Sharing, saving, living well on less: Supporting social connectedness to mitigate financial hardship

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ABSTRACT

This paper contends that problems such as poverty and economic disadvantage are equally social in their nature as they are economic. As such, a social frame of reference is helpful in design. Using a qualitative approach, we study the ways 13 Australian households living on a low income manage, organise and interact in their everyday financial activities and what this means for designers of technology that might assist them with this. We highlight the highly social nature of many practices concerned with managing and saving money. We provide implications for how these practices may be supported through fostering social connections and how informal and sharing economies may be leveraged to provide value to those experiencing financial hardship. An argument is made that classifying an otherwise heterogeneous population based on income alone is reductive. In response we propose a rationale for amending the “low income” demographic classifier, incorporating a broader

measure we tentatively term Social-financial Connectedness which captures the importance of social connections in overall financial wellbeing and identifies people's capacity to live well and share, irrespective of their financial circumstances.

KEYWORDS

Money; low income; poverty; sharing; finance; social; sharing economy

INTRODUCTION

Australia is the fourth most expensive country to live in the world (Credit Suisse Research Institute 2014). While a high average wage balances this for many, Australians out of the mainstream workforce face significant economic challenges. Low income and poverty have been linked to increased levels of stress and poor health (Aber 1994), however many low income families stretch their money further than others, live healthily and thrive in the face of adversity (Seccombe 2002).

Poverty and low income are most commonly measured in economic terms, given the relationship between money and essential goods and services. Yet the scope of poverty extends far beyond a simple lack of money, into well-being, social mobility, social inclusion and psychological factors (Martin and Hill 2012). Money is present in many social transactions (Kaye et al. 2014a). Social capital and family structure, have been found to be strong predictors of upward mobility amongst the economically disadvantaged (Dillahunt 2014). For this reason, the issues of poverty and low income are argued to be deserving of a more social frame of reference in research than that which has been applied in the past (Martin and Hill 2012).

Families also represent both an economic and a social entity and are an important unit of analysis through which to understand finances and financial practices (Aber 1994, Pahl 1995). Families are complex, not only in their composition, norms and appropriation of new technology (Tejinder et al. 2014), but in terms of the support provided for individuals in times of adversity (Seccombe 2002). Research is important into the processes with which money is conceptualised and managed within the family unit (Pahl 1995) and how individuals within families live their economic lives beyond the family unit. Regarding the role of social networks beyond the immediate family in economic matters, Dillahunt (2014) identifies a specific lack of understanding for how: "*individuals in economically distressed areas can connect to others in less distressed conditions*" (Dillahunt 2014, pp.539). An argument is presented for the need to foster social ties by sharing across socioeconomic groups and by building trust.

This present paper contributes an Australian context to the nascent HCI work to date on how people on a low income manage and save their money, and what this means for designers of technology that can help them do this. In recognition of the social dimensions of money (Kaye et al. 2014a), our focus is on the individual-level social interactions and social aspects of managing money on a low income. Hoping to inspire debate, we propose ways in which we feel design in this area may be missing the target and could be re-focused.

Firstly, our findings demonstrate a particularly high level of cooperation and interaction observed among our participants in the ways they managed their finances. Social connectedness, sharing and informal economies were fundamental in many of the creative ways our participants saved their money and got by on less. A challenge here is to more fully understand the social dimensions of peoples' financial circumstances. We demonstrate how the scope of technology in this space may be extended beyond the individual level of personal budgeting (for example Alves 2008, Stockinger et al. 2013, Smith 2016) towards designs which leverage the social connections between people in the context of managing money.

Specifically, we outline the opportunity for an online service which consolidates the range of currently distributed and specific “sharing economy” platforms which may provide value to users living on a low income. Further, we outline three pragmatic and tactical considerations for platform designers working in the “sharing economy” space more broadly. These include identity disclosure for social support; circumstances of need vs perceptions of circumstances and; capacity to offer vs ability to offer.

Lastly, we contend that the “low income” classification, which is commonly applied in research and policy to differentiate people, does not adequately represent those to whom it is applied. We argue it represents the application of a singularly economic lens to what is a far more complex and social problem. It serves to categorise people solely on their monetary income and capacity to buy, rather than their capacity to live well and share despite limited means. It also potentially adds stigma. In response, we demonstrate the value of focusing on the creative and social ways people stretch their money, and how the “low income” categorisation might be mobilised instead as a provocation to consider how people share, save and live well on less. We propose augmenting “low income” in research and policy with alternative measurements of the connectedness of individuals to avenues of support in a crisis and to social means of saving money such as friends or family with whom to share rides, bulk purchases and barter. We generalise this provocation towards alternative metrics in the term Social-Financial Connectedness.

BACKGROUND

Poverty: Social and Economic

Approximately 20% of the world’s population lives in absolute poverty, on less than $1 US dollar per day (United Nations 2015). This level of poverty relates to lack of food, lack of

freedom and lack of adequate shelter or sanitation. Lacking the economic means to access fresh food and basic services has direct implications on health and quality of life. As such poverty is undoubtedly an economic problem.

Despite this, the scope of poverty transcends a lack of access to money and bears various social and environmental dimensions (Blocker et al. 2012) . It has been argued that these factors do not always receive sufficient consideration in the literature. Martin and Hill (2012) highlight a lack of research on the social dimensions of poverty, caused in part by a *"misspecification by economists of low individual income as a surrogate for poverty"* (Martin and Hill 2012, pp.1157). The scope of poverty extends well beyond a simple lack of income toward various aspects of well-being and psychological factors (Martin and Hill 2012) and that mechanisms for poverty alleviation have a greater chance of adoption: *"when the 'solutions' [offered]… fit into the psychological, familial, social, and cultural lives of the poor"* (Blocker et al. 2012, pp.1201). As such, this present paper is written on the understanding that poverty and low income have fundamental social dimensions which require due consideration in research- and which we focus on here.

"Low income": The economic classifier

Australia, where this research takes place experiences ongoing issues with poverty and inequality. Around 14% of Australians live below the poverty line when poverty is defined as earning less than 50% of the median wage (ACSS 2015). However, similar to many other developed countries, Australia enjoys high social mobility, relatively low unemployment and a level of social security available to citizens who find themselves out of work. Thus the scale of poverty in Australia is not directly comparable with the context and scale of such issues faced by areas of the developing world. We do not claim this present study relates to those living in "poverty" per se, rather people living on a low income in an expensive country.

The term “low income” is somewhat of a prevalent rhetoric in developed world contexts. Rather than programs for “poverty alleviation”, for example, it is more common for Western governments to differentiate households according to measures of relative income and provide assistance for low income households in the form of subsidising winter utility bills (Blocker et al. 2012), subsidising the cost of private health insurance or assistance with healthcare levies (NHS 2015). Despite differences in terminology between poverty and low income, however, the commonality between the two terms is that they are both classifications of people based on economic terms.

The use of income-based classifiers is prevalent in economics literature- e.g. profiling the financial lives of “the poor” (Banerjee 2007) or the provision of financial services as a solution to poverty (Martin et al. 2002). However, due to the relatively small volume of HCI literature to date specifically on financial practices of those on a low income (Singh et al. 2007, Kaye et al. 2014a, Kaye et al. 2014b, Vines et al. (2014), which we review below, it is premature to comment upon the presence or absence of such a trend in HCI.

HCI design for vulnerable groups, low income and money management

Despite the pragmatism of differentiating populations in research and policy, classifying groups of people according to single dimensions- i.e. low income, elderly, disabled etc- can be problematic. Rogers and Marsden (2013) argue that despite the best intentions of researchers, much HCI work in the area of disability, has tended towards designing technologies based on researcher understandings of what the user groups needs, rather than a process of co-creation. The result is a tendency towards technologies that *“compensate or overcome, rather than innovate”*; providing for a lack of what the disabled individual does not have (Rogers and Marsden 2013). Despite some exceptions (Ellis and Kurniawan 2000, Vines

et al. 2011), a similar pattern is found in literature incorporating older adults in HCI. Vines et al. (2015) argues older people as a cohort are often characterised by either by their declining abilities (e.g. technology produced to compensate for failing eyesight or limited mobility) or in the third person (e.g. systems produced for monitoring the elderly with information fed back to carers or family). Such an approach has the potential to focus attention towards one single dimension of comparison among a diverse group of people who may have little else in common with each other (Gaver et al. 2010). In response, Rogers and Marsden (2013) argue for a move away from this dominant *"rhetoric of compassion"* in design towards a rhetoric of engagement and co-design. Later in this paper we discuss ways in which future research related to economically classified groups might avoid this pitfall of generalising an otherwise heterogeneous population according to a single dimension of ability; in this case, purchasing power.

Compared to ageing and disability, relatively little HCI work at present focuses on the money management practices of disadvantaged individuals or communities. A body of work seeks to understand and design for the information needs of disadvantaged populations including those without a stable shelter or source of income (Le Dantec et al. 2011, Woelfer et al. 2011) and those of low literacy groups (Kavanaugh et al 2013). However the focus here is on fostering technical competencies (Kavanaugh et al 2013) and building connections between clients and staff (Le Dantec et al. 2011) rather than money or financial management per se.

In relation to the social construction of monetary (and non-monetary) transactions, recent contributions consider the role of informal economies such as bartering and resource sharing in local communities. Studies of commerce over social networking sites find user identification with a given platform can predict users' loyalty and purchasing behaviors (Wang et al. 2015). Inspired by urban decay following the 2008-2009 financial crisis, 'BARTER' represents open source software aimed at encouraging consumers to spend money at local businesses and

motivate businesses to reinvest in their community (Knowles et al. 2014). Light and Miskelly (2014, 2015) critique the burgeoning "sharing economy" constituted of services such as Craigslist, TaskRabbit, Freecycle, AirBNB, etc. Although newer for-profit ventures (e.g. Uber, AirBnB etc) offer consumers new options, the values of do not always reflect the values of co-creation and reciprocity underpinning the original sharing economy which was concerned with open source software development (Light et al. 2014). Malmborg et al. (2015) explores how HCI design may contribute to these informal economies and the communities within which they operate. Towards this, an agenda is proposed towards HCI's involvement in developing new forms of financial services and the importance of understanding and designing for the trust required with such services (Millen et al. 2015).

On the personal scale of everyday money management practices, Kaye et al. (2014b) study the ways people manage their personal finances, exploring the "*emotional component of the relationship people have with their finances*" (Kaye et al. 2014b, pp.521). Findings suggest that existing systems for managing financial lives are not well utilised and that opportunities exist to rethink these systems. Regarding the financial practices of marginalised groups specifically, Singh et al. (2007) investigated the banking practices of Australians living in the far north Queensland Torres Strait Islands; several hours travel from the nearest bank. Banking was found to be a social process, people would share their PIN numbers and other personal information with the community member making the long journey into town such that banking could be conducted on their behalf.

HCI research explores how money is managed and banking transacted by older adults (Vines et al. 2011) and by those on a low income (Vines et al. 2014). In the latter study, Vines et al. (2014) use the UK *"absolute low income measure"* of £251 per week as a qualifier for inclusion in their study. While they do not comment on the use or applicability of such economic classifiers, they outline the heterogeneity of their sample and how their findings defy the

"*popular rhetoric in the UK*" that low income individuals cannot adequately manage their finances. Instead, their participants employed sophisticated and creative financial practices including planning, prioritising and hiding transactions. More recent work explores the design of financial services for marginal populations (i.e. unbanked) and developing new social-based financial services utilising social media (Millen et al. 2015). This signifies both HCI's understanding of money and monetary transactions as socially situated, and the timeliness of the topic for research of this nature.

Using a process of contextual interviews, this paper investigates how people manage money and share resources on a low income. Rather than approaching low income as a problem or deficit, we instead take a strengths approach, focusing on the innovative personal and social ways our participants managed to get by and live well on less. In the following section we present our methodology for investigating the roles that families and social networks play in budgeting and the management of money.

METHODS

Participants

We recruited 26 participants across the city of Brisbane*,* Australia, using a mixture of leafleting at shopping centres, letterbox dropping, and advertising on Facebook and Gumtree (similar to Craigslist). From this original sample of 26, we divided families into two groups according to their income- 13 families living on a middle/high household income and 13 participants living on a lower income. In this paper we concentrate specifically on the latter.

"Low income" in this study is below $45,000 per annum (p.a) household income. Australia does not employ a national measure of "*absolute low income*" as per the UK (Vines et al. 2014). $45,000 p.a. is instead based on the income thresholds at which families begin to

become eligible for different subsidies and rebates such as the Medicare Low Income Threshold (Australian Government 2014b) and the Centrelink Low Income Supplement (Australian Government 2015b) from the Australian Government. Our definition is also informed by figures from the Australian Council of Social Services (ACSS 2015) who define the poverty line to be "50% of median income", defined as $400 per week ($20,800 p.a.) for a lone adult, $600 per week ($31,200 p.a.) for a couple and $640 per week ($33,280 p.a.) for a lone parent with two children (ACSS 2015).

It should be noted that $45,000 p.a. relates to "household income" and our participants who lived alone without children (Participants 4, 11, 12 and 13) all earned less than half of this. It can be seen in Table 1 (below) that many of our participants would be classified as living near or below the poverty line according to the ACSS (2015) definition. Our participants are described in more detail in Table 1 below.

Participant 1: Single mother (36), unemployed, two daughters aged 13 and 5. **Income:** ~$31,200 per year, comprised of benefits and child support. **Tenancy:** Renting privately

Participant 2: Single mother (33), unemployed, one daughter aged 6. **Income**: ~$28,600 per year, comprised of benefits. **Tenancy**: Renting privately

Participant 3: Single mother (38) with two children aged 10 (f) and 9 (m). **Income:** ~$42,000 per year from full-time employment, some further money from child support and benefits. **Tenancy:** Renting privately

Participant 4: Single female (37), unemployed, recently separated from de-facto, recently lost her job. **Income:** Under $10,000 per year, living mostly off her savings; occasional cash-in-hand work at events. **Tenancy:** Renting a room in a friend's house

Participant 5: Single grandmother (56), unemployed, 13 year old grandson. **Income:** ~$13,624 per year from benefits- currently in argument with social services over more pay. **Tenancy:** Owns house, paid off

Participant 6: De-facto couple 34 (m) PhD student and 32 (f) Masters student. **Income:** ~$35,000 per year from PhD Scholarship (m only). **Tenancy:** Renting privately

Participant 7: Married couple (40's), adult son (20) living at home. Husband: Unemployed; Wife: Part time retail assistant, Son: Some casual labour. **Income:** ~$44,000- $45,000 per year, mostly from wife's job and unemployment benefits. **Tenancy:** Owns house, mortgaged

Participant 8: Single mother (39), unemployed- occasional private tutoring work. Four children, 12 (f), 11 (m), 8 (m), 5 (f). **Income:** ~$35,800, from benefits. Child support pending from divorce settlement. **Tenancy:** Renting privately

Participant 9: De-facto couple, 27 (m) PhD student, 26 (f) unemployed. **Income:** ~$25,000 per year, from PhD scholarship, some savings. **Tenancy:** Renting privately

Participant 10: Single mother (35) with four year old son. **Income:** ~$19,000 per year from benefits. **Tenancy:** Renting privately

Participant 11: Single female (late 40's) living alone, unable to sustain employment due to health issues. **Income:** ~$20,500 per year from disability benefits. **Tenancy:** Living in a house her family owns paying "peppercorn rent"

Participant 12: Single male (60's), retired, living alone. **Income:** ~$20,500 per year from aged pension. **Tenancy:** Living in privately owned house, already paid off

Participant 13: Single male (late 30's), living alone, unemployed. **Income:** ~$16,484 per year from unemployment benefits. **Tenancy:** Private rental of a single room with shared bathroom

Table 1: Participants

Evident in Table 1 (above), our participants' living statuses and family structures were diverse. These were comprised of: six single mothers living with dependent children, three de-facto or married couples, one with an adult child still living at home, and four single participants without dependent children. Of these four, three lived alone (Participants 11, 12 and 13) and one shared a house with a friend (Participant 4). All participants felt they did not have enough money to live as they would like to.

Interview process

Informed consent in accordance with the Queensland University of Technology Office of Research Ethics and Integrity was obtained before all interviews. The contextual interviews took place in the homes of the participants as a means of gathering information about their specific contexts. The interview process involved participants first drawing a flow diagram of their / their family's finances (adapted from Pahl 2008). This involved listing sources of income, how the money was managed (e.g. into which bank accounts or physical locations) and what it was spent on. This activity allowed us to develop an understanding of each participant's individual financial situation, incomes and outgoings. We explained to the participants that our interest was in their processes and strategies for managing money, not in any actual dollar values.

[Figure 0 to go about here].

Figure 0 represents one participant's completed flow diagram. Results from this activity are discussed in more detail elsewhere (Vyas et al. 2016). Questions were then directed towards more social aspects of money management: the systems and methods used by each

participant to budget and manage their / their family's finances; the role of support and friendship networks; sharing, barter; and the ways in which they stretched their budgets further.

Interviews were semi-structured and lasted between 43 and 82 minutes (mean = 58 minutes). In two of the three interviews involving a couple (Participants 6 and 9), both partners were present and contributed to the interviews. Young children were present during some of the interviews, but did not participate. This was due to parents often requesting they play nearby or in a different room so as not to distract them. The adult son of Participant 7 was not present at the time of the interview.

Analysis

All interviews were audio recorded on a digital voice recorder and transcribed verbatim by the research team in order to create a deeper understanding of the data. All data then underwent a process of thematic analysis as per our previous work (Vyas et al. 2016), where themes and patterns were identified inductively from the data by research team. Transcripts were annotated both by hand and on word processing software with themes clustered (and re-clustered) using post-it notes.

RESULTS

From the thematic analysis process three key themes emerged relevant to managing money on a personal level: (1) Strategies for saving money (2) The importance of family transcending daily monetary struggles and (3) Circumstances not poor decisions. These are discussed below in order.

Strategies for Saving Money

The role of family, friends and the informal economy

Kaye et al. (2014) highlight the inherently social nature of money, while Vines et al. (2014) note how their low income participants were adept and creative in the ways they saved money. Our findings suggest that these two aspects are fundamentally related: Many of our participants living on a low income spoke of how friends, family, social networks and support groups played a role in aspects of their finances. Participant 11 had previously bartered her services as a massage therapist when she was in better health, while Participant 7, an electrician, noted how he had recently been helping out friends with electrical work while he was unemployed in exchange for other non-monetary benefits

> *"I used to be a masseuse where I used to trade my skill with other therapists. Even when I was working I would still do that to survive- to have a better life"* (Participant 11)

> *"They might take us out for dinner or come over and give us a hand when we need to do things, so 99% of the time its barter. It's just voluntary. End up with a bottle of drink or a couple of cartons of beer. I say: 'Keep the cash, give me something I can use'"* (Participant 7)

This quote is one of several examples Participant 7 gave of how he shared his skills in the community in exchange for barter. Informal networks of university students were described as an integral part of Participant 9's knowledge about saving money. From these networks Participant 9 and her partner had learned where to find the cheapest fruit and vegetables, where to shop for meat and what is a good price to be paying for different goods:

> *"We try to find the best offers, for example we buy our fruits from [name of market], because we've heard from some students that prices are so cheap there. So we drive there with some friends who we share petrol with"* (Participant 9)

These carpooling trips with friends to visit different markets and shops for groceries represented a useful means of taking advantage of bulk-buy offers as well as sharing the cost of petrol and car expenses. These shared shopping trips were also highly sociable activities. Later in the interview when questioned how they saved on entertainment, Participant 9 pointed to these shopping trips, how they represented entertainment themselves.

Participant 6 kept purposefully meticulous records of all purchases (**refer Figure 1**). While this had a budgetary purpose, the main reason given for the records was for ease of sharing information about the prices of various everyday commodities with interested relatives.

[Figure 1 to go about here]

Sharing and cooperation with friends and family emerged as important means of saving money. Participants 1 and 2, both single mothers, lived in close proximity and had developed a friendship where they would collect two-for-one dinner coupons from shopping receipts and take each other out to dinner occasionally. During the summer they would take each other's children to the local swimming pool. Participant 1 also saved on utility bills by sharing her internet connection with her neighbours next door. This was achieved simply by placing the router in a room on the far side of the house and sharing the WIFI password with the adjoining neighbour, who paid a contribution to the bill.

Extended family- where available- played an important role for some participants, not as a direct financial support, but as potential a safety net in times of crisis. Participants 2's mother helped out with school uniform purchases when necessary, while Participant 11 lived in a house owned by another family member paying what she described as "peppercorn rent". Participant 8 admitted to having transferred some personal savings into her mothers' name such that her assessable net-worth was lower in the eyes of welfare agencies. This was in response to her ex-husband having utlised a legal loophole to avoid paying her adequate child support. Participant 4 credited her parents for her frugal attitude to money that had resulted in the accumulation of the savings she was currently living off after losing her job.

Individual strategies for saving money

Our participants displayed various and creative means of saving money on an individual level. Monitoring account balances, saving for upcoming expenses, carefully checking catalogues and supermarket shelves for specials and coupons represented daily practices for many. Other strategies included the devoted use of supermarket loyalty cards, utilising free local events for entertainment and combining errands to save petrol. In this respect, living on a low income meant money was a fundamental part of everyday life. The following represents only an excerpt of Participant 2's many strategies for saving money and getting by on less:

> *"Shopper-dockets or Groupons. If I go out for dinner its cos' it's a two-for-one night or it's a Groupon. If [****] has specials on I'll go there. I've done a lot of one off jobs like recording mobile phone ring tones. I was a member of the RSL and they have a subscription to the newspaper and I'll read the newspaper and I'll see what specials are on at [****]. I'll see what free things are on [during] the weekend to take my daughter to"* (Participant 2)

Figure 2 shows the box in which Participant 9 and her partner kept all their shopping receipts as well as supermarket catalogues they received in the mail. The dockets were kept both as a means of reconciling all monies spent in the week as well as storing the shop-a-dockets and discount fuel offers printed on dockets by certain supermarkets, which would be removed and used later.

[Figure 2 to go about here]

Buying and selling household items through informal economies such as Gumtree, Facebook and local markets or jumble sales also emerged as a small source of supplementary income for four of the 13 participants. Participant 3 also used Gumtree regularly for the purchase of second hand items:

> *"I buy everything second hand, so all my furniture is from Gumtree and then I negotiate and try to get the best price and then I try to make a bit of money by selling stuff I don't use like old cameras... Just anything I don't use I chuck on Gumtree" (Participant 3)*

Participant 5, a single grandmother living with her 13 year old grandson, used informal markets regularly. She mentioned her frequent use of Gumtree, garage sales and charity stores, looking for free or cheap items that she might be able to re-sell at a profit, either online or in person:

> *"That car seat was free and I'll sell it at the markets… People rubbish me for having all this stuff, but it can help me make ends meet. It's just that I don't have any order in the house"* (Participant 5)

While this represented a modest source of additional income, it came at the expense of an organised house, with the living room almost inaccessible due to the clutter during the interview. Participant 13 was able to point out a number of items in his room and kitchenette which he had located on the street during hard-rubbish collection and had fixed or re-purposed. Unlike Participant 5, he was less interested in selling items for profit, preferring to give to the charities which had helped him out in the past. Although participants were not asked specifically, no participants mentioned their use of other online informal-economy platforms beyond Gumtree and Facebook.

Saving through self-control

Self-control emerged as a common means of saving money. Participants 1 and 2 did not own credit cards; in both cases, this was a purposeful arrangement to ensure they could not access money which they did not have. Participant 1 described her philosophy towards money thus:

> *"Having savings, never getting behind and no credit cards. If you don't have the money to pay for something then don't buy it"* (Participant 1)

Several participants spoke of scheduling automatic direct debits for fixed payments such as rent, loans and fortnightly contributions to electricity, gas, internet and phone bills. In this way a schedule could be set up such that the money was drawn from their account the day after payday so that it could not be spent on other items:

> *"It is too dangerous to have it in there [everyday account]… because it might get spent on McDonalds or something like that!"* (Participant 13)

> *"Everything [is] direct debit. So I don't have to worry about it. I set up the direct debit to the day after I get paid. With the internet and the phone I just need to make sure the money's there on the days which they come out"* (Participant 2)

These quotes typify the way that simple self-imposed controls such as limiting the money in one's everyday spending account or carefully scheduling direct debits were sufficient disincentive for participants not to access their money.

The importance of family transcending daily monetary struggles

Although money was a daily struggle for our participants and required consideration in many daily decisions; it emerged through the interviews that family and friends mattered far more than money. Money was seen as something that was necessary to live day-to-day and of obvious vital importance, but also something which our participants wished they did not have to worry so much about.

Friends and family, particularly children, in many ways were far more important than the inadequacy of income faced by all participants. Participant 5 had given up her full time job at the airport to care for her grandchildren, who she mentioned had been in and out of State care. In this way, the welfare of her grandchildren far outweighed the prospect of economic hardship.

> *"I look after them, I lose them, they come back, gone, gone, come back. But because they're my grandchildren, this is what I do… The light at the end of the tunnel is my son coming home [currently awaiting parole] and us living as a family"* (Participant 5).

Participants 1, 2 and 8 all spoke of the importance of their children *"not missing out"* and how they would make sacrifices for themselves in order to allow their children the same opportunities as others:

> *"Any extra money goes towards [my] kids. So I just prioritise things. I make sure the kids don't miss out on things. Because it's not their fault... My circumstances aren't their fault"* (Participant 1).

This tendency for family concerns to override monetary concerns highlight that it wasn't necessarily the money itself that people wanted, but rather to be in a position that they did not have to worry about it. For this reason, we argue later in the paper that designs which encourage people to worry about money, by requiring regular input of income and expenditure (for example technological budgeting aides and related software), may not be entirely appropriate for those struggling on a low income.

Circumstance not poor decisions

Vines et al. (2014) speaks of a "popular rhetoric" in the UK that low income is linked to poor money management. However, like Vines, we found little evidence to suggest that poor money management or bad life decisions were responsible for landing our participants in their current situations. Many participants spoke of their current low income situation as temporary and only two of the 13 participants spoke of poor decisions- alcohol and drug abuse- contributing to their current financial situation. A number of participants considered their bad financial situations as temporary. Participant 7 had previously earned a good wage working as an electrician on a large government project in a remote location. This contract had not been renewed, however, landing him out of work and reliant on welfare:

> *"My welfare payment is] at the moment, $199 per fortnight. It barely pays the bills. All the mortgage is on hold again"* (Participant 7).

Although struggling at the time of the interview, Participant 2 expected to be better placed financially in the future when she finished her training as a Teacher Aid. Participant 3 planned to commence study once her son started school and Participant 13 had previously begun a course in photography. Participant 5 had been in paid employment, but quit her job when her grandchildren were returned to her after an extended period under State care. Participant 8 spoke of coming from a wealthy family and had previously been married to a lawyer, however, a relationship breakdown and a protracted unresolved divorce settlement had left her with very little money and inadequate child support.

> *"You know what? I used to think it all came down to hard work. And sorry… but there's an element of luck and there's an element of justice. And the justice just doesn't exactly exist sometimes. Some people just get it easy and some people don't"* (Participant 8).

Based on these findings, it can be seen that frivolity or poor money management or budgeting practices actually had very little to do with our participants' current situations. Instead, for many, low income was either a temporary condition to be endured until future employment could be obtained, or simply the product of poor circumstance or misfortune.

DISCUSSION AND DESIGN IMPLICATIONS

Through the course of this research we have found that: (1) friends, family, social networks and informal economies supported our participants' numerous, diverse and creative strategies for saving money and; (2) the circumstances our families found themselves in did not appear

to be a result of their own financial mismanagement. Our findings suggest that categorising people solely in terms of their income- as we had ourselves in our initial sampling- inadequately defines a diverse and heterogeneous cohort of people with aspirations and needs far beyond simply having more money.

The relatively early stage of HCI work on personal finances provides an opportunity for researchers to propose and debate suitable directions for design (Kaye et al. 2014b). While previous research on money has focused on personal management systems and the practices of transactions (Kaye et al. 2014b, Mesfin et al. 2016, Vyas et al. 2016), we focus instead on how connectedness and networks of support assist people in living well on a low income. In the following discussion, we propose a research agenda for future design efforts in this area based on our findings. First, we discuss ways that informal economies and social networks may be leveraged to help people live well on less. We outline an opportunity to consolidate- and link individuals to- multiple local sharing economy platforms through an online service and discuss some considerations for the design of such a service, including the need for financial inclusivity. Second, through three broader tactical considerations, we illustrate the importance of designers appreciating sharing platforms in a much broader context than simply systems that facilitate the transfer of goods or services. Lastly, we reflect on the classification of “low income” in terms of trends in HCI work concerning other marginalised populations (Rogers and Marsden 2013, Vines et al. 2015). We argue the need to augment solely income-based classifications with a measure of an individual’s connectedness to people and communities who can provide support and assist in saving money. We generalise this provocation as Social-Financial Connectedness. Expanding the classification of low income in this way better realises the social dimensions of money (Kaye et al. 2014a) and allows for consideration of how to support people getting by on different levels of income, and on different levels of connectedness to means of saving money.

Leveraging social networks and informal economies

While money was a daily struggle for our participants on account of its scarcity, the actual practice of budgeting itself did not emerge as a specific problem. Many of our participants already had a good grasp of their budget and the likely availability of their money at different times of the week or month, even if this was only in their heads or jotted on scrap paper. Because of this, we are not convinced further technology to assist personal budgeting (Alves et al 2008), or digitised versions of existing analogue practices such as coin jars or cash folders (e.g. Stockinger et al. 2013, Mesfin et al. 2016) would be useful for those in our sample group.

Family, friends and informal economies such as Gumtree, Facebook and locally organised barter featured in our participants' strategies for saving money. Our participants shared goods, services, food, transport costs and internet connections with friends and family, as well as sharing knowledge about other money saving opportunities. As such, we believe a better focus for design in this context is supporting those on lower incomes foster connections to social avenues for saving money and sharing resources such as sharing platforms and local informal economies. This echoes Dilahunt's assertion of the importance of fostering ties across social groups in order to build social capital and improve social mobility (Dillahunt 2014).

Work is already underway defining HCI's potential involvement in the informal or "sharing economy" (Light and Miskelly 2014, Malmborg et al. 2015, Millen et al. 2015, Lampinen et al. 2015). However, except for a critique of the monetisation of sharing (Light and Miskelly 2014 and 2015), there is currently little differentiation in the literature at present between three quite distinct typologies for web-based platforms for alternative economies, i.e. those that: (1) involve money (e.g. AirBnB, Uber, TaskRabbit), (2) involve only sharing/barter (e.g. Freecycle, Streetbank, Leftover Swap) and (3) those used for both (e.g. Gumtree, Craigslist and Buy-Swap-Sell-Giveaway Facebook pages). Although our participants did not report utilising online platforms for sharing and barter beyond Gumtree and Facebook, we consider it likely that as

resource sharing platforms (e.g. Streetbank, Leftover Swap, Freecycle) gain traction and multiply in number, that such platforms hold a great potential to complement our participants existing creative means of getting by on less. At the time of writing however, available online sharing platforms are distributed, specific and difficult to find in lieu of knowing the name of a specific website.

One immediate opportunity we see for platform designers here is to provide online spaces to consolidate- and connect individuals to- multiple local sharing platforms, i.e. a sharing platform connector service. A service of this nature would link users to available internet (i.e. Freecycle, Leftover Swap) and physically located (i.e. jumble-sales, Mens Sheds, community gardens etc.) platforms for sharing based on user-input parameters such as location, skills and sharable resources. By listing their sharable resources (e.g. tools, car, spare room) and skills (e.g. engine maintenance, web design), users could be recommended opportunities to barter with their skills and potentially save money in the process; for example subsidising car costs by using ride-sharing services, or saving money on purchasing a new drill by borrowing one via an online sharing service such as Streetbank.

Taking this one step further, up-skilling was mentioned by several participants in our study as a means of increasing their earning potential. We therefore envisage a sharing platform connector service of this nature additionally offering user input for desired up-skilling or further education. In this way, users (dependent on their input and location) could be connected to local skill-share opportunities such as Hacker/Maker spaces, non-government organisations, local training providers or courses at local polytechnics. Further integration could see polytechnics filling empty spaces in courses by offering discounted rates through such a system. These sort of community-based local educational possibilities and opportunities for informal learning are not yet well represented in existing sharing economy platforms to date, nor in the related academic literature (Knowles et al. 2014, Light and Miskelly 2014, 2015,

Light et al. 2015, Malmborg et al. 2015, Millen et al. 2015). A system of this nature provides an opportunity to connect people with avenues to take advantage of shared resources, save and potentially earn money; leveraging many of the social practices of getting by on a low income that we observed from our participants. Despite this, such a system is financially inclusive, i.e. its value and utility extends to people in a range of different demographic, financial and social circumstances.

We argue that financial inclusivity should represent a priority for designers of any sharing economy service. One consideration here is ensuring that potential barriers to entry to sharing economy platforms do not affect or dissuade usage. Even non-monetised sharing platforms have the potential to exclude financially disadvantaged users via barriers to entry. Streetbank for example requires new users to offer an item or service before they are connected to others offering their goods and services. This represents a potential barrier to entry for users with limited financial means such as our participants, who may not be in a financial position to simply replace a borrowed item which goes missing. A further consideration is maintaining this financial inclusivity over the long term. Light and Miskelly (2015) notes the growing number of "glossy" for-profit services emerging in the sharing economy. A sharing platform connector service as described above, for example, could easily become re-engineered into a for-profit service, receiving monetary commission from certain organisations to the exclusion of others (e.g. many so-called "comparison" services for insurance or mortgage providers). This could potentially compromise the ability for such a system to adequately represent locally available avenues for bartering, selling and learning away from the mainstream economy. These factors affecting the financial inclusivity of sharing economy platforms warrant further consideration.

Broader tactical considerations for platform design

Our findings from this study can also usefully shed light on broader pragmatic and tactical considerations for platform design. We identify three tensions in particular which need to be addressed:

1. Identity disclosure for social support
2. Circumstances of need vs perceptions of circumstances
3. Capacity to offer vs ability to offer

1. Identity disclosure for social support

Our participants found support through sharing with family and friends and also through drawing on family and friends for support when this was needed. Reaching out for support beyond immediate friendship networks through the internet potentially introduces the need to identify oneself to people who might provide that support. Studies of weight loss (Maitland and Chalmers, 2011) and smoking cessation (Wadley et al, 2014) have found that many people limit disclosure of their attempts to lose weight or to stop smoking for fear of failure, preferring to share news once they have obtained some level of success. Sites such as Reddit for example are popular for social support for smoking cessation because they support social discussion without disclosure of identity. Here users typically identify themselves by their stage of quitting smoking, rather than by revealing their identity. As people are typically sharing encouragement, empathy and strategies rather than material support, this social support can be given anonymously. This is a particularly important consideration for platforms aimed at supporting people in financial distress, given the stigma felt by our participants for their financial situation. Sharing platforms to support sharing and connectedness will need to investigate aspects of disclosure in order to find the right mix of disclosure and social support. Computer-based support for social sharing of goods and services might take the form of

personal social networks or domestic or family based technologies (Grimes et al 2009) rather than broadcast platforms such as Gumtree or Facebook.

2. Circumstances of need vs perceptions of circumstances

Our study found that circumstances of need related more to personal situations, i.e. losing a job (Participants 4, 5 and 7), looking after young children (Participants 1, 2, 10) or studying (Participants 6 and 9), rather than financial mismanagement. People may be looking for an opportunity to shift circumstances through training or employment, by offering a skill in exchange for goods or services, or by finding new friendships and moral support. Yet the circumstances in which people will offer support are also varied and may depend on perceived circumstances of need. For example, people may willingly donate goods, services and money when they hear people are in times of crisis, but perhaps not if they doubt the authenticity of claims. Thus perceptions of need and circumstances may be an important factor in what is offered and to whom. Computer-based support may need to address these issues of perception and authenticity.

3. Capacity to offer vs ability to offer

Offering may come in many ways: from people both financially wealthy and poor, time-rich or time-poor, or from those with particular interests or circumstances that make them wish to offer goods or services. However, those with a capacity to offer may find difficulty translating that capacity into actuality. Wealthy people with goods that they do not need may be time poor and may dispose of them rather than offering them. Advertising items online, even to give away, can be time consuming or require membership to an online platform. As such, mechanisms and infrastructures that can translate capacity to offer into ability to offer need to be investigated. New forms of translational mechanisms may be in part the value that platforms can provide.

Each of these three considerations illustrate the need for sharing platforms to be considered in a much broader context than simply systems that facilitate the transfer of goods or services. Within each of these considerations, are complex factors (e.g. capacity to offer, perceptions of circumstances and personal anonymity). These factors may vary with financial capability and may affect, if not determine, the use and value of a sharing platform.

Re-framing the "low income" tag

In this last section, we outline our proposal to re-frame the "low income" categorisation in future HCI work. It has been argued that classifying people only by a single metric (e.g. disabled, elderly, poor) has led in the past to technologies intending to "overcome" or compensate for lack of ability (Rogers and Marsden 2013, Vines et al. 2015). After previously engaging a broader demographic of participants on issues of personal and family finance (Snow et al. 2015, Vyas et al. 2016), we wished to compare these findings with people on a lower income. In retrospect, however, we too had sampled our participants solely according to levels of income and had wrongly assumed that low income qualifies as a surrogate for poverty in the broader sense of the word (Martin and Hill 2012). Our intention is to make good on this oversight and discuss ways in which income-based categorisations may be adapted and enhanced in future work.

Based on findings from this study, we argue the "low income" classifier, when applied alone, is reductive. It considers people only according to their capacity to buy, ignoring their degree of access to support, their capacity to share and contribute, or their ability to live well despite financial adversity. It represents the application of a solely economic lens to what is now understood to be an equally social problem (Martin and Hill 2012, Dillahunt 2014). While poverty may be entrenched in areas with low social mobility, in the context of this study; i.e. people living on a low income in an expensive country, the situation of low income in was observed as having a strong temporal component. Had we conducted the research 12 months

earlier, Participants 4, 5, and 7 would have fallen into the middle/higher income sample, not yet having lost their respective jobs. Participants 2, 6 and 9 all expected to be better placed in coming years when upskilling toward better qualifications would broaden their possibilities for employment. On the other hand, more complex personal and mental health issues had kept Participants 11 and 13 out of the mainstream workforce for some time and seemingly for the foreseeable future. We also saw very little evidence to suggest the low incomes experienced by our participants were a direct result of financial mismanagement. This provides further evidence dispelling the assumption that poor people are poor on account of their inability to manage money (Vines et al. 2014). In short, the take-home message here is that we are not convinced that being on a low income is indicative of anything beyond simply being on a low income.

Accordingly, we propose that such singularly economic qualifiers might be augmented in policy and research with a term which recognises both the economic and social dimensions of financial situations (Martin and Hill 2012). We suggest future work in this area might consider measuring the connectedness of people to social supports which allow them to live well and save money. For example, connectedness to different friends and family with whom they share or pool goods and services and receive support in times of need. Tentatively termed here as Social-Financial Connectedness, a measurement of this nature could include: (1) the number and quality of connections (i.e. friends, family or neighbours) with whom an individual or family pools or shares resources; (2) knowledge of, and access to, support services, both non-government organisation and accessible family and friends; and (3) access to informal economies and the quality of goods or services with which to barter.

We introduce Social-Financial Connectedness not as a dictionary-ready definition or fully formed idea, but simply a term that generalises our provocation in this paper for designers and policymakers to consider ways to augment economic classifications with social dimensions.

As such, it should be considered quite separate from definitions of Social Connectedness in the social sciences literature, which relate to companionship, isolation and loneliness and social support (Ashida and Heaney 2008, Rook 1990). We envision Social-Financial Connectedness to be developed further and used pragmatically to quantify the number and quality of social connections available to a person that can facilitate barter, sharing, selling, saving or other means of supporting the principle of living well on a low income. Such a measure is not proposed to replace, but rather to supplement income-based qualifiers; providing a means of better capturing the heterogeneity within different financial cohorts. Someone who is cash-poor but connections-rich (e.g. Participant 2, 7 or 9 who shared and pooled resources with friends and neighbours), may be better placed than someone on a marginally higher income whose isolation or lack of connections prevents them from pooling resources, sharing/bartering and stretching their money further. While this may have been case within our sample, there is insufficient data to back this up and more targeted research is required.

The determination of exactly how Social-Financial Connectedness might be quantified is largely beyond the scope of this present paper. However, a system akin to a sharing platform connector service (as discussed prior) could provide a starting point for this, by quantifying the number of available social avenues for sharing, barter and saving available to an individual in a given location and with a given set of resources or skills to share. Separate to this would be a need to quantify the number and quality of offline social connections such as extended family, friends, neighbours, charities or support services who an individual interacts financially with.

More immediately, for researchers and designers in this space, we advocate a useful starting point for determining Social-Financial Connectedness might be an adaptation of the sketching exercise used in the methodology of this paper. In our study we started our interviews with

people sketching out the flow of their finances in terms of income and outgoings (**refer Figure 0**). In future work, a window into peoples' Social-Financial Connectedness could instead be obtained by inviting participants to sketch their social-financial landscape, e.g. people they share goods and services with, family or friends they can borrow money off in a time of crisis, connections who they talk to about banking, bargains and so forth.

If a measurement akin to Social-Financial Connectedness is incorporated in studies, setting solely income-based (and potentially stigmatic) income qualifiers in participant sampling becomes less important. By this, we do not mean that such a term should simply replace "low income" when sampling participants. Simply that looser classification in sampling, e.g. *"…who feel they do not have enough money*" may be adequate when a more holistic definition of overall financial well-being can be determined through Social-Financial Connectedness. In this way, enquiry is broadened beyond income alone and toward the opportunities associated with the sharing economy (Knowles et al. 2014, Malmborg et al. 2015, Millen et al. 2015, Light and Miskelly 2014 and 2015) and a better appreciation of the richness of social practices concerned with getting by and living well under financial constraints.

We argue that designers of sharing economy platforms are in a unique position to increase the Social-Financial Connectedness of their users; by connecting people to avenues that enable them to sharing goods and services with others. This better equips people to live well on less than measures or designs aimed simply at budgeting or saving money (Alves et al. 2008, Stockinger et al. 2013). We believe a key to maximising the impact of the sharing economy on Social-Financial Connectedness, as we argued earlier, is designing for inclusivity from the broadest range of financial situation. We borrow the adage from gerontology: *"Design for the young and you exclude the old. Design for the old and you include everyone."* [1] In our

[1] Professor Bernard Isaacs: Founding Director of the Birmingham Centre for Applied Gerontology

context, we argue that sharing economy platforms which impose financial barriers to entry (i.e. the need to own a car less than 2 years old to drive for Uber or have a spare room in your house to host on AirBnB) exclude the financially disadvantaged. However, designs that are inclusive of various levels of social/financial disadvantage (i.e. non-monetised sharing platforms, or our proposition for a non-profit sharing economy connector service) offer equal utility to a far broader range of people and offer a direct opportunity to increase peoples' Social-Financial Connectedness.

CONCLUSION

This paper represents an exploration on the individual level of how people living on a low income in an expensive country manage their money. Wishing to avoid treating low income as a deficit or "condition" to be compensated for, we adopted a strengths approach; exploring the creative ways in which our participants got by and lived well (e.g. socialised, saved money and shared with others) on less. In particular, the role social connections played in money management and some of the reasons behind our participants' current situations.

We have demonstrated how the scope of technology in this space transcends personal budgeting, towards designs which leverage the social connections between people in the context of managing money. We have highlighted in particular the potential role of sharing economy platforms in supporting people to live well on a low income and the range of considerations which designers of such technologies need to be mindful. Finally, we have outlined how monetary demographic categorisations such as "low income" represent an ultimately reductive economic lens on what is equally a social problem, and in response, have outlined the need to augment such qualifiers with a metric which better appreciates the social dimensions of financial situations.

It is important to appreciate the implications discussed in this study as being resultant from a Western context of relatively high average wages for those employed and a reasonable safety net of social security for those who are not. While all our participants experienced lower than average incomes and struggled with Australia's high living costs, their situations are not comparable with those faced in areas of the developing world. For this reason we do not expect our findings to be broadly applicable to both contexts.

At the same time however, for the millions of families surviving on limited budgets in expensive countries such as Australia and Western Europe, we feel the issues raised by the paper are salient. We have highlighted this area of personal and family finances as a promising area for much further HCI research and have demonstrated in particular, the importance of this agenda in the development and design of the sharing economy and sharing economy platforms. We hope that the ideas presented in this paper will be debated, challenged and that subsequent research agendas will benefit.

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Figures

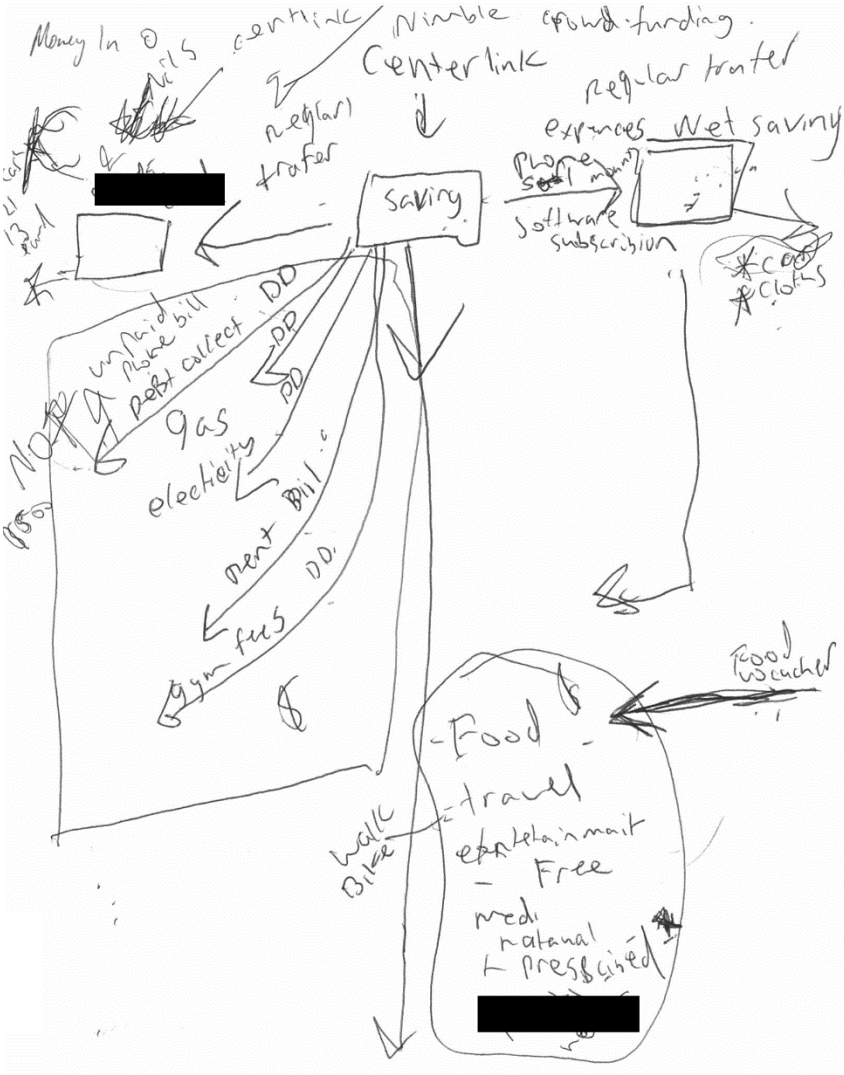

Figure 0: Financial flowchart

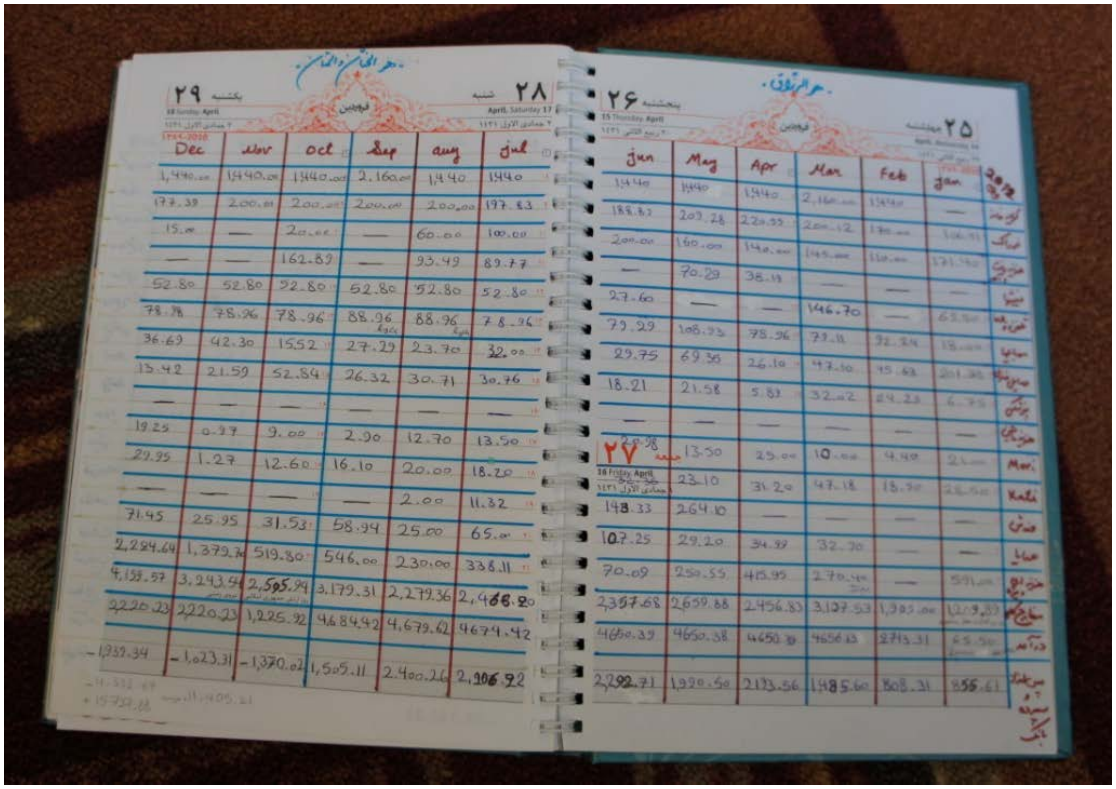

Figure 1: Account book- Participant 6

Figure 2: Box of coupons, dockets and catalogues- Participant 9

Biographies

Stephen Snow is a Research Fellow at the University of Southampton. Having completed a PhD in Human Computer Interaction from Queensland University of Technology (QUT), his research interests have spanned from human-factors research into the social contexts of in-home energy use feedback displays, financial management and indoor air quality.

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