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Seamless Journeys to Work: A multifaceted approach to exploring daily journey to work experiences of young people with disabilities

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Abstract: Technology advances extend our opportunities for social participation by enabling our ability to establish actual and virtual connections. While these changes prompt new forms of social engagement beyond physical mobility, such advances seem to not have truly augmented the ability of young people with disabilities to self-determine their access to places for work, health or play. This paper reports the creative synergy of four disciplines through co-creation and mixed methods approach that extend our understanding of young people experiences of journeys to work. From relevant policy to surveys and field work, our three-stage research investigated the limiting factors and enablers that make their daily journeys. The results informed our scenario approach to representing current and desired future seamless journeys, as a tool that brings together transport end-users and stakeholders views. Findings from our research aim to inform the design of a more smoothly transition of young people into the workforce.

Keywords: mobility; scenario design; transformative services; policy; disability

1. Introduction: it is not only about transport or employment

In 2018, 4.4 million of Australians —17.7% of the population— reported having a disability (ABS, 2018; 2015). Achieving economic independence is a fundamental right and aspiration of young people with disabilities, yet in Australia, 45% of all people with disabilities live near or below the poverty line (ACSS, 2016). Australian Government funding exists to support people with disabilities find a job and assist employers to hire them, yet almost 38% of all people with disabilities main source of income is a government pension, and up to 70% of workers with disabilities do not keep their jobs beyond the initial six months of employment (Commission, 2017). An example of this growing problem is represented by figures of

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people with disabilities in the public sector. For example, in 2008 Queensland Public Service workforce of people with disabilities was estimated at 10 percent, and to date it has decreased to 2 percent. (PSC, 2018). This significant decline in the public sector workforce seems incongruent as the population of people with disabilities in the workforce will tend to increase due in part to an active ageing population. With this as a point of departure, in this paper we report a study that was set out to investigate the mobility practices of a person with disability, to uncover context dimensions of those mobility experiences of going to work. Extant studies demonstrate that in Australia, young people with disabilities work participation is one of the highest rates of unemployment in the OECD (Soldatic & Pini, 2009). Our research suggests young people with a disability experience poor transitions to employment (Beatson et.al, 2019); and it demonstrates the complexity and multiple barriers hindering education to employment pathways (Stafford et al, 2017; 2019). In addition, our analysis of the main disability services systems reveals how these pathways are tightly prescribed and services are influenced by stereotypical views of disability (Marston et al, 2017). However, little evidence is found about the challenges young people with disabilities in their journey to work, including both their physical commute to work and introduction to the workforce.

From a pilot study of people with mobility related disabilities (Adkins et al 2015) we identified the formidable level of planning that is required of wheelchair users in order to get to work on time, which includes: ensuring they have sufficient support to get ready on time, booking appropriate taxis and ensuring the bus they want to catch is wheelchair accessible. Even when all these are planned for, experiences of being stranded are very common. The cases identified the sequence of supports that need to be in place simultaneously to make the work journey possible and the centrality of online and mobile resources in this process.

In the following sections we describe our research process, and demonstrate the methods we adopted to work from four different disciplines (Social Policy, Social Sciences, Service Marketing, and Design) and across two Universities and four Faculties, our scaffolded process for understanding the experiences of young people with disabilities journeys to work, the creative synergies through co-creation that informed our mixed method approach, and our outcomes so far. This research is conducted as part of the ARC Linkage project Seamless Journeys to Work (LP150100168), which seeks to explore the transition to work of young people with a disability and, the role that digital technologies can play in improving self-determination and employment. The project aims to extend our knowledge for policy and service delivery, and to inform the development of transformative services aimed to deliver online person-to-person (P2P) platforms that facilitate self-determination and seamless journeys for young people with a disability.

2. Young people with disability: mobilities and self-determination in their journeys to work

In this research, the concept of mobility is defined as people's ability to access social life

and services that support a productive life (Raja, 2016). In this notion, the social and built environment context shaping people's mobility experiences play a critical role in determining people's ability to connect the elements that enable their daily routines. The many obstacles that people with a disability experience to their routine mobility to effectively navigate the city as well as indoor spaces, reduce their ability to participate in employment (Lacrow et al., 1990; Moore Sohlberg et al, 2009). From this perspective mobility and self-determination are intrinsically related, as self-determination is the principle of self-direction and choice (Ryan & Deci, 2017). When a person with disability experiences limitation to effectively navigate to work, their self-determination is impacted, and their sense of wellbeing is negatively affected. In Australia, current services and infrastructure do not enable effective commute to work for people with mobility-related impairments (Chamorro-Koc, Stafford, & Adkins, 2015) limiting their self-determination and positioning them in a situation of inequality.

By journeys to work we refer to the process that young people with disabilities go through in their transition from school to work, their pathway from pre-planning to their actual day experiences, in relation to getting to work. However, this journey to work is a fragmented and disconnected environment that entails complex and often difficult interactions for young people with disabilities with other people, services, infrastructure and systems in their day-day lives (Adkins et al., 2015; Chamorro et al., 2015). These observations are supported by organisational reviews such as the Productivity Commission, (2011a&b, OECD, 2011) that illustrated that people with disabilities experience fragmented support services to employment assistance, personal care, transport, aid and equipment; and all of these also act as barriers to participation in work (e.g. PDA, 2014). As a result of this fragmented system, people with disabilities often require different mechanisms and assistance to help them negotiate and understand how services can be adapted for them.

All the explained supports the notion that young people with disabilities experience poor transitions to employment and with low employment rates (Cocks & Thoresen, 2013; Meadows, 2009), despite existing strategies such as paid work at school (Hemmeter et al., 2009) and client focused approaches. Little is known about what is required and what works for young people with physical disabilities to effectively join the workforce. This gap in knowledge is problematic when attempting to improve the workforce participation rate for this large proportion of young people with disabilities.

Our research team set out to investigate this problem from a systems perspective and to contribute to the understanding of young people with disabilities journeys and transitions to work. We situate our research in the intersection between policy, service landscape (including stakeholders and employers) and the application of a design lens to the understanding of young people with disabilities needs. We address the DRS2020 Conference Synergy Theme by describing our research approach that involved a multidisciplinary collaboration and co-creation of mixed methods to expand our understanding of young people with disabilities journeys to work. To this effect, we present our approach to the development of scenarios illustrating the critical incidents that limit or enable young people's everyday journeys. This is described in the following section.

3. Exploring journey experiences: a mixed method approach

To address the complexity of the research problem described in section 2 and to understand person-environment interactions in young people's journey to work experiences, we conducted this research in three stages:

- Stage 1: Audit of the service and policy landscape
- Stage 2: Identify people's motivations, perceptions, and expectations
- Stage 3: Understand the experience of journeys to work

Each stage is explained in the next subsections.

3.1 Policy exploration and the concept of Creative Resistance

Our Stage 1 of the research analysed disability employment services and the intersecting service systems to understand: (i) how policy and programs influence on the transition to work for young adults with disabilities; (ii) how implementing organisations (e.g. service providers) experience, understand and practice the policy; and (iii) the potential implications and conflicts when supporting young adults with disabilities in their pathways to employment. We analysed the policy and conducted twenty-two in-depth interviews with participants from different organisations; each interview was of approximately 60 min duration each. Participants were personnel from service delivery and advocacy organisations (Stafford et al., 2019) Coding of the interview transcripts was assisted with the use of NVivo 11. Our analysis revealed policy and programmatic derived barriers that are significantly influential on young people's pathways to work because this is tightly prescribed (Stafford et al, 2017; 2019). Amidst this complexity, a key finding in relation to our understanding of the how young people with disabilities and stakeholders navigate the policy landscape, is the concept of *Creative Resistance* (Stafford et al, 2017). We applied this term to those service providers' practices finding ways to overcome prescribed service restrictions in order to help young people with disabilities build their employability. Moreover, our results indicate the need of young people with disabilities of being supported to self-determine their work goals and the support they need; and that this process should account for life experiences, personal characteristics, environment, and resources (Stafford et al, 2017; 2019). The next stage looks into gaining more detail of the factors influencing young people's ability of self-determination in their journeys to work.

3.2 Exploring Motivations and Attitudes: indicators of scenarios

Stage 2 focused on identifying motivations, perceptions, and expectations of young people with disabilities about journeys to work. Extant literature about what influence people's ability to move into the workforce identifies four key factors: socio-cultural factors (e.g. stereotypes and prejudices), environmental factors (e.g. the built environment), transition-policy factors (e.g. access to supported planning), and psychosocial factors (e.g. individual's self-concept, intrinsic motivation) (Abbott & Carpenter, 2014; Baker et al, 2009; Magill-Evans et al, 2008; Huang et al, 2013). However, it is unclear whether these factors influence

the journey to work for young people with mobility related disability. The Model of Goal Directed Behaviour (MGDB) posits that understanding affective and motivational factors of a decision making behaviour help explaining a person's pursuit of a goal (Perugini & Conner, 2000). We applied the MGDB to an online survey in order to examine the socio-cultural, psychosocial and environmental factors influencing young people with disabilities' journey into the workplace (Beatson et al, 2020a; 2020b). The survey was responded by a sample of 200 young adults with a physical and/or neurological disability aged 18–35 years; they were all employed or seeking employment; their mean age was 27.59 years of age; and 55% of the respondents were male. The participants were recruited from all states in Australia and the majority had a secondary education level (19.5%) or bachelor's degree (19%) qualification. 43.5% of participants were employed full-time, 21.5% were employed part-time, 13.5% were employed casually and the remaining 21.5% were employed in a different role or seeking employment.

The results revealed 11 factors influencing young people's motivations and attitudes about their journeys to work: attitude, subjective norms, positive emotions, negative emotions, risk aversion, past behaviour, perceived behavioural control, employer support, social support, desires and intentions (Beatson et al, 2019). Figure 1 shows the interrelations between the 11 factors and their influence in the young people with disabilities desires and attitudes regarding their journeys to work. It also shows that psychosocial, socio-cultural and environmental factors all play a significant role in people's desires and intention to independently commute to work and establish themselves in the workforce.

Figure 1 Factors influencing young people with disabilities intention to establish themselves in the workforce

Facilitators of journeys to work are not only the person's readiness for it (psychological factors), but it also requires available support from employers, friends and families (socio-cultural factors), and accessible transport that supports independence (environmental factors). These relationships and influence of these factors in people's journeys to work were more clearly identified in the results from a cluster analysis on the basis of gender, living status, education and employment status, applied to the responses to the online survey. The following table shows the interpretation of the 11 factors in four types of Personas created to demonstrate relationships and influences (names are fictional).

Table 1 Cluster analysis interpreted as four types of Personas and their intentions about their journeys to work.

	JOHN	MIA	TIM	JACK
Description	Male, lives alone, works full time, has a bachelor's degree, 32 years of age, lives in NSW	Female, lives with family, works part time, secondary education, 25 years of age, lives in QLD	Male, lives with family, works part time, secondary education, 35 years of age, lives in QLD	Male, lives with family, works full time, Post-grad education, 30 years of age, lives in NSW
Risk aversion	Moderate M=4.8 Cautious about new situations and taking chances	Very Strong M=5.8-6 Avoids new situations and taking chances	Moderate-Strong M=5.2 Cautious about new situations and taking chances	Moderate M=4.6 Cautious about new situations and taking chances
Perceived workplace discrimination	Feels people are generally treated fairly at work M=4	Feels people are treated fairly at work M=3	Feels people are generally treated fairly at work M=4	Feels people are generally treated fairly at work M=4
Satisfaction	Are satisfied with current job M=6	Are somewhat satisfied with current job M=5	Are somewhat satisfied with current job M=5	Are somewhat satisfied with current job M=5
Supported to gain employment	No	No	Yes	Yes
Employer support	Employer occasionally checks whether I understand tasks and offers to help if needed M=4.29	Employer occasionally checks whether I understand tasks and offers to help if needed M=4 and 4.43	Employer occasionally checks whether I understand tasks and offers to help if needed M=4	Employer occasionally checks whether I understand tasks and offers to help if needed M=4
Transport	Passenger in car	Car as driver	Passenger in car	Train
How found job	Online	Online	Word of mouth/ friends	Online

Find transport apps easy to use	Moderately easy M=4	Very easy M=6	Moderately easy M=4	Easy M=5
Invited to work related functions	Frequently M= 5	Frequently M= 5	Occasionally M=4	Occasionally M=4
Family and friends help me get ready for work	Occasionally M=4	Frequently M=4 and 6	Occasionally M=4	Very frequently M=5 and 7
Disability	Chronic regional pain syndrome	Cerebral palsy	Autism	Limb difference

MGDB has been useful to understand the different factors influencing people's behaviours and attitudes towards pursuing a goal: commuting to work as a necessary component of young people with disabilities transitions to work. We applied then design narratives approach to construct a scenario that can flesh out people's experiences of journeys to work in a more relatable way. Scenarios are a design tool that can be successfully employed to: (i) understand people's everyday practices in context, and (ii) reveal stakeholder relationships in the provision of services within current everyday practices (Chamorro-Koc et al, 2012). For example, consider the following scenario narrative based on Table 1:

Mia is a 25-year-old female who lives with her family in QLD. She works full time and has a Bachelor degree. In the morning Mia wakes up and gets ready for work with the occasional support from her mum. She drives herself to the train station where she parks and transfers to her wheelchair to catch the train. Her workplace is quite supportive and her boss occasionally checks in on her to see how she is going and offers help if required. Mia is somewhat satisfied with her job and feels people are generally treated fairly at work. After work, Mia is frequently invited to join her colleagues for after work drinks. Because Mia is extremely cautious about new situations, she often avoids attending those events. When Mia needs to go to new places on her own, she researches where they are going to ensure the place is suitable for her and that she can travel there safely. She finds easy to use transport apps to assist with this.

This scenario narrative provides an explicit account of a Persona (Mia), her characteristics, personal views, routines, and challenges that facilitate the understanding of how the 11 factors influences her attitudes and motivations towards her daily journeys to work. It shows that there is much more than just using transport to get to work, and it demonstrates a support system of family and friends, as well as infrastructure, and of technology that she relies on in order to 'get to work'. Building on this scenario, the following section explores in more detail how does a young person with mobility disabilities experiences enablers and navigates barriers in a routine journey to work.

3.3 Exploring people's perspectives: critical incidents and journeys to work experiences

Having identified in Stage 1 that service providers implement creative resistances where possible, and in Stage 2 the factors influencing young people desire and intention to get to

work, our focus in Stage 3 is to identify what enables people's self-determination in their journeys to work experiences. To this end, we employed self-reported field observations and interviews, as key components of a Critical Incident Technique (CIT) method approach. CIT is a method of inquiry that supports the observation of human behaviour by triggering participants to recall stories that can be positive or negative experiences (Flanagan, 1954). Our participant recruitment in this stage was opportunistic. In our research, more than 200 CITs were identified from eight participants, most of them were wheelchair users. Seven participants were employed at the time of the interview, their journey experiences were different, some of them commuting daily while others in rare occasions. In addition, for this part of the research, we tighten our concept of journeys to work as: the activities that people perform before and during a commute, including planning, familiarisation with the route, getting from one place to another, and any other activities included in this process (Sartori, et al, 2019).

Our use of CIT consisted of asking participants to describe memorable examples of limiting situations or support strategies that impacted their self-determination during journeys. We started by asking participants to describe a typical journey that they usually undertake. The participants described their journeys from the moment they prepare to leave, to the moment they arrive at their destination. They were also asked to describe how they adapted or dealt with unexpected events during journeys and if online services or digital platforms helped them to prepare for or during the journey. During interviews the participants self-reported critical incidents about their journeys to work and also about other moments when they felt like their mobility was limited and self-determination was impacted; for example, when going to restaurants and booking hotels. All the interviews were audio recorded to include all the details of the incidents reported and to avoid data collection bias. The audios were later transcribed and prepared for data analysis with ATLAS.ti software. In total, 65 usable incidents during people's journeys to work were identified using this process.

A thematic analysis of the 65 critical incidents generated 5 categories and 22 sub-categories of limiting situations and support strategies that impact on participants' self-determination. The largest limiting situation identified across all CITs was about the use of digital platforms during journeys for planning and decision making (29.1%). The second largest limitation situation was transport options (26.6%); this was followed by technology (19%), policy and standards (15.2%), and communication (10.1%). The following is an exemplar of a participant's CIT of a routine journey:

You can't just be like, oh, well this place is a bit tricky or different. Like planning is so much more key to life now that you just feel like even if you're going somewhere you don't know, you can't be like, oh, we'll just find a hotel when we get there and we'll just grab a taxi from here. But it definitely avoids a lot of, not disasters, but a lot of complications.

Through this categorisation of limiting situations, Stage 3 extends our understanding of factors enabling or disabling self-determination of young people with mobility-related disabilities in journey experiences. This is illustrated in the form of journey to work experience maps, which we present in the following sections.

4. Actual and Desired Scenarios of Journey Experiences

Design can play a transformative role in this complex system of enabling and limiting factors, because it brings a human-centred approach and recognises service users as experts of their experiences (Cottam & Leadbeater, 2004; Lundkvist & Yakhlef, 2004). From this perspective, our design approach helped bring together and interpret findings from the 3 stages of the research into a holistic understanding of young people with disabilities journeys to work experiences. The CIT study provided insights into participants' journey experiences, including the process of planning and undertaking routine and non-routine journeys. This information was used to generate journey maps that illustrate the activities that participants reported during the interviews. A journey map is a tool used to represent how a person interacts with a service by synthesising information into a step-by-step representation of service touchpoints (SDT, 2019a).

The maps generated for this research are an adaptation of a classic journey map because they include a representation of the entire service system involved in people's journey experiences. These journey maps also include sample quotes from participants of critical incidents associated with specific steps of the journey. Figure 2 shows an example of a routine journey map from one of the participants' journey to work routine experience (from Stage 3).

Figure 2 A person's routine journey to work

The Persona example in Figure 2 has similar traits to the Persona presented in the example demonstrated for Stage 2. The illustration reveals the steps that a young person with disability experiences in her journey to work that include driving herself for one part of the journey.

Figure 3 illustrates the journey map of the same Persona, this time the Persona's journey is different, a non-routine journey. It shows the different enablers as well as limiting factors that the Persona encounters at different touchpoints of her overall non-routine journey. It tells that when the Persona engages in a journey to a new destination, her routine planning does not necessarily prevent delays or unexpected challenges. It also shows the moments in which this Persona engages with mobile technology as a way to overcome the challenges, sometimes successfully.

Figure 3 A participant's non-routine journey

In our research, this representation of journeys is helpful to illustrate the different problems that a person with mobility disabilities might encounter. It provides a design narrative for designers to work with stakeholders (end users and transport service providers), to work across design teams, and more importantly, to identify moments of the journey experience where a design intervention is clearly needed. We tested this approach at a workshop with stakeholders, focused on gathering their views about the service delivery needs, and opportunities to support their creative resistance, as well as proposing ways for them to collaborate with service users. Figure 4 shows a participant using a scenario journey map.

Figure 4 A participant's using a scenario journey map

Participants for this study were stakeholders involved in providing services for young people with disabilities representing areas of the service system that supports their journeys. These participants were purposefully recruited to represent the five categories found from CIT events, these are: mobility planning, transport option, technology, policy and standards and communication. The following is an example of one of the service stakeholder's comments when working with the journey map scenario:

This is one thing, like if you're going to go into public transport, one of the biggest issues I hear from my clients is I can't reach up and touch on. Or it's at a really good height, but I can't reach there because it's an awkward position and my power wheelchair or my mobility issue, whatever it is, I can't get into the right position to do it. So, I've got to ask the bus driver who's never happy to help or you've got to ask that person who's sitting in the front seat. Sorry. Do you mind just touching my go card? It takes away your independence once again.

This approach provided further insights into service delivery participants ideas of creative resistance. They stated that in order to be able to genuinely work around some of the rules, they need to have a vast knowledge of all the options available to the people they are working with. However, a small number of people would know all aspects of the service.

The journey maps provided an alternative form of a scenario that was useful to identify and discuss a number of issues about the services, and also about their own needs as services providers. Their comments revealed possibilities and desires of what a better or desired scenario of a seamless journeys would be. The idea of a person-to-person interactive and collaborative web platform to inform both end users and service providers of people's everyday journeys emerge as a required solution to make those journeys easier to navigate and more seamless.

6. Discussion: towards seamless journeys

Improving workforce participation of people with disabilities of working age is a key policy priority (policy 3) of the COAG endorsed National Disability Strategy 2010–2020 (2011). This is because Australia has a particularly poor record for employment rates for people with disabilities, ranking 21st out of 29 OECD nations (OECD 2011).

Our multidisciplinary collaboration and co-creation of mixed methods to expand our understanding of young people with disabilities journeys to work have provided a more holistic perspective to the research problem. It has also broaden our understanding of the different factors that enable or limit people's journeys to work. This is clearly evidenced in our use of critical incident interviews with a Human-Centred-Design approach, which allowed the identification of issues that people with mobility-related impairments face in their journeys to work and in other aspects of their lives. This approach has also helped to illustrate in much more detail how young people with disabilities manage to overcome these barriers.

In this paper we have explored: the connections and disconnections that are most important for the participant's participation in society and in employment, and we have uncovered a greater level of detail about people's needs: those from end-users and service providers. Our findings enabled by our co-created methods, have been demonstrated in the form of journey maps scenarios portraying: (a) daily practices of going to work, (b) the connections/disconnections on this journey to work, (c) the points where support services (physical and online) do not match expectations. The use of scenarios provides a conceptual framework to position a visual or written narrative identifying typologies of journeys to work and the experiences of people's interactions with current services delivery. We have employed these maps in a workshop with service providers in order to gather their views about current and desired journeys to work for young people with disabilities. These results will inform the design of future scenarios of seamless journeys to work – that is, the points of intervention required to develop actionable strategies that can be utilised to increase the independence of young adults with physical disabilities in their travel to work. Before this study, there had been limited investigation into this area of research and how these strategies could assist with the transition into the workforce. This paper described a mixed method approach from the perspectives of four disciplines across three Faculties. Beyond the results from each method, we demonstrated how Design provides the vehicle to collaborate and bring together all findings, creating value from this collaboration, leading to synergy through collaboration and co-creation.

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