



Research Report:

Doing Better for Vulnerable Young Parents and their Children

**An Exploration of how Technology could Catalyse
System Transformation**

Authors:

Kay Cook, Kath Albury, Milovan Savic, Farnaz Zirakbash, Abdullah Al Mahmud,
Ashir Ahmed, Jennifer Martin, Robbie Fordyce, Jessica Mackelprang,
Muneera Bano, & Jean-Guy Schneider.

Acknowledgments

We would like to wholeheartedly thank the twelve staff and ten clients at Family Life who were interviewed for this research. We appreciate their time and effort to take part in the research and share their personal stories and experiences with us. Without them, this project and publication would not have been possible. Additional thanks to Zoë Goodall for editing the report and writing the executive summary.

© Swinburne University of Technology, Family Life and Life Without Barriers 2019.

This publication is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced without prior written permission from the authors.

Views expressed in this publication are those of individual authors and may not reflect those of Swinburne University of Technology, Family Life or Life Without Barriers.

ISBN: 978-1-925761-13-9

DOI: <https://doi.org/10.25916/5d8010383e7fc>

Suggested Citation

Cook, K, Albury, K, Savic, M, Zirakbash, F, Al Mahmud, A, Ahmed, A, Martin, J, Fordyce, R, Mackelprang, J, Bano, M, & Schneider, J (2019), Doing better for vulnerable young parents and their children: an exploration of how technology could catalyse system transformation. Melbourne: Swinburne University of Technology.

FOREWORD

From the outset we knew this would be a challenging project. We wanted to learn from young parents about what part new technologies might play in assisting them to care safely and well for their babies. These young parents experience complex issues which can make every day difficult for them to meet their basic needs as well as care for their baby. As service practitioners and researchers, we had to take a careful and ethical approach to ensure our desire to learn was a positive experience for the parents as well as purposeful for the project. The challenges around achieving this engagement to then gather data for analysis and insights should not be underestimated. That said, as this report highlights, the lived experience of those we serve is essential to dispel myths and assumptions about how the rapidly changing world of digital technology might, or might not, be accessible or beneficial for vulnerable families. This report reinforces how critical it is to use a human-centred approach, where equal value is accorded to the data provided by our clients, if we truly want to innovate to improve benefits and outcomes for those we seek to serve, including when we are considering the contribution and impact of new technologies. “Nothing about us without us” is indeed an important principle to be honoured.

As practitioners, our desire to learn is dramatically enhanced through partnerships with tertiary research institutions. We need the rigour and expertise of academic colleagues to help us to understand, learn and remain relevant and responsive, bringing quality evidence to inform interventions. Our services operate within a continuous improvement loop to learn from practice, embrace new knowledge, and evaluate our efforts and outcomes for those we serve. The art of effective helping requires a scientifically driven process.

In joining with Swinburne, Family Life and Life Without Barriers have together aimed to improve our understanding of pathways and processes which might assist vulnerable young parents to access, engage with and benefit from parenting resources and services via the use of digital technology. This report provides a unique glimpse into how vulnerable young parents, engaged in Family Life’s Cradle to Kinder program, access and use digital technology.

We are grateful to the young parents and practitioners who engaged with this important project and to the team at Swinburne for their sensitive and insightful approach to gathering and synthesising the information. We look forward to engaging in the next steps of the journey supporting young parents to gain the access, skills and support they need to benefit their role as parents, and for them and their children to be safe and thriving as equal participants in social and online communities.

Jo Cavanagh OAM
Chief Executive Officer
Family Life
Adjunct Professor,
Faculty of Health, Arts and Design
Swinburne University of Technology.

Claire Robbs
Chief Executive Officer
Life Without Barriers

Family Life

Family Life is an independent community service organisation with a well-established footprint in Bayside Peninsula through nearly 50 years of service delivery in the region. We focus on supporting vulnerable children and families, with offices based in Sandringham, Cheltenham and Frankston. To achieve our vision of capable communities, strong families and thriving children, we provide holistic, therapeutic and practical services, support and community connections. We have 400+ volunteers which enhance the value of our 150+ staff. Our long connection to the local community has enabled us to develop an extensive network of community partnerships which we are able to leverage to enhance outcomes for clients.

Family Life has extensive knowledge and experience in the delivery of Victorian social services, with many of these services provided to vulnerable young parents and their children. In addition to our services in the areas of Family Law, Family Violence and Corrections, we provide State Government funded services specifically targeted towards vulnerable families including Child First, Integrated Family Services and Cradle to Kinder.

Life Without Barriers

Life Without Barriers (LWB) is a leading social purpose organisation working in more than 440 communities across Australia. Their services currently support around 16,000 people living in their own homes or in residential houses managed by LWB. The organisation supports children, young people and families, people with disabilities, older people and people with mental illness. LWB also works with people who are homeless, as well as refugees and asylum seekers.

At LWB, the wellbeing of children, young people and their families is the greatest concern, and they support over 2,000 children and young people in out-of-home care. LWB provides a range of services for children, young people and families, including home-based foster and kinship care, residential care, support for families and children to spend time together when children are in care and post-care, youth advocacy and mentoring. Ensuring that children are cared for, supported and protected from sexual and physical abuse is absolute, non-negotiable priority.

The Swinburne Social Innovation Research Institute

The Swinburne Social Innovation Research Institute (SIRI) is where technology meets humanity. Social challenges are interconnected in nature, often including elements that affect and are affected by wellbeing, education, mobility and economic issues. SIRI facilitates teams to solve problems by addressing the intersection between these social elements and the potential of technology. Through the application of technologies and data analytics techniques, SIRI collaborates with industry partners to address their real-life challenges. SIRI comprises researchers, practitioners and community members from diverse, appropriate backgrounds.

The Research Team

Associate Professor Kay Cook

Kay Cook is an ARC Future Fellow and Associate Professor in the Department of Social Sciences at Swinburne University. Her work explores how new and developing social policies, such as welfare-to-work, child support and child care policies, transform relationships between individuals, families and the state.

Professor Kath Albury

Kath Albury has a PhD in Media and Communication from UNSW. Her research focuses on young people's practices of digital self-representation, and the role of user-generated media (including social networking platforms) in young people's formal and informal sexual learning.

Kath is Professor and Research Development Director in Swinburne's Department of Media and Communication, and leads the Social Innovation Research Institute's Community Health and Wellbeing Program.

Milovan Savic

Milovan Savic is an early career researcher currently in the final phase of his PhD at Swinburne University. His research looks at family media practices and particularly parent-child dynamics around digital and social media use. With expertise in conducting qualitative studies, Milovan's research interests include most youth- and technology-oriented themes as well as the interplay of the two. With a background in youth work, Milovan has extensive experience in community building and intercultural youth programs.

Dr Farnaz Zirakbash

Farnaz Zirakbash is an early career researcher and teacher with a PhD in Sociology from Swinburne University of Technology. She is an expert in qualitative methods and has conducted several studies interviewing vulnerable women. She is particularly interested in issues faced by women in both Western and non-Western countries, especially family and domestic violence.

Dr Abdullah Al Mahmud

Abdullah Al Mahmud is a design researcher and human-computer interaction (HCI) specialist. He has extensive experience in developing and evaluating technology for older adults and special user groups. Over the years, he developed several computer applications such as tangible tabletop and intergenerational games for older adults, an assistive email client for persons with aphasia, and a storytelling application for older adults.

Dr Ashir Ahmed

Ashir Ahmed has research interests and expertise in the design, implementation and evaluation of programs related to the social impact of technology. Dr Ahmed is working on various projects that focus on creating positive social impact through technology. Some of these projects include digital literacy for refugees, women's empowerment, and foster care management systems.

Professor Jennifer Martin

Jennifer Martin's research interests and expertise are in youth mental health and wellbeing, young people and substance issues, social inclusion and future human services models and interventions. Before entering academia, Jennifer had fifteen years practice experience as a social worker in disability, child and family health, and mental health.

Dr Robbie Fordyce

Robbie Fordyce is Lecturer in Big Data, Quantitative Analytics, and Research Methods in the School of Media, Film, and Journalism at Monash University. Robbie's research investigates the civic dimensions of media technologies, especially communication and distribution platforms, media infrastructure, and digital entertainment. He has previously published on 3D printing, activist technologies, and videogames.

Dr Jessica Mackelprang

Jessica Mackelprang is a clinical psychologist with experience providing clinical services and conducting research in primary care, hospital, and community settings with socioeconomically marginalised groups (e.g. people experiencing homelessness). Her research utilises qualitative and quantitative methods to investigate health, intentional and unintentional injury, and health service utilisation.

Dr Muneera Bano

Muneera Bano has a PhD in software engineering and has been conducting research in the socio-technical, human-centred domain of requirements engineering. She has experience of interdisciplinary research where technological solutions are assessed within a social context, with a particular focus on user involvement in the software development process.

Professor Jean-Guy Schneider

Jean-Guy Schneider has more than two decades of experience in reliable software technologies, with a special research focus on component-based software systems, human-computer interaction, requirements engineering and cloud and mobile computing, as well as software development methodologies. He has also published in the area of mobile application development and analysis of users' perceptions and feedback of mobile apps.



CONTENTS

Acknowledgements	i	Technology as a communication tool	27
Foreword	ii	Barrier: digital literacy	27
Project Origins	iii	Staff Perspectives on Clients' Use of Digital Technologies	28
Family Life	iii	Digital technology as a distraction or negative enabler	28
Life Without Barriers	iii	Digital technology as a site of social connection or a positive enabler	29
The Swinburne Social Innovation Research Institute	iii	Digital technology as a source of parenting advice	30
The Research Team	iv	Smartphone Apps as Parenting Resources	32
Table of Contents	vi	Challenges with Online Government Services	34
Executive Summary	1	Conclusion and Recommendations	37
Glossary	2	Digital Inclusion	37
1. Background	4	Online Peer Support Groups	37
2. Project Design and Research Methods	8	In-House-Built Parenting Apps	38
Mapping the Process	9	Responses to Centrelink and Other Government Policy Issues	38
Phase 1: Literature review	9	References	40
Phase 2: Interviews with staff	9		
Phase 3: Interviews with young parents	9		
Data Collection Methods	10		
Data Analysis	10		
3. Literature Review	13		
Supporting Young Parents	13		
Digital Inclusion and Digital Literacies for Disadvantaged Young Parents	13		
Parenting Technologies	14		
Social Isolation of Young Mothers and Scientific Mothering	15		
Online Peer Support Groups	16		
Online Government Services: A User Perspective	17		
4. Findings: Interviews with Staff and Young Parents	19		
Young Mothers' Access to and Use of Digital Technologies	20		
Access to digital technologies	20		
Rates of access	20		
Barrier: digital literacy	20		
Barrier: limited mobile data plans	21		
Use of digital technologies	22		
Parenting information and advice	22		
Online peer support groups	24		
Staff's Access to and Use of Digital Technologies	26		
Caseworkers' reasons for using digital technologies	26		

EXECUTIVE SUMMARY

The Swinburne research team, in conjunction with Family Life and Life Without Barriers, interviewed twelve staff and ten clients at Family Life to determine the service and information needs of vulnerable young parents who are the beneficiaries of social services and welfare programs.

We first explored the current empirical literature on young parents, digital inclusion, digital literacy, parenting assistive technologies, social isolation of young mothers, online peer groups, and user perspectives on online government services. Building on this literature, we then used interviews to query the strengths and blind spots related to technology among Family Life workers and service users (i.e. young parents).

We sought to identify opportunities for capitalising on the potential of technology to complement or transform existing services provided by Family Life and Life Without Barriers. In particular, we wanted to find out how social service providers could use technology to support clients, manage their organisational obligations, and access professional resources. We also wanted to find out how beneficiaries of these social services engage with digital technology, including the types, their methods of engagement and current barriers to access.

We found that the young parents used resources including Facebook groups, websites and apps for information and support about parenting. However, lack of digital literacy and lack of reliable internet access were sometimes barriers to

usage. Staff used technology as part of their day-to-day work, and some were comfortable showing websites and apps about parenting to young parents. However, 'change fatigue' and lack of digital literacy could be a barrier for staff, too.

Staff saw both advantages and disadvantages to young parents' use of digital technology. Digital technology was viewed as a potentially useful source of support, but staff noted that excessive engagement with digital technology could disrupt connection between parents and their children. Staff showed a mix of support and caution about the appropriateness of online parenting resources for clients.

Both staff and clients spoke positively about the possibility of a parenting app that presented relevant information. Government online services, such as MyGov, were flagged by staff as time-consuming and difficult to understand for clients.

We conclude that digital literacy cannot be assumed among young parent clients who utilise welfare and social services. We recommend building clients' digital capacities as part of social service provision, as this would have multiple benefits. Developing an in-house online peer support group or app is a possibility, but further research is required to test viability, specifications and costings. Furthermore, we recommend several initiatives for helping clients with myGov and related government platforms.

GLOSSARY

App

Short for 'application'. In most cases, this refers to a software application run on a smartphone, tablet or computer, but apps can also be found on smart TVs and smartwatches. Typically, apps have a narrow focus, allowing the user to perform a specific task.

Caseworker

Worker employed by a not-for-profit welfare organisation or a government agency who works directly with clients, providing them – and often their families – with advocacy, information and other services.

Celebrity mums

Refers to public figures, who are already famous, using their media presence to share parenting experience and advice. It can also refer to 'regular' mums who become famous online; they use their popularity to share parenting advice and/or promote parenting-related products, typically through social media platforms such as Instagram or YouTube.

Centrelink

Government welfare benefits service that provides financial support to Australians who face hardship. These include people with disabilities, the unemployed, students, retirees, people who live in rural or remote communities and Indigenous Australians. Centrelink payments and entitlements can be viewed and managed via an app.

Data aggregation

Process of compiling a range of (often personal) information from various databases with the intent to prepare combined datasets for data processing. Typically, this process is used to obtain specific insights about particular demographic groups based on variables such as age, profession, income, etc.

Data brokerage

Process in which large datasets resulting from data aggregation, concerning individuals or specific groups of people, are sold to third parties. Often people whose data are being brokered are not aware that their data are being collected and sold.

Digital device

Physical equipment operating as a computer. The term may refer to devices including mobile phones, smartphones, tablets, notebooks, laptops, fitness trackers and others.

Digital literacy

A person's ability to efficiently find, identify, evaluate and use information through the use of digital devices. It includes: a) skills to use the digital devices; and b) skills to understand the implications of engaging with various services through digital devices.

eGov

The provision of traditional government services to citizens and other stakeholders through digital devices.

Facebook groups

Feature within the Facebook platform that allows users to join thematic groups. These groups can have different levels of visibility: Public groups and content shared in them are visible to anyone on Facebook; closed groups are visible only to approved members, but they still can be found by anyone on the platform; secret groups are hidden from all Facebook users except group members, and can be joined only upon receiving an invitation. However, from time to time Facebook implements changes to the platform which often affect the visibility of these groups.

Geolocative tracking

Part of the process of data aggregation where data about individuals' use of apps and other online services are recorded through the GPS features inbuilt in most modern digital devices.

Google Drive

Data storage and synchronisation service for organisations and individuals, operated by Google Inc. It allows users to store, share and synchronise files across different digital devices.

ICT

Information and Communications Technologies.

NGO

Non-government organisation. In most cases, the term refers to not-for-profit organisations working towards positive changes in welfare, education, human rights, the environment and other areas.

Online peer groups

Networks of people with certain shared demographic or social characteristics such as age, location, economic status, education, class, or interests who communicate and interact via digital devices.

Online services

Website- or app-based interfaces which allow users to perform a specific set of task(s). This can include online banking, communicating with others, sharing personal content such as photos and videos, shopping, searching for jobs and completing administrative tasks.

Social networking sites

Online services, accessed through digital devices, that allow users to create public or private profiles, share content and interact with other users of the service.

WhatsApp

Free messaging app owned by Facebook. The app allows users to send text and voice messages, make voice and video calls, and share documents, videos and images as well as geo-locations. It requires an internet connection.

Young parents

For the purposes of this report, the term refers to parents between sixteen and twenty-five years of age.



1. BACKGROUND

The use of digital technology is a ubiquitous aspect of everyday life, impacting on work, family and relationships. Portable digital devices have become ingrained in mundane aspects of interpersonal communication: people use them to communicate with each other; to engage with friends on social media or messaging apps; to access news and media content; to play games; and, increasingly, to shop and bank online. Notably, the provision of government and non-government services is also being facilitated via online portals. However, while digital devices seem to be pervasive, access to and participation in digital services should not be assumed. One group that often faces barriers to access is disadvantaged young parents. This is despite evidence indicating the importance of online social networks to new mothers seeking information and social support (Price et al. 2018). Too often, the low socioeconomic status of these parents hinders digital participation, with recent research indicating their use of telecommunication technologies is well below the national average for their age group (Price et al. 2018).

In recent years, a range of fields has begun to consider not only the opportunities offered by digital technologies, but also their social and ethical impacts. Examining Australian social workers' technology use, Harris (2018, p. 31) found that "social workers are driven to embed technology in their practice, often in spite of their organisational mandate, due to their constructs of social work as being client centred". She found that, as with other groups, social workers and allied professionals use digital technologies not only for information-seeking but also for communication and social connection. However, it is important to note that many social workers continue to privilege face-to-face contact over other forms of communication, even when their clients explicitly indicate a preference for digital interaction (Harris 2018).

In other words, while technological innovations might aid service delivery, they should not be seen as a substitute.

The use of digital technologies in social services provision often raises concerns regarding the controlling or coercive potential of these technologies, particularly in relation to geolocate tracking, data aggregation and data brokerage. For example, Lupton (2013, 2014) critiqued the disciplinary potential of health apps and self-tracking tools, noting that even "well-intentioned" technologies can be used for the purposes of surveillance and control. Similarly, Morozov (2013) observed an emerging tendency towards "technological solutionism", or the belief that technological innovation solves social problems, as opposed to introducing new ones. Still, despite such reservations, the use of digital media in social work is steadily increasing (Chan & Holosko 2015). For example, social service providers increasingly rely on information systems to manage client databases and also use proprietary platforms including Google Drive and WhatsApp. As such, technology in social work practice can have a wide variety of uses. It operates both as a 'backstage' tool for efficient administration, record-keeping and performance-measuring, and as a 'frontline' for client engagement, advocacy and interaction (Harris 2018).

In order to harness the potential of digital technologies to enhance social work practice, there is first a need to better understand, a) the organisational contexts of agencies that provide services to disadvantaged clients and, b) the ways clients access and engage with digital technologies. This report seeks to address these areas and provide insights into the organisational contexts for current and future technology use by caseworkers, as well as understanding the needs of the service beneficiaries. This will ensure a space for client advocacy.

The aim of this project was to explore the service and information needs of vulnerable young parents who are the beneficiaries of social services and welfare programs. We explored the current empirical literature, then queried the strengths and blind spots related to technology among Family Life workers and service users (i.e. young parents). By involving both workers who deliver Family Life's services and young parents who are beneficiaries of these services, we adhered to an inductive research approach. We sought to identify opportunities for capitalising on the potential of technology to complement or transform existing services provided by Family Life and Life Without Barriers. In doing so, our project addressed the following research question:

What are the potential areas where technological solutions might improve social service provision in a way that is meaningful to young parents (clients)?

To better address this overarching research question, our inquiry focused on several specific questions guiding data collection and analysis:

1

How can social services and welfare providers use technology to

- a) support clients;
- b) manage organisational obligations regarding compliance and governance; and
- c) manage workflows and access to professional resources and professional development opportunities?

2

How do service beneficiaries engage with digital technology, including:

- a) the type of digital technologies that are currently available;
- b) how they currently engage with these technologies; and
- c) the current barriers to their use of technologies?

Given the exploratory nature of this project, we applied a very broad definition of digital technologies in our investigation, with interviews discussing devices caseworkers and their clients are presently using (e.g. mobile phones or smartphones, laptops and/or tablets), access infrastructure (e.g. mobile plan limitations, WiFi availability), platforms and apps (e.g. social media, parenting apps) and other digital content they might access (e.g. websites, video clips, etc). We also considered the role of ICT software and infrastructures such as the MyGov portal and the organisation's client databases and management systems.

The Swinburne University of Technology team that was assembled to address these research questions was interdisciplinary and included academics from the fields of media and communication, sociology, social work,

communication and design, information systems and psychology. The team members brought expertise in qualitative research methods, family studies, organisational analysis, and technological design. We participated in monthly working meetings to ensure the coordination and integration of the various disciplinary perspectives. An interdisciplinary approach allowed us to identify individual, cohort, systemic and social issues within the data and to examine the technological context and responses at an individual, service and sector-structural level.





2. PROJECT DESIGN AND RESEARCH METHODS

Designed as a qualitative and exploratory study, project implementation commenced in August 2018 and lasted for twelve months. The project was funded through Swinburne's Seed Innovation Grant with financial contributions by Swinburne University of Technology and the project partner organisations Family Life and Life Without Barriers. The purpose of the Seed Innovation Grant is to support the development and establishment of interdisciplinary projects and partnerships that work towards solving 'end-user' challenges, while also contributing to economic and social impact. In response, this report provides scope and requirements for a possible interface to address the needs of vulnerable young parents and, in doing so, yields insights into service transformations by directly responding to the community needs. These recommendations provide scope for future collaborative partnerships between Swinburne University of Technology, Family Life and Life Without Barriers.

The project implementation consisted of several phases, including: an extensive literature review; interviews with Family Life staff; and interviews with ten young mothers who were beneficiaries of Family Life's Cradle to Kinder and Community Bubs programs. Ethics approval for the interview phases of the project was obtained from Swinburne University of Technology (SHR Project 2018/246) prior to commencing fieldwork.

Following the principles of a co-design research approach, we sought to actively include project partners in all phases of the project implementation, not only as study participants but also by ensuring they maintained an active role in steering the project's design and implementation. To achieve this, we held three review meetings during which we evaluated progress of the project and, together, planned future directions. These meetings took place in March, June and August 2019. Additionally, the project manager was in regular contact with Family Life's Senior Manager for Practice Quality as well as with the team leaders of the Cradle to Kinder and Community Bubs programs. Regular consultations between the Swinburne research team and the project partners ensured the project responded to the challenges and needs of the community partners. Furthermore, close collaboration helped to optimise recruitment of difficult-to-reach participants, namely young mothers experiencing various vulnerabilities.

The following section provides a detailed account of each of the project phases, and outlines the methods used for data collection and analysis.

Mapping the Process

Phase 1: Literature Review

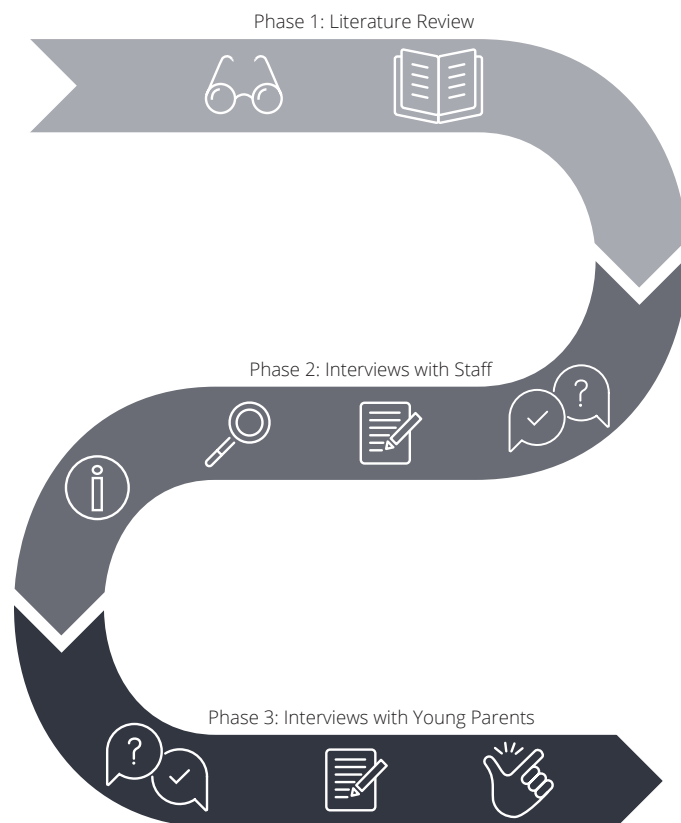
We conducted a literature review continuously throughout the project, consisting of several smaller reviews aimed at informing and supporting each of the project's phases. Narrative literature reviews were used to cover specific themes addressed by the project. This involved collecting and compiling materials on digital inclusion, use of digital devices and technologies by social workers, technology use by young people and particularly vulnerable populations, online peer support groups, parenting apps, mobile health platforms (also known as mHealth interventions), teen parenting, technology adoption and use within health and welfare service provision, perspectives on online government services and other related themes. We collected academic papers and relevant 'grey' literature sources from a number of disciplines including media and communication, social work, human-computer interactions, sociology and psychology. We provide a summary of reviewed literature in section 3 of this report.

Phase 2: Interviews with Staff

Phase 2 took place between October 2018 and January 2019. In this phase, we interviewed six front-end staff who worked in the Infant team and engaged in direct work with clients. We also interviewed six back-end staff – working across management, IT, education and policy teams. While not all staff that we interviewed worked directly with clients, all were able to discuss the use of digital technologies within the organisation in their respective field of work. In these interviews, we sought to understand how staff are currently using digital technologies to a) support clients, b) manage organisational obligations regarding compliance and governance and c) manage workflows and access to professional resources and professional development opportunities. Findings from this phase were also used to inform Phase 3.

Phase 3: Interviews with Young Parents

In this phase, we sought to gain a deeper knowledge of the types of technology available to parents and their engagement practices with technology, as well as identify potential areas where technological solutions might improve service provision in a meaningful way. To this end we recruited a total of ten clients – all young mothers and current beneficiaries of one of the Family Life programs aimed at supporting vulnerable young parents (either Cradle to Kinder or Community Bubs). Clients included in these programs experience a range of vulnerabilities including domestic violence and abuse, physical and intellectual disabilities, limited educational attainment, drug use problems, chronic or recurrent homelessness, poverty and/or lack of economic independence, lack of access to supports, refugee status, social and institutional effects of racial discrimination, and long-term intergenerational effects of colonisation. Participants were aged between sixteen and twenty-five years old. All interviews were approximately thirty minutes long and were conducted by a female interviewer via telephone, between February and May 2019.



Cradle to Kinder is a program funded and coordinated by the Department of Human Services and implemented by registered service providers who are reviewed against specific quality standards every three years. The program provides a targeted antenatal and postnatal support service that offers intensive and long-term family and early parenting support to vulnerable young mothers (under the age of twenty-five) and their families. Families can commence using this program during pregnancy and continue up until the child is four years old. Priority is given to young mothers who are known to have difficulty maintaining engagement with services.

Community Bubs is a philanthropically funded program that started in 2004. The program is designed and run by Family Life. It offers twelve-month support to young parents, primarily young mothers who are struggling with parenting or experiencing complex social issues, such as drug and alcohol problems, family violence and homelessness. Parents in this program are often at risk of child protection services removing children from their care.



Data Collection Methods

As outlined above, Phases 2 and 3 of the project implementation involved interviews with staff and service beneficiaries, respectively. In both phases, we conducted semi-structured interviews. Three separate interview guidelines were used, each tailored for the specific target group – caseworkers, back-end staff and clients.

Initially, a caseworker provided clients with brief information about the research during a regular home visit. At this point, clients were asked to provide their contact details on a brief form and express if they were interested in being interviewed by the researchers. Clients provided their response using a sealed envelope – in this way, we avoided the risk that clients might feel pressured into participating. Sealed envelopes were delivered to the research team, who then contacted those clients who indicated interest to arrange a time for interview. All interviews in Phase 3 were conducted via the telephone by the female researcher.

Following caseworkers' suggestion that text messages are viewed favourably by clients, our research team decided to use this method as a key communication channel with project participants. In order to arrange an interview, a Swinburne researcher sent a text message to each client asking them to suggest the best time for the interview. In instances where clients did not respond, a follow-up message and/or email were sent. If there was no response to the follow-up text, a researcher contacted clients via telephone and left a voice message. After the interview, clients were reimbursed with a \$50 Coles/Myer voucher.

Data Analysis

All interviews were audio-recorded and transcribed by a professional service. Transcripts were anonymised and any mention of names, both of Family Life staff and clients, was removed prior to analysis. We applied a thematic analysis of the data (Braun and Clarke 2006) for identifying and analysing thematic patterns across the datasets.

We analysed interviews with Family Life staff and clients separately. Accordingly, themes distilled from the two datasets were different and corresponded to the unique perspective of each group. The first level of analysis was conducted manually. Specifically, the researchers read the transcripts and identified themes across the sample. Data analysis was aided by the use of NVivo 12 software. NVivo's 'text search query' function was used to identify the frequency of particular keywords used across the sample.

Interviews with staff were conducted face-to-face and took place at Family Life's offices located at Frankston, Cheltenham and Sandringham, Victoria. Interviews with clients were conducted via telephone as outlined above. Prior to conducting the interviews, the research manager contacted the staff via email, providing them with the Plain Language Statement and inviting them to participate. Upon staff consenting to participate, we interviewed them face-to-face. Each interview lasted forty-five minutes on average. Interviews were audio-recorded and transcribed by a professional service.

Parenting
Clients
Actively
Community
Website
Facebook
Questions
Acting
Working
Groups
Belong
Media
Change
Needs
Message
Support
Information
Organisation
Program
Issues
Services
Strengths
Business
Children
Phone
Devices
Family
Digital
Moved
Worker
Child
People
Thinking
Helpful
Positive
Experience
YouTube

Clients
Actively
Belong
Things
Consent
Parents
Change
Needs
Groups
Community
Media
Working
Questions
Organisation
Information
Support
Happening
Facebook
Strengths
Website
Business
Family
Phone
Issue
Digital
Point
Practice
Action
Computer
Thinking
Children
Connected
Involved
Direct
Reason
Social
Friends

Left: Word use frequency from interviews with clients.
 Right: Word use frequency from interviews with workers.



3. LITERATURE REVIEW

Supporting Young Parents

The topic of teenage pregnancy and adolescent parenthood has been studied in-depth within social sciences literature from various angles (Duncan et al. 2010), especially with regard to young parents who are vulnerable or live in precarious or risky environments (Kinard and Klerman 1980, Pinderhughes et al. 2000, Nanninga et al. 2015). Furthermore, there is a significant government interest in this area too (Cortis et al. 2009). A recurring problem for some young parents is a lack of knowledge or resources that would enable them to build skills and confidence in caring for young children. There are various psycho-social, economic, health-related, environmental and educational factors listed in the literature that play crucial roles in the ability of young people to effectively parent (Coley and Chase-Lansdale 1998).

While Australia is experiencing a period of record-low teenage-parenthood, and Victoria is experiencing rates well below the national average (Hoffman and Vidal 2017), the consequences of early parenting – especially for those without adequate family support – are often dire. Hoffman and Vidal (2017) identified a correlation between teen-parenthood and other indicators of disadvantage, including exposure to domestic violence and parental divorce (Brand et al. 2015, Larkins et al. 2011, Quinlivan et al. 2004), low socio-economic background (Stanley et al. 2010, Lewis and Skinner 2014, Quinlivan et al. 2004) and being born to young parents (Keys 2007, Smith et al. 2011). Furthermore, teenage mothers face a higher risk for complications such as anemia, poor maternal weight gain, toxemia, increased mortality and premature delivery (Beers and Hollo 2009). They are also more likely to drop out of school and to depend on their families or government for economic support (Klein et al. 2005). Consequently, the disadvantages faced by young parents prior to childbirth may have lasting effects (Hoffman and Vidal 2017).

Given the low number of young parents in Australia and the paucity of studies conducted in the Australian context, few representative statistics exist to examine the characteristics and experiences of young parents. While not wholly analogous, single-parent families share many of the characteristics of social disadvantage with young parents. In addition, many young parents will form single-parent households. Research on young fathers and their inclusion in social service interventions is lacking in the existing research and was also a limitation of this project, as we were only able to recruit young mothers. Still, despite this significant limitation, we now provide details of the digital exclusion experienced by single mothers, as these insights are pertinent to our examination of the role that technology could play in interventions designed to support young parents.

Digital Inclusion and Digital Literacies for Disadvantaged Young Parents

The Australian Digital Inclusion Index (Thomas et al. 2018) foregrounds the experiences of single parents, noting that affordability is their key barrier to digital inclusion. Single parents, who have a greater reliance on private rental or social housing, were less likely to have access to less expensive fixed broadband and instead relied more on mobile-only access. Thus, the cost of internet access for single parents was higher than for most families, with single parents spending 2 per cent of their income on this item, compared to 1.17 per cent, nationally (Thomas et al 2018). In addition, single parents in the Australian Digital Inclusion Index study reported less empowering experiences online compared to other users. This is likely due to single parents' high engagement with government portals (also known as eGov systems), such as MyGov and Centrelink, which are reported elsewhere to be unreliable and difficult to navigate (Australian National Audit Office 2015, Sleep & Tranter 2017, Cook et al. 2019).

Cook et al. (2019) recently conducted a review of apps available to support single mothers in managing shared care-time and financial transactions with ex-partners. Those researchers found that rather than aiding women in managing information and interfacing with government systems, the apps created additional administrative burdens that fell disproportionately on low-income women. The authors found that low-income women were not serviced well by available apps and that, contrary to their 'empowering aims', the administrative burdens created by the apps, alongside a lack of meaningful outcomes, replicated and reinforced hierarchies in social, political and technological domains.

Still, even when Australians are guaranteed access to digital technology (e.g., in the workplace), they may not have the digital literacy required to take full advantage of the various software, devices and digital content they encounter. As a result of affordability and access issues, it may be that single parents, and particularly vulnerable young mothers, are more reliant on free Wi-Fi to access online resources.



Parenting Technologies

With the recent boom in technological services being socially accepted in our daily lives, there has been an increase in the launch and promotion of parenting assistive technologies (Shiomi and Hagita 2017), such as mobile apps (Tun-Min et al. 2016), web resources (Yoong et al. 2015) and Internet of Things (IoT) solutions (Raghavan and Ullas 2017).

The Internet is an integral part of the life of millennials (McMillan & Morrison 2006). The so-called 'Net Generation' (Oblinger et al. 2005) has grown up with the modern Internet. The Australian Bureau of Statistics (2016) found that during 2014-2015, the majority of young Australians (above 85 per cent) were Internet users, with teenagers spending most hours of the day (approximately seventeen) online. Consequently, Internet-based technological solutions are considered to be more attractive for younger parents in comparison to mature-age parents. Unsurprisingly, young parents describe significant and complex interactions between mobile media use and their family life, such as for developing social connections to other mothers (Lupton 2016) and for documenting their experiences of domestic violence (Clarke et al. 2013).

Although the prevalence of parenting assistive technology has grown in recent years, the market is still developing. For instance, in comparison to the other app categories on Google Play Store, parenting apps only make up 0.1 per cent of the available apps (Statista 2018). Those apps focus on general parenting areas such as pregnancy, breastfeeding, co-custody, co-parenting or raising children with special needs. Most of

these apps are generic in nature. The needs of young parents are unique due to their age group and their social context (Karraker and Evans 1996) and existing technological solutions or apps may not fulfil their specific needs.

The potential of mobile health platforms (also referred to as mHealth) has been pursued by a range of government and non-government organisations providing health and welfare-based services. The promise of digital technologies, such as mobile apps and social media platforms, as tools for health promotion has become the focus of several research studies, with a range of literature reviews published in the past five years (for example, McKay et al. 2018, Welch et al. 2016, Zhao et al. 2016). While these reviews support the potential efficacy of mHealth technologies, they tend to conclude that their potential is still far from being realised.

Various evaluation frameworks for assessing technologies and apps in different domains of life, such as mHealth (Stoyanov et al. 2015), mental health (Donker et al. 2013), and mobile learning (Kearney et al. 2015, Bano et al. 2018), have been proposed. However, the empirical literature is presently limited in terms of a clearly articulated framework for evaluating technological solutions that prioritise the specific needs of young and vulnerable parents.

Social Isolation of Young Mothers and Scientific Mothering

Research shows that becoming a parent, at any age and under any circumstances, is a stressful and challenging experience, particularly for women. Grappling with the responsibilities of caring for a newborn, accompanied by the physical and emotional toll of giving birth may result in difficult emotions (e.g. helplessness, depression) and may lead to social isolation and narrowing of friendship circles (Stapleton 2010). This reduction of socialising and the feeling of social exclusion may simply be caused by having less time, less energy, and less financial resources in addition to new mothering responsibilities (Cronin 2015, YWT 2017). An additional social movement in the postmodern era, the medicalisation of pregnancy and the production of “scientific mothering”, has triggered additional pressure on mothers and further distanced them from their friendship circles (Litt 2000). This is a situation whereby doctors, hospitals and other ‘experts’ (e.g. parenting book authors or parenting counselling specialists) become the chief advisors on parenting. Consequently, traditional ‘women’s knowledge’ and relying on the advice of other mothers is less valued than in prior generations. Research suggests this leads mothers to feel even more socially isolated (Drentea and Moren-Cross 2005) and this may be particularly pronounced for young vulnerable mothers who may be more likely to experience social isolation.

On this note, a study by Sloan and Tamplin (2019) investigated social isolation experienced by young mothers throughout pregnancy and into motherhood. This study specifically looked at the impact of teenage pregnancy on

friendship networks and young mothers’ experiences of loneliness and isolation during their pregnancy and after the birth of their child. This qualitative study involved six one-on-one interviews with young mothers in their early twenties in southeast England. The study found that for vulnerable women (e.g. teens, lower socio-economic status, women with mental health issues), it is difficult to enjoy pregnancy and to look forward to experiencing motherhood due to the stigma attached to teen pregnancy or perceived public judgments that vulnerable parents are incapable of being ‘good mothers’. This study proposed that facilitating friendship networks is crucial to support and assist these young mothers as they transition into parenthood, which includes assisting these women to form new friendships through school, playgroups and so forth. Providing space for social networking and developing connections is particularly important for vulnerable mothers who might not be working (Sloan and Tamplin 2019). In line with this, Formby et al. (2010) concluded that having friends can have a great impact on new mothers’ self-worth and help them to improve their self-esteem and create positive identities. Online peer support groups, therefore, might be useful in helping young parents overcome such isolation by connecting them with other parents experiencing similar challenges.

Online Peer Support Groups

Literature from the fields of sociology and media and communication defines online peer groups as networks of people with certain shared demographic or social characteristics such as age, location, economic status, education, class, etc. (Hirsch 2002, Lehdonvirta & Rasanen 2011). For the purpose of this research, we have defined them as networks wherein users communicate and interact via smartphones and/or computers. Previous research has suggested that peer groups are beneficial to users in various contexts, such as chronic disease management (Stockdale 2008, Coulson 2013), peer counselling (Fukknik 2011), female reproductive health issues (Holbrey & Coulson 2013), breast cancer (Sillence 2013) and depression (Houston et al. 2002).

Without time or space constraints that may have impeded group interactions historically, online peer groups increase potential opportunities for communication, such as exchange of information/resources and sharing of personal experiences and knowledge between group members. Importantly, online groups may also improve quality of life through building social capital, with friendships and community participation being domains with the strongest satisfaction (Choi et al. 2007).

Klier and colleagues (2019) identified four key mechanisms through which the effects of online peer communities are wielded: informational support, emotional support, social identity and social comparison. Informational support refers to practices within online peer groups in which users exchange personal experiences, opinions and advice, which enable social learning (Agarwal et al. 2009) and raise awareness of and interest in particular topics (Sillence 2013). However, other researchers note that peer communities can also significantly increase anxiety associated with risks regarding health issues (Coulson 2013, Holbrey & Coulson 2013).

Despite this caveat, studies note that membership in online communities can provide emotional support resulting in enabling and empowering outcomes: for example, increasing self-esteem or prompting a positive outlook or readiness to act (Holbrey & Coulson 2013). Furthermore, online community members' overall emotional stability may be increased through the acts of expressing feelings, opening up and sharing traumatic or other experiences (Finn 1999).

Social identity refers to the sense of belonging to the online group which allows users to recognise that others experience similar situations, and therefore may understand what they are going through and be able to provide support (Coulson 2013, Stockdale 2008, Holbrey & Coulson 2013). However, a sense of social belonging is not necessarily increased for

all online community members. For example, when users do not feel integrated into the online peer group, this may exacerbate the issues or feelings that prompted the individual to seek out the group in the first place (Holbrey & Coulson 2013). In the context of these studies, social comparison refers to normative pressure on the individual to satisfy expectations of others or to conform to group norms (Agarwal et al. 2009). Social comparison can lead to constructive outcomes such as being more proactive or motivated to take action towards improving their situation, or it may exacerbate one's negative perception of their situation, leading to feeling demoralised and disengaged (Coulson 2013).

Klier et al. (2019) argue that intrinsic characteristics of online peer groups, such as accessibility, disinhibition and written interaction amplify the potential influence of online peer groups. Online accessibility removes geographical and temporal barriers allowing users to participate in asynchronous ways at the time of their convenience. However, online interaction also creates a "layer of anonymity" (Lehdonvirta & Rasanen 2011, p. 94), which may also lead to insensitive responding. That said, anonymity enables group members who prefer to be unseen to also seek advice and support (Brady & Guerin 2010, Chung 2014). Finally, written interaction facilitates emotional and informational support not only to participants but also to "lurkers" – users who follow posts but do not engage in the discussions (Coulson 2013). Written interaction also removes the pressure of real-time conversations, thus allowing users time to reflect on their feelings and respond/reply when ready (Coulson & Greenwood 2012) and to revisit posts, which may allow a "greater level of cognitive processing" of the information provided (Cook & Doyle 2002, 101). It should be noted, however, that the use of online forums can require significant written literacy, which may be a barrier for vulnerable young parents who are more likely to experience low levels of educational attainment.



Online Government Services: A User Perspective

This emerging field of research explores how computer technologies are taken up in the social welfare sector. To date, this research has concentrated on the interests and experiences of policymakers (Devlieghere, Bradt, & Roose 2017, Henman 2010) and social welfare service practitioners (Bradt et al. 2011). What is largely absent from the research is the experience of welfare service users themselves, particularly in the Australian context.

Audits of government communication portals, including MyGov and the child support case management system, have found them to be difficult to use, inefficient and responsible for errors in payments and service provision (Australian National Audit Office 2015, Deloitte 2018, Sleep & Tranter 2017). In light of the difficulties that separated parents, in particular, face in managing Centrelink benefits and child support payments, a further study examined

whether any apps were available to meet parents' needs (Cook et al. 2019). The authors found that no apps were currently available that met the data collection and reporting needs of low-income single parents.

Henman's (2010) work set out four ways that computer technology can relate to social policy, where: (1) social policy is a response to technology, or where ICTs are used to (2) implement and administer; (3) develop and evaluate; or (4) substantively shape social policy. In our project, we sought to learn from the experiences and views of welfare service users and social services providers at Family Life in Melbourne, Victoria in order to inform the implementation and administration of social policies relevant to young parents.



4. FINDINGS: INTERVIEWS WITH STAFF AND YOUNG PARENTS

This section presents findings from our interviews with both the Family Life staff and the clients. We interviewed six members of the Family Life Infant Team, who work directly with clients, along with six staff working in the Education, Marketing, Policy, ICT and Management teams. This allowed us to gain comprehensive perspectives from staff involved in direct work with clients, in addition to back-end staff. This section also presents findings from the interviews with ten young mothers who are current beneficiaries of either the Cradle to Kinder or Community Bubs programs. On average, mothers we interviewed had been Family Life service beneficiaries for approximately one year, with two interviewees being service beneficiaries for less than six months, and three parents being service beneficiaries for more than two years.

Young Mothers' Access to and Use of Digital Technologies

Access to digital technologies

Rates of access

Although some caseworkers indicated that about half of their clients do not have access to a smartphone, interviews with clients, conversely, suggested ubiquitous access to smartphones. Additionally, some clients reported having other digital devices such as tablets and/or laptops:

"It – oh, it's a toss-up between my phone and the laptop because I'm on my laptop a lot for Uni but my phone is with me 24/7."

However, despite potentially having access to other devices, such as laptops and/or tablets, clients consistently reported smartphones to be their main device for communication, social media and searching for information and advice online.

It is possible that the divergent perception of clients' access to smart devices among staff, compared to clients' self-reports, might be due to the small sample size of this study and recruitment bias. In other words, we might have exclusively captured the perspective of clients who had access to smartphones and other devices, as they may have been more likely to participate in a project addressing technology use. Therefore, caseworkers' assertion that some parents do not have access to smart devices should not be dismissed and universal access to such devices within this population should not be assumed. As suggested by the Australian Digital Inclusion Index (Thomas et al. 2018), while smartphones are widely used by single parents – particularly young mothers of low socioeconomic status – use of digital technologies among this group are below average relative to the mainstream Australian population.

Barrier: digital literacy

Even among clients with access to smartphones and other digital devices, low digital literacy may be a barrier to the competent use of digital technologies. In line with previous studies (Price et al. 2018, Thomas et al. 2018), our findings suggest that vulnerable young mothers face multiple barriers to accessing online resources, including low digital literacy, lack of functional devices and limited data plans. More specifically, caseworkers commonly mentioned that low digital literacy is a barrier to accessing online resources for some beneficiaries of the Cradle to Kinder and Community Bubs programs. In particular, they mentioned that clients with intellectual disabilities, who may have low reading or writing literacy, may struggle to

fully comprehend such resources or to participate in online communities. They also noted that clients who have a history of "complex trauma" (chronic exposure to trauma that is often interpersonal in nature) may find the content of online resources or communities overwhelming.

Self-reported confidence in using technology varied significantly across our sample and suggested that some Family Life clients struggle with the use of digital devices:

"Because I'm not good with technology — as good, that's why and I don't know how to read."

—

"I do think apps are really good, but it just depends on whether the – I'd say you'd have to be pretty good with technology to be able to access apps. I know there is some people that aren't that good with technology these days, still."

—

"No, they [caseworkers] can't – they give you the websites, but they don't really tell you how to access them if that makes sense."

Clients' self-reported need for support in developing their digital skills has implications for using technology to enhance the social services provided to them. Namely, integration of websites, apps, online portals, etc. should be complemented by supports – ones that enable clients to develop skills to use those digital technologies competently and meaningfully. Furthermore, such supports would have broader implications for clients (e.g. improving employability, more efficient use of government and financial services) that would help to address their previously-identified vulnerabilities. Given that the use of digital media in social and welfare service provision is progressively increasing, there is a need to further explore this aspect, including determining clients' preferences for how such supports might be delivered.

“

I do think apps are really good, but it just depends on whether the — I'd say you'd have to be pretty good with technology to be able to access apps. I know there is some people that aren't that good with technology these days, still.

Barrier: limited mobile data plans

Both caseworkers and young parents suggested that, in addition to digital literacy, limited mobile data plans were a key barrier in accessing online resources. For example, one caseworker noted that many clients could not afford sustained access to mobile data:

“A lot of clients will run out of credit. We've got into the habit of not trying to phone them because they can't pick up. They can receive a text message, so we will text with them. Texting with clients has just become a standard part of how we interact with them.”

Clients made a similar assertion; few parents had unlimited plans for both mobile and home Wi-Fi networks, and most relied on phone plans with limited calls, text and data allowance.

“Well, it just depends, budget-wise. If I can't – if I don't get credit that week then I won't have data. But we do have internet at home but, yeah.”

In line with the recent data from the Australian Digital Inclusion Index (Thomas et al. 2018), our findings identify affordability of mobile data plans to be a key barrier to the digital inclusion of vulnerable Australians, including single mothers. Mothers in our sample often relied on mobile-only access to the internet. Given their household composition (commonly a single adult), internet access for these parents is less affordable compared to the general population, as the cost is less likely to be shared across multiple adults. Consequently, this may limit their ability to engage with social services, government, family and parenting services in a reliable and timely manner, or at times of acute need – such as while feeding, settling, or when babies are distressed in the middle of the night.

As noted in the previous section, although some parents also had access to digital devices such as laptops and tablets, smartphones were the primary devices used to search for parenting advice or related media content online. This suggests that any potential technological intervention that would offer parenting resources should be developed from the standpoint of a smartphone as the primary access device. Therefore, to optimise adoption, either a smartphone app or another form of mobile-friendly online resource would be highly recommended.

Use of digital technologies

Parenting information and advice

In most cases parents reported using the Google search platform when looking for information on health-related or parenting issues for themselves or their children:

“If I need information then I’ll Google it or I’ll go to my child health nurse.”

—

“Yeah, when I was pregnant mainly, I’d look at symptoms, if everything was normal. Yeah, even when my first was a newborn, I used to look up symptoms, like – because he was a screamer. He had colic and reflux; I would have looked up symptoms for them.”

—

“Pretty much anything, really. If I – for instance, if my daughter has a new medication and the doctor hasn’t really explained what it is properly, I’ll use Google to look it up. Other things like behaviour techniques, that’s a big one.”

—

“Sometimes I’ll look up on the internet signs of the baby being sick or symptoms to look out for. Sometimes I’ve looked up because my son’s done a poo and it was a weird colour, so I looked up on the internet what colour means and yeah, it has been useful.”

Google was a primary source of information for mothers when looking for health-related information and parenting advice. This included information on symptoms (e.g., colic, reflux, the colour of faeces), prescribed medication and behavioural techniques (screaming). However, although most parents relied on the health-related advice sourced online, some also raised concerns over its reliability:

“I think I Googled things about development a lot. So I was trying – when I put it in the Google search I was trying to look at websites that look legit rather than Wikipedia or a [Baby Centre] one, I would try and look at like Better Health Channel or something like that, that’s got information about children’s development.”

Several online parenting resources were mentioned favourably by parents during the interviews, such as Better Health Channel [<https://www.betterhealth.vic.gov.au>], the Department of Social Services’ Raising Children portal [<https://raisingchildren.net.au>] and the Zero to Three sites [<https://www.zerotothree.org>]. However, despite these verified sources, Google was trending as the first online ‘go-to’ place when looking for practical advice about parenting. Additionally, in the interviews, some mothers also reported using social media platforms such as Instagram, YouTube and Pinterest for this purpose. Through these platforms they reported following accounts of ‘celebrity mums’ (e.g. Constance Hall, Brooke Moller) who share parenting advice and experiences.

Although these strategies clearly present young parents with the benefit of hearing others’ first-hand experience and advice that they can relate to, there are also associated risks. Namely, relying (exclusively) on such sources might lead some parents to experience negative social comparison – perhaps feeling demoralised or developing a negative self-image of being an inadequate parent. In addition to the above-mentioned online sources, parents reported the use of other existing resources – most commonly YouTube video demonstrations of skills such as swaddling and/or settling babies.

“I usually like YouTube some of the things, like of other parents giving advice and what worked for them. Just clicking on random sites that have like step by steps et cetera.”



Online peer support groups

Participating in online peer support groups was mentioned favourably by all mothers in the sample. During the interviews, mothers reported using various social media and messaging apps such as Facebook, Pinterest, Instagram, Snapchat and WhatsApp. However, among these, Facebook stood out as the most commonly used platform – particularly Facebook groups, through which most of the online peer groups operate. Facebook groups such as Modern Mummy Club, World Society of Girls Mums and Mums and Bubs were mentioned favourably. Mothers interviewed in this study use these groups to find first-hand advice on various aspects of child-rearing:

When your kids, like when they stop having bottles; what age they went from a cot to a bed. Sometimes they post like ‘oh my daughter got this rash, what does everybody think it is?’ They’ll just write I think it’s this, go to the doctor’s or whatever. Yeah, just anything really. You could post anything on there to do with your children.

—

Even – they have helpful ways to how to help with like getting your children to eating. Starting them on solids and stuff like that and the best remedies that other parents have found that might work for me. So, it’s different ideas and strategies on how to help with different scenarios and everything as well.

—

I think a lot of it is about sleeping patterns, medical advice, food and introducing solids. Siblings, if siblings are having issues, how to deal with that or tantrums.

Online communication and advice exchange facilitated through these groups served as a valuable resource to the mothers in our sample. Importantly, even those mothers who might be shy, embarrassed to pose a question or simply too busy still benefited from these groups and got support and information they needed. For example:

Yeah, there’s a fair few mums groups I’m a part of on Facebook, but not very active in them. I just look at what people are writing and that’s about it really.

—

I’ve only shared my experience, so if somebody posts something like what age did you stop sterilising your child’s bottles, like I’ve commented on that post saying for me I stopped sterilising my [child’s] bottles at the age of one.

Evidently, online peer support groups are beneficial for parents who are more passive media users, as well as those who are more active, as it allows them to see the content shared by others without requiring their active involvement. Importantly, these groups afford an ‘always-on’ mode of help-seeking, which some mothers found particularly useful:

I reckon that they need – so just like the Facebook, that Mums and – oh, the group, Mums and Bubs, I reckon they should make some – like an app like that, where you can just ask questions. Because it could be like one o’clock in the morning, and your kid could be screaming, and you don’t know why. There’s always another mum on Facebook.

However, while Facebook parenting groups are clearly beneficial to mothers in our sample, some concerns were raised by caseworkers regarding the reliability of advice provided in these groups. One way to address this issue would be to provide content moderation in peer groups facilitated by the social service providers. Currently existing groups are based on peer-to-peer advice sharing and there is no content moderation. Furthermore, given that these groups are hosted by Facebook, an enterprise with its own commercial interests, there is a need to consider concerns over privacy and confidentiality for parents and also caseworkers (should such groups become part of the service delivery). Therefore, if an in-house platform for online peer support were to be developed, special care should be taken to ensure that any resulting outcomes and outputs are developed sensitively, taking full account of relevant ethical and legal implications. This is especially important given that clients are already enmeshed within eGov systems as ‘data-subjects’, and any potential leaking or sharing of case-management data has the potential to cause them ongoing harm.



Staff's Access to and Use of Digital Technologies

Caseworkers' reasons for using digital technologies

In interviews with caseworkers, we sought to understand how they currently used digital technologies to a) support clients, b) manage organisational obligations regarding compliance and governance and c) manage workflows, and access professional resources and professional development opportunities.

Caseworkers interviewed in Phase 2 of this project reported a diverse use of work-allocated devices such as mobile phones (not always smartphones), tablets and laptops. Additionally, some of the interviewed workers commented on the use of personal computers (primarily for continuing education and professional development purposes).

Interviews highlighted an important aspect of digital technologies in staff's day-to-day work responsibilities. Namely, the key reason for providing staff with mobile phones is situational awareness and to ensure staff safety at all times.

"Other than normal office use, the original reason of giving staff the mobile phones was purely for safety reasons."

In addition to providing the capacity to contact supervisors (or emergency services) if they or a client were in danger, mobile technologies were seen by staff as essential for other aspects of frontline workers' jobs. They enabled them to manage emails, stay in contact with clients and maintain case files when out of the office.

Use of digital technologies also enabled frontline staff to create a suitable and relaxed environment for parents who are depressed, isolated or jaded during face-to-face encounters. This may involve tailoring information according to parents' preferences (i.e. visual versus textual) or even discussing current concerns and learning about potential resolutions in alternative locations.

"Usually, they [parents] quite like to see things visually [such as YouTube videos]. Having things written down is a bit too much for them. We might go and grab a coffee because they would get the opportunity to get out and they would be in a better mind space, I guess, when they're out of the home and in a more relaxed environment."



Technology as a communication tool

Some mothers interviewed expressed a strong preference for the text-based communication over calls, mostly for practical reasons:

“They try different methods of contact so like texting and calling, leaving a voice message, that kind of stuff is what they normally do because they know that it’s so hard for me to normally pick up the phone straight away.”

While frontline staff members discussed their current use of digital technologies for everyday interactions with clients (such as home visits), some described printing material from websites to share with clients. Others used laptops to show clients YouTube clips or parenting websites. One also shared apps with clients using a work-issued mobile phone, which was perceived as a more interactive means of sharing information:

“I don’t really tend to use websites so often. Just because I think when you’re sitting next to a parent, an app is something that – it’s just a bit more engaging, to sit next to someone using an app, and interacting with an app, rather

than scrolling through a website. So, I think there’s something about the degree of interaction with the app that makes it a bit more engaging to sit with the parent, rather than scrolling through a website.”

Barrier: digital literacy

Digital literacy as a barrier might be regarded as a challenge not only for clients but for some practitioners as well. While our interviews suggest that the overwhelming majority of social workers are “socially and technologically able” in terms of digital technologies, ‘change-fatigue’, willingness to attend training sessions and time constraints associated with work in the not-for-profit sector were raised as potential barriers for workers who were less comfortable with digital technology use:

“I’m aware of change-fatigue among staff, and it’s a difficult exercise to navigate, because whenever you put a new technology, you have to consider how it’s going to be taken in, and even when you organise trainings, you might not have people turning up and then complaining that they don’t know how to use the system.”

Staff Perspectives on Clients' Use of Digital Technologies

The key themes emerging from staff interviews regarding clients' use of digital technologies were: barriers to accessing formal services and support; the risk of 'distraction' by digital technologies; the positive value of digital technologies as a facilitator of social connection, and; the role technology might play for clients seeking information and support regarding parenting.

Digital technology as a distraction or negative enabler

Some caseworkers expressed concern about the use of digital technology as a 'distraction' from parenting for some clients, whereby clients would parent the child in one hand and remain on their phone in the other. Caseworkers were concerned that an over-reliance on technology – the use of mobile phones in particular – could lead to a lack of engagement or connection with the children, which may impede the young mothers' effectiveness as parents.

"We're trying to encourage them to actually look at their babies and get off their phones. That's one of the big issues that's coming up now – it's actually the same as having a depressed mum. You're not looking at your child. You're not teaching it how to interact. You have to actually be there interacting with your child. Put it down."

—

"Often parents will have their child there, but they now also have their phone on their lap and they will have these alerts. They'll get so many texts and Snapchats

and everything coming through, and it really breaks the interaction that they have with the child, or it can absorb a lot of their time and their energies. There's a lot of missed communication opportunities between the child and the parent, if the parent is really tuned into their phones."

—

"I think we know with young children that exposure to a lot of technology, above all else, doesn't actually – it actually delays language development and the development of your empathy and relational skills. [...] I can remember in my days of doing like home visits in my first job – just the television blaring in the background the whole time and having to ask for that to be turned off."

While some caseworkers linked their concerns regarding digital technology specifically to a lack of eye-contact or focused attention between parents and their children, others (as indicated in the quote above) expressed broader concerns regarding media entertainment technologies in general, including television and video games. Some caseworkers also expressed concern regarding the negative potential for digital technologies to enable obsessive or 'always-online' behaviour by clients. There was also concern that digital technologies could facilitate stalking of or by ex-partners and estranged family members via social media.

Digital technology as a site of social connection or a positive enabler

Caseworkers did not universally view client use of technology in a negative light or as a 'distraction'. Some expressed support for clients' use of mobile devices and mobile apps as tools for maintaining connections with friends and family. They noted that some clients joined online parenting groups as sites for peer support, and others used mobile messaging apps as a cost-effective way of maintaining bonds with fellow parents.

"I think it's [social media] probably quite a positive influence. I think that it's important, and particularly younger parents – which is the bulk of our clients, I think – that it's really relevant to the way that people connect with their world. I think in some circumstances it could increase isolation because people are less inclined to go out and meet people in the outside world. But I also think that there's a comfort in accessing and having access to a social network without having to leave the home, so getting parenting support and connecting with one another that might have kids similar age."

—

"[F]rom the last term the group that I ran, the mums in the group, they got along so well that they did create a WhatsApp group chat. That's now how they continue their own group on a Wednesday without the support of staff. That's a really big success. Because that's how they keep that friendship that they formed. Because some of them don't have credit and things like that. They can't always call or text. It's a free thing."

One caseworker specifically sought to engage in supportive conversations when mobile phone notifications occurred during home visits – including encouraging clients to respond to messages or notifications, and checking that the connection was safe for the client:

Sometimes they try to hide that [notification] from the worker and switch their phone the other way, so that you can't see the face of it. But it's about being honest and just saying I notice that you flipped the phone. Is everything okay? Because in that sense, it's talking about safety and if they're safe, because we work with families that experience family violence, so to me, it's wanting to know is someone hassling you? Or is it a friend?



Digital technology as a source of parenting advice

When invited to reflect on clients' use of digital technologies for seeking information regarding parenting, caseworkers expressed both support and concern. One caseworker was especially cautious regarding the potential for clients with a history of trauma to be re-traumatised when participating in online conversations. This interviewee also suggested that clients might access misinformation regarding parenting online, which could confuse or undermine the information provided by healthcare providers. Others expressed a similar caution:

"I haven't personally ever recommended a parent to join any specific parenting group. I know that a lot of the families I work with are on parenting groups online. But just the feedback that I've received from some parents is that there's a lot of misinformation given, so I tend to not recommend those."

Where caseworkers supported the notion of parents seeking information online, it was clear that their support was quite context-specific. For example, one interviewee suggested that this kind of information-seeking practice was more common (and perhaps more useful) for parents in their twenties as opposed to teenaged parents:

"I find that it is the older mothers that tend to use the technology a bit more around settling your infant, looking up the right things. Yeah, it just depends on the different cases you have."

Overall, there was more discussion of digital technology as a source of general social support, as opposed to a resource for accurate parenting information:

"I know we've had a couple of parents in our programs who I think were both young mums. It turned out that they were both part of the same young mums' group on Facebook, so they developed a bit of a friendship, so I think it's really useful in that way."

Caseworkers often used and recommended websites (e.g. Zero To Three and Raising Children) with clients, and shared YouTube clips or free parenting apps with them. These were used during home visits (on the case workers work-issued laptop or phone), and downloaded (in the case of apps) to the clients' device to use independently between visits:

"YouTube clips are probably the most popular thing. Recently we've been encouraging parents too, if they have the right sort of phone, download apps."

—

"With some of my clients, I love using child development apps. I think they're fabulous with them. I've got one app that has a heap of – that kind of filters it by the age group and what kind of developmental play activities you can be doing for that child."



One caseworker cautioned, however, that technology-based information sources could be overwhelming or developmentally unsuitable for some clients:

“Probably 50 per cent not open to it. Things like mental health, intellectual disabilities, it’s too difficult. Then probably 25 who are willing to give it a go and then 25 who actually do use it on their own phones, have the apps and are eager to see clips and come to groups where there is a lot of slideshows and things like that.”

It is important to highlight potential risks associated with health-related advice sought through Google, YouTube and other online resources. Namely, that such sources may lead young parents to websites that cannot be relied upon to provide accurate information. As outlined in the literature review section of this report, vulnerable young parents often experience shame when seeking parenting advice in person or over the phone as opposed to when using online sources. Therefore, adding a section within existing online resources (e.g. the social service provider’s website) with easily accessible information concerning where to find help and links to verified parenting advice should be added and made accessible to young parents. If a parenting app (see below) were to be developed at a later stage of this project, such resources should be added there, too.

Smartphone Apps as Parenting Resources

Some of the caseworkers we interviewed referred to potential benefits that might be gained from the development of an in-house library of short, engaging, trauma-informed audio-visual resources suitable for young parents with intellectual disabilities or low literacy. They expressed reservations regarding the practical barriers to live-action video production, including whether staff members – and clients and their infants – were suitable performers for this kind of production process. While the alternative of animation was not raised by any staff members, the Swinburne research team suggests that the use of animated (i.e. cartoon-like) videos could be a suitable solution if the digital video library option is appealing as a potential collaborative project.

Additionally, caseworkers also expressed support for a ‘one-stop-shop’ information and referral app:

“I’d love to have an app that kind of starts from – okay, you’re pregnant, you’re one week pregnant, you need to go – this is what – like a step by step, this is what you do. You need to go to the doctors. You need to get a blood test. You need to organise an ultrasound. Okay, you’re – and this is the equivalent size of your baby right now. This is the nutrition that you should be eating. This is the kind of exercise you could be doing. You need to be cutting back on smoking, here’s the link to a search engine of an organisation that can help you quit smoking whilst you’re pregnant. Right through to okay, your baby’s born, this is how frequently you need to feed baby. This is how you clean the bottles. This is how you swaddle the baby. Like a real step by step kind of thing but mostly if it could be a really simplistic text and a lot of videos. Just because we have so many parents that have intellectual disabilities and visual is best. So, yeah just that real step by step how to parent, really.”

The concept of such an app was explored with Dutch expectant mothers (Wierckx et al. 2014). While the stand-alone app format was explicitly endorsed by this staff member, the Swinburne research team suggests that a responsive, mobile-friendly website may be more appropriate in the longer term, given the relative expense and complexity of stand-alone app development and maintenance.

When asked to provide examples of when they found the technology useful for parenting, most parents talked positively about apps designed for pregnancy tracking. In particular, parents mentioned apps Ovia and Pregnancy Tracker. Such apps typically provide useful information about what to expect as pregnancy progresses and allow mums to track their babies’ development over the course of the pregnancy. Those apps used visual presentations which parents appreciated:

“I reckon an app that shows stages and developments and maybe if you could even like chat to other mums or a certified person via the app or something and video content would be nice.”

—

“Maybe even like an app which has different, to like – maybe an app where you put in the age of what your child is and it gives you information specifically on their age, months and they’re grouped in what they should be at developmentally.”

—

“I guess the app would be where you can communicate to any mum and they all say their problems and maybe if we know how we can help them or any other mum knows how they can help them, we can all reply.”

—

“I - it just depends on how much time I have. If – yeah, if I have time to sit down and read, I’ll read stuff. But if I’ve – haven’t got so much time, I’ll listen to a video while I’m washing the dishes or doing chores, or – you know what I mean?”



Challenges with Online Government Services

In discussing use of digital technologies as part of social service provision, the relevance of eGov services – e.g. the MyGov app and Centrelink website – to mothers' daily experiences was mentioned by both caseworkers and clients. However, workers and parents had very different experiences of these platforms.

Most parents were positive about the MyGov app, making comments such as:

“Yeah, it's helpful for in the sense I can check for when my payments are due; yeah pretty much just check when my payments are due.”

—

“I use the Centrelink app, I've got that – Yeah, [it's] easy to use. I'm dreadful with technology so anything that's simple and I don't have to click and do 500 things is good.”

Caseworkers, on the other hand, reported that the MyGov portal and associated eGov platforms are difficult for clients to navigate and, as a result, they are required to spend a considerable amount of time assisting parents with the platforms during home visits:

“[Single parents] are the group that finds technology least enabling and it's because of things like myGov or trying to go onto Centrelink and none of it works and you've got no data and you're like you can't do anything.”

—

“They've asked for my help filling out forms like on MyGov so I have to use my laptop for that and I do it online for them.”

—

“I feel like honestly, my routine problems are around Centrelink and anything MyGov. I dread it, they dread it. It's complicated, it is long, it's drawn out. Really, I've had one of my ten [clients] that has yet to be able to do it on their own. It took her three hours.”

One caseworker estimated that up to one-third of the actionable time during a home visit is sometimes spent assisting a client in accessing eGov platforms. The efforts caseworkers put into working with clients to 'smooth over' their Centrelink engagement may be a reason why some clients found these information systems to be adequate. However, while ensuring that clients were not left destitute through breaches or inadequate benefits was essential to caseworkers' work, the time spent performing the functions of a federal government department detracted from the service provider's local remit.





CONCLUSION AND RECOMMENDATIONS

Drawing together findings from the interviews with staff and young parents, the following section will summarise our key findings and outline potential technological solutions to address the identified needs and/or gaps in existing services. This section maps out the suggestions provided by parents and staff to understand the commonalities and differences of the identified technologies. We further demonstrate how these suggestions would be feasible in light of published literature and/or existing technologies.

Digital Inclusion

Findings presented in this report indicate that digital literacy cannot be assumed among young parent clients who utilise welfare and social services. Building clients' digital capacities as part of social service provision would have multiple benefits. Given the increasing reliance on technology for the provision of government social welfare programs, as well as generally in all areas of life (e.g. job searching, banking and financial management, continuing education, shopping), building clients' digital competencies would meaningfully impact vulnerable clients – and young mothers, in particular. Efforts aimed at increasing their confidence, skills and general online safety would present a meaningful investment in their future and promote digital inclusion, thereby contributing to closing the existing gap. In a modern world, digital exclusion may have a negative impact on a person's life, especially for those who are already disadvantaged, by further widening the social inequality gap. Therefore, service providers should consider integrating digital skills learning resources as part of service provision and tailor it based on the individual's needs. This was described by some caseworkers in this study who guided young mothers in using eGov platforms. Examples of positive practice include, but are not limited to, the Good Things Foundation, which targets disadvantaged social groups, and Be Connected, a program that targets elderly Australians. Similar programs, tailored to the needs of vulnerable young parents, might be useful in supporting them. Clearly, this is an evolving aspect of social service provision and will likely be the focus of future developments in the field. Therefore, it is crucial to further establish best practice models.

Online Peer Support Groups

Online peer support groups are an effective medium to support parents (Nieuwboer, Fukkink, & Hermanns 2013). However, further research to explore the utility of developing online peer support groups for young parents would be useful. The young parents interviewed in this study expressed a preference for learning from other parents, and valued the opportunity to share their own parenting knowledge and experience to help other parents, which they are doing in Facebook peer support groups. For instance, the young parents we interviewed found existing Facebook groups (e.g. Modern Mummy Club, World Society of Girls Mums, Mums and Bubs) useful for seeking advice and gathering relevant parenting information. However, caseworkers had concerns regarding the parenting information provided in those groups and proposed that expert moderation may help ensure the accuracy of information shared. Moderated peer support groups were not among those mentioned by parents in this project. An example of such a group is MyTime ("MyTime" 2019), which provides specialised online support for Australian parents of children with disabilities.

Online peer support groups are useful for young parents as they provide flexibility, an immediate and easily accessible response to the current parenting issue, step-by-step guidance from other parents on what they have found useful, and an opportunity to contribute to discussions aimed at assisting other parents. Online peer support groups can also be designed in a visual medium that is easy to follow and understand.

In order to clarify the viability of developing an in-house platform for online peer groups that would be tailored to the needs of the service's clients, further exploration would be necessary. Main features could include a co-design approach, with young parents being integrally involved in the design and delivery of the online peer group and with opportunities for peer leadership within this online forum. It could also serve as a portal to online resources recommended by the service. Further research is required to test viability, specifications and costings.

In-House-Built Parenting Apps

Currently, there are several apps for tracking pregnancy and parenting, for example: Sprout (“Sprout” 2019); What to Expect (“What to Expect” 2019); My Pregnancy and Baby Today (“My Pregnancy & Baby Today” 2019). Due to a large number of apps available in app stores, it is cumbersome to find and select the app that will be most useful for a particular parent. Therefore, there is a need for a curated list of evidence-based apps that have proven effective for parenting and that meet the specific needs of young parent clients. Existing apps might not address ethical concerns expressed by both workers and clients in the interviews. Namely, existing apps do not ensure content moderation and pseudonyms for users and caseworkers, which might risk compromising personal health information. Eventually, service providers may consider developing mobile apps that would address the needs and requirements specific to the vulnerabilities of their particular clients.

While apps might seem like a quick way to address the potential gaps in service delivery, findings from a recent study of Australian young people (Byron 2019) questioned attempts to address complex social problems – such as the mental health of young people – by developing digital solutions. Findings from that study suggest that while many young people perceive mental health apps as useful and helpful in theory, they simultaneously express a preference for other forms of support (including face-to-face services). While critical of the current technological solutionist approach (Lupton 2015), Byron still welcomes the development of innovative digital health tools as long as they are not seen as a sole solution to the complex social problems that vulnerable young people face.

Furthermore, while the issue of cost was not raised in the interviews, the Swinburne research team stresses that development of new digital platforms or apps should account for not only the initial costs of development and implementation, but for the ongoing maintenance costs associated with activities such as repairing faulty code, updating links to external sites, and revising content as required. We recommend the resources developed in a recent research partnership between VicHealth, Deakin University and Dialogue Consulting as a useful guide for organisational planning in this area (Dialogue Consulting 2015).

Responses to Centrelink and Other Government Policy Issues

Based on the interviews with both caseworkers and young parent clients, there is an opportunity to intervene in correspondence with Centrelink. For example, organisations providing social services to vulnerable clients could ‘translate’ online information into a format that is accessible to clients, such as for those with learning difficulties, acquired brain injuries, English as a second language, and time and financial poverty. Cook and colleagues’ (2019) recent review of available apps for separated parents dealing with child support services found that one legal service distilled Australian child support and family law into a more user-friendly and conveniently located format. For clients in our study, video content could be added to walk parents through common problematic points on Centrelink and government forms.

A second solution could enable parents to easily collect the information that they commonly need when completing Centrelink forms, but may not know they will require at the time (e.g. information about children’s health expenditure, shared parenting). These data could then be compiled for entry into Centrelink or other government department forms (e.g. state housing, child support), or to provide to ParentsNext or JobNetwork providers who require proof of need, expenditure, transport costs, income and job search activity, etc.

Finally, an online recording and reporting tool could be built for caseworkers to use to document the amount of time spent on Centrelink or other federal or state government policy-related tasks. These data could be used by welfare service providers to illustrate the extent to which not-for-profit social service providers are subsidising the Department of Human Services’ (and other departments’) budget(s).



REFERENCES

- My Pregnancy & Baby Today. (2019). Retrieved from <https://www.babycenter.com/mobile-apps>
- MyTime. (2019). Retrieved from <https://www.mytime.net.au/>
- Sprout. (2019). Retrieved from <http://sprout-apps.com/sprout-pregnancy-iphone-app/>
- What to Expect. (2019). Retrieved from <https://www.whattoexpect.com/mobile-app/>
- Agarwal, R., Animesh, A., & Prasad, K. (2009). Social Interactions and the "Digital Divide": Explaining Variations in Internet Use. *Information Systems Research*, 20(2), 277-294.
- Alexander, C., Duncan, S., & Edwards, R. (2010). *Teenage parenthood: what's the problem?* London: The Tufnell Press.
- Australian Bureau of Statistics. (2016). Household use of information technology. Retrieved from www.abs.gov.au/ausstats/abs@.nsf/mf/8146.0
- Australian National Audit Office. (2015). Management of Smart Centres' Centrelink Telephone Services. Commonwealth of Australia. Retrieved from www.anao.gov.au/work/performance-audit/management-smart-centres-centrelink-telephone-services
- Bano, M., Zowghi, D., Kearney, M., Schuck, S., & Aubusson, P. (2018). Mobile learning for science and mathematics school education: A systematic review of empirical evidence. *Computers & Education*, 121, 30-58.
- Beers, L. A. S., & Hollo, R. E. (2009). Approaching the Adolescent-Headed Family: A Review of Teen Parenting. *Current Problems in Pediatric and Adolescent Health Care*, 39(9), 216.
- Bradt, L., Roose, R., Bouverne-De Bie, M., & De Schryver, M. (2011). Data Recording and Social Work: From the Relational to the Social. *The British Journal of Social Work*, 41(7), 1372-1382.
- Brady, E., & Guerin, S. (2010). "Not the Romantic, All Happy, Coochy Coo Experience": A Qualitative Analysis of Interactions on an Irish Parenting Web Site. *Family Relations*, 59(1), 14-27.
- Brand, G., Morrison, P., & Down, B. (2015). "You don't know half the story": deepening the dialogue with young mothers in Australia. *Journal of Research in Nursing*, 20(5), 353-369.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Byron, P. (2019). 'Apps are cool but generally pretty pointless': LGBTQ+ young people's mental health app ambivalence. Media International Australia.
- Chan, C., & Holosko, M. J. (2015). A Review of Information and Communication Technology Enhanced Social Work Interventions. *Research on Social Work Practice*, 26(1), 88-100.
- Choi, H., Im, K. S., Lee, M., & Kim, J. (2007). Contribution to quality of life: A new outcome variable for mobile data service. *J. Assoc. Inf. Syst.*, 8(12), 598-618.
- Chung, J. E. (2014). Social Networking in Online Support Groups for Health: How Online Social Networking Benefits Patients. *Journal of Health Communication*, 19(6), 639-659.
- Clarke, R., Wright, P., Balaam, M., & McCarthy, J. (2013). Digital portraits: photo-sharing after domestic violence. In (pp. 2517-2526).
- Coley, R., & Chase-Lansdale, P. (1998). Adolescent pregnancy and parenthood - Recent evidence and future directions. *Am. Psychol.*, 53(2), 152-166.
- Cook, J. E., & Doyle, C. (2002). Working alliance in online therapy as compared to face-to-face therapy: preliminary results. *Cyberpsychology & behavior: the impact of the Internet, multimedia and virtual reality on behavior and society*, 5(2), 95.
- Cook, K., Given, L., Keam, G., & Young, L. (2019). Technological opportunities for procedural justice in welfare administration: A review of available apps. *Critical Social Policy*.
- Cortis, N., Katz, I., & Patulny, R. (2009). Engaging hard-to-reach families and children: Stronger Families and Communities Strategy 2004-2009. Retrieved from Canberra:
- Coulson, N. S. (2013). How do online patient support communities affect the experience of inflammatory bowel disease? An online survey. *JRSM Short Reports*, 4(8).
- Coulson, N. S., & Greenwood, N. (2012). Families affected by childhood cancer: an analysis of the provision of social support within online support groups. *Child: Care, Health and Development*, 38(6), 870-877.
- Cronin, A. M. (2015). 'Domestic Friends': Women's Friendships, Motherhood and Inclusive Intimacy. *The Sociological Review*, 63(3), 662-679.
- Deborah, L. (2013). The digitally engaged patient: Self-monitoring and self-care in the digital health era. *Social Theory & Health*, 11(3), 256.
- Deborah, L. (2014). Apps as Artefacts: Towards a Critical Perspective on Mobile Health and Medical Apps. *Societies*, 4(4), 606-622.
- Devlieghere, J., Bradt, L., & Roose, R. (2017). Policy Rationales for Electronic Information Systems: An Area of Ambiguity. *British Journal of Social Work*, 47(5), 1500-1516.
- Donker, T., Petrie, K., Proudfoot, J., Clarke, J., Birch, M.-R., & Christensen, H. (2013). Smartphones for smarter delivery of mental health programs: a systematic review. *Journal of medical Internet research*, 15(11).
- Drentea, P., & Moren-Cross, J. L. (2005). Social capital and social support on the web: the case of an internet mother site. *Sociology of Health & Illness*, 27(7), 920-943.
- Ellis-Sloan, K., & Tamplin, A. (2019). Teenage Mothers and Social Isolation: The Role of Friendship as Protection against Relational Exclusion. 18(2), 203-218.
- Finn, J. (1999). AN EXPLORATION OF HELPING PROCESSES IN AN ONLINE SELF-HELP GROUP FOCUSING ON ISSUES OF DISABILITY. *Health and Social Work*, 24, 220.
- Formby, E., Hirst, J., & Owen, J. (2010). Pathways to adulthood: reflections from three generations of young mothers and fathers. In C. Alexander, S. Duncan, & R. Edwards (Eds.), *Teenage parenthood: what's the problem?* (pp. 85-110). London: The Tufnell Press.
- Fukkink, R. (2011). Peer counseling in an online chat service: a content analysis of social support. *Cyberpsychology, behavior and social networking*, 14(4), 247.
- Hirsch, E. D. (2002). *The new dictionary of cultural literacy* (Completely rev. and updated, 3rd ed., ed.). Boston [Mass.].
- Hoffmann, H., & Vidal, S. (2018). Supporting Teen Families: An Assessment of Youth Childbearing in Australia and Early Interventions to Improve Education Outcomes of Young Parents. ARC Centre of Excellence for Children and Families over the Life Course) Institute for Social Science Research, The University of Queensland.
- Holbrey, S., & Coulson, N. S. (2013). A qualitative investigation of the impact of peer to peer online support for women living with Polycystic Ovary Syndrome. (Report). *BMC Women's Health*, 13(1).
- Houston, T., Cooper, L., & Ford, D. (2002). Internet support groups for depression: A 1-year prospective cohort study. *The American Journal of Psychiatry*, 159(12), 2062-2068.
- Karraker, K., & Evans, S. (1996). Adolescent mothers' knowledge of child development and expectations for their own infants. *J. Youth Adolesc.*, 25(5), 651-666.
- Kays, D. (2007). Opportunity for change: young motherhood and homelessness,

a report from the Becoming a Mother project. Retrieved from University of Melbourne in collaboration with Family Access Network: <https://apo.org.au/node/8624>

Kearney, M., Burden, K., & Rai, T. (2015). Investigating teachers' adoption of signature mobile pedagogies. *Computers & Education*, 80, 48-57.

Kinard, E. M., & Klerman, L. V. (1980). Teenage parenting and child abuse. *American Journal of Orthopsychiatry*, 50(3), 481-488.

Klein, J. D., Barratt, M. S., Blythe, M., Diaz, A., Rosen, D., Wibbelsman, C. J., Shain, B. (2005). Adolescent pregnancy: Current trends and issues. *Pediatrics*, 116(1), 281-286.

Klier, J., Klier, M., Thiel, L., & Agarwal, R. (2019). Power of Mobile Peer Groups: A Design-Oriented Approach to Address Youth Unemployment. *Journal of management information systems*, 36(1), 158-193.

Larkins, S. L., Page, R. P., Panaretto, K. S., Mitchell, M., Alberts, V., McGinty, S., & Veitch, P. C. (2011). The transformative potential of young motherhood for disadvantaged Aboriginal and Torres Strait Islander women in Townsville, Australia. *Medical Journal of Australia*, 194(10), 551-555.

Lehdonvirta, V., & Räsänen, P. (2011). How do young people identify with online and offline peer groups? A comparison between UK, Spain and Japan. *Journal of Youth Studies*, 14(1), 91-108.

Lewis, L., & Skinner, S. (2014). Adolescent Pregnancy in Australia. In A. L. Cherry & M. E. Dillon (Eds.), *International Handbook of Adolescent Pregnancy Medical, Psychosocial, and Public Health Responses* (pp. 191-203). Boston, MA : Springer US : Springer.

Litt, J. S. (2000). *Medicalized motherhood : perspectives from the lives of African-American and Jewish women*. New Brunswick, N.J.

Lupton, D. (2015). Health promotion in the digital era: a critical commentary. *Health Promotion International*, 30(1), 174-183.

Lupton, D. (2016). The use and value of digital media for information about pregnancy and early motherhood: a focus group study. (Report). *BMC Pregnancy and Childbirth*, 16(1).

McKay, F. H., Cheng, C., Wright, A., Shill, J., Stephens, H., & Uccellini, M. (2018). Evaluating mobile phone applications for health behaviour change: A systematic review. *Journal of Telemedicine and Telecare*, 24(1), 22-30

Morozov, E. (2014). To save everything, click here: technology, solutionism, and the urge to fix problems that don't exist.

Nanninga, M., Jansen, D., Knorth, E., & Reijneveld, S. (2015). Enrolment of children and adolescents in psychosocial care: more likely with low family social support and poor parenting skills. *European Child & Adolescent Psychiatry*, 24(4), 407-416.

Nieuwboer, C. C., Fukkink, R. G., & Hermanns, J. M. (2013). Peer and professional parenting support on the internet: A systematic review. *Cyberpsychology, behavior, and social networking*, 16(7), 518-528.

Oblinger, D., Oblinger, J. L., & Educause. (2005). *Educating the net generation*. Boulder, Colo.: EDUCAUSE.

Paul, H. (2010). *Social Policy and Information Communication Technologies. In Information Communication Technologies for Human Services Education and Delivery: Concepts and Cases* (pp. 215-229). Hershey, PA, USA: IGI Global.

Pinderhughes, E. E., Dodge, K. A., Bates, J. E., Pettit, G. S., & Zelli, A. (2000). Discipline Responses: Influences of Parents' Socioeconomic Status, Ethnicity, Beliefs About Parenting, Stress, and Cognitive-Emotional Processes. *Journal of Family Psychology*, 14(3), 380-400.

Price, S. L., Aston, M., Monaghan, J., Sim, M., Tomblin Murphy, G., Etowa, J., . . . Little, V. (2018). Maternal Knowing and Social Networks: Understanding First-Time Mothers' Search for Information and Support Through Online and Offline Social

Networks. *Qualitative Health Research*, 28(10), 1552-1563.

Quinlivan, J. A., Luehr, B., & Evans, S. F. (2004). Teenage mother's predictions of their support levels before and actual support levels after having a child. *Journal of Pediatric and Adolescent Gynecology*, 17(4), 273-278.

Raghavan, N., & Ullas, S. (2017). Infant movement detection and constant monitoring using wireless sensors. In (Vol. 2018-, pp. 2109-2114).

Sarah, H. (2018). *Complexities of Practice: Practitioner Understandings of Technology in Contemporary Social Work*. Institute of Culture and Society, Western Sydney University, Paramatta.

Shiomi, M., & Hagita, N. (2017). Social acceptance toward a childcare support robot system: web-based cultural differences investigation and a field study in Japan. *Advanced Robotics*, 31(14), 727-738.

Sillence, E. (2013). Giving and receiving peer advice in an online breast cancer support group. *Cyberpsychology, behavior and social networking*, 16(6), 480.

Sleep, L., & Tranter, K. (2017). The Visiocracy of the Social Security Mobile App in Australia. *International Journal for the Semiotics of Law - Revue internationale de Sémiotique juridique*, 30(3), 495-514.

Smith, J. L., Skinner, S. R., & Fenwick, J. (2011). How Australian Female Adolescents Prioritize Pregnancy Protection: A Grounded Theory Study of Contraceptive Histories. *Journal of Adolescent Research*, 26(5), 617-644.

Stanley Fiona, J., Lawrence, D., Mitrou, F., Gaudie, J., Silburn Sven, R., & Zubrick Stephen, R. (2010). Antecedents of teenage pregnancy from a 14-year follow-up study using data linkage. *BMC Public Health*, 10(1), 63.

Stapleton, H. a. (2010). *Surviving Teenage Motherhood: Myths and Realities*. London: Palgrave Macmillan Limited.

Statista. (2018). Most popular Google Play app categories as of 1st quarter 2019, by share of available apps. Retrieved from <https://www.statista.com/statistics/279286/google-play-android-app-categories/>

Stockdale, R. (2008). Peer-to-peer online communities for people with chronic diseases: a conceptual framework. *Journal of Systems and Information Technology*, 10(1), 39-55.

Stoyanov, S. R., Hides, L., Kavanagh, D. J., Zelenko, O., Tjondronegoro, D., & Mani, M. (2015). Mobile app rating scale: a new tool for assessing the quality of health mobile apps. *JMIR mHealth and uHealth*, 3(1).

Thomas, J., Barraket, J., Wilson, C. K., & Cook, K. (2018). Measuring Australia's digital divide: the Australian digital inclusion index 2018. Retrieved from <https://apo.org.au/node/184091>

Tun-Min, J., McCool, B. N., & Reed, D. B. (2016). Military parents' personal technology usage and interest in e-health information for obesity prevention. (Report). *Telemedicine and e-Health*, 22(3), 183.

Welch, V., Petkovic, J., Simeon, R., Presseau, J., Gagnon, D., Hossain, A., . . . Yoganathan, M. (2018). Interactive social media interventions for health behaviour change, health outcomes, and health equity in the adult population. *Cochrane Database of Systematic Reviews*. Retrieved from <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD012932/full>

Yoong, S. L., Williams, C. M., Finch, M., Wyse, R., Jones, J., Freund, M., . . . Wolfenden, L. (2015). Childcare service centers' preferences and intentions to use a web-based program to implement healthy eating and physical activity policies and practices: a cross-sectional study. *Journal of medical Internet research*, 17(5).

YWT. (2017). What Matters to Young Mums. Retrieved from https://www.youngwomenstrust.org/assets/0000/6339/Young_Mums_report_version_2.pdf

Zhao, J., Freeman, B., & Li, M. (2016). Can Mobile Phone Apps Influence People's Health Behavior Change? An Evidence Review. *Journal of medical Internet research*, 18(11).

