relevant data records. As such, the apps reviewed here reinforced the intersectional hierarchies described in other studies of welfare-related information systems and critical technology studies. The design of existing apps, including the imagined user and their need to access, record and report data, referenced and reinforced this existing social order to the detriment of women and children in low-income, single parent families.

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