An exploration of the narrative dynamics of physical activity intervention and its potential for public health practices in behaviour change

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An exploration of the narrative dynamics of physical activity intervention and its potential for public health practices in behaviour change

A thesis submitted to University of the West of Scotland for the Degree of Doctor of Philosophy in the School of Science and Sport

Angela Beggan

Director of Studies: Professor Julien Baker
Second Supervisor: Professor Jean Rankin

September 2017
Declaration of Originality

This is to certify that I am responsible for the work submitted in this thesis, that the original work is my own except as specified in acknowledgements or in footnotes, and that neither the thesis nor the original work contained therein has been submitted to this or any other institution for a degree.

Signed: Angela Beggan

Date: 20 March 2018
Abstract

The burden of non-communicable diseases has drawn public health attention to lifestyle behaviours such as physical inactivity. Attempting to change behaviour through the practice of intervention has become part of the public health repertoire bolstered by theories that evidence manipulable correlates of behaviour with the expectation that inactive people can be changed to active people. The lack of direct and lasting effectiveness of specific approaches coupled with the moderate and transient effectiveness of a wide variety of approaches has prompted divergent research into the complex dynamics of behaviour change. This thesis adds to the divergent literature by exploring the narrative dynamics of material-discursive agencies enacted through physical activity intervention. Using a design-based methodology, a qualitative frame comprised of narrative and cultural psychologies was used to explore the small and big stories of parents, their nursery-aged children, and community health improvement practitioners in designing an intervention to promote intergenerational physical activity. Across three distinct design phases, stories were gathered and analysed using rigorous dialogical narrative analysis. In phase 1, stories were used to co-construct typologies of physical activity in the everyday lives of parents and children. In phase 2, tensions identified by the dialogical analysis in phase 1 were used to story a material object designed to participate in the conditions of possibility for intergenerational physical activity. In phase 3, the prototype object was implemented, and stories of its use demonstrated that the narrative dynamics enacted by participation with an intervention was not change but becoming. The processes and findings from across the phases culminate in an original model for lifestyle intervention based on narrative dynamics called the Relational Innovation Model. The model proposes lifestyle intervention based on abstraction rather than normativity and demonstrates how stories participate with meanings causing them literally to matter.
Dedication

This thesis is dedicated to

Caden Riley Beggan

2006-2012

and

Nell Frances Vidrine

1926-2014

Nothing but time lies between us.
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I owe a debt of gratitude to Ken Scott, John Humphreys, and Andrew Abraham for my academic journey and this milestone upon it. Thank you for seeing the possibility of this achievement in me, for giving me a job, and for setting me on my way. I am deeply grateful, but I may never forgive you!

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The breath in my lungs, the warmth in my skin, the strength in my bones, the blood in my veins... How does one show gratitude to the very fibre of one’s being? Because that is what you are, David. Thank you for being strong when I was weak, for being my foil and my critic, for lavishly giving unselfish, unconditional, unwavering love and support. I could not do life, much less this thesis, without you. I love you truly, madly, deeply, and forever. I think we are quite ready for another adventure... Holiday!! I mean holiday!
Conference presentations arising from this thesis


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List of Abbreviations

AI – appreciative inquiry
AIN – agential narrative intra-action
BC – behaviour change
BCW – behaviour change wheel
COM-B model – capacity, opportunity, motivation – behaviour model
CPU – central processing unit
DC – design challenge
DNA – dialogical narrative analysis
DS – double Stimulation
DT – design thinking
EYC – early years collaborative
EYP – early years practitioner
FI – Formative intervention
FF - Family fit
GIRFEC – Getting it right for every child
GTPI - General Theory of Psychological Intervention
HCD – Human-centred design
HLP – Health and leisure partner
IGNITE – Inspiring generations in [location] to get active together
IPA – Intergenerational physical activity
LA – Local authority
LALT – Local authority leisure trust
NICE – National institute of health and care excellence
NHS – National Health Service (partner)
NPC – Narrative Personal Culture
PA – Physical activity
PH – Public health
PU – Proportional universalism
RCT – Randomised control trial
RIM – Relational innovation model
RV – Rural village
SCET – Scottish centre for enabling technologies
SLP – Senior leisure partner
ST – Suburban town
UK – United Kingdom
US – United States
WHO – World health organisation
WT – WeTime
ZPD – Zone of proximal development
Chapter 1 – Introduction

1.1 What is this Thesis About?

“What if I told you... remember that guideline we spoke about? What if just a small amount of walking would make enough of a difference to your health that you could play those games with your child? Would that make a difference to you?”

“I don’t know... I don’t think it would really make that much difference because... people have got their own things. People have got a lifestyle that works for them, and do you know what? You can put all the guidelines out there that you want and you can say that, ‘This is really good for you and this is really bad for you.’ At the end of the day, people are going to live the life they choose and a guideline is not drastically going to make people change their way of thinking. I think to some people it might, if you pin them down and say, ‘If you do this you’re going to feel better,’ then fine, they might make the effort to do it but I think there are a lot of people who would say, ‘It doesn’t matter, go away.’”

This thesis considers behaviour change (BC) and physical activity (PA) as they intersect with public health (PH). These concepts have become joined in theory and in practice because it has been established that habitual physical inactivity is a potent risk factor affecting a wide variety of chronic physical and mental health conditions. Physical inactivity is the fourth leading cause of death worldwide (Kohl et al., 2012). Globally, it contributes 9% of premature mortality and 6-10% of the worldwide burden of non-communicable diseases (Lee et al., 2012) with an additional and substantial global economic burden conservatively estimated in 2013 at $53.8 billion (International $) of which $31.2 billion was paid by public sector healthcare (Ding et al., 2016). While physical inactivity is a global health threat, sufficient amounts of physical activity are both prophylactic and remedial to these conditions (Wen et al., 2011). If the whole world could be made instantly physically active from now, global life expectancy would increase by an
average of 0.68 years (Lee et al., 2012). This “pandemic of physical inactivity,” to use Kohl et al.’s (2012, p. 294) term, has drawn the attention of PH practitioners globally to consider ways of increasing physical activity and reducing sedentary behaviours in virtually every segment of human populations with the goal of ameliorating what have been termed lifestyle diseases (Hallal, Martins and Ramírez, 2014).

Prevention is a key focus of PH efforts to reduce the effects of physical inactivity. Adoption of even modest improvements in PA behaviours would reduce the disease burden dramatically if the improvements could be affected across large enough segments of the population (Graham, Baker and Davies, 2015). Interventions are the main delivery mechanism for such health improvements. For PA, intervention practices focus on the various cause-effect pathways thought to determine behaviour (Buchan et al., 2012) whereby the intervention functions to impact, mediate, and ultimately change behaviour (Mâsse et al., 2011). Behavioural interventions are developed in controlled settings to determine their efficacy (Hallal et al., 2012) after which they are translated into real-world settings (Dzewaltowski, Estabrooks and Glasgow, 2004) where their predicted efficacy and measured effectiveness are expected to be congruent; this is known as evidenced-based intervention design (Heath et al., 2012). To date, however, PA interventions have demonstrated variable effectiveness (Foster et al., 2005) and have had negligible impact on PA behaviours at a population level (Hillsdon et al., 2005). Attempts at researcher-led translation of evidence to practice tend not to thrive beyond their funding (Reis et al., 2016) largely due to their lack of compatibility with the working rules of the context (MacDonald and Green, 2001) and an implicit trust in methodologies that ignore outliers which may hold the key to BC (McKenna and Davis, 2005).

This disparity between efforts and outcomes has led some researchers to think differently about behaviour and the role of intervention in affecting it. For instance, Chapman (2007) reflected on evidence-driven interventions for smoking and tobacco control, an area of behavioural intervention widely regarded as a PH success (Frieden, 2014), noting that overreliance on quantitative evidence for
designing and evaluating interventions misses crucial information. Understanding why a smoker quits and how he or she goes about doing so may hold more important information for intervention practice than the evidence currently comprising evidence-based interventions. One reason for this is smoking rates were most notably impacted when more smokers did something to quit; meaning, a less effective intervention that maximises the number of participants (or reach) is preferable to a highly effective, intensive intervention that only reaches small percentages of the population (Glasgow, Vogt and Boles, 1999). This effect of some action toward change points toward another reason the problem of BC is in need of different perspectives, that being, reductionist methods oversimplify the dynamic interplay of factors leading to change including the length and type of exposure required to a myriad interventions, influences, and conditions necessary to precipitate even a single qualitative change in behaviour (Chapman, 2007). With regard to the problem of physical inactivity, ecological models comprise the current framework for understanding PA with a focus on the biopsychosocial, environmental, and structural correlates and determinants understood to lead to the behaviour. The implication for BC intervention is that if PA behaviour can become a known, closed set by virtue of improved knowledge of causal inference, interventions can be designed to effect and remediate the causal relations (Bauman et al., 2012).

The level of complexity involved in changing behaviour has spurred some researchers to take radical departures from accepted behavioural theories by attempting to understand intervention from perspectives of chaos, quantum, and complexity theories (Orr and Plaut, 2014; Resnicow and Page, 2008) and from cultural and narrative perspectives (Greenhalgh, 2016; Napier et al., 2014). These theories challenge a linear view of change and permit behaviour to be conceived as an emergent phenomenon of possibilities (Aunger and Curtis, 2014) perhaps more suited to the rich and imaginative dynamics of stories than to deterministic mechanisms (Kauffman and Gare, 2015). Applications of dynamic theories in BC are limited. There is still much ambiguity about BC processes in linear and systemic models without adding dimensions of dynamics like those in complex adaptive
systems (Martin, 2010), and there is even less understanding of how knowledge emanating from these different theoretical positions could be practically used. The intervention methods that have been modelled on these perspectives are open, collaborative, and creative, focusing on the future and what comes next (Favareau, 2015). These methods derive from the ubiquitous human phenomenon of experience that narratively comprises human behaviour and beyond it to a globe-full of cultures and practices, and perhaps to the material world itself.

The purpose of this thesis is twofold: it presents an instance of future-forming research (Gergen, 2014a) considering how families with young children might become physically active together within a Scottish local authority, and in doing so, it elaborates a narrative, dynamic theory of BC by exploring the questions - what makes physical activity matter and can it be made to matter?

1.2 Physical Activity in Scottish Health Improvement

Physical activity began to feature in the Scottish health improvement landscape in 1999 with the publication of the white paper, “Towards a Healthier Scotland.” This paper outlined a new approach to public health that balanced a focus on lifestyle choices with an understanding of the life circumstances that often mitigate such choices. Health improvement began to focus on narrowing health inequalities and including wider determinants of health with the named lifestyle targets of smoking, diet and physical activity (Robson, 2007). In 2001, Scottish ministers responded by commissioning the National Physical Activity Task Force and asked its members to develop a national strategy for improving levels of physical activity within Scotland. The result was “Let’s make Scotland more active (LMSMA),” the strategy document that outlined a twenty-year plan focused on the following vision, “People in Scotland will enjoy the benefits of having a physically active life (p. 22),” which was to be achieved by pursuing their main goal, “to increase and maintain the proportion of physically active people in Scotland (PATF, 2003, p.22).” The focus on improving physical activity uptake was bolstered by an additional government action plan called Healthy Eating, Active Living. This plan focused on the link between physical inactivity, diet and the rising levels of obesity and incorporated further strategies to attenuate its incidence and prevalence in the Scottish
population (Donnelley, 2008). Using LMSMA as a guide supported by monitoring data from the Scottish Health Surveys, stakeholders at national and local levels began incorporating physical activity into their community health strategies.

One example of such joint health improvement work across stakeholders was the Early Years Collaborative (EYC). The EYC was a collaboration of agencies from local authority (LA) government, area health boards, education and community organisations including third sector partners. The remit of the EYC was to improve health outcomes for children and families in Scotland using a “multi-agency, bottom-up quality improvement programme” (EYC, 2017). The work of the EYC contributed to the Scottish national strategy for children and young people, Getting it Right for Every Child (GIRFEC). The aim of GIRFEC was “improving outcomes and supporting the wellbeing of our children and young people by offering the right help at the right time from the right people (Scottish Government, 2016).” In practice, this meant following the health improvement approach adopted in Scotland called ‘test of change’ where small-scale changes are planned, implemented, evaluated, and then either discarded or scaled-up depending on local effectiveness (IHI, 2016) with the purpose of fulfilling the National Health Service’s (NHS) approach to shared decision making and giving individuals more say in the actions taken to improve health and communities (DOH, 2012).

In one particular Scottish LA, the work of the EYC involved a partnership with the local authority leisure trust (LALT) that featured a range of services supporting physical activity opportunities for children and adults, but none that explicitly facilitated parents and children to be active together. In 2008, the LALT ran a variety of pilot programmes that included family activities specifically for mothers and babies. These programmes were included in a wider project called Active Communities that was evaluated in 2011 (Beggin, 2012). The findings from the evaluation highlighted that gaps in the LALT provision meant their successes at recruitment and retention of participants to parent/child PA programmes were thwarted when the children grew too old to remain in mother/baby classes but were not old enough to do individual activities without having their parents nearby. The practitioners were concerned to fill this gap because they felt that it was
important for children to have early experiences of PA, since this may predict their adolescent to adult PA behaviours (Biddle et al., 2010) and that perhaps the children could be influential in changing their parents’ uptake of PA (Gadhoke et al., 2015). The practitioners were looking for evidence-based ways to implement programming that would promote PA behaviour in families with young children, and this practical issue formed the nexus at which my story and this thesis joined with the work of stakeholders in the LALT and the EYC. However, while this nexus was the beginning of the work of this thesis, it was not the beginning of the story of this thesis. For that, I must go back to go forward so that I may orient my voice for my reader, as I necessarily assume different subject positions within this research (Dowling and Garrett, 2016): student, researcher, theorist, practitioner, designer, mother.

1.3 Once Upon an Evaluation...

In late 2009, I was commissioned to undertake an evaluation of a Scottish community PA initiative implemented through a then novel collaboration between the local NHS health board and the local authority leisure trust (LALT) attempting to positively impact the levels of PA within the local authority (LA). The programme had broad aims that included increasing knowledge and awareness of the benefits of PA; increasing PA behaviour and decreasing sedentary behaviours; increasing actual provision of services; mapping existing services; creating partnerships; and increasing community capacity and participation in an effort to improve project sustainability. All of these activities were to be targeted specifically at adults (because the stakeholders assessed that locally there was already work underway aimed at children and young people) who were deemed to be ‘hard-to-reach’ and who were identified as individuals with disability, mental or physical ill health, and adults from black or minority ethnic communities. The project had already begun in October 2008 with funding until October 2011. I was tasked to collect both retro- and prospective data on the effectiveness of the project in achieving its outcomes.

At that time, I had been working in academia for five years. I had come into the academy through an unconventional route afforded to me by my years of commercial experience in delivering exercise for health in clinical and commercial
settings. The college I then worked for recently merged with another institution to form a new university, and university-level expectations were placed upon all staff members. Specifically, this involved gaining a doctoral-level qualification. The only postgraduate qualification I had then achieved was a PG Cert in Advanced Academic Studies, so a serendipitous set of circumstances precipitated the undertaking of this evaluation with a view to gaining a doctoral qualification in the process. I was 36 years old. When the evaluation was commissioned, I had, just 10 months prior, given birth to my third son. I did not especially want a PhD, but I had too long a career ahead of me not to have one, I loved teaching students, and I was blissfully ignorant of what was actually involved in gaining one.

It is worth noting that I am not Scottish. I am a white, female American married to a white, Scottish male and we both permanently reside in the United Kingdom (UK). I graduated university at the top of my class as an undergraduate in the United States (US) and had nearly a decade of work experience in exercise and health-related fields by the time I started teaching in the UK. Though research was a new arena for me, my previous successes and my American sensibilities made me confident in my knowledge, skills, and abilities. I had surmised in my time so far in Scotland that exercise and physically activity related professions were underdeveloped compared to the US, yet the socio-political arrangements here were much more favourable to achieving an ongoing, impactful, and equitable influence on health via PA. I was convinced that a strong evidence to practice link was key to achieving improvements in health outcomes, so I began this work with my mind inclined toward examining how this initiative translated evidence into practice (Dzewaltowski, Estabrooks and Glasgow, 2004; Glasgow and Emmons, 2007).

The work progressed slowly, as I was a part-time student learning new and essential skills as I went, and culminated in 2012 with a written report to the stakeholders (Beggan, 2012). A summary of the main findings concluded that the project had broadly succeeded in forming partnerships and creating capacity in varying degrees across the regions of the local authority, and they had increased the amount and variety of local opportunities for adults to be active in their
communities. However, little of their efforts actually reached the hard-to-reach people groups they had targeted, and they had not incorporated evidence-based methods for assessing whether awareness and knowledge had increased, nor whether physical activity levels had increased while sedentary behaviours decreased. Recommendations included simplifying and narrowing the scope of their objectives by using theoretical models of behaviour; developing community-relevant opportunities; and focusing on designing activities that would help an individual achieve at least the minimum UK guideline dose of PA (CMO, 2011).

Basically, in my view, the recommendations conveyed the need for the practitioners to better use research evidence so that they could focus on influencing the mechanisms linked to their desired outcomes. I was idealistic about the ‘truth’ of studies that seemed to say that the application of this theory or that process would result in the desired behavioural outputs with a significant and generalizable certainty, and if the outcomes did not reflect such ‘truth,’ then it was likely down to a problem with fidelity of implementation (Glasgow, 2008; Plotnikoff et al., 2014).

Once the evaluation concluded and the project was reviewed, the stakeholders found their funding was extended, and in mid-2012, I met with them to discuss how we could take some of the recommendations forward. They were deferent to me, and I could have taken forward any aspect that interested me in the development of my thesis. I struggled initially because my fieldwork on the evaluation, which was a mixed-method endeavour, helped me to understand what a challenge the practitioners had in developing and maintaining any programme, never mind one involving a behaviour in which many people were simply not interested. There was evidence on determinants and barriers and inequalities and models of behaviour. It seemed we knew exactly what pieces comprised the PA behaviour puzzle, but how they fit together and if there were moving parts, we were none the wiser. At least, this is how I viewed the liminal practice<>research space in which I found myself. From my experiences of work in the US and now having a flavour of the practices here in the UK, I began to muse more deeply about what the actual problem was. There would have been a time when I would have
laid most of the responsibility at the feet of the individual and their levels of motivation to be physically active, and now I was beginning to consider the role of practitioners and their understanding and use of evidence in their work. The practitioners seemed to be genuinely concerned about people and also about achieving the targets set for them because of what ‘the evidence’ said was achievable, while the people who were the focus of all this scrutiny just wanted to live their lives. Becoming physically active was definitely a complex problem; how could I understand it better? This was the question I was grappling with when it happened.

There are moments in life that are so profound, leave a mark so indelible, that the world, in the ontological sense, is permanently altered. In October 2012, I was about to have one of those moments. My middle son, Caden, who was then six years old woke-up ill on the morning of the 23rd October; it was a Tuesday. He seemed quite poorly like a very bad bout of flu, so I stayed home from work to look after him. He lay on a couch in the living room while I worked on my laptop a few feet away. I was trying to arrange hard copy printing of the full evaluation report between reading-up on a new approach I had come across, Realistic Evaluation (Pawson and Tilley, 1997). I was struggling with some of the concepts the authors were using. My education to date had been thin in the social sciences; I was trained as a physiologist. I did not even know that such a thing as qualitative research methods existed until I did my postgraduate teaching qualification in 2008. My grasp of theories lay largely in the domain of psychology, and my use of them had been an unquestioning, functional affair in which I understood them to account for the unseen structures and functions of the mind. It did not occur to me that they could be constructions affected by contextual, historical or social influences (Toomela, 2010). Pawson and Tilley’s (1997) work introduced me to the seductive world of philosophy and names I had never heard before: Kuhn, Popper, Bhaskar (Pawson, 2011). I had fallen into a rabbit hole with no bottom in sight. But reality called. The day waned and so did Caden. He descended rapidly into a frightening listlessness, and then I saw them, tiny purple pinpricks. One, then another, then another, they began to engulf him. In a blur of events I can scarcely recount, I found
myself just hours later sitting in a hospital praying for the life of my child. Meningococcal Septicaemia. That is the name of the thing that was taking him away from me a piece at a time. He fought for twenty-eight days, but it was not to be. On Monday 20 November, I held him in my arms one final time as he breathed his last.

There are no words for the heartbreak. The numb months that followed lingered like a silent interlude. But after six months passed, I had to decide what I was going to do with myself, and I decided to go back to work. It is perhaps necessary at this juncture to explain why I would burden my reader with such a personal story. I am reminded of a critique relayed by Sparkes (2002) where he notes that confessional narratives such as this one have been criticised as more of a perverse catharsis rather than a meaningful contribution to knowledge; however, the purpose of Sparkes’ comment was to highlight just the opposite. My story matters because it altered me; I did not participate in the world in the same way any longer, nor did I value the same things. I had deep questions that needed answering beyond the simplistic view I had previously held of truth, and I had come to doubt the notion of control as nothing more sophisticated than a rudder in a hurricane. The world and everything in it looked different which meant that I could not go on as I had before. This reshaping of myself would result in a reshaping of my thesis and my approach to research processes (Fortune and Mair, 2011). Additionally, the whole experience of Caden’s illness had become a shared and public story. What began as an effort to keep my American family informed of what was happening turned into a Facebook phenomenon of sorts. My husband began journaling the experience for our family and friends, but our personal pages were so overloaded that we made a community page just for Caden which at its peak attracted just under 80,000 followers from all over the world (Beggan, 2016c). His story was met with a swell of local support and was featured in local and national newspapers. At the time, it was all quite helpful in my grieving; who wouldn’t want the life of someone they loved to leave a mark, even a small one. But when I decided to return to work, this meant that everyone knew, at least it felt like everyone knew, my deepest pain. So, the person that had begun a thesis in 2009 was not the same now in 2013.
I mechanically picked-up where I had left off. I had missed the opportunity to join onto some of the follow-up work from the evaluation. The programmes had continued and had incorporated some aspects of the evaluation’s recommendations, but they also had to follow market forces. I had come back to a different space and time. It was difficult to figure out how to continue with my thesis, but I was determined to do it – I needed to. The original stakeholders were still interested in working with me, but with funding and staffing changes to their programmes, further resources would be required. One of the NHS stakeholders, made me aware of a call for local funding bids to Scotland’s Early Years Collaborative (EYC) and encouraged me to apply. Together with support from the LALT, I put in a bid to the EYC in late August 2013 for an intergenerational physical activity project called IGNITE (inspiring generations to in [LA] to get active together). The purpose of this project was to use a design method that had been recommended to the LALT called Human-Centred Design (HCD) to investigate, with parents and children, how families of children aged 3-5 years could participate in physical activity together within the community, and if they did, what would it look like and what would its outcomes be? Answering these questions would result in the creation of a prototype, a “product, service, environment, organisation, or mode of interaction (IDEO, 2009, p.6)” or similar, that would facilitate families to do this behaviour of intergenerational physical activity (IPA). In October 2013, I was notified that the bid was successful. We were given two years and awarded £10,000 to develop one of the prototypes that the parents would help to design, and so the work and this thesis began.

1.4 Overview of the Thesis

Though the intervention project concerned intergenerational physical activity, this thesis is about behaviour change. In Chapter 2, I review a range of foundational literature pertinent to BC that contextualises its theory and practice in PH with specific attention to PA. I include an overview of current approaches and controversies as well as burgeoning lines of inquiry that I expound throughout this research. I conclude this chapter with the research aims of this thesis and the questions that guided them. Chapter 3 establishes the methodological and
philosophical positioning of the research, including the research design that incorporates them and the methods and analysis that enact them. I offer an extended account of my role in the research while explicating the research processes in Chapter 4, which I present as a confessional narrative. The 3 subsequent chapters present the empirical findings of the research phases: Chapter 5 co-constructs narrative typologies of parents’ and children’s everyday experiences of PA; Chapter 6 examines how these everyday experiences might be remade with IPA in them inclusive of a collaboratively storied material object with which to enact them; and Chapter 7 considers parents’ experiences of using the storied object, the findings of which highlight the important role of meaning in creating rather than changing behaviour. In the final chapter, Chapter 8, I draw together conclusions from across the research phases highlighting their contributions to knowledge, and with them, I propose a new and original model for designing lifestyle interventions. I conclude the work by reflecting on its strengths and limitations and by offering implications for research and practice.

Throughout this thesis, I draw upon a wide range of concepts not often considered together in research on behaviour change. Because of this, each chapter discusses the applicable concepts to demonstrate how they were used in the given phase of the research process. While this was necessary to ‘show my work’ (to use a mathematics metaphor), it can be cumbersome for a reader to have to carry forward thinking from previous chapters to form the big picture of the research. To help with this, I have included summary boxes at the end of each chapter that, when read together, tell the whole story of the thesis in brief, plain language.
Chapter 1 - Summary Box

Physical inactivity is a global health problem. Practitioners in public health rely on behavioural interventions as a way of stemming the tide of lifestyle diseases attributed to physical inactivity. The assumptions driving behavioural interventions suggest that the evidence-based work of public health practitioners should be effective in reducing sedentary behaviours and increasing physical activity. However, such changes have not been forthcoming at a population level, and while they are more noticeable at a community level, the effects are moderate and any changes tend not to last.

Since we often do not experience what the prevailing evidence suggests should be possible when conducting real-world interventions to change behaviour, researchers in the domain of behaviour change have gone looking for alternatives. Some of these alternatives consider change not as a causal event, but as something that emerges. This is a dynamic perspective that considers, rather than understanding change by its ‘stuff’ and the forces that act upon it, behaviour and how it changes may be more akin to an agentive, self-organising system.

There is not a great deal of foregoing research that explores behaviour change theory and practice from such alternative perspectives, but the research that does exist promotes a forward-looking, creative approach to intervention design that is derived from people in their everyday lives. The community research project at the heart of this thesis provided the perfect opportunity to develop understanding around how behaviour ‘becomes.’ It offered the chance to consider how a new behaviour, termed intergenerational physical activity, might be made by using future-forming research practices and by applying an emergent perspective of behaviour change.
Chapter 2 – Literature Review

2.1 Overview
The body of literature on behaviour change (BC) is wide and varied and sits across multiple disciplines that inform health improvement practices. In this chapter, I circumscribe the field with a discursive literature review that provides an overview of BC as a public health practice and as a theoretical domain in the academic literature. Challenges related to the current conception of behaviour change including its evidence base and practical applications are highlighted and narrative approaches are explored for their current and potential contributions to BC theory and intervention practices. Key literature is discussed throughout and complimentary literature from different disciplines, including guiding global and UK policy documents, is used to think about BC in different ways. I conclude this chapter by presenting the research aims and the questions that guided me in pursuing them.

2.2 Behaviour Change in the Literature
The theory and practice of BC is relatively recent in academic terms. Table 1 provides an example of how, in a search of four key databases, combinations of the terms Behaviour Change and Physical Activity or Exercise appeared together less than 15,000 times total in all types of publications in the years from 1900 to 1999. By 2000, however, peer-reviewed journal articles related to those terms were published at an increasing rate so that to date in the year 2016-17, published journal articles combining these topics increase annually by nearly the amount of journal articles published in the whole of the twentieth century.

BC as a concept is claimed and underpinned by a number of disciplines such as sociology (Ong et al., 2014), education (Heimlich and Ardoin, 2008), and neuroscience (Naqvi and Morgenstern, 2015), each developing a range of evidence according to its given perspective on what behaviour is and how it changes. While these areas of evidence proliferate, psychology is the discipline with the largest investment of theory and research (Buchan et al., 2012).
**Table 1.** Behaviour change and physical activity publications from 20th to 21st centuries

<table>
<thead>
<tr>
<th>Years (January to December)</th>
<th>Number of publications all types*</th>
<th>Number of academic journal articles*</th>
<th>Qualitative Research**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900-1989</td>
<td>5,604</td>
<td>4,230</td>
<td>1</td>
</tr>
<tr>
<td>1990-1999</td>
<td>8,996</td>
<td>7,489</td>
<td>20</td>
</tr>
<tr>
<td>2000-2009</td>
<td>32,703</td>
<td>29,077</td>
<td>290</td>
</tr>
<tr>
<td>2010-2015</td>
<td>46,096</td>
<td>41,817</td>
<td>963</td>
</tr>
<tr>
<td>2016-2017 (to 30 June)</td>
<td>11,802</td>
<td>9,134</td>
<td>160</td>
</tr>
</tbody>
</table>

Databases searched: PsycINFO, MEDLINE, CINHAL, SPORTDiscus

* Search terms: Behavior or Behaviour Change + Physical Activity or Exercise

** Search terms: Behavior or Behaviour Change + Physical Activity or Exercise + Qualitative research or design (academic journals only)

Psychology, itself, is a many-faceted, and to some, fractured (Green, 2015) discipline with a variety of subject specialities weighing-in on the theory and practice of BC (i.e. cognitive, developmental, social, health, ecological, etc.) (Davis et al., 2015). Despite differences in theoretical domains, much of the evidence generated by research in these cognate areas examines mainly rational cognitive processes and individual behaviour (Kelly and Barker, 2016; McGannon and Mauws, 2000); employs a narrow range of methodologies that are predominantly quantitative; and relies heavily on psychometrics that are taken to produce rigorous evidence of a variety of psychological phenomena relative to human behaviour (Toomela, 2007; Van Langenhove, 1995). This weighting toward a positivist ontology and objective epistemology of psychological phenomena has been criticised as lacking the capacity to produce both necessary and sufficient understanding about behaviour, generally (Gergen, 2014b; Harré, 2016c; Smedslund, 2009), and in relation to PA specifically (Fullagar, 2017; Giardina, 2017;
McKenna and Mutrie, 2003) with several authors calling for novel perspectives and qualitative approaches (Kretchmar, 2013; Mâsse et al., 2011; McGannon and Smith, 2015; McHugh, 2016; Smith et al., 2015). The historical neglect as well as the current burgeoning of qualitative evidence can be observed in Table 1 as the contribution of qualitative research to the current understanding of BC and PA steadily increases via a wide variety of theoretical perspectives and knowledge practices (Papathomas, 2016; Sparkes and Smith, 2014).

Coupling such a range of disciplines with a boom in demand for knowledge about BC has given rise to a confusing array of theories claiming to account for and affect BC. Michie et al. (2014) recently undertook an extensive review to create a compendium of BC theories and determined that at least 83 theories are currently in use with a published evidence base. By employing a network analysis of the theories’ conceptual components, Gainforth, West and Michie (2015) were able to identify the interconnectedness of the BC theories. Their analysis yielded a varied array of concepts offered as explanans of behaviour for a variety of lifestyle practices. In particular, four theories were found to contribute substantially to the content and development of nearly a quarter of the theories reviewed: Social Cognitive Theory (Bandura, 1986), Health Belief Model (Rosenstock, Strecher and Becker, 1988), Theory of Planned Behaviour (Ajzen, 1991), and Self-Efficacy Theory (Bandura, 1977). These theories are widely used in explaining and promoting PA behaviours (Biddle, Mutrie and Gorely, 2015; Prestwich et al., 2014), but as Michie et al (2014) identify they mainly account for variation in patterns of behaviour without explicitly explaining how change happens. Only three theories attempted to account for change over time: the Transtheoretical Model (Prochaska and DiClemente, 1982), CEOS Theory (Borland, 2014), and PRIME Theory (West and Brown, 2013).

Notably, findings arising from Michie et al’s (2014) work highlight that many uses of theory were poorly defined and articulated; that the most popular theories in the literature tended to focus on cognitive reflective processes with less attention paid to biological influences and include little accounting of contexts; the most widely applied theories are understood statistically as static structures with
only a very few considering the dynamics of change over time; and finally, that most theories function to explain variations in behaviour rather than specifying how change occurs or how it might be created. These issues have been echoed variously by other authors who contend that behaviour cannot be understood only as a phenomenon of individual thinking and doing without accounting for relational influences of body, context, and history (Kelly and Barker, 2016; Slife, Burchfield and Hedges, 2010; Veenstra and Burnett, 2016) and that the complexity of behaviour change requires understanding of dynamic models that challenge extant thinking about methodologies and about behaviour itself (Martin, 2010; Renner et al., 2012; Resnicow and Vaughan, 2006; Trempala and Cieciuch, 2016). Despite the continued development and application of behavioural theories, there is still much to be learned about why and how BC occurs. This includes understanding what specific aspects of interventions that are deemed to be effective actually brought about the change. (Mâsse et al., 2011).

2.3 Behaviour Change in Practice

Part of the reason for the proliferation of BC theories is that efforts to date to improve PA behaviours have been largely ineffective. Governments, policy makers, and practitioners are looking for measurable shifts toward more active lifestyles across population segments, but these have not been forthcoming despite considerable attention and investment (Sallis et al., 2016). PA interventions have been shown to have only moderate effects on PA levels (Foster et al., 2005; Kahn et al., 2002), and these effects tend not to last (Hillsdon et al., 2005). The current message in the public health domain calls for multidisciplinary action and integration of evidence-based practice and practice-based evidence to scale-up successful interventions as the next step to making a discernible impact on PA levels (Reis et al., 2016). While this message is a positive one, it must be recognised as a shift, and to some degree, a concession in the ongoing discourse about BC and PA, and to do so, requires that intervention, as a practice, be considered more fully.

Intervention is the stock and trade of Public Health (PH) theory and practice. PH is characterised by the accumulation of scientific evidence that can be translated and applied to prevent disease and promote health (Kohl and Murray, 2012), and
since the handle was removed from the Broad Street water pump in London 1854, interventions have negotiated the causal links between behaviour and biology in the service of PH (Jardim, 2015). Behavioural intervention work in PH is often termed ‘health promotion,’ and according to Green and Kreuter (2005), its purpose is “to maintain, enhance, or interrupt a behaviour pattern or condition of living that is linked to improved health or to increased risks for illness, injury, disability, or death” (p. 32). PH uses BC interventions according to its two primary modes of operation: pathogenic and salutogenic.

2.3.1 Pathogenesis

Pathogenesis is often referred to as the medical or biomedical model of health which references its focus on finding the causal pathway of an illness or condition so that it can be interrupted, reversed or prevented (Cedar, 2015). This approach is concerned with why people become ill and focuses mainly on individual behaviour paying close attention to processes proximal to an organism and is characterised as mechanistic, reductionist, and deterministic (Naidoo and Wills, 2016). From a behavioural perspective, this model alone is insufficient to explain health-related behaviours (Crichton and Mulhall, 2015), so social-cognitive and ecological models have guided much of current understanding about behaviour as biopsychosocially determined, though the focus on changing the individual is largely retained (Golden and Earp, 2012). Social-ecological theories employ systems logic, though much work claiming to apply them does not (Toomela, 2014a; Tudge et al., 2016). Social-ecological perspectives acknowledge that behaviour is contingent and health is shaped by multiple factors from individual genetic characteristics developing in proximal processes to wider physical, social, cultural, and economic environments that have notable yet distal influences on the person (Murphy, Dugdill and Crone, 2009). Most social-ecological approaches currently in use are adaptations of the work of Urie Bronfenbrenner (1979) who examined human biocultural development as a series of nested systems in reciprocal relation. He spent a long career applying his systems model to the study of child development. Beginning with the individual (child) in the centre, his systems emanated from the
individual to microsystems, mesosystems, exosystems, and finally to the macrosystem, all set within a chronosystem (time) (Bronfenbrenner, 1988).

Such systems thinking expanded the theoretical and practical landscape from causal pathways to webs of causation as a focus for BC while increasing the complexity of relations that required to be identified, controlled or manipulated (Glass and McAtee, 2006; Midgley, 2000). Bronfenbrenner’s nested model was adapted and applied to PA by King et al. (2002) who used it to conceptualise determinants of PA within each level of interaction. King et al’s (2002) approach linked with the contemporaneous advance of behavioural epidemiology which developed to understand the aetiology of health behaviours through a framework of phases (Sallis, Owen and Fotheringham, 2000, p.295):

- Phase 1 – establish links between behaviour and health
- Phase 2- develop methods for measuring the behaviour
- Phase 3 – identify factors that influence the behaviour
- Phase 4 – evaluate interventions to change behaviour
- Phase 5 – translate research into practice

PA research extends an evidence-base for each of these phases, and together, they encompass the main mode for the research and practice of PA intervention as largely research and researcher driven (Jago and Wood, 2016).

Efforts continue to expand perspectives on the links between behaviour and health particularly from theories reflecting advancing understanding in the physical and natural sciences like chaos, complexity, quantum, and cybernetics theories (Cabell and Valsiner, 2014; Navarro and Arrieta, 2010; Resnicow and Page, 2008). These theories proffer new methods of measurement reflective of new theoretical perspectives, so evidence generated from modelling, simulation, and probabilistic methods is on the rise (Edmonds, 2010; Lawson et al., 2014; Nianogo and Arah, 2015; Yong et al., 2014). Factors that influence behaviour are still mainly viewed in a mechanistic way, and there are repeated calls for these emerging methods to be employed to more accurately identify determinants of behaviour and their mediators and moderators (Bull et al., 2010; Mâsse et al., 2011; Pratt et al., 2012).
Evaluation and translation refer to how outcomes and evidence are achieved and used in the real world, and gaps are thought to exist here (Rychetnik et al., 2012). This is because research and practice happen separately and the evidence produced by each is categorised into a hierarchy of quality where randomised control trials (RCTs) and meta-analyses are ranked at the pinnacle for their ability objectively verify and synthesise evidence (Wimbush and Watson, 2000). Only efficacious interventions that have been proven effective are to be implemented to improve the likelihood of achieving desired outcomes and judicious use of resources (Kohl and Murray, 2012).

Because practitioners are the ones delivering interventions, there is increased focus on how interventions are implemented and their degree of fidelity to a given evidenced example (Evans et al., 2013) sparking the emergence of a new research discipline known as implementation science (Wallerstein and Duran, 2010). However, real-world situations are not like the conditions in which the evidence was generated so according to this view, it requires to be translated in service of the various problems targeted by policies which are enacted by practitioners (Glasgow and Chambers, 2012; Glasgow and Emmons, 2007). Guidance provided to practitioners reflects this as they are asked to interpret situations with a goal of matching theory to the phenomena they identify in front of them. In designing BC interventions, the National Institute for Health and Care Excellence (NICE, 2007) instructs practitioners to ask (p.13):

- Whose health are you seeking to improve (target population/s)?
- What behaviour are you seeking to change (behavioural target)?
- What contextual factors need to be taken into account (what are the barriers to and opportunities for change and what are the strengths/potential of the people you are working with)?
- How will you know if you have succeeded in changing behaviour (what are your intended outcomes and outcome measures)?
- Which social factors may directly affect the behaviour, and can they be tackled?
What assumptions have been made about the theoretical links between the intervention and outcome?

The NICE (2007) guidance goes on to recommend beginning with high-quality, up-to-date evidence available in a variety of research and review databases as the starting place for intervention design noting, “When drawing up plans to change people’s behaviour, enough time needs to be set aside to consult these resources to establish which interventions and programmes will be most appropriate” (pp. 13-14). Beginning intervention design from an evidence-base is a key feature of the guidance from NICE and other PH policy sources, such as the World Health Organisation (WHO, 2008) which is why the acknowledgement by Reis et al. (2016) that practice-based evidence must more potently inform research if interventions are to be effective can be understood as a shift (Green, 2006; Hannes et al., 2013; Hooker, Fulton and Mudd, 2012).

Guidance from PH agencies like NICE and WHO is just that, a guide, and it is implemented to varying degrees of rigour because interventions must be designed (Lowson et al., 2015). Frameworks and models have traditionally been used to organise the design process of health promotion interventions with one of the most widely used ones being the PRECEDE-PROCEED model comprised of nine phases, five of which precede the intervention by assessing and gathering a variety of evidence and a further four that involve implementing the intervention and then evaluating it (Green and Kreuter, 2005; Porter, 2016). Other frameworks have subsequently been developed and have gained in popularity, such as the RE-AIM framework (Glasgow, Vogt and Boles, 1999) and Realistic Evaluation (Pawson and Tilley, 1997). These approaches were developed as evaluation strategies but have seen wider use as tools for intervention planning and design across health and social settings because they are deemed to have potential for bridging the research-practice gap by returning evidence of contextualised instances of evidence-based practice through pragmatic measures and localised programme theory (Blamey et al., 2013; de Souza, 2013; Gaglio, Shoup and Glasgow, 2013). From the pathogenic perspective, such tools shine a light into the ‘black box’ of interventions and through their use of qualitative methods, help to reveal the processes by which the
interventions may work since these are often not accounted for in the theories and methods of its evidence base (Kok et al., 2012; Lévesque et al., 2005; Salter and Kothari, 2014).

Michie, van Stralen and West (2011) developed a framework specifically for designing BC interventions by combining their compendium of theories with a review of 19 frameworks for BC to develop a tool they call The Behaviour Change Wheel (BCW) (see Figure 1).
The BCW pictured in Figure 1 is unique because it is a framework based on a single model of BC that is a synthesis of the disparate perspectives gathered in their compendium on both what behaviour is and how to change it. Michie et al. (2014) explain the BCW provides a comprehensive framework by “synthesising the common features of the frameworks and linking them to a model of behaviour that was sufficiently broad that it could be applied to any behaviour in any setting” (p. 17), though the authors do not mention how they handled the conflicts in basic assumptions that necessitated such a variety of theories in the first place. The model of behaviour to which they refer is their COM-B model (Michie et al., 2011) which predicates that any behaviour is a product of three interacting factors (p.4):

**Capability** - defined as the individual’s psychological and physical capacity to engage in the activity concerned. It includes having the necessary knowledge and skills; **opportunity** - defined as all the factors that lie outside the individual that make the behaviour possible or prompt it; and **motivation** – defined as all those brain processes that energize and direct behaviour, not just goals and conscious decision-making. It includes habitual processes, emotional responding, as well as analytical decision-making.
These three components interact in what is termed a ‘behaviour system,’ and intervention is presumed to act upon one or more components within that system. The BCW is a guide to design the interaction of components based on a design process of eight steps organised into three phases: “understand the behaviour” (put the problem into behavioural terms); “identify intervention options” (how will it function and in what policy domains); “identify content and implementation options” (select BC techniques and delivery mode) (Michie, Atkins and West, 2014, p. 28). Michie et al. (2016) continue to elaborate their work toward what they term a “behaviour change ontology” (p.9) linking behavioural theories, mechanisms, and techniques with populations and outcomes to improve the effectiveness of behavioural interventions, which is the ultimate goal of BC in pathogenic PH.

To summarise, pathogenic PH focuses on why people are ill, and in BC terms, it is concerned with why people are not exhibiting healthy behaviours - in this instance, why they are not physically active. In this version of practice, BC theories are used to understand people in aggregate and largely from an organismic perspective whereby their behaviour is a product of biopsychosocial mechanisms that require to either be influenced as they develop ontogenically or to be remediated after they already have (Harré, 2016c; Salvatore and Valsiner, 2014). This has been termed a ‘deficit model’ of health predicated on presumed deficiencies in the targeted groups or the communities in which they live alongside a failure to account for people as persons, meaningful, value-laden, experiencing persons (Coalter, 2012; Greenhalgh, 2016; Moore and Charvat, 2007). The logic of pathogenic interventions is based on a particular version of causality known as efficient causality where the cause of presently identified circumstances are to be found in the interactions of antecedent entities (Harré, 2016a). The assumption is that if these component interactions can be verified as having law-like regularity, they can be applied to all kinds of behaviour and all kinds of people and be used to predict and control behaviour and, thereby, people (Toomela, 2010). BC theories function to account for the ontological arrangement of these components and prove to be explanatory and efficacious when application of the theory statistically accounts for the predicted patterned covariance between a theoretical construct,
as verified linguistically, and a predetermined outcome, as indexed to a given behaviour, without necessarily accounting for how the outcome was achieved (Mâsse et al., 2011; Michie and Abraham, 2004). Not knowing ‘the how’ is a current and pressing issue for proponents of the pathogenic perspective of BC making it a contemporary area of research interest and development (Sallis and Green, 2012). Effectiveness of theory-based interventions is established objectively by researchers according to the same gold standard as bio-medical treatments, RCTs, meaning the role of practitioners requires careful translation and faithful implementation of the evidenced mechanisms to reproduce the evidenced effects as behavioural outcomes, which is the social value of the intervention and the practitioner (Sparkes, 2013).

2.3.2 Salutogenesis
Not all BC practices follow the pathogenic approach. In many instances, BC is practiced according to the concept of salutogenesis which, in contrast to pathogenesis, is concerned with why people are healthy (Naidoo and Wills, 2016). Salutogenesis is characterised as social medicine meaning it is premised on the notion that, when it comes to modern chronic conditions, many of the salient risk factors arise from social structures and physical environments not easily reduced to specific causes. Salutogenic approaches work from social and ecological theories to promote factors that support human health in a given context similarly to the pathogenic approaches except they tend to focus more on environmental and socio-cultural, socio-political influences (Cala and Soriano, 2014; Skovdal, 2013). These factors are identified as social-ecological determinants of health and are understood to combine to influence individual and collective human behaviour/health in complex, systemic ways (Murphy, Dugdill and Crone, 2009). Though these same determinants are also acknowledged in the dominant pathogenic approach, their relevance pertains to their contribution to the causal chain, either by direct causation or by mediating or moderating a theorised causal mechanism (Bauman et al., 2012). In contrast, salutogenic practices are more holistic and concerned with how social determinants either help or prevent individuals in taking greater control over their lives.
Research from this perspective can struggle to make an impact on the evidence hierarchy because it regularly employs mixed-method and qualitative methodologies that are routinely excluded from the systematic reviews and meta-analyses that inform policy directives (Denzin, 2009; Petticrew, 2015), though strides toward more inclusive criteria are being made (Greenhalgh, 2016; Peters, de Bruin and Crutzen, 2015). These contrasts have led to a key distinction between pathogenic and salutogenic approaches to health promotion as being top down versus bottom up, respectively, where top down refers to actions (i.e. interventions) being driven from macro systems of policy and sanctioned research evidence, and where bottom up refers to micro systems of grassroots action at a community level by community members that pushes for change and greater social equity (Baum, 2007). Salutogenic practices are most commonly employed in communities or specific settings (i.e. schools, work places) to foster empowerment, resilience, or social capital and to reduce inequalities, deprivation, and discrimination (Glass and McAtee, 2006). From the salutogenic perspective, health and behaviour are too complex for, and indeed do not require, the algorithmic control pursued by the pathogenic logic; rather, it is heuristic processes that govern the complex functions that often emerge from relatively simple systems (Schuldberg, 2002). This systems logic is key to understanding the premises of the salutogenic perspective, yet its tenets are often presumed and its potentials underdeveloped, particularly relative to BC. Jolley (2014) states the problem quite clearly, “Community-based health promotion is poorly theorised and lacks an agreed evidence-base” (p. 71).

Community-based interventions are the grey area of health promotion; they are the diffusion point for both top down and bottom up approaches. Carter (2015) highlights that communities are perceived as “an idealised scale of governance and a flexible space for policy innovation” (p. 380). From the top down perspective, communities are the translational domain, the place where rigorous research evidence must be translated and implemented into a specific context to affect the predicted outcomes (Cacari-Stone et al., 2014; Vaughn, Wagner and Jacquez, 2013). From the bottom up perspective, communities are people inhabiting ‘life worlds’
(after Habermas (1987) of socio-cultural meanings for which interventions must have meaningful value and benefit and who are affected by power relations and the complexities of shared resources and collective decision making on programme outcomes and sustainability (Wallerstein and Duran, 2010). According to Schinke, Smith and McGannon (2013), approaches to community research and intervention are characterised by these common traits: “community driven, localised research practices and methods, decentralised academics, prolonged engagement and consultation, community capacity building, project deliverables [culturally relevant projects], and enhanced sustainability” (p. 176-180). Community interventions favour participatory methods which originate in collaborative researcher/participant partnerships where participants share in the decision making about the intervention design and research processes, and they are often engaged in collecting and interpreting research data which tends to be qualitative or mixed method (Israel et al., 2013). There are, however, gradients of participation from fully bottom up and participant-driven from the outset, to a top down version that looks more like extended consultation (Freudenberg and Tsui, 2014).

Guidance for intervention design from this perspective takes a capacity-based, or also referred to as an asset-based stance where, rather than beginning with problems or needs, intervention begins with identifying capacities and assets already available in the community and building upon them (Allmark, Bhanbhro and Chrisp, 2014; RSPH, 2017; South, 2014). While a wide variety of community-based research has been undertaken in relation to PA interventions (Antikainen and Ellis, 2011; Draper, Kolbe-Alexander and Lambert, 2009; Ying-Ying, 2009), when it comes to BC, there is a paucity of theoretical development derived directly from the accumulated evidence of bottom up interventions. This is because the qualitative evidence belongs to an interpretivist paradigm and acknowledges, to varying degrees depending on tradition, that reality, knowledge, and selves are socially constructed, meaning words-in-use do not directly correspond to or reflect ‘things’ out there in the world ‘as they truly are’ (Gergen, 1982; McGannon and Mauws, 2000; Smith and Sparkes, 2008). The relativist leanings required for such an epistemology does not fit easily with the (post)positivist evidence hierarchy of the
pathogenic approach. Findings from community-based research often function as a “handmaiden” to the quantitative evidence that is taken to have more credibility in explaining whether an intervention works, so the qualitative evidence tends to play a supporting role in exploring experiences, mechanisms, and acceptability of interventions in service of hypothesis generation for quantitative work (Petticrew, 2015, p. 4). Where BC is concerned, the bedrock of the salutogenic approach continues to be the evidence of the pathogenic approach which constrains its selection of outcomes and relegates its functions as largely translational (Rabin et al., 2006).

Salutogenic practices are also shaped by current neo-liberal discourses in PH. Once synonymous with social reform, salutogenic PH was truly interventionist in its external focus on social structures and government regulation from Victorian era social engineering to more modern environmental protections and community improvement (Crawshaw, 2013). Because they value shared responsibility and target wider socioeconomic structures, these practices are politically charged, resource and legislation intensive, and have drawn criticism as the interference of a ‘nanny state’ in personal liberties (Flaskerud, 2014). The pendulum has now swung the other way as neo-liberal individualism underlies much of the PH rhetoric about empowerment, choice, and transformation, and neo-liberalism is a notable factor in the upsurge of interest, academically, politically, and practically, in BC (Crawshaw, 2014).

Neo-liberalism is the product of the bio-medicalisation of behaviour and the ingress of corporate capitalism into PH signalling what has been termed ‘the behavioural turn,’ referring to the shift of responsibility for health and well-being onto individuals and away from collective responsibility for economic and social determinants of health (Crawford, 2006). In neo-liberalist terms, PH has become lifestyle-focused tasked with the purpose of helping to mould individuals into enterprising selves that take personal responsibility for their behaviour and strive to produce the behavioural products desired by the government (Jones, Pykett and Whitehead, 2011; Sparkes, 2013). Citizens are encouraged to transform themselves by investing in their own health and happiness, and a failure to do so carries a
moral valence regardless of social structures like class, poverty, discrimination or economics (Carter, 2015). PH accomplishes such lifestyle modification in two main ways, the positive psychology of self-transformation and the liberal-paternal nudge.

Positive psychology features happiness, resilience, self-esteem, optimism, and other positive aspects of human experience thought to contribute to a meaningful life (Seligman, 2003). Neo-liberal PH uses this perspective with the intent of aligning healthy choices with such positive experiences and presumes a rational, reflexive, agential subject with the ability to choose (Crawshaw, 2014). These messages tout choice and self-determination and are often combined with the promotion of self-surveillance for the purpose of self-regulation in an effort to internalise the neo-liberal audit culture of monitoring outcomes (Millington, 2014; Sparkes, 2013). As positive psychology is used to encourage lifestyle transformation from the inside, liberal-paternal nudges do their work from the outside. Nudges are nonintrusive constraints intended to “shape the contexts in which people make decisions whilst increasing the range of choices available to them in the determination of their own lives” (Pykett, 2012, p. 217). For example, putting fruit at eye-level counts as a nudge but banning junk food does not (Thaler and Sunstein, 2008). This distinction permits governance that is liberal to the degree that it permits choice without forbidding options, though these are constrained by the design of choice architectures, and paternal to the degree that behaviour is still altered in the desired ways without overt government intervention or economic incentive (Jones, Pykett and Whitehead, 2011; Marteau, Oliver and Ashcroft, 2009). Nudges also cover the automatic aspects of behaviour left untended by the positive psychology of self-regulation as much of health-related behaviour is non-conscious and irrational (Kelly and Barker, 2016). From a practice perspective, this leaves PH at an impasse between the current approaches that put the ethics of neo-liberalism in question, with its blind eye to social structures and stealthy influence of individuals, or between the historical approaches that inflame the politics of government-mandated social intervention deemed as risky, expensive, and undesirable (Diepeveen et al., 2013; Raihani, 2013; Van Den Broucke, 2014). The prevailing argument, rightly or wrongly, is that lifestyle diseases present serious
societal and economic concerns, and that it is people, not structures, that must change, whether by positive self-transformation or unconscious nudging, but not coercion (Carter, 2015).

One interesting development that has come from such intense attention to influencing lifestyles has been a renewed interest in cultural and narrative contributions to behaviour. In a commissioned review for The Lancet, Napier et al. (2014) highlighted that all people have value systems that produce effects in individuals and in societies which impact health, and it is this subjective, contextual system of practices, perceptions, beliefs, morals and values that the authors identify as the key cultural component of health. In one of only a handful of grounded theory studies to be conducted on successful long-term physical activity BC, Hutchison, Johnston and Breckon (2013) found that a person’s core beliefs and values, expressed variously according to given situations, was a key determinant of long-term change in PA behaviours.

To date, there has not been much attention given to researching cultural factors like values and how, together with biological influences, they form underlying behavioural orientations where PA and BC are concerned. Such theories have fallen out of favour in the BC literature (Hutchison, Johnston and Breckon, 2013). McGannon and Smith (2015) make a point of their exclusion, particularly in the sport psychology literature, noting that ignoring them has resulted in a variety of negative outcomes for extant understanding of PA participation, but that their inclusion brings potential for solutions through improved socio-cultural understanding of what limits it. The authors go on to extol the benefits of narrative inquiry and discursive psychology as “methodologies which take a novel and creative approach to conceptualizing and studying self-identity, experiences and behaviour” (McGannon and Smith, 2015, p. 80). The WHO has also highlighted the virtues of narrative inquiry in response to the work of Napier et al. (2014) with its own recently commissioned review. Greenhalgh (2016) concluded that narrative inquiry is an appropriate methodology for investigating cultural aspects of health because “individual’s stories provide a critical window to their meaning systems and values and are nested within wider narratives of society and culture” (p. 29).
Employing a narrative paradigm not only holds potential for more comprehensive theorising of health and behaviour, but also for bridging the gap between divided approaches to health promotion practices. Garista et al. (2015) proffer that the gap between pathogenic and salutogenic perspectives can be spanned by narrative work because it connects scientific evidence and community practice without losing complex and contextual elements since both domains are embodied in everyday lives, and thereby, stories.

In summary, the salutogenic approach to PH is concerned with why people are healthy. Practitioners apply social-ecological models of health to identify factors that promote or diminish health, from individual characteristics to social structures and physical environments. Salutogenic PH uses systems logic from a holistic perspective and looks for relations that build capacity, balance power, and reduce inequalities. The structural systemic causality afforded by this logic is underdeveloped with regard to behaviour change as the dynamic relations between mutually interdependent parts as they function as a whole remain to be investigated (Toomela, 2014a). Salutogenic work is focused at the level of community which is taken to be just the right level of complexity to encompass the individual and their everyday context of living, and it uses participatory methods to develop shared understanding with community members and to promote grassroots ownership. The evidence from community-based interventions is disparate and currently does not inform a coherent theory to evidence to practice progression with relation to BC, particularly for PA. Instead it informs and translates evidence produced in the pathogenic mode by exploring processes that improve or inhibit its effectiveness. The possibility of a general theory of BC intervention derived qualitatively from local and contingent occurrences is largely unexplored (Salvatore, 2014). Current neo-liberal discourses have focused the practice of BC on influencing individual lifestyles. People are encouraged and facilitated to take control of their lives through self-regulation and are guided to invest in their own enterprising selves. To help with this, the ‘right behaviours,’ as determined by evidence and not the individual, are promoted and made easy while environments are altered to unconsciously direct positive choices. A focus on lifestyles has
highlighted the crucial role of culture and narrative in understanding a person’s health and behaviour creating an opportunity to elaborate these theories and their methodologies as providing insights into the idiography, complexity, and dynamicity of psychological phenomena (Valsiner, 2014c). Value and meaning systems are sites of contextual integration for theories and evidence from both pathogenic and salutogenic modes of PH. With regard to PA specifically, values, meanings, and experiences may be key to better understanding of processes of long-term BC and how it happens, which is currently unclear in both the pathogenic and salutogenic evidence base. Since values, meanings, and experiences are among the objects of cultural and narrative approaches, these perspectives require to be further investigated.

2.4 Narrative and Behaviour
Invoking the term ‘narrative’ sounds differently in different ears. Many authors have noted the difficulty in defining narrative due to its long history and wide application in fields from the humanities to the human sciences (Barfield, 2010; Gubrium and Holstein, 2009; Polkinghorne, 1988; Riessman, 2008). Narrative is sometimes used synonymously with the term ‘story,’ and while unambiguous definition is elusive, generally speaking, a narrative or story is recognisable when a speaker connects selected and meaningful events sequentially with the purpose of affecting a hearer for action, explanation, instruction, relation or any number of intents (Riessman, 2008). Narratives and stories are sometimes differentiated hierarchically where individual stories are recognised as collecting to comprise a general class or type of narrative (Bochner, 2001; Smith and Sparkes, 2005). Narrative forms (i.e. oral accounts, written texts, dramas, art, expressive art, etc.) are so ubiquitous in human activities that humans have been regarded as ‘story-telling animals’ (Bochner and Ellis, 2003; MacIntyre, 1981; Robert and Shenhav, 2014). Stories can also be classed as big and small where big stories refer to grand narratives or extended life history accounts, and small stories to the mundane talk of everyday life (Georgakopoulou, 2006). In its most basic form, a story has a beginning, middle and end, though this structure has been much debated and elaborated (Gee, 1991; Labov, 2006). Other distinctive characteristics include
contingency -stories are created for an audience in a context with a situational purpose (Gubrium and Holstein, 2009), plot- a particular ordering of events and characters that, when enacted, makes things happen (Brockmeier, 2001; Polkinghorne, 1988) and polyphony - a story always includes at least 3 voices: the teller, the story itself, and the hearer (Brockmeier, 2012; Frank, 2010).

Because of narrative’s form and distinctive characteristics, and because of its open, unfinished nature, narrative inquiry is mainly conducted as qualitative research (Ashworth, 2015; Murray, 2015; Sools, Murray and Westerhof, 2015). Narrative inquiry is often undertaken from two main stances, that of a story analyst or that of a storyteller, the main difference between them being the prominence of the researcher’s voice in the analysis and presentation of the data which is louder in the former and softer in the latter (Smith and Sparkes, 2009). Analysis in narrative research is pluralistic with many options and stances available (Papathomas, 2016). As a story analyst, one could focus on the content or structure of a narrative (i.e. what is spoken and how it is put together), one could also look for interactions that give rise to the telling of stories (i.e. how stories are constructed in everyday life), or one examine all these at once including the effects of the stories themselves from a relational stance using a dialogical form of analysis (Smith, 2015). From a storyteller’s stance, the story is the analysis and can be presented via a variety of creative analytic practices including autoethnography, ethnodrama, ethnotheatre (McMahon, 2016) as well as visual, musical, and digital forms of expression (Smith, 2015). Neither stance is mutually exclusive, but what they both share is an interest in providing a rigorous analysis of meaning (Smith and Sparkes, 2009). What meaning is or represents, however, is another area in which narrative inquiry supports a range of perspectives.

When it comes to research, there are different perspectives on the ontology of meaning – what is it we study when we study narratives? According to Robert and Shenhav (2014) much of contemporary narrative research may be themed into two main categories: narrative as the “fabric of human existence” or narrative as “representational device” (p. 4). While not mutually exclusive, these two positions characterise narratives as either a fundamental structure/function of the person-
action union known as ‘life,’ through which we make sense of and create the social world, or as more of a rhetorical device for representing experience of objective reality, be it the mind inside or the world outside. Smith and Sparkes (2008) provide a much more nuanced accounting of this binary distinction by setting the various approaches to narrative inquiry, particularly as it relates to selves and identities, on a continuum. In their account, the polarising points are set by the focus each perspective takes on the social aspect of narrative since a divining rod amongst narrative theorists is their stance upon the degree to which a ‘self’ can be said to derive from individual versus socio-cultural factors, though, by taking a narrative approach, all theorists admit some social formation of self and some version of a relational world (Gergen, 2015). Smith and Sparkes (2008, p. 7) mark the continuum by setting “thick individual/thin social relational” at one end and “thin individual/thick social relational on the other. They go on to offer five perspectives along the continuum – “psychosocial, intersubjective, storied resource, dialogic, performative” (p.7) - that show the gradient of relations between two main stances on psychological and social phenomena: constructivism and constructionism.

Volumes have been written on both of these positions, but for present purposes, a simplistic distinction is offered to which I will later return. Constructivism is linked to the thick individual/thin social relational stance and focuses on how narrative structures, and perhaps constitutes, an inner, phenomenological world of mental states, internal processes and mechanisms also known as ‘psyche’ (Smith, 2015). Research in this mode purports to explore a person’s interiority and takes either a realist/foundational ontology and epistemology that mental life is corporeal, out there in the world, existing apart from and prior to a researcher’s interest in it and that knowledge of it can be accessed objectively with degrees of trustworthiness. This stance can also be taken with a slight twist, pairing the same realist ontological premise with a constructivist epistemology acknowledging that while the mind is objectively knowable, as humans we are limited in what it is possible for us to know (Barad, 2007; Garbarini and Adenzato, 2004; Smith and Sparkes, 2008). Constructionism, on the other hand, takes the thick social relational/thin individual stance that narratives are not
internalised structures or schemas but are performative, storied actions that derive from rather than precede social relatedness (Smith and Sparkes, 2008). In this view, there are no ‘psychological states’ that explain behaviour; instead identities are multiple, dynamic and emergent positions that are performed or created moment by moment in relation to ‘others’ (i.e. persons, contexts, objects, etc.) (Gergen, 2011). Work from this perspective is characterised by non-foundationalism or an ontological relativism and an epistemological constructionism that accepts all psychosocial phenomena are multiple and mind-dependent and therefore relative, and all knowledge of them is co-constructed interpretation created with the socio-cultural resources already available (Smith, 2015). Regardless of the theorised origins of narrative phenomena, what can be considered a common ground is that human existence is relational and consists of a realm of meaning often ignored in traditional modes of psychology, yet meaning is the glue of human experiences from which we make sense of life and generate behaviour (Slife and Christensen, 2013; Smith and Sparkes, 2009).

Across this range of perspectives, much has been learned about PA and exercise behaviours through narrative inquiry. Just a sampling of recent research demonstrates that PA behaviours are integrated into selves/identities through life experiences (Knowles, Niven and Fawkner, 2014; Phoenix and Sparkes, 2009; Sparkes and Smith, 2005), and while these can be socially normative (Caddick, Phoenix and Smith, 2015; Gonsalves et al., 2016), they are also idiographic, dynamic and changeable (Griffin and Phoenix, 2016; McGannon, 2012). Narratives are also generative with regard to PA behaviour; they do things. They create potential to expand identities to include PA that currently do not (Phoenix and Griffin, 2013; Sparkes and Smith, 2011); they animate and motivate PA participation (Caddick, Smith and Phoenix, 2015; Perrier, Smith and Latimer-Cheung, 2013); they empower socially marginalised groups (Richardson, Smith and Papathomas, 2017; Smith, Bundon and Best, 2016); and they have practical applications in translating quantitative research evidence (Smith et al., 2013; Smith et al., 2015) and as tool for implementing interventions (Papathomas, Williams and Smith, 2015). Uniquely, compared to traditional psychological models, narratives permit complex
understanding of PA behaviour, like the way body and environment interact without words in pre-reflective constitution of self and the creation of layered experiences (Bell et al., 2015; Caddick, Smith and Phoenix, 2015). Narratives can also contribute to the application of complexity theories (i.e. complex adaptive systems) in quantitative PA research by providing the qualitative contexts that make probabilistic and other forms of qualitative maths possible (Elliott, 2005; Taylor et al., 2014; Yang and Diez-Roux, 2013; Zhu et al., 2013). While narrative research is clearly making useful contributions to the understanding of PA behaviour, the findings are disparate and do not yet coalesce into a uniquely narrative understanding of PA behaviour and its development afforded by narrative’s complimentary position to traditional theories of BC.

2.5 Narrative Dynamics: In search of a metaphor

Harré (2002) observes, “Sciences develop at least as much by abandoning old metaphors and adopting new ones as by the accumulation of empirical data” (p. 141), and psychological science needs metaphors (DeRobertis, 2015; Osbeck, 2014). The function of a root metaphor is to provide a framework for philosophic and scientific models that construe occurrences and constrain what interpretations or explanations can be applied (Sarbin, 1986a). A currently dominant but weakening metaphor in mainstream psychology is that of individual behaviour as the output of an information processing computer (Slife and Williams, 1995). From this vantage, the brain is taken to be the central processing unit (CPU) that houses a biologically derived architecture that receives input from external sources. The brain or CPU stands over and above the input data and organises it according to rational, programmed routines which have to be imagined because they cannot be observed. All experiences that are processed by the brain are treated as representations of real ‘things’ out in the world that somehow get rendered on the inside, and this rendering process is the same for each human being regardless of context or history (rendering happens in the ‘black box’ mentioned earlier - see Rosenbaum and Valsiner (2011); Petraglia (2007); Allan, McKenna and Hind (2012) – and refers to the unseen mental processes that produce observed effects based on the hypothesised structure and function of mind). Behaviour is, therefore, a by-
product or output of the internal settings as biologically originating and socio-culturally influenced (i.e. mediated or moderated). This base metaphor of what a person is and where behaviour comes from is supremely important in understanding BC because it affects any understanding of how change happens and the role of intervention in the process. In essence, the concept of BC itself is predicated on the underlying view of causality being applied. For instance, BC from this cognitive rational processing metaphor must entail affecting some internal architecture either by varying the input through altering the immediate context in some way or by increasing/decreasing the quantity of some internal component (McGannon and Mauws, 2000).

Many of the BC interventions for PA are based on this metaphor and seek to affect one by the other, but usually, from the outside in. They alter immediate context by making opportunities available (Gray et al., 2013; Jilcott Pitts et al., 2015), increasing social support (Buman et al., 2011; Davison et al., 2011), removing barriers (Mailey et al., 2014; Royce et al., 2003), or making information available (Doshmangir et al., 2015; Tomasone et al., 2014) and thereby, affecting internal components like motivation (Fortier et al., 2012; Teixeira et al., 2012), self-efficacy (Heath et al., 2012; Sebire et al., 2014), and resilience (Zhou et al., 2016), among others. The nature of these types of changes is unclear since their effects tend not to be permanent and behaviour is liable to relapse (Schwarzer, 2008). This strong biological derivation assumes there is a clear division between mind and body and between brain state and social role otherwise known as the mind-body dualism (Valsiner, 2012). This position is further linked with theories of developmental psychology that proffer this internal mental architecture is moulded by experiences during ontogenic development (Bronfenbrenner and Evans, 2000). With regard to promoting PA behaviours, this has led to intense focus by health promotion practitioners and researchers on early year’s children (from pre-birth to around eight years) and their proximal environments, particularly parenting practices, in the hope of influencing the right mechanism at the right time to form PA into children’s physical and psychological development as predictive of increased frequency/uptake of PA behaviours as adults (Bradley et al., 2011; Grigorenko,
2012; Kochanska and Kim, 2013; Mitchell et al., 2012). The view of causality driving the expected change is linear, event causality based on Newtonian forces and Euclidean parameters of space and time (Harré, 2016a; Van Langenhove, 1995).

Advances in neuroscience and neuropsychology are weakening the CPU metaphor as findings demonstrate that human consciousness is emergent and dynamic sustaining multiple levels of awareness via embodied perception that does not require the mediation of an internal representation (DeRobertis, 2015). Value-related meanings have been shown to modulate neural coupling (Park et al., 2011), and even human biological development, when viewed through dynamic systems theory, becomes a creative process. It is less of a consequence and more of jazz-style ‘improvisation’ between genetic material and its surroundings from which a unique organism emerges from the generic (Thelen and Smith, 2003). These and similar findings seem to point to agentive or systems causality and the active involvement of persons in the ongoing making of their person (DeRobertis, 2015; Harré, 2016b; Toomela, 2014b).

In contrast to the mechanistic metaphor above, Sarbin (1986a) offered narrative as psychology’s most appropriate basic analogy because he understood it to be the organising principle of human action functioning at a hierarchal level above the objects of interest in the mechanistic view. In looking for observable components of mind, psychology using the CPU metaphor can be viewed as atomistic because the locus of causality is subject to infinite regress (Harré, 2016b; Van Langenhove, 1995). However, there is a long history of work, from the Gestalt school to theorists like Vygotsky and Bruner, espousing that the smallest representative unit in psychology can only be the whole person (Bruner, 1986; van der Veer and Valsiner, 1991). None of the constituent parts, such as the brain and its many components can sufficiently explain the behaviour of the human organism because they only meaningfully function at the level of the whole (Harré, 2012). As whole persons, human beings are meaningful, imaginative, normative, goal-oriented, and future-looking, or in other words, they exhibit higher psychological functions (Toomela, 2016; Valsiner, 2007). Higher psychological functions are socially formed, so psychology from this view explores the border between natural
and cultural sources to understand the degree to which one or the other constitutes or explains a person. As has been demonstrated, narrative research makes contributions to this premise, but there is plurality of perspective amongst narrative theorists as to a suitable root metaphor.

Returning to Smith and Sparkes’ (2008) continuum, the polarising metaphors range from material biological organism with a narrative-shaped mind to non-material meaning-making performance of narrative resources (Smith, 2015). Any instrumental understanding of narrative and behaviour is necessarily constrained by its guiding metaphor. Regardless of their differences based on foundationalism versus non-foundationalism, the distinctions between the polar positions on narrative still retain classical dualisms of natural/cultural, mental/physical and of classical physics of mechanical forces and internal/external geometries (St Pierre, 2014; Toomela, 2011). There are, however, dynamic perspectives that essentially take Smith and Sparkes’ (2008) continuum by each end, give it a twist, connect the ends (turning it into a topological form, i.e. a Mӧbius strip), and set it in motion (Snell et al., 1999). For instance, current work by Valsiner (2014b) in the domain of cultural psychology, a perspective set at the middle of Smith and Sparkes’ (2008) continuum, explores the concept of ‘personal culture.’ Rather than culture being a socio-historical container of people and artefacts or a person’s mind being a carrier of cultural resources (Smith and Sparkes, 2008), personal culture refers to the process of continuous dialectic relation between an infinite internality and an infinite externality at the nexus of infinite past and future (Valsiner, 2014c). A dialectical relation is a functional-dynamic one in which an organism develops through their cultural-historical context or umwelt to produce novel forms (Valsiner, 2011; Van Langenhove, 1995). Through dialogical tension, dialectical relations push their opposite (or antithesis) resulting in synthesis (van der Veer and Valsiner, 1991). This is an agential or emergent causality seen in self-organising systems (Wadsworth, 2012) and explains how persons can be producers of culture while simultaneously being productions of it (Brinkmann, 2015b). Advancing such a process/relational ontology would have no necessity of absolute interior or exterior, no inherent distinction between structure
and performance; rather, individual narrative and social-relational narrative forms move seamlessly one into the other (Valsiner, 2016a). It is possible, then, that an appropriate narrative metaphor for psychology, and thereby BC, could be one that is both material and performative, both dynamic and relational (Salvatore et al., 2009; Trempała and Cieciuch, 2016).

When Sarbin (1986a) offered narrative as psychology’s root metaphor, he did so by bracketing “parts of human psychology that deal with sensory physiology” (p. 8). He, too, could not get around the dualisms that are a perennial problem for psychology in that research efforts of various kinds seem to validate two seemingly incompatible ways of understanding the activities of human beings (Garbarini and Adenzato, 2004; Harré, 2002; Slife and Fisher, 2000). Recent developments in post-qualitative and post-humanist research have explored material/performative relations from a stance termed ‘new materialism’ (Fullagar, 2017; St. Pierre, Jackson and Mazzei, 2016). While new materialism, being still newly elaborated, resists clear definition, research from this stance is characterised in three main ways: it is resonant with advances in the natural sciences that view all matter, not just humans, as having agency and as not simultaneously requiring presence and substance; a willingness to question the status of ‘life’ and challenge what it means to be human; and a commitment to explore with fresh eyes the matter of everyday life and its relations and structures (Coole and Frost, 2010; St. Pierre, Jackson and Mazzei, 2016). Another feature key to these characteristics of new materialism is the concept of entanglement (Barad, 2007),

To be entangled is not simply to be intertwined with another, as in the joining of separate entities, but to lack an independent, self-contained existence. Existence is not an individual affair. Individuals do not pre-exist their interactions; rather, individuals emerge through and as part of their entangled intra-relating (p. viii).

Entanglement speaks of an inherent unity to phenomena usually understood as entities of various types (i.e. physical, social, mental, etc.) designated as separate by
Cartesian cuts, but rather, are irreducibly related in Bohrian philosophy-physics (Barad, 2007; Lather and St. Pierre, 2013).

Taking such a radical ontological stance necessitates an entire rethinking of the ‘givenness’ of what currently stands as evidence (Giardina, 2017). Reflecting on health promotion and UK policy linking PA and BC, Fullagar (2017) highlights the conventional thinking of bodies and places as settings constituted of neutral matter that can be “acted upon, regulated and surveilled” (p. 254) to achieve BC. However, rethinking PA behaviour as a biocultural phenomenon requires a reorientation to the entangled nature of bodies, environments, bio-chemistry, affect, and power as mutually constituting a phenomena mutable by more than intentional human intervention (Guthman and Mansfield, 2012). New materialist perspectives also sharpen the picture of what makes for ethical policy and practice (St. Pierre, Jackson and Mazzei, 2016). Material-discursive agency enacts the mattering of health promotion policy and practices making us responsible for concepts like ‘inequality’ and its embodiment in persons labelled as inactive, unhealthy or obese (Fullagar, 2017; Warin, 2015). The potentials for narrative inquiry from new materialist perspectives await exploration. To expand current narrative metaphors to encompass changing ontological perspectives, narrative psychology requires, as Giardina (2017) admonishes, for researchers to go “beyond ‘method’ to an engagement with the philosophy of inquiry and the philosophy of science” (p. 264).

2.6 Narrative Intervention: In search of a method

Any discussion about change is necessarily a discussion about causality. Intervention is easily understood in linear, efficient terms of causality, but what does intervention become from a dynamic, agentive point of view? Thinking from new perspectives as advocated by theorists in post qualitative inquiry can be challenging; it is hardly possible to abandon the familiar entirely and at once. St Pierre (2014) recommends forgetting the usual research process of starting with methodology, and rather, beginning with careful study of the theory and its ontological and epistemological commitments from which the methodology is sure to follow. While my study of onto-epistemological commitments and their subsequent methodology are given extensive treatment in Chapter 3, here, the
complimentary concept of the adjacent possible is relevant to the mutual consideration of narrative dynamics and the potential for a different conception of BC intervention (Smith, 2009).

The adjacent possible is a concept belonging to biophysics and refers to an evolutionary process that explains how life is persistent becoming (Kauffman, 1995). According to Kauffman and Gare (2015), the universe is participatory and lively in which even the smallest protozoa exist in worlds which they meaningfully co-construct and thence become. From a stance of formal and not efficient causality (Harré, 2016b; Witherington and Heying, 2015), becoming can be explained by what Kauffman and Gare (2015) refer to as ‘the Triad’ consisting of ‘Actuals,’ ‘Possibles,’ and ‘Mind’ (p.232). Taking a similar positon on the measurement function to that of quantum physics (Barad, 2007), Mind (or measurement) creates a boundary position defining an Actual (or an enabling constraint) further creating a new (adjacent) Possible into which evolution (life) continues to become. This notion of ‘forward into nothingness’ is not wholly new to psychology as extant versions of it have developed from historically underpinning theories including Peircean semiotics (Cuff, 2007; Innis, 2016; Valsiner, 2014b), the Vygotskian zone of proximal development (Ma, 2014; Vianna and Stetsenko, 2006; Zittoun and Cerchia, 2013), Merleau-Ponty’s phenomenology (Ellis, 2013; Engeström, 1999), and more recent theories of biosemiotics (Brinkmann, 2015c; De Luca Picione and Freda, 2016; Favareau, 2015). What becomes in the possible (i.e. a new actual) cannot be stated in advance and cannot be formalised mathematically since there is no entailing law. Kauffman and Gare (2015) highlight that, given what we humans experience and are able to know as life and mind, our scientific ideals compel us to develop more methods adequate to life, not only mathematical but also non-mathematical models that admit indeterminacy and openness in both the present and future. Interestingly, the authors go on to note, “Mathematical models of life or cognition cannot capture the experience of being alive (stories are far better for evoking appreciation of this)” (p.242, italics added).
Human experience and its storied nature are complex dynamics of life and have been harnessed as methods popularly used in organisational research that use stories in creative, participatory, and future-oriented ways. The three most popular are Appreciative Inquiry (AI) (Watkins and Cooperrider, 1996), Design Thinking (DT) also known as Human-Centred Design (HCD) (Cross et al., 1992) and Formative Intervention (FI) (Engeström, 2011). AI has been characterised as a re-working of Lewinian action research that focuses on positives rather than problems (Cram, 2010). AI is used to create transformational change within organisations by collaborating with its members through 4 phases (see table 2) with a view to pursuing the future development of the organisation from its base of strengths (Bushe, 2011). In contrast, DT or HCD has many more branches in its family tree, from human factors research and ergonomics to linguistic and creative sense-making processes to tool-use and physical processes of production (Giacomin, 2014). DT was born when design science principles traditionally used to for product design were applied to social and organisational problems (Brown and Wyatt, 2010). HCD is also less about problem-solving and more about working with people through 3 phases (see table 2) to make their lives more meaningful and recognising patterns in everyday life that might help or hinder its unfolding (Krippendorff, 2006). Formative Inquiry is based in Vygotskian developmental research and his cultural-historical activity theory (Cole, Göncü and Vadeboncoeur, 2014; Engeström, 2006). Also using participatory methods, FI takes a systemic view of human activity and seeks to remediate relationships in work or organisational environments using the expansive learning cycle which consists of 7 phases (see table 2) (Virkkunen and Newnham, 2013).
Table 2. Comparison of phases of future-oriented inquiry

<table>
<thead>
<tr>
<th>Approach</th>
<th>Processes</th>
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<tr>
<td>AI</td>
<td>Discovery</td>
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<tr>
<td></td>
<td>Dream</td>
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<tr>
<td></td>
<td>Design</td>
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<tr>
<td></td>
<td>Deliver/Destiny</td>
</tr>
<tr>
<td>HCD</td>
<td>Inspiration (Hear)</td>
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<tr>
<td></td>
<td>Ideation (Create)</td>
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<td>Implementation (Deliver)</td>
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<td>FI</td>
<td>Questioning</td>
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<td>Analysis</td>
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<tr>
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<td>Modelling</td>
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<td></td>
<td>Testing the model</td>
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<td>Implementing</td>
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<td>Reflecting/consolidating</td>
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FI uses the early phases to look for systemic tensions called contradictions that become sources of potential change and development when creatively re-mediated via modelling of the outcome which is implemented in the later stages (Engeström, Sannino and Virkkunen, 2014). What these three approaches share is that their initial phases use participants’ formal and informal stories to model historical conditions and, depending on the theoretical orientation of the approach, the middle phases look for relations and processes that create possibilities for moving forward with a design, prototype, or model that gets tried in the context in which it was generated.

All three of these methods have been variously used as alternatives or supplements to evidence-based intervention in health (Engeström, Nummijoki and Sannino, 2012; Ferreira et al., 2015; Roberts et al., 2016; Vechakul, Shrimali and Sandhu, 2015), education (Petraglia, 2009; Pill, 2016), and psychology (Bang et al., 2016; Moore and Charvat, 2007; Quinney and Richardson, 2014; Yeager et al., 2016). Together these perspectives contribute to what Gergen (2014a) identifies as future forming research, or in other words, research that generates relational process knowledge from continuous, participatory engagement and that is less concerned with veridically establishing what is and more concerned with innovating what might become.

Innovating what might become of persons is a feature of narrative that could be used for BC intervention, and its dialogical quality is what makes it
possible. Emergent views of narrative forms depend on their dialogicality, or multiple agencies in dialogical relation. Narrative interventions are already employed in psychotherapeutic practices (Gonçalves, Matos and Santos, 2009; Smith and Sparkes, 2006) and systemic family therapy (Gelo and Salvatore, 2016; Musaeus and Brinkmann, 2011) where the changes observed come through ongoing dialogue. Though the dialogue in psychotherapeutic settings is typically person to person, objects can also be used to ‘speak’ (Humphries and Smith, 2014), as well as cultural forms like films and books (Zittoun and Gillespie, 2015), and digital tools (Carlén and Maivorsdotter, 2017). Storied dialogue always contains multiple voices (Frank, 2012) and those voices or agencies engage other agencies in dialogues both internal and external to persons (Smith et al., 2015). These agential relations are detectable in narratives through dialogical narrative analysis (Frank, 2010; 2012). Voices in narrative dialogues can be amplified to create change (Smith, Bundon and Best, 2016), or as Santos and Gonçalves (2009) call it, innovations that create exceptions.

Santos and Gonçalves (2009) have examined narrative development from a dynamic process perspective in analysing what they call Innovative Moments or i-moments. I-moments are future-oriented and use imagination as a condition of possibility through which narrative change can develop (Gonçalves, Matos and Santos, 2009; Ribeiro et al., 2010). Using a dialogical lens, i-moments can be identified as promoters (or not) of change in a person’s macro-organiser, a dominant rule or narrative they normally apply to their life (Matos et al., 2009). Exceptions to the rule can be promoted through all forms of meaningful expression including thinking, acting, drawing, singing, etc. (Zittoun, 2011). When elaborated, exceptions have been shown to produce both behavioural and narrative change (Barbosa et al., 2017; Gonçalves et al., 2016; Ribeiro et al., 2011; Santos et al., 2009), but when not elaborated, no change (Ribeiro and Gonçalves, 2011; Santos, Goncalves and Matos, 2011). The development of i-moments can be followed using a coding system that has so far demonstrated the ephemeral yet productive nature of narrative changes (Barbosa et al., 2017; Gonçalves et al., 2011; Ribeiro et al., 2011). It seems possible from these applications of narrative theory that narratives
participate in and may even constitute BC and could potentially be instrumental for making it. A similar conclusion was reached by Smith et al. (2015) leading the authors to recommend further real-world research into narrative’s role in BC intervention to promote physical activity, but more importantly to “apply what we know in practice to help people live meaningful lives” (p.311). Through this PhD thesis, I endeavour to make a contribution to both.

2.7 Summary

Behaviour change as it is currently theorised and practiced provides an incomplete picture of physical activity behaviour and how it forms and changes. There are weighty implications for such insufficient understanding. Not only will large swathes of people continue to experience the ill effects of a lack of physical activity, but also, large swathes of people will experience the deleterious effects of our efforts to ‘fix’ them.

Narrative Inquiry has the potential to provide a different way of looking at BC. Narratives, with their dynamic, open, and pluralistic forms, match more closely to the phenomenon of behaviour permitting behaviour to be examined and explained at levels other than merely efficient causality, and thereby, allowing a novel view of BC and how it might be achieved. By incorporating new materialist perspectives, a sensitivity to diverse perspectives on reality and knowledge open connections with disciplines and evidence that would not normally be considered side by side.

This PhD thesis offers a reconceptualization of intervention by taking a new materialist stance and combining it with narrative as the guiding theory, the active agent, and the material form of a real-world BC intervention to promote PA. The following chapter presents the research design and methodology for this thesis and articulates how stories were used to develop a PA intervention from design to implementation. The dialogical relations performed throughout the design processes were examined entirely using rigorous qualitative analysis. The overall aim of this research design was to contribute to a fuller, more coherent understanding of BC that adds to current knowledge by proffering a dynamic
conception of behaviour as meaning-making which extends beyond the brain and the body and takes seriously the unfinished nature of life and the shared responsibility we have in its becoming. It is hoped that in reaching this aim, the germ of a narrative model of BC and intervention will proliferate.

2.8 Research Aims and Guiding Questions
In an effort to explore the overarching research question of this thesis: what makes physical activity matter and can it be made to matter, the following practical aims were pursued in service of the IGNITE project introduced in the previous chapter.

- To gather stories from parents and children of PA in their everyday lives.
- To engage in co-designing a prototype intervention with parents and practitioners designed to create intergenerational physical activity
- To implement the co-designed prototype and examine how parents use and experience it
- To model a narrative form of PA intervention

In pursuing the above practical aims, each was guided but not determined by the following questions:

- How is PA meaningful to families of young children and how does it fit into their stories of everyday life?
- How can stories be used to design an intervention and what can be learned about BC from the process of parents creating IPA for themselves and their children?
- How do parents use the intervention and does the prototype intervention generate narrative innovation?
- What might intervention look like if BC is understood as becoming?

In the next chapter, I develop my ontological perspective on behaviour which provides the foundation and progression of the research efforts and demonstrates how these research aims and guiding questions were addressed within the research design.
Chapter 2 – Summary Box

To understand where behaviour change research is going, it is helpful to understand where it has been. Its history relative to physical activity is disparate and fairly brief, burgeoning right toward the end of the twentieth century. Various psychological theories inform the majority of its evidence base, and Public Health entities are the main consumers of such behavioural research. Its practitioners attempt to implement physical activity interventions based on this research evidence, and they do so according to their two main modes of practice: pathogenesis and salutogenesis.

Pathogenesis is also known as the medical model. According to this mode of public health practice, negative health behaviour is understood as pathology; meaning, research from this perspective tries to determine the essential nature of an undesirable behaviour. The idea is that, if the path to a given behaviour can be understood by its antecedents, this path can be interrupted by alteration of some malfunctioning characteristic(s). Contrastingly, salutogenesis is a stance that considers why people are healthy. Salutogenic practices are often considered social medicine. They focus on social and environmental determinants of health, are usually community-focused, and assume that individual behaviours develop via a range of micro to macro systems of influences.

Together, these two perspectives provide the polarising discourses of public health practices as being either ‘top-down’ (pathogenesis) or ‘bottom-up’ (salutogenesis). Academic evidence hierarchies propagate the top-down approach because it is expert led and its research evidence is considered rigorous and superior to other forms. The bottom-up approach is meant to be community-led and egalitarian, but its practices are constrained by its focus on costly and often politically unpopular social interventions. The resulting stalemate has given rise to a neo-liberal form of behavioural intervention where individuals, rather than collectives, are responsible for changing to reproduce socially constructed ‘positive’ health behaviours.
At present, there is seemingly no fair and effective way to ameliorate the problem of lifestyle behaviours leading to non-communicable diseases. This impasse has directed the attention of some researchers toward cultural and narrative interpretations of the problem. With regard to physical activity specifically, this entails consideration of the values, meanings, and experiences of people in their everyday lives, which may be key to a better understanding of long-term behaviour change and how it happens. Narrative theories focus on stories and their functions in, on, and through the storyteller. Due to their unique qualities, stories offer complex insights on behaviour change because stories are polyphonic (they contain multiple voices), dialogical (they hold these voices in a dynamic relation), and capable (they do things for, with, and to people).

There is very little literature considering behaviour change from a narrative perspective, but the research that has been conducted shows physical activity behaviour to be simultaneously idiographic and socially normative, materially embodied yet dynamic and changeable. Such narrative evidence suggests that behaviour may not have essential properties so much as it coalesces situationally. This means that narrative approaches may provide a framework for understanding behaviour change as an emergence of multiple agencies and behavioural intervention as a future-forming endeavour.
Chapter 3 - Methodology

3.1 Overview
This chapter presents my approach to answering the research questions noted in the previous chapter. Throughout, I rationalise my choices and justify their applications. I begin by identifying this research as qualitative psychological research undertaken from a post-qualitative stance. I then discuss the philosophical position that grounds the entire research endeavour demonstrating its links with narrative theory. The research design is presented as a curious inquiry predicated on abductive reasoning and generalisation. I introduce my participants and procedures ahead of their detailed discussion in Chapter 4. I then present my analytical approach as dialogical narrative analysis followed by a discussion of ethical considerations and possible criteria for judging the work.

3.2 Qualitative Psychology Research
This research is a form of qualitative inquiry, which is to say, that it takes for its objects human experiences of minds, lives, societies, and cultures, and for its representations, human forms of lived expression, i.e. words, actions, and artefacts (Holliday, 2007; Smith and Caddick, 2012). Specifically, this thesis can be considered a form of qualitative psychology research, but exactly what that distinction means is still evolving. I was inspired to appropriate the term for this work by Josselson’s (2014) designation of qualitative psychologists which resonated with me,

Qualitative psychologists are a diverse collection of researchers who are interested in some aspects of lived or narrated experience in its natural setting and work by detailing their sense-making activities in a way that attempts to persuade others of the sensibleness of the sense they make (p.2).

In the founding volume of the American Psychological Association’s journal *Qualitative Psychology*, Josselson (2014) describes qualitative psychology research as “just coming into its own” (p. 2), but she typifies it as research having a focus on investigating human experience holistically and contextually, and as valuing the study of the particular to learn about the generality of human experience. Such
qualitative inquiry was a foundational scientific practice of psychology that has been erstwhile side-lined during a dominance of positivist perspectives (Ashworth, 2015; Wertz, 2014). While qualitative psychology research is innovating and still finding its way, it presently draws its methodological inspiration from decades of work in other social science domains like sociology and anthropology as well as lesser known theoretical traditions in European and Eastern psychologies (Liu, 2011; Prawat, 2000; Rosiek, 2003). Authors like, Fasulo (2015) and Osbeck (2014) have admonished that careful attention must be paid to the development of qualitative methods in psychology so that both psychology and its methods retain a unique focus on psychological phenomenon while also acknowledging science as a social practice and the researcher’s participation in it.

What these and other authors of qualitative psychology definitely agree upon is that human experience must constitute the object of study (Brinkmann, 2015c; Demuth, 2015a; Gergen, 2014c) but defining experience requires to be further circumscribed. Reaching to the potential offered by post-qualitative perspectives such as new materialism, Rosiek (2013) proposes qualitative psychological inquiry both maintains its anti-foundational stance and derives its warrant not just from explaining the generalities of human experience from local constructions, but also by including in its examinations the ontological status of possibilities and the potential futures the research makes possible. Qualitative psychology researchers do this by studying psychological concepts as dialogically entangled in the dynamic constitution of the experiencing person and the social world (Demuth, 2015b), a job for which narrative forms of qualitative psychology are particularly useful (Brockmeier, 2010; 2012).

What remains of this chapter demonstrates how this methodology adds to the re-emergent qualitative psychology discussed above while servicing the research aims. Taking St. Pierre’s (2014) advice, I begin with an extended account of my theoretical frame and its ontological and epistemological commitments from which the remainder of the methodology and procedures clearly derive. This is necessary because I cannot rely on heuristic terms to represent the basic assumptions underlying this research and the view of change I understand it to
permit. I wish to retain Sarbin’s (1986a) proposal of narrative as psychology’s root metaphor for construing occurrences and for constraining research practices and the interpretations that can be applied to them. However, I propose a dynamic, post-qualitative reinterpretation of narrative as well as the classic positions on science, data, and human being itself.

3.3 Basic Assumptions: A Post-qualitative Onto-epistemology

Central to understanding behaviour and how it changes, the post-qualitative stance I adopt in this research was inspired by Barad (2007) who proposed a relational ontology as an extension of a Bohrian philosophy which assumes a fundamental “quantum wholeness” to the world, or in other words, a “lack of inherent/Cartesian distinction between object or the agencies of observation” (p.118). Put more plainly, from such a perspective, there is no necessary pre-existing distinction between ‘things’ we take to be the world. Instead, designations such as material, discursive, human, nonhuman, natural, cultural, matter, non-matter are mutually-constituted entanglements in irreducible relation (St. Pierre, Jackson and Mazzei, 2016) iteratively emerging and reconfiguring in a constant process of agential intra-action (Barad, 2003). The term ‘intra-action’ is Barad’s (2007) neologism to distinguish her concept of “the mutual constitution of entangled agencies” (p. 33) from the usual nomenclature of ‘interaction’ (i.e. separate entities preceding interaction). This distinction opens an entire reworking of causality.

To make any distinction in an entanglement requires an apparatus (a specific configuration of material-discursive practices) to resolve ambiguity, but the apparatus then becomes a part of the knowing and anything known by it while simultaneously producing a complementary position of indeterminacy. Barad (2007) refers to it as “making a cut” where the enacting of ‘measurement’ (or ‘mind’ to use Kauffman’s (2015) term) through an apparatus designates a boundary, a particular instantiation of entanglement termed a “phenomenon” (p. 119), which, for her and also for this research, is the primary ontological unit. Taking such a stance makes no essential distinction between knowing (epistemology) and being (ontology), offering instead an onto-epistemology known as agential realism, where agency is the dynamic intra-action of the whole world.
and where realism refers not to entities but to phenomena of entangled material-discursive practices (Barad, 2007). This research adopts Barad’s perspective of dynamic unity, particularly because it permits pathways useful to exploring the research questions, and thereby, opening new avenues of understanding. Below, I briefly establish 3 key applications of agential realism which are developed throughout this thesis: model of triadic development; non-linear causality, and performative/creative inquiry.

3.3.1 Model of Triadic Development

Self, mind, and identity are embattled concepts in psychology and subject to a variety of realist and relativist expositions (Gergen, 2011; Harré and Moghaddam, 2012; Smith and Sparkes, 2008). Barad’s innovation is that in a world of dynamic wholeness, these binary distinctions need not be made on the grounds of reality or of truth but of agency. The self, for example, is a specific material-discursive relation differentiated in its ontological entanglement via intra-action by what Barad terms, an ‘apparatus’ (Levy, Halse and Wright, 2016). Apparatuses are material-discursive practices that distinguish what matters and what is excluded from mattering by enacting determinate boundaries. Importantly for Barad (2007), such agencies of apparatus are enacted by humans and non-humans alike, a distinction she does not take to be given. This is similar to the cogenetic logic employed by cultural psychologists to establish meaningful relationships and their complementary spaces (Valsiner, 2014b). Based on a Peircean triadic phenomenology, an undistinguished or unified state has no elements until a distinction is made (Tateo, 2016a). A distinction forms a triadic relation consisting of a closed set, border, and open set (see Figure 2).

The closed set is defined by the distinction, A. In making a distinction (border), an oppositional field of meaning, Non-A, is called into existence at the same time as parts of a whole. Making a distinction mutually constitutes all elements, and removing any one of the triad makes the others disappear (i.e. become indistinguishable). Importantly, the complementary positions require negation of the distinction by its non-concept, not its conventional linguistic opposite. For example, the non-concept for the closed set TRUTH is not LIE, but
NON-TRUTH. This non-concept permits an open set of infinite possibilities of NON-TRUTH that includes not only ‘lie,’ but also, ‘partial-truth,’ ‘white lie,’ ‘not yet true’, ‘I don’t know’, etc. This is what Barad (2007) calls an “exteriority within” (p. 135) or what Valsiner (2014) calls “inclusive separation” (p. 41). Each element codefines the other in a dynamic wholeness of multiple complex relations of mutually-constituting meaning systems (Tateo, 2016). Applying this basic assumption represents an innovation for understanding BC outside of the typical binary logic which only permits maintenance or substitution within a given structure (Valsiner, 2014) and for progressing the foundational concept of dialectics in developmental research (Engeström, 2014). Instead, BC is conceived herein as emergence, made possible when one of the triadic elements performs as a transformational operator, but what will emerge is not able to be stated in advance (Favareau, 2015).
3.3.2 Non-linear Causality

If the world is not made of separate entities like billiard balls awaiting the strike of a cue ball, and if a person does not necessarily have a mind on the inside and a body on the outside, causality must take on a different hue. The persistent use of models of linear efficient causality for quantification and prediction in psychology has drawn criticism for decades (Allport and Clarke, 1981; Beckstead, Cabell and Valsiner, 2009; Bruner, 1986; Resnicow and Vaughan, 2006; Slife and Williams, 1995; Smedslund, 1978; Smedslund, 2016; Toomela, 2010). In the main, these criticisms centre on the presumption that unitary entities called ‘causes’ precede and lead, necessarily and unconditionally, to ‘effects or outcomes’ (Toomela, 2014a). Attempts to redress these critiques with more complex forms of quantification like structural equation modelling, still involve turning dynamic qualia into static variables. The variables are signified through interpretive semiotic means to determine the degree of linear relation between concepts using a presumed coefficient, only to translate these numbers back into ‘verified, objective’ representations (i.e. personality traits, etc.). The idea is that this process apprehends a context-free, ahistorical truth (Sato, Hidaka and Fukuda, 2009). This is deemed an inappropriate assumption for psychological/social phenomena because they are historical, contextual, and intransitive, thus spurring perspectives.
of non-foundationalism, particularly in qualitative psychology (Smith and Sparkes, 2008; Valsiner, 2014b). However, taking Barad’s (2007) dynamic intra-action as a starting point, the implicit entanglement of phenomena means that causality is, instead, about relational, systemic differentiation from which causal enactments emerge. The agencies of observation (or measurement) intra-act both the cause and the effect, themselves agential phenomena, and in their forming resist the apparatus of observation creating a border which can be detected dialogically by its variability (Salvatore, 2014). The geometry of absolute interiority or absolute exteriority is also rejected in favour of ‘exteriority within’, as noted above; assuming instead, “a dynamic, ever-changing topology of spacetimematter” (p. 177).

Because phenomena are material-discursive, neither can be given priority and neither stands outside the other but are enfolded and enfolding along with the apparatuses that make them known, forever being re-enfolded and reformed. Crucially, this agential realist conception of causality poses an entirely different conception of the free will/determinism debate. Intra-actions always entail exclusions (as in the triadic set above) providing conditions of possibility thereby precluding strict determinism; however, that does not mean that anything at all is possible at any time. Intra-actions also constrain by iteratively reconfiguring what is possible/impossible. This ongoing reconfiguration of the actual and the possible is animated by the dynamo of agency, not a primarily human attribute of intentionality or subjectivity, but a ‘doing/being’ of the whole universe that troubles the conventional practice of intervention which presumes to work from the outside in (Hacking, 1983).

3.3.3 Performative/Creative Inquiry

If persons are mutually constitutive intra-acting phenomena in the ongoing doing and being of the world, “knowing is a matter of a part of the world making itself intelligible to another part” (Barad, 2007, p.185). Apparatuses facilitate this intelligibility via specific material-discursive practices that perform a cut or distinction permitting ontological ‘separability within phenomena.’ The phenomena distinguished by such cuts are communicable and ‘real’ in more and less
determinate ways without ‘representing’ an object with essential ‘properties.’ Rather, the epistemic function in such a configuration describes “not nature itself but our intra-activity as part of nature” (ibid. p. 207). While the agency of such intra-actions does not belong solely to humans, the goal of human knowledge practices is to describe the reality of which we are a part rather than a reality independent of us. Knowledge never has a full or complete claim to objective truth, but neither is it entirely relative or constructed. The material and the discursive elements of scientific practices participate in the phenomena they set out to describe, and in this sense, are performative. However, because human practices actively reconfigure the world in its becoming, we are responsible for the knowledge we make and what it brings into existence through the sedimentation of a long history of phenomena. Time thus becomes not merely a parameter in a container of space, but instead, space, time, and matter are intra-actively produced. Assumptions of quantum discontinuity mean that the past is enfolded with the future bringing them always near one another in iterative, dynamic configurations as spacetimematter (Barad, 2010; Kauffman and Gare, 2015).

Different material-discursive practices produce different configurations, but as Gergen (2014a) notes, “Whatever exists makes no necessary requirements on its representation” (p. 289), or in agential realist language, on its intra-action. Rather, the agencies of the entanglement and the apparatuses that make them known are not merely human constructions, they are boundary making devices of the inseparable observer and the observed that permit an inherently indeterminate relation to ‘matter’ through agencies of observation. Such agencies of observation are often termed in ocular language, but as Brinkmann (2015b) explains, “Humans can only be said to fully know something if they know how they came to make it into what it is” (p. 244). Instead, he proposes an ‘epistemology of the hand’ that seeks to know not only what is but to create what can be. Epistemologies of the eye provide perspective in a spatial sense while epistemologies of the hand provide a temporal component of process knowledge via the myriad intra-actions between doings and consequent happenings (Brinkmann and Tanggaard, 2010). Putting the two together in a creative task allows a different kind of understanding; we go from
unmaking what we see to seeing what we want to make. Gergen (2014a) concurs in his call for “future-altering research” (p.199) proffering that research may have more use in creating the future than in predicting it, thus providing a potential innovation for practices of BC. The anticipated advantages of applying this performative onto-epistemology are that it: permits observation from within phenomena in which some aspects are determinate and others remain indeterminate conditions of possibility; coordinates epistemologies of the eye with those of the hand by evoking creative/constructive processes via the research apparatus, of which the researcher is a part; and materialises phenomena through the stabilising/destabilising agencies of intra-acting apparatuses, meaning the intelligibility of ‘what matters’ emerges from the knowledge practices (not wholly given and not wholly co-constructed).

Returning to Sarbin’s (1986) metaphor, I too, embrace narrative as psychology’s basic analogy, but I offer my own expansion. The narrative form I propose acknowledges the agential entanglements of material-discursive practices permitting narrative to be considered as a manipulable and manipulating topological form with a hermeneutic realism (Slife and Christensen, 2013; Yanchar, 2015) and as a fluid and dynamic meaning system mutually constitutive of persons and the selves, contexts, environments, and time (past, present, and future) they unify as experience (Tateo, 2016a; Valsiner, 2015a). It also permits a pragmatic understanding of the performative yet material nature of meaning by considering how, in a storied-form, narrative ‘does things that leave marks’ (Barad, 2003). Thus, inquiry is practiced from within intra-actions of agencies, values, and experiences, not all of which are human, but are oriented toward the material-discursive transformation of the present toward the future where imagined possibilities and historical configurations must be considered as equally contemporaneous and real (Innis, 2016; Rosiek, 2013). These assumptions provided the foundation for exploring the phenomenon of change central to this thesis and are expounded throughout this work.
3.4 A Curious Inquiry

This research apparatus was designed to permit a different conception of the phenomenon of BC. Using a collaborative approach, an abductive research design was enacted as a “study of nothingness that may become something” (Valsiner, 2014b, p. 19) similar to the future-forming research introduced in the previous chapter. Abductive forms of inquiry are useful for understanding open-ended, dynamic phenomena and for situations of uncertainty. Attributed to Charles Sanders Pierce, abduction is one of the 3 main logics underpinning systematic inquiry (Ma, 2014; Patton, 2015). Brinkmann (2014) provides a useful contrast of the three types of reasoning by offering a metaphor for each: in inductive research, data lead to theory and the researcher is a collector; in deductive research, theory-driven hypotheses confront the empirical world and the researcher is a framer; in abductive research, inquiry considers relations that enable action in a given situation and the researcher is a craftsperson. For this research, a situation was identifiable by a canonical violation whereby data was recognisable as a deviation (i.e. understanding of A is cultivated in contingent terms until C ceases to be surprising) (Salvatore, 2014). Indeed, abductive research begins with wonder or breakdown in one’s experience rather than with data or theory (Brinkmann, 2014). In this work, participants’ experiences regarding PA were given priority over a priori assumptions because the relevant occurrences became articulable by the contingent conditions of their everyday lives providing a better fit between method and phenomena (Valsiner, 2014b).

Localisation to a situation makes abductive research necessarily idiographic, but that does not mean the knowledge it produces is not generalizable. Abductive reasoning provided an abstractive generalisation by which a general theory of dynamics (a way of working of a general class of phenomenon) grounded the modelling of a process (a local working of the dynamics) (Salvatore, 2014). The general cultural/narrative psychological theories I applied throughout this work performed an interpretative rather than predictive function meaning that the general theory was not conceptually bound to the empirical content of the case, but instead offered a level of remove from the phenomenon to permit abstraction.
of the empirical content as an instance of the general theory (ibid). Knowledge was advanced not by accumulation of verified pieces of reality, but by the power of the general theory (dynamic) to comprehend increasingly heterogeneous phenomena (process) (Salvatore, 2016). Consistent with open systems, variability, not central tendency, was the analytical focus. What inductive generalisation detects as noise, abductive generalisation amplifies because all development, including the progress of knowledge, happens at borders of variability (Salvatore and Valsiner, 2010; Valsiner, 2016a).

All generalisation is an interpretive act, otherwise some part of the world could never be initiated as a target of inquiry (Tateo, 2013). It was important for this research that the interpretation of the instance of inquiry was a collaborative effort. Researchers working abductively must tune-in to a given situation through the language and practices of people-in-context similar to ethnomethodological traditions (Ratner, 2008). Such collaboration was generative in this work not because of the transparency of research questions in penetrating subjectivity, but because the participants and I shared a curiosity whereby agency and authorship continuously traded hands mutually constituting the phenomena of inquiry (Tateo, 2015). Stories were integral here because the relational processes of their construction is how the world comes to matter in both a meaningful and material sense (Smith, Bundon and Best, 2016; Yanchar, 2015) and how the inquiry had the potential for “collaboratively fashioning the future” (Gergen, 2014a, p.303). In this research, Human Centred Design (HCD) (Giacomin, 2014) provided the framework for a curious and collaborative effort to form a behaviour signified as Intergenerational Physical Activity (IPA). HCD and its processes are introduced in section 3.5 and are reflexively elaborated in Chapter 4.

3.5 Human-Centred Design: People and Processes

In this section, I wish to give a general overview of the research participants and HCD processes rationalising how they contributed to the overall methodology. Only an overview is provided in this chapter because the design phases spanned several months and included so many different participants and processes that it was too cumbersome to include sufficient detail in this chapter alongside the other
information required to show the coherence of the whole methodology. Instead, Chapter 4 provides a detailed reflexive account of the specific processes of HCD and how I undertook them, including data collection procedures and participant recruitment and selection. However, here I provide a brief justification for choosing HCD followed by a summary of the research phases and the methods and participants who contributed to each.

In the previous chapter, HCD (Cross et al., 1992) was compared with Appreciative Inquiry (Watkins and Cooperrider, 1996), and Formative Intervention (Engeström, 2011) as forms of future-oriented research. When considered together, these approaches had overlapping content with distinctions made based on the context for which the approach was developed and for what was theorised to be happening in a given phase. HCD was of animating interest to the commissioners of the research which weighed heavily in its selection as the methods framework. However, as the primary investigator, I had opportunity to influence the selection, yet I deemed it an appropriate fit to this methodology based on 4 specific characteristics. First, unlike other approaches, HCD was not strictly developed for organisations or organisational change. It is first and foremost a design-based practice subsequently extrapolated to social phenomena, hence, its processes were focussed on producing meaningful material/conceptual creations (Brown and Wyatt, 2010; Krippendorff, 2006). Second, HCD processes do not assume a bounded organisational context requiring progressive cycles of inquiry; rather, it can be used to enter a situation, do its abductive work, and transmute its solutions like a chemical catalyst (Ferreira et al., 2015). Third, while a main impetus of HCD is to generate empathy, hence the ‘human’ denotation in the title, it extends beyond only human considerations by incorporating systems-ecological and relational thinking in its use of stories (Brown and Kätz, 2009; Krippendorff, 2006). Fourth and importantly for explicating the kind of change explored in this thesis, the research needed to capture the developmental processes of a creative experience. The process of meaning-making from a historically unfolding (post-factum) to an imaginative (pre-factum) configuration permitted the dynamics of the cultural/narrative phenomena to be modelled (Valsiner, 2014c). These assumptions
relative to its practices made HCD an optimal constituent of the research apparatus given the material-discursive intra-actions required for the design task. Though HCD provided the main procedural framework, the overlapping content from the complementary forms of inquiry (i.e. AI and FI) diffractively informed the research phases (Mazzei, 2014).

HCD followed 3 phases each with an accompanying action: inspiration (hear), ideation (create), and implementation (deliver) (IDEO, 2009). The purpose of these phases taken together was to be inspired by the real lives of people meant to benefit from the design, to participate with them in creating prototype solutions, and then to implement small-scale versions of the prototypes to iteratively develop ideas. The IGNITE project encompassed one cycle of these 3 phases and spanned just under 30 months (see appendix A for project Gantt chart). Table 3 provides an overview of the research phases, participants, and methods employed. Initial participants included me and 4 practitioners representing 3 facets of the local health improvement partnership: public health (n=1), leisure (n=2), and early years (n=1). Given the research design, choosing the locations for conducting the work was a key sampling feature, similar to case-based research (Patton, 2015). The remit was to include one suburban and one rural locale within the Scottish local authority (LA) as selected by the stakeholders indicated above. The stakeholders were pragmatic in their choice of this specific suburban town (ST) and rural village (RV) based on the fact that, at the time of commissioning, there were no other early year’s programmes running in these areas, unlike other parts of the LA, so there was less chance of interference from other work. Once the locations were selected, any parent, carer, or grandparent of a 3-5 year old child living in one of these two locales was eligible to participate. While this could be construed as typical case sampling (Yin, 2014), the typicality was not about establishing representativeness but contextual normativity so that non-normativity could be detected (Sato, Hidaka and Fukuda, 2009; Valsiner, 2014c). Chapter 4 explains the recruitment process in detail.

HCD recommends activities particular to each phase to help the researcher hear, create, and deliver with the participants (IDEO, 2009). The specific methods
and procedures undertaken are also detailed in Chapter 4, but their selection and use was pragmatic to the tasks at hand and not indicative of an intrinsic quality to ‘gather data.’ In fact, their contribution was not data (i.e. the given) so much as creata (i.e. the taken or constructed) since any product of human activity, including talk, configures an abstraction of complex life (Brinkmann, 2014).
### Table 3. Overview of research phases, participants, and methods

<table>
<thead>
<tr>
<th>Phase</th>
<th>Participants</th>
<th>Purpose</th>
<th>Data Collection Method</th>
<th>Data Contribution (in hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Challenge</td>
<td>4 practitioners</td>
<td>Plan and choose locales</td>
<td>Group meetings</td>
<td>4 hours</td>
</tr>
<tr>
<td>Hear - Workshops</td>
<td>19 Parents, 15 children</td>
<td>Hear how parents and children experience PA in everyday life.</td>
<td>Group discussions with creative activities, and individual interviews</td>
<td>11 hours (parents), 1.8 hours (children)</td>
</tr>
<tr>
<td>Create-Workshops</td>
<td>7 parents, 4 practitioners</td>
<td>Imagine how life could have IPA within it and what could be done to make it happen.</td>
<td>Group discussions with creative activities, initial prototype trials</td>
<td>5 hours</td>
</tr>
<tr>
<td>Deliver-Prototype</td>
<td>10 parents</td>
<td>Deliver co-created design and explore parents’ use experiences</td>
<td>Individual interviews</td>
<td>8 hours</td>
</tr>
</tbody>
</table>
More important than the methods were the questions asked in using them (Tateo, 2015), and it was important to the research tasks that questions remained open to any story being told (Frank, 2012). In phase 1, a mixture of workshops and interviews were used to ask parents (n=19) and children (n=15) about everyday life and physical activity in their town or village. Appendix B shows the presentation used to guide the Hear workshops and interviews. In phase 2, follow-up workshops were used to generate ideas from both the parents (n=7) and the practitioners (n=4) about how parents and children might engage in IPA (appendices C and D guided the parent and practitioner Create workshops respectively). In phase 3, a prototype in the form of a digital smartphone app was implemented and interviews were used to understand parents’ (n=10) experiences of using it (see appendix E for interview guide). The methods of the early phases of HCD are derived from ethnomethodological approaches (Garfinkel, 1984) based on a static epistemology; however, the ideation and implementation phases progressed by creatively amplifying developmental conditions of possibility identified in the inspiration phase (Engeström, 2014). To permit thorough data analysis inclusive of actions and talk that I would not be able to capture and retain on my own, each workshop was video and audio recorded and each interview was only audio recorded. The recordings from each event were transcribed verbatim in preparation for data analysis (Caddick, 2015).

3.6 A Dialogical Narrative Analysis

Dialogical narrative analysis (DNA) was the analytical approach applied throughout this research to understand what the phenomena and the apparatus had spoken together. DNA is characterised by a commitment to polyphony; any single voice is a dialogue of multiple voices (Frank, 2010). How these multiple voices configured a single voice (self, person) was a complex entanglement of agencies: biological, material, social, cultural, environmental, historical, imaginative, etc. (Harré, 2016c). Singling-out agencies as determinants of behaviour, as psychological research often does, commits a mereological fallacy (Brinkmann, 2011). A key empirical claim I make in this work is that facets of agencies (or voices), both human and non-human, were detected together in a single person’s storied experience, thereby
constituting some agencies in a given configuration to the exclusion of others (Barad, 2003). My claim as an analyst, which I borrow from Frank (2012), was that I “hear[d] multiple stories from many storytellers” (p.35) as part of the research apparatus.

Throughout each phase, I predominantly assumed the position of a story analyst; meaning, I undertook an analysis of stories using them to create theoretical abstractions from the structural and performative elements of narrative forms (Riessman, 2008; Smith and Sparkes, 2009). However, I explain in Chapter 6 that I also assumed the position of a storyteller whereby data was cast as a future-forming, material story in the form of a digital smartphone app (Chamberlain and Lyons, 2016; Smith, 2016). Below, I outline how I consistently applied Smith’s (2015) analytical strategy for DNA which has five main stages: indwelling, identifying stories, identifying narrative themes and relationships, identifying structure, and analytical questioning. Throughout these stages, various forms of writing, from memos to draft summaries, were used to iteratively think with the stories and the theories, to ascertain how these fit together, and to test their coherence (Caddick, Phoenix and Smith, 2015; Smith, 2015).

The first of the stages, indwelling, is similar to concepts of familiarisation or immersion (Silverman, 2014). It involved reading the transcripts several times, repeatedly listening/viewing the recordings, and writing memos, a process that began alongside data collection (Caddick, 2015). Beyond a cognitive function, indwelling included a somatic sense or embodiment (Innis, 2016) and harkened to Frank’s (2012) acknowledgement of stories’ ability to ‘choose’ their hearer based not on intuition but on the tacit knowledge built-up during fieldwork. To help with such feeling-in to the data, part of my indwelling involved spending time in the research locations including outlying areas. I visited schools and parks, and attended local events making field notes so that when participants mentioned a particular park or neighbouring town or school, I had some personal experience of what and to where they were referring (Gubrium and Holstein, 2009). Analysis continued over extended periods of time, and each event (i.e. workshop or interview) was analysed separately. I identified both small and big stories that
included the informal, prosaic talk of parents, children, and practitioners while participating in the workshops to the more formal, extended stories of the interview context (Georgakopoulou, 2006; Sools, 2013). I began by looking for where a thought began, ended or shifted in a participants’ talk. This allowed me to consider stories individually, and then how they fit into the story of the overall event including larger narratives and wider discourses. Once the stories had been identified in this way, I used a form of analytic bracketing to consider their different narrative qualities (Gubrium and Holstein, 2009; Smith, 2016). I first themed them to understand what the stories were about by recognising patterns and common threads, noting meanings and impressions as they developed (Riessman, 2008). Next, I looked for structures by considering how the story was put together- its trajectory, tone, or genre, and I looked specifically for evaluations, obstacles, and actions of the characters in the construct of the story (ibid). Finally, I used dialogical questions to open analysis of the “inner library... the dynamic principle by which stories have their effects” (Frank, 2010, p. 54). Six sets of dialogical questions helped to expose what could have gone unnoticed in the stories including aspects that were missing or that for one reason or another might not apply (Smith, 2015): resource questions helped me consider what resources shaped participant’s stories; with circulation questions I understood who told what stories to whom; connection questions highlighted who and what was included and excluded by stories; identity questions elaborated what a given story made narratable about the characters; body questions considered the somatic work of stories and how bodies responded to them; and function questions interrogated how stories shaped conduct, what they did on and for a person (see appendix E for an analysed data sample of the stage that used some dialogical questions).

It was important to me to be vigilant that I was researching with the participants while also theorising about them through their various stories. I endeavoured to be as balanced and reflective as I could about what I took to be my resonant understanding of their stories and not to go beyond what I could feel-in between theory and an individual story or across sets of stories. I was part of the material conditions that enacted mattering in the analysis and the materialisation
of the results in different forms in each chapter (Barad, 2007). In chapter 5, DNA was used to build typologies of the parents’ and children’s stories of PA in everyday life. In chapter 6, DNA was used to understand how the parents and practitioners would make IPA by exploring contradictions in their design frames. In chapter 7, DNA was used to analyse narrative development by following contradictions and tensions between the voices in parents’ stories of using an app to promote IPA. While each chapter in this thesis reports findings, Frank (2010) offers some cautions: typologies are of narratives, not of people, as no person can be reduced to a single narrative, and findings are not definitive, they remain open and necessarily unfinished as a person’s life is unfinished (Caddick, 2015).

Finally, it must be noted that, although adults were the main analytical focus of this work, it was important for the HCD process that the children’s voices contributed to the overall understanding of PA in the lives of parents and children in each location (Palaiologou, 2014; Pearce et al., 2009). As storytelling capacity is developmentally evident around ages 3-4 years, the children were just at the right stage to make a discernible contribution (Price, Roberts and Jackson, 2006). What came to be recognisable as stories in this age group were ratios and patterns of constant or variable elements from a single story or across several stories (Sutton-Smith, 1986). The patterns or stories that emerged from the children’s workshops resembled what Valsiner (2000) calls a “collective monologue” (p.236) where children in a peer group talked without necessarily directing their speech to a recipient. Given the immediate and imaginative form of the children’s stories, it would have been misleading to affix adult sense-making to them, so they were considered situated, constructions (Zittoun and Cerchia, 2013), analysed using DNA as outlined above, and presented as a composite typology in chapter 5.

3.7 Ethical Considerations
The onto-epistemology I have proposed required an ethical account that demonstrated responsibility for the differential entanglements I participated in enacting. Each material-discursive apparatus (i.e. research) materialised a different configuration of the world (i.e. not a representation of an independent reality nor a subjectively embodied construction) (Barad, 2007). Intra-active research practices
not only intelligibly configured the world in specific ways but they also opened and foreclosed what came to matter. This relational quality was similar to what Lahman et al. (2011) identify as an aspirational ethical code called culturally responsive, relational, and reflexive ethics (CRRRE). It is aspirational because it attains to concerns beyond the minimalist code to do no harm by self-imposing requirements to practice sensitivity to differences in culture, values, and world-views encountered throughout the research process. Rather than aspirational, this code was foundational to my responsibility in differentiating connections and commitments in human-other (human, non-human) (re)configurings enacted throughout this work (Barad, 2007), and it grounded the relevance of the minimalist criteria.

This work was undertaken with the purpose of enacting a culturally responsive, relational and reflexive form of intervention design. The intent was to understand the variety and complexity of PA stories and to respond to them empathetically, appropriately and judiciously (Lahman et al., 2011). I endeavoured to be responsive to the professional demands experienced by the practitioners as well as the everyday struggles of parents caring for small children and to be conscientious to keep my promises to deliver work that met with parents’ and practitioners’ expectations, even when their views of desirable outcomes differed. Because of my imbrication in the research, I required to be circumspect of my varying roles as researcher, practitioner, facilitator, student, etc. which I discuss in Chapter 4. I had to be honest about the scope and the feasibility of some of the design ideas while remaining vigilant not to exert undue influence by openly discussing issues of finance, authority, and role obligations (Sparkes and Smith, 2014). Because of the participatory nature of this work and the expectation that ‘something’ would come at the end of the process, I also attended to what Tracy (2010) calls exiting ethics which took consideration of ethical responsibilities beyond data collection. After the designs were prototyped, I communicated the initial findings to both the parents and the practitioners and facilitated a meeting with stakeholders and parents to plan how to take the prototypes forward following up on the progress for a further six months.
These aspirational codes were underpinned by minimalist codes otherwise known as procedural ethics (Guillemin and Gilliam, 2004). In the ongoing ethical process of research, procedural ethics concerned doing the right thing with a duty of care to do the greatest good for the greatest number (Palmer, 2016). First, ethical approval was granted by the University of The West of Scotland Research Ethics Committee (approval number 8-9-15-001). Second, participants were informed of the risks, benefits, and commitments of the research prior to agreeing to participate. For phases 1 and 2 of the research, this was facilitated through a covering letter of invitation, a participant information sheet and an informed consent for the adults (see appendix G) and an additional covering letter of invitation, information sheet and assent form for the children (see appendix H). In phase 3, this process was facilitated digitally. The participant information sheet was offered as a typical terms and conditions screen during the app download (see appendix I), and an opportunity was given to consent to participation before the app took any personal data. Consent was given by creating a personal log-in page after agreeing to the information on the terms and conditions screen. Third, I had a duty of care to protect the identity of the participants and the data they shared by attending to anonymity and confidentiality in data handling. This involved anonymising all data, storing it securely (either on encrypted and password protected USB drives and laptop or in locked filing cabinets), and maintaining confidence between the participant groups.

I also had to be wary of deductive disclosure whereby the detailed reporting associated with qualitative research could result in participant identification tantamount to a breach in confidentiality (Sparkes and Smith, 2014). This was of particular concern for the practitioner group because the implication of their position could make them easily identifiable. In addition to using pseudonyms, I minimised this risk for both parents and practitioners by not naming the local authority or the locales and by not including demographic data of the practitioners. In the case of the parent/child data, the descriptive participant data was reported in aggregate with labels (in Chapter 4) or with pseudonyms (in Chapter 7).
3.8 Possible Criteria

Many authors share the view that formalising criteria for judging qualitative research is problematic not least because all criteria are value-laden and, as such, are changeable over time requiring to be constantly revisited (Cutcliffe and McKenna, 2002; Frost, 2014; Sparkes and Smith, 2009; Tracy, 2010). Smith and McGannon (2017) recently proffered that hazards to rigour occur from unthinking use of criteria, poor understanding of ontology and epistemology such that researchers do not recognise that their assumptions and criteria may contradict one another, and neglecting to develop markers of quality specific to the work being undertaken which all qualitative research, in principle, should require.

Brinkmann (2015c) highlights similar concerns that qualitative psychology is in danger from neo-positivist standardisation, which he likens to ‘McDonaldization,’ and from isolating itself by method instead of embracing the complexity of the wholeness of psychological phenomena. Concordantly, I took a ‘slow food’ approach (Demuth, 2015b) and developed this research as craft skill constructing an apparatus, inclusive of myself and specific to my onto-epistemological understanding of the phenomenon, and choosing methods in accordance with that position. Here I invite my reader to examine the criteria I have applied while exercising what Sparkes and Smith (2009) call “connoisseurship” (p.496), or in other words, to knowledgeably make fine-grained discriminations while allowing such nuances to challenge current thinking and criteria in making judgements. To help with this, I borrowed from Brinkmann (2015c) 4 ways in which this research endeavoured to resist standardisation while providing a list of criteria relative to this research apparatus and its instance of use (Smith and McGannon, 2017).

Brinkmann drew on the work of Ritzer (2008) to show how the 4 components of consumerism perfected by McDonald’s destabilises the raison d’être of qualitative research - efficiency, calculabilty, predictability, and control:

Efficiency concerns intentionally seeking the shortest, least wasteful route towards a goal, and I consider it here as related to research design. Trenchant research takes time and patience. Minimising time was an unrealistic characteristic for the phenomenon of psychology, and behaviour in particular, because to
understand people and what they do, I had to spend time with them. This research was anything but efficient. Its abductive design was a winding, prospective process that had twists and dead ends, but it resulted in prolonged engagement in the field with the practitioners, parents, and children that contributed to the richness of the research (Tracy, 2010). While I do not presume that time in the field automatically equals high quality research products, the research design was flexible and allowed for detours via extended engagement. The prospective nature of the process permitted the unexpected to happen and the length of time revealed more about the context than I would have gotten from one-off data collection opportunities.

Calculability refers to an audit culture of evidence hierarchies based largely on what can be counted, and I applied it in consideration of my methods. A ‘best practice’ approach sits uneasily with emergent and imaginative processes which were the focus of this research. The creative methods of HCD permitted localised possibilities to be given priority right down to the number of participants involved and prototypes developed. The work was premised on not calculating samples and outcomes from the outset. Taking a prospective approach provided a coherent match of method with the assumed qualities of the phenomena (Valsiner, 2014c). I must note, however, that this stance was taken with difficulty, particularly with regard to the practitioners and funders who placed value on the calculability of impact and uptake in terms of the number of people involved in the work.

Predictability indicates an expectation of uniformity across settings and times; implicitly assuming an ontology of ahistorical, separate entities. I endeavoured to challenge this stance in theorising the world as a basic unity of agencies with an inclusive separateness. However, it is important to address a potential critique that what I propose is relativism dressed up in realism’s clothes in a neo-realist sense (Smith and Sparkes, 2008). In claiming a dynamic unity, the geometry of realist and relativist was denied in favour of performative agencies that enacted borders detectable by their variability. ‘Mind-dependency’ of knowledge was not a concept this onto-epistemology required. My biosemiotic form (material-discursive agencies) detected variability (‘other’ material-discursive agencies) that both limited and extended my borders with a materiality that objects
and affects. Knowing was not an uncertainty problem about independent entities, as was Heisenberg’s epistemological argument; rather, it was a Bohrian ontological complementarity whereby apparatuses (themselves configurations of agencies) make phenomena selectively determinate (Barad, 2007). In working to understand the concepts and consequences made possible by such a stance, I made a significant contribution to knowledge by articulating and enacting a dynamic theory of behaviour and how it changes that can be judged by its ability to bridge the general theory with a local model by detecting variability (Salvatore, 2014).

Finally, control concerns the conceptual/technological advancement that augments and sometimes replaces human activity in a bid to improve quality outputs by virtue of speed, accuracy, or consistency. Much behaviour change research is predicated on this type of control often deemed to be provided by specific types of research designs and methods. However, this research shifted the loci of control from myself to the practitioners to the parents in pursuing the task/tool relationship of developing IPA (Harré, 2015). Instead of parents being the object of an intervention in which pre-selected outcomes could be produced, their values and experiences were legitimised in a local construction requiring imagination and negotiation (Gergen, 2014c). This fitted the future-oriented nature of this research by accepting that persons were unfinished and by acknowledging the ‘outputs’ of intervention were transient and their quality relative to the persons who experienced them (Rosiek, 2013). Additionally, the parents and practitioners provided different points of view along the way that pushed and pulled the work generating insights beyond my own and providing contextual parameters for what made the work right and wrong (Smith and McGannon, 2017).

I have offered this list of criteria for consideration of what this research was by showing what it was not. In addition, and importantly with regard to the research apparatus, I aspired to a sincere and self-reflexive account of my role in this research by including my own confessional narrative in Chapter 4 wherein my reader can read through my thinking and judge for themselves.
3.9 Summary

In this chapter, I have offered a coherent methodology beginning with an onto-epistemological standpoint that I consistently develop throughout the design and implementation of the research including my approach to analysis and production of findings. I noted how I attended to an ethical research process, and I concluded by inviting my reader to discriminate my work. In the next chapter, I continue the unfinished work noted herein by detailing the story of entering the field, participant recruitment, and data collection while proving a reflexive account of myself as part of the research apparatus.
Chapter 3 - Summary Box

To understand behaviour in an emergent way, an account must be made of the relationship between thoughts and things. This is an old problem deriving from a foundational assumption that has driven the ‘modern’ era of science. This foundational assumption says that there is a fundamental difference between mind and matter, that they are each different ‘stuffs.’ Centuries of wrestling with how to reconcile these two substances in the case of human beings has led to the recapitulation of two main themes. The first is that only that which can be observed counts as evidence of a reality beyond the mind. The real world has ‘properties’ that can be ‘discovered’ and any knowledge of them can become increasingly true. The second is that regardless of what reality may or may not exist, human knowledge of it cannot get beyond the mind because science is a human practice. The real world is ‘constructed’ relative to a knower whose mind is socially formed through historically and culturally ‘inherited’ language practices.

These polarising perspectives are writ large in the history of psychology. At its roots, psychology began with the monist view that there was no crucial distinction between mental and physical events. However, during the modernist turn, this position was deemed unconducive to rigorous scientific practice. Psychology, as a discipline, wished to participate in the successes the physical sciences were experiencing at the time due to Newton and his revolutionary classical physics. This marked a split in psychology so that at present the dualist perspective of mind and body holds dominant sway supporting what is often designated ‘quantitative’ psychology, and thereby, creating its alter, ‘qualitative’ psychology, from any relativist or constructionist perspectives.

Interest in qualitative psychology has seen a resurgence in the early decades of the 21st century, and it has become a hotbed for divergent thinking about materialism and humanity. Much like the modernist turn, developments in physics, specifically quantum physics, have sparked some intriguing ideas often communicated under the label ‘new materialism.’ In broad strokes, new materialism proffers that reality is not a collection of separate entities with fixed
properties. Rather, it is an entanglement of agencies that is simultaneously material and discursive, a lively participation of matter and mind through the agency of measurement. Such agency is understood to be shared by human and non-human entities alike, and their properties in a given instance are relationally and contemporaneously configured by the apparatus used to understand them.

This research employed a narrative research apparatus in the context of a creative research design that had 3 phases. The union of a narrative apparatus with a creative, cooperative task permitted the behaviour of intergenerational physical activity to be understood by whether and how it came to be (it’s becoming). The first phase began with the narrative construction of the boundaries of physical activity in the everyday lives of parents and children, the dialogue of agencies in the participants’ stories were examined using dialogical narrative analysis to establish a normative story or canon. In the second phase, the dialogical relations in the established canon were followed through creative tasks with the goal of creating a prototype intervention based upon them. The third and final phase followed the implementation of the prototype to observe how it participated in the creation of intergenerational physical activity.
Chapter 4 – A Confessional Tale of Intervention Design

4.1 Overview
The purpose of this chapter is to give an account of myself as an apparatus of measurement and to explicate the processes of HCD undertaken during this research. Background is given to the function and purpose of confessional narratives followed by my account of the design process from the commissioning of the work to its completion. Not only are the processes detailed to give the reader an accounting of the design experiment and data collection, but also my reflections are included to communicate insights about the practice of intervention design and to give a flavour of the issues and intricacies impacting upon it. In doing so, I wish to make my position in the research plain for the reader so they may ‘read-through’ my thinking during the work and see how it informed the abductive research processes. An orientation is also provided for the three succeeding chapters, specifically that: they mirror the design phases presented in this chapter; the data presented in Chapters 5-7 correspond to the participants and procedures described within each phase presented here; and this chapter should be considered a companion to the preceding and succeeding chapters as the reader is referenced to specific sections when pertinent.

4.2 Introduction
The process of human-centred design (HCD) presented in this thesis was tantamount to a complex instrument with various moving parts (of which I was one) used to capture, trace, detect and otherwise encounter particular phenomena for the purposes of knowing. Where the previous chapter set out the overarching research design and methodology, this chapter details how these were accomplished. This highlights the experimental nature of this research in the classic sense of creating a partially artificial situation for the purposes of observing phenomena (Brinkmann, 2007) in that the happenings presented here were not wholly reflective of people living their lives as they normally would. Rather, this process was active and interventionist in the sense that the intention was to explore how life could have been different than it was. As a prime mover within this research endeavour, my actions were initiated with a specific intent and set in a
particular direction. I determined to keep the research person-centred (i.e. inclined toward and responsive to the parents) while mediating between the desired outcomes of the practitioner/funders and also myself. This chapter highlights the difficulties in achieving such an aim and tells the story of my role within the process.

4.3 A Confessional Tale

In keeping with my narrative metaphor, I present this chapter as a confessional narrative. The methodology in Chapter 3 outlined how integral and entangled the researcher was to the apparatus in mutually constituting the phenomena performed in the ‘measurement’ process. This confessional tale began in Chapter 1 where I configured my idiographic and meaningful orientation within the research process, and the tale continues here, foregrounding my position as a fallible, value-laden person undertaking the social practice of scientific inquiry (Sparkes, 2002). Sparkes (2002) explains that the purpose of confessional narratives is to explicate the researcher’s perspective and to demonstrate personalised authority in the research process; he further notes:

Confessionals explicitly problematize and demystify fieldwork or participant observation by revealing what actually happened in the research process from start to finish. Therefore, the details that matter in confessional tales are those that constitute the field experience of the author (p.58).

I have used this tale to provide a reflexive account of myself in the process of researching, with all the biases, trials, flaws and surprises brought into view. Schinke et al, (2012) identify that such self-reflexive practices are essential for developing a cultural praxis within sport psychology, the goal of which is to “blend theory, lived culture, and social action with a self-reflexive sensibility” (p.35). Through reflection, I confronted taken-for-granted aspects of the research process that may have affected them and the research participants. This was important because, as Brinkmann (2010) highlights, our ability to understand ourselves arises from a sense of “the whole predicament” (p. 82), which permitted some shared sense of how I related to others, how we got to where we did, and the factors that
were meaningfully relevant going forward. This was how research participants came to be recast as co-producers of knowledge rather than mere subjects of inquiry; self-reflexivity invited a conscious repositioning of the participants through my account of my own actions (Schinke et al., 2012). To speak of self, I, as an author, acknowledged the entanglements of context, alterity, differences of power and values among other factors that clouded yet catalysed the messy process of trying to understand. This confessional is my partial account of intra-acting the people, places, and processes brought into view and constitutive of this phenomena. Drawing on Hoffer et al. (2008) and Sparkes (2002), I have applied the following quality criteria to constructing this confessional narrative, and I invite my reader to do the same by considering: how critical was I of the process and products of research; did I demonstrate personalised authority by persuasively showing time and struggle in the research process; and did I show values and struggles beyond my own? In this chapter I present my account as a journey through the phases of the HCD process. Appendix A shows the research activities at a glance and is referred to throughout this chapter.

4.4 The Design Challenge
As explained in Chapter 3, HCD was a specific set of processes rooted in concepts of design thinking (Brown and Katz, 2009). Its ‘human-centred’ thread came from its orientation toward the person who is the intended user of the design solution. All aspects of the overarching processes (see Figure 3) were aimed at providing solutions based on persons’ “needs, dreams and behaviours” (IDEO, 2009 p. 6). ‘Solution’ is a slightly misleading term in that it implies a preceding problem, but HCD does not necessarily begin with a problem, per se; rather, it begins with a design challenge (DC). Such a term is purposefully used to denote that the starting place for HCD does not have to be problematic; it can also be imaginative. The DC behind IGNITE was a bit of both in that the stakeholders had problems that needed solving (i.e. improved health outcomes for families across a range of indicators, insufficient levels of PA in young children and adults, difficulty creating outcomes that are self-sustaining, among others), but they were open to how these problems might be tackled and willing to view them from the participants’ frame.
According to the HCD Toolkit, formulating a DC begins with gathering a design team, a core group of 3-8 individuals, one of which is the facilitator (IDEO, 2009). Our group comprised a partner from the Early Years Collaborative (early years partner – EYP), a partner from the local NHS health board (NHS partner – NHS), two partners from the LALT (1 senior leisure partner, SLP and 1 health/leisure partner, HLP - a leisure post funded by the NHS to deliver physical activity and health programmes in the community), and myself as the facilitator. As the facilitator, my role was to lead the group through the process of HCD and make contributions to content and ideas without using my position to sway decisions (IDEO, 2009). I did my best to hold to this, but as I will explain, this was a difficult task at which I was more and less successful.

4.4.1 Forming the Core Group

Prior to undertaking this work, I had never done nor even been involved with a HCD project. I decidedly lacked what Smith (2015) refers to as “phronesis or practical wisdom” (p. 203). I was relying heavily on the Toolkit (IDEO, 2009) and trying to work my way through the process like following a recipe. I had my core group of 3-8 people, and I was ready to proceed to the next step which involved engaging the group in deciding on a DC. This had effectively already been done in that most of the stakeholders had been involved in the funding bid in which we had agreed to investigate how families of children aged 3-5 years could participate in physical activity together within the community, and if they did, what would it look like and what would its outcomes be. The only partner not involved in some fashion in the original bid was the EYP. She was not part of the group who had reviewed and
granted the bids, but she was the local contact for carrying out work on behalf of the EYC. Her initial reaction to my use of HCD was ambivalent, but she rationalised that it was similar to what she knew as a “test of change,” which was already a well-embedded practice employed by her and the other stakeholders too. Test of change is a practice associated with improvement science, an organisational model for improving processes and outcomes widely applied in health care organisations (IHI, 2016). It is characterised by a cyclical process of phases – plan, do, study, act (PDSA) (Deming, 1993). These phases are intended to trial small-scale, localised, low risk/investment ideas, and if successful, work to employ them on a wider scale. In her view, HCD was a version of such a process. She was supportive of the DC as stated and left me and the rest of the stakeholders to develop the specifics of how to begin.

4.4.2 Finding the Location

I was not able to meet with all the stakeholders at once, initially. After the meeting with the EYP noted above, I met with the NHS, SLP, and HLP in November 2013 (see appendix A) where I confirmed that all the stakeholders understood the phases of HCD, and we agreed that the first order of business was to find a suitable location for the work to go. The LALT partners would check with their contacts to assess what other programmes were running across the LA, and we would meet again in the New Year. In January 2014 (see appendix A), I and the LALT partners met to decide where the work should be placed. The LA had a large geography that was commonly divided into 4 sizeable regions. The LALT partners informed me that there were already several other projects going on across the LA involving other health or education agencies as well as other universities. We wanted to try to stay out of each other’s way, so the HLP suggested two locales in which there were currently no programmes running. These areas were adjacent to each other but one was a suburban town (ST) environment with 4 primary schools, a high school, a leisure centre, 3 play parks, and retail parks, and the other was a rural village (RV) surrounded by pasture land, high street shopping, one park, two primary schools, and one community centre.
According to the Scottish government urban/rural classification, by population and location, the ST was on the borderline of being an accessible small town and an ‘other’ urban area, and the RV was considered an accessible rural village (Scottish Government, 2016). Because of the age target of 3-5 year old children and their families, we decided to enter the community through primary schools with nurseries attached with a goal of recruiting parents (the HCD Toolkit recommended between 8-20 as an appropriately sized group – IDEO, 2009) in each area to participate in the HCD process with the intent of developing a community-specific offering in each locale. The HLP made introductions for me to the head teachers, and I arranged to meet with them individually to explain the research process and purpose. They each agreed to support the endeavour, and by May 2014 (see appendix A), I was ready to recruit participants.

The sections that follow are my reflexive account of the fieldwork of HCD. Each one introduces the purpose of each phase, then details its process (the procedures employed during the phase) and progression (what happened that influenced the following phases). Each of the design phases (see Figure 4) corresponds to its own subsequent data chapter of this thesis: Chapter 5 – Hear, Chapter 6 – Create, and Chapter 7 – Deliver.
Figure 4 – Design phases of the IGNITE project

- **Design Challenge**
  - Form the core group of practitioners
  - Choose locations

- **Hear Phase**
  - Enter the field through nursery schools
  - Gather stories from parents and children

- **Create Phase**
  - Use stories to create prototype interventions with parents and practitioners
  - Try-out some of the ideas

- **Deliver Phase**
  - Develop two ideas for delivery and implementation
4.5 Hear – the Inspiration Phase

This phase was about gathering stories. In HCD terms, that meant “mapping the relational dynamics” (IDEO, 2009, p.33) of the participants’ world and developing an empathetic understanding of their underlying assumptions and beliefs by observing and talking to them. In Chapter 5, I present narrative typologies as constellations of such relational dynamics; however, at the time I began this work, I had not yet encountered narrative inquiry as such. The aim of this phase was to understand how PA was meaningful to families of young children and how it fit into their stories of everyday life.

4.5.1 Process

The intent of this initial sojourn into the field was to form working groups of participants in each location that would contribute not only to this first stage of data collection, but also to identify participants who might like to make an ongoing contribution to the subsequent design phases. I was led by the processes in the toolkit, but I undertook them with a hope that being among the parents and children would show me what I felt I was missing in understanding PA behaviour if I could just remain open to what was going on.

4.5.1.1 Preparation – Engaging with the nursery schools

After receiving University ethical approval, the head teachers of each school arranged for me to meet with the heads of their nursery schools (located on the same premises) so that I could arrange to recruit parents through their nursery classes. Each nursery had two nursery classes and each class had between 25-30 spaces creating a potential pool of at least 50-60 adults and children respectively in each location. Both nursery heads and their teachers were very supportive of my work and facilitated ongoing access to parents and children throughout the design experiment. They suggested that the best way to recruit parents was to send the participant information packs home with each child. I had envisaged that the parents would return their forms to the nursery, and I would contact the interested parents to ascertain a mutually agreeable time to meet at which time I would invite them to also allow their children to participate. To this end, participant information packs were distributed by the nursery teachers to every child’s parent or carer of
both nursery classes (morning and afternoon classes in each location), one for them (appendix G) and one for their child(ren) aged 3-5 (appendix H), inviting them to participate in the research project. Because a child’s primary care giver can range from a variety of biologically and non-biologically related adults, the word parent is used throughout this thesis to denote the role of primary caregiver and acknowledges that this may take a variety of forms.

4.5.1.2 Recruitment – Engaging with the parents
Initial engagement was low in both locations with only 8 respondents from both nurseries. I later learned that some parents were unsure about what was being asked of them, i.e. some people thought they were being invited to a physical activity workshop where they would actually do PA, while others did not readily identify with the purpose of the workshop, i.e. they were not active themselves so they thought they should not contribute. The nursery teachers encouraged me to get in touch with parents they knew to be ‘engaged.’ They identified these individuals as the ones who always volunteered to help when required and who made active contributions within the school. I had anticipated more of a broad response from the parents that would allow the type of maximum variation sampling suggested in the HCD Toolkit (IDEO, 2009); however, once I applied a snowball sampling approach (Patton, 2015) using the teachers’ recruitment suggestion, I did not want to exclude anyone that responded nor further delay by continuing to look for people with extreme physical activity habits or socio-demographic characteristics. I took the pragmatic decision to work with whomever responded since they would still meet the only necessary criteria of being a resident of that particular locale and the parent of 3-5 year old child.

4.5.1.3 Suburban Town Workshops
The intent was that data from this first phase would be collected by way of group workshops using HCD’s ethnomethodologically inspired approaches outlined in Chapter 3. The groups were to be comprised of myself as the facilitator, the HLP, and 7-10 parents or 7-10 children, respective to their workshops, in a facilitated discussion about family life and PA within the respective communities. However, the recruitment troubles affected this format, and I had to become flexible in how I
gathered the data. For instance, it proved very difficult to arrange a workshop in ST. Many of the parents that had responded worked shift patterns that did not facilitate an evening workshop and conversely others had daytime shift patterns that prevented them from meeting during the day. Even though I contacted and interviewed the parents recommended to me by the nursery teachers, I was ultimately unsuccessful with forming a group and no adult workshops were delivered in ST. Instead, 2 individual and 2 small group interviews were conducted that followed the content of the workshops (as in appendix B but without the active elements), though we did manage to arrange two child workshops.

4.5.1.4 Rural Village Workshops
In RV, we also had two child workshops, and I also had a bit more success with the adults thanks to the efforts of one of the parents. In RV, one of the nursery teachers personally invited the mother she had identified to me as an engaged parent, Sarah (pseudonym), and this resulted in my finally being able to schedule an adult workshop in June 2014. Group workshops were conducted in one of the meeting rooms of the local community centre in RV and were both audio and video recorded. At the beginning of the workshop, confirmation was made of written consent, minimal additional demographic data was collected (see Appendix J), and parents were informed of the confidentiality and anonymity of their data and that they had the right to withdraw at any time.

This first workshop was scheduled on a weekday evening from 6:00 to 8:30pm. One parent who expressed initial interest could not make the event, so I interviewed her individually prior to this first workshop. Child care was provided in an adjacent room. I and the HLP greeted the parents and offered them refreshments and helped them to get their children settled into the crèche. Many of the parents knew each other, but the sessions still began with introductions in which I and the HLP explained who we were and gave further detail about the research project. The evening progressed in 3 sessions punctuated by comfort breaks. Session one considered experiences of living and parenting in their community. Session two considered parents’ views on the things they felt impacted theirs and their family’s health. Session three considered their views on
intergenerational PA. We employed a semi-structured format that encouraged story-telling and creative interaction where participants were asked to react to pictures, make and arrange networks of post-it notes, and respond to open-ended questions that encouraged stories about their everyday life with their children and how PA, particularly joint or intergenerational PA, fitted within it. The PowerPoint presentation in appendix B was used to guide these activities in the adult workshops and shows how the content was presented.

There were 5 parents at that first workshop, though one mum did not even get to finish her coffee before her 4 year-old daughter came in from the crèche, told her mum that she did not want to stay here, grabbed her mum by the hand and led her out the door. The mum was embarrassed but when her child was adamant, I could see that she intended to leave. I wanted to make the situation easy for her, so we agreed to meet later for an interview instead. The rest of the evening passed with a lively discussion. The parents’ stories were sincere, full of struggle and history and intent and ambivalence and imagination, and all deeply rooted in their community.

4.5.1.5 An actual partnership

As the evening concluded and the parents were leaving, I was gathering my things when Sarah came to speak with me privately, and she began, “I just wanted to ask you... are you Caden’s mum?” Though I was startled, I had been asked this question before. I had a rehearsed, congenial answer that helped me steel myself and return a warm reply to people who simply wanted to show they cared or tell that they had heard his story and that it had touched them, but she caught me off-guard with her question – I did not expect that here. She must have seen the surprise on my face because she conveyed that she thought he and our family were very brave and that she had prayed for us. I could feel tears welling in my eyes, but she let me away with a quick embrace when I realised that her eyes were welling too. We laughed at the pair of us getting emotional, we were strangers after all, but no longer. As I walked her to the door she said to me, “You know, I could have gotten more people to come tonight...” In this moment, an actual partnership was made (Sutter, 2011).

Sarah had offered her efforts not just because she was interested in being active
with her children, but because she ‘cared,’ in some small measure, about me, and 
*because of my story*, she would give something more than what I was asking (Frank, 
2010). The process had now become *meaningful* to her (Brockmeier, 2009). My 
initial reaction was delight - I needed all the data I could get, but that was followed 
sharply by an awareness of my position and not wishing to take advantage of my 
position or of Caden’s memory (Hoffer et al., 2008). However, she insisted, and I 
was concerned my reticence would be hurtful rather than helpful, so I agreed to do 
another workshop in a few weeks’ time once she had spread the word. Thanks to 
Sarah’s efforts at the next workshop there were 7 new parents. Table 4 shows the 
make-up of the parent group that participated in the workshops.
**Table 4. Parent demographics**

<table>
<thead>
<tr>
<th>Location</th>
<th>Parent/Carer</th>
<th>Age (in years)</th>
<th>No. children</th>
<th>Child Ages (in months or years)</th>
<th>Household Status</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>ST</td>
<td>Female A</td>
<td>33</td>
<td>2</td>
<td>2yrs, 3yrs</td>
<td>Married</td>
</tr>
<tr>
<td>2</td>
<td>ST</td>
<td>Female B</td>
<td>38</td>
<td>1</td>
<td>4yrs</td>
<td>Married</td>
</tr>
<tr>
<td>3</td>
<td>ST</td>
<td>Female C</td>
<td>36</td>
<td>2</td>
<td>3yrs, 4yrs</td>
<td>Married</td>
</tr>
<tr>
<td>4</td>
<td>ST</td>
<td>Female D</td>
<td>34</td>
<td>2</td>
<td>4yrs, 1yr</td>
<td>Married</td>
</tr>
<tr>
<td>5</td>
<td>ST</td>
<td>Female E</td>
<td>41</td>
<td>3</td>
<td>4yrs, 6yrs, 8yrs</td>
<td>Single</td>
</tr>
<tr>
<td>6</td>
<td>ST</td>
<td>Female F</td>
<td>49</td>
<td>2</td>
<td>5yrs, 6yrs</td>
<td>Married</td>
</tr>
<tr>
<td>7</td>
<td>ST</td>
<td>Male A</td>
<td>40</td>
<td>2</td>
<td>2yrs, 3yrs</td>
<td>Married</td>
</tr>
<tr>
<td>8</td>
<td>RV</td>
<td>Female G</td>
<td>33</td>
<td>2</td>
<td>3yrs, 7yrs</td>
<td>Married</td>
</tr>
<tr>
<td>9</td>
<td>RV</td>
<td>Female H</td>
<td>30</td>
<td>2</td>
<td>3yrs, 13yrs</td>
<td>Married</td>
</tr>
<tr>
<td>10</td>
<td>RV</td>
<td>Female I</td>
<td>40</td>
<td>1</td>
<td>6yrs</td>
<td>Married</td>
</tr>
<tr>
<td>11</td>
<td>RV</td>
<td>Female J</td>
<td>26</td>
<td>2</td>
<td>6mos, 4yrs</td>
<td>Partnered</td>
</tr>
<tr>
<td>12</td>
<td>RV</td>
<td>Female K</td>
<td>23</td>
<td>2</td>
<td>3yrs, 6yrs</td>
<td>Partnered</td>
</tr>
<tr>
<td>13</td>
<td>RV</td>
<td>Female L</td>
<td>25</td>
<td>1</td>
<td>2yrs</td>
<td>Single</td>
</tr>
<tr>
<td>14</td>
<td>RV</td>
<td>Female M</td>
<td>31</td>
<td>2</td>
<td>10mos, 3yrs</td>
<td>Married</td>
</tr>
<tr>
<td>15</td>
<td>RV</td>
<td>Female N</td>
<td>32</td>
<td>2</td>
<td>2yrs, 5yrs</td>
<td>Partnered</td>
</tr>
<tr>
<td>16</td>
<td>RV</td>
<td>Female O</td>
<td>31</td>
<td>2</td>
<td>1yr, 4yrs</td>
<td>Married</td>
</tr>
<tr>
<td>17</td>
<td>RV</td>
<td>Female P</td>
<td>35</td>
<td>3</td>
<td>4yrs, 10yrs, 12yrs</td>
<td>Married</td>
</tr>
<tr>
<td>18</td>
<td>RV</td>
<td>Male B</td>
<td>34</td>
<td>3</td>
<td>6mos, 4yrs, 7yrs</td>
<td>Married</td>
</tr>
<tr>
<td>19</td>
<td>RV</td>
<td>Female Q</td>
<td>35</td>
<td>3</td>
<td>6mos, 4yrs, 7yrs</td>
<td>Married</td>
</tr>
<tr>
<td>20*</td>
<td>RV</td>
<td>Councillor</td>
<td>50</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

*only participated in Create workshop*
4.5.1.6 Children’s workshops

The child workshops were based on similar principles to the adult versions and employed a draw-and-talk approach adapted from Knowles et al. (2013) who employed a write-draw approach to a similar end with older children. In this instance, writing was replaced with telling, as the children in the target age group were not yet capable of writing. The children were asked to tell about who they played with and where and what kinds of activities they did with their family. They were then asked to draw a picture of their favourite thing to do with their mum/dad/grandparent/carer while talking about their experiences. All children’s workshops in both locations were delivered in the partner nursery school during class times. Only children who had given their personal consent and whose parent or carer had given their assent were allowed to participate in the workshops. These children were taken to a room or space adjacent to their nursery classroom to do their workshop activities and were accompanied by myself as the primary researcher and either the HLP or a research assistant. Four child workshops were delivered – two in each location, one for each nursery class (morning and afternoon). No workshop consisted of more than 4 children at one time, and each had a duration of around 40-45 minutes. In each instance, the children’s data was both audio and video recorded.

At the beginning of each session, children were oriented to both devices and were shown how they worked. Each child was invited to say their name into the Dictaphone and had it played back to them, and each was given the opportunity to make a face for the video camera. The children were seated at tables in preparation for their drawing but were first asked to tell about who lived in their house (so that we could speak about their family using the appropriate terms), and then they were asked to talk about the type of PA they did within their family. It became quickly apparent that PA as a term meant little to the children, so whenever PA was referred to generally in the discussions, the term play was most often used. After this initial period of orienting talk, the children were provided with paper and markers and were invited to draw about their favourite things to do with their parents/families. Some children drew a single picture while others drew several.
During the drawing activity, I and the HLP or research assistant spoke to the children about their drawings and asked them questions about the action, setting, and participants being portrayed; notes were made of their answers on the back of the pictures to aid in recall during analysis. Table 5 shows the make-up of the child groups that participated in the workshops.
### Table 5. Child demographics

<table>
<thead>
<tr>
<th>Location</th>
<th>Child</th>
<th>Age (in years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST</td>
<td>Female</td>
<td>4yrs</td>
</tr>
<tr>
<td>ST</td>
<td>Male</td>
<td>5yrs</td>
</tr>
<tr>
<td>ST</td>
<td>Male</td>
<td>4yrs</td>
</tr>
<tr>
<td>ST</td>
<td>Female</td>
<td>4yrs</td>
</tr>
<tr>
<td>ST</td>
<td>Male</td>
<td>4yrs</td>
</tr>
<tr>
<td>ST</td>
<td>Female</td>
<td>4yrs</td>
</tr>
<tr>
<td>RV</td>
<td>Male</td>
<td>4yrs</td>
</tr>
<tr>
<td>RV</td>
<td>Female</td>
<td>4yrs</td>
</tr>
<tr>
<td>RV</td>
<td>Male</td>
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</tr>
<tr>
<td>RV</td>
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<td>4yrs</td>
</tr>
<tr>
<td>RV</td>
<td>Male</td>
<td>4yrs</td>
</tr>
<tr>
<td>RV</td>
<td>Female</td>
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<tr>
<td>RV</td>
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<td>4yrs</td>
</tr>
<tr>
<td>RV</td>
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<td>4yrs</td>
</tr>
<tr>
<td>RV</td>
<td>Male</td>
<td>3yrs</td>
</tr>
</tbody>
</table>
4.5.1.7 Workshop Summary

In addition to the interview and workshop data, observations were made of the key community spaces identified in the participants’ data. These included: the areas and neighbourhoods immediate to both nursery schools, parks in both locales, parks in two neighbouring towns, the local leisure centre in ST, the community centre in RV, and a local greenway in ST. Each of these locations were explored on foot and photographs and field notes were taken.

In the end, 7 adults and 6 children were recruited in ST, and 12 adults and 9 children in RV. This phase showed me how important it was to make a connection with people for development or intervention work. Such information is not readily considered or reported in the PA literature, in fact, such relations would likely be construed as introducing an undesirable and systematic bias to the mechanisms of the intervention (Nolas, 2009). However, when using a qualitative approach to understand how aspects of social phenomena are experienced as meaningfully related, understanding connections becomes much more desirable as long as they are acknowledged and reflected upon (Brown and Katz, 2009; Dutta, 2010). With the swirl of the parents’ stories still fresh in my mind, I began thinking about how powerfully meaning must factor into behaviour.

4.5.2 Progression

The workshop data was gathered from May 2014 – July 2014 (see appendix A) and included contributions from 19 adults and 15 children from two locations. This information and its interpretation became the starting place for the Create phase, but I was already formulating ideas ahead of undertaking the actual process. HCD can be done in brief or lengthy versions, and we had taken the lengthy approach (IDEO, 2009). The lengthiness was exacerbated by my necessarily part-time attention and in trying to keep each group – the parents and the practitioners – equally involved. The practitioners were very busy individuals with day to day work and projects of their own, but they seemed keen to have academic involvement in their work in anticipation of ‘better’ (than they were used to) outcomes. This made me uncomfortable. This was not a tried and tested process for me, and while I was
optimistic (idealistcally so) about the outcomes the work would generate, I was worried that I might let them down.

I had similar concerns about the parents. Three of the parents that contributed to the data in RV had also been involved in other community work (i.e. consultation on their community centre, campaigning against a proposed waste treatment site near their village, petitioning to have their park improved, etc.). In the group workshop situations, the talk at times strayed into a community action discourse to the degree that I felt the need to reinforce that I had no authority to inform resources or capital investments in their area. While they acknowledged this, I struggled with my empathy for them because I had walked their village myself, I had seen the spaces they wanted to improve, particularly the parks, and I felt their concerns were legitimate (Frisby et al., 2005).

In ST, there was a different problem to overcome. Each of the parents I spoke with and both the heads of the primary and nursery schools, even the LALT partners noted that ‘nothing works in ST.’ This town had its own narrative as a kind of Bermuda triangle for programming; an initiative that worked well anywhere else would not work in ST. The narrative went that ST, as a town, was insular but also insular to a further degree by neighbourhoods. The town had territories that were marked by very different socio-economic circumstances, and it mattered where you lived. One of the parents commented in an interview that what a parent had access to for their children was determined by “post code lottery.” By that she meant, if you were in an area identified as having health and social disparities (and one of the LA’s worst data zones was in this area), you had access to more programming. So, in her estimation, because she was not in one of these areas, she and her children did not have the same opportunities (in this specific instance she was speaking about before and after school programmes). These geographical boundaries might have been invisible, but they were real (Georgiou and Carspecken, 2002). I was coming to understand that a process like HCD would likely need to be repeated in each of these neighbourhoods to get a real breakthrough in ST. This was an instance where the lack of extreme cases in my sample was making a difference. I was also starting to realise my naivété in trying do this process in two locales at once by myself. HCD
recommends working with a design team, and though I had a core group committed to the project, they could not contribute to the data gathering and interpretation in a regular and consistent fashion. This was a new way of working for them, and they were approaching their role as more of a steering group rather than as fully-fledged collaborators. This distinction became more impactful in the Create phase.

4.6 Create – the Ideation Phase
This phase was about creativity. I have considered specific aspects of creativity, such as imagination and sense-making, in relation to intervention and to behaviour in Chapter 6. Here I recount my personal experience of attempting be creative with and on behalf of others. The aim of this phase was to use parents’ and practitioners’ stories to create a PA intervention.

4.6.1 Process
The Create phase was comprised of four processes: “synthesising, brainstorming, prototyping, and feedback” (IDEO, 2009, p.83). The parent and stakeholder Create workshops followed the form outlined in appendices C and D. The presentation was an adaptation of the 4 processes noted above. The HCD Toolkit (2009) recommends various activities to move participants through the creative processes which I outline here.

The synthesis process began with sharing stories. Participants listened as I shared stories from the data and were asked to capture instances, observations, details, quotes, household information, and aspirations, anything they identified as informative or surprising, and to record each instance on post-it notes. These become data units collated onto flipchart paper. These papers were hung on the walls of the workspace and later these units are examined for patterns and themes and used to build up a picture of the DC (see appendix K for examples). From these patterns and themes, participants were asked to identify “opportunity areas” (IDEO, 2009, p.102). Opportunity areas are identifiable as contradictions (contradictions are explained Chapter 6), and they were used to identify ways in which the DC could be rearticulated in a future-facing way leading to multiple
possible solutions. The HCD Toolkit (IDEO, 2009) recommends stating these rearticulations as ‘How might we...’ statements, i.e. how might we encourage parent and child PA in park spaces? These statements were idea generators that led to the highest level of abstraction in the HCD process – brainstorming.

During brainstorming, any blue-sky idea was encouraged; any constraints – organisational, operational, technological, financial, etc. were left out of the considerations to allow expansive thought. Participants were encouraged to “defer judgement, encourage wild ideas, build on the idea of others, stay focused on the topic, be visual, have one conversation at a time, go for quantity (of ideas) (IDEO, 2009, p. 104).” This process was taken in turn with each opportunity area (‘how might we statement’). Once lots of ideas built up, the participants selected one or two solutions from the brainstorming for prototyping, or in other words, to make their ideas real.

Prototypes are rough and ready disposable tools that help the thinking process. Ideas selected for prototyping are made as quickly and cheaply as possible to get feedback. Getting feedback involves trying the idea out on people who were not involved in the design process and includes individuals who are potential end users, but also anyone potentially involved in the chain of delivery. This was the process I intended to undertake. I planned to gather the parents and practitioners in a single location to spend a day working through these processes together, but as in the Hear phase, actual circumstances required some pragmatic compromises.

4.6.1.1 Arranging the Create workshops
The preferred approach was to get parents from both locales and the practitioners together in one workshop, but this was not achieved. I made several failed attempts at scheduling a common event, but the stakeholders had very busy schedules and clearing a full day in each of their schedules was a challenge. Combined with the varying shift patterns of the parents that were willing to participate, it became clear that a more flexible approach would have to be taken. The decision was made to hold the workshops separately and as shorter events. Such separation of the groups did not necessarily pose a problem as the function of
the stories gathered from the Hear phase was to bring the participants’ world to the design process with as much texture as possible, and I and the HLP were to be the common denominators across the different groups. However, between the times the initial data was collected and the follow-up workshops took place, the HLP took another job and was no longer available to participate in the process. I was the only person remaining common to all data collection.

From August 2014 to January 2015 (see appendix A), the data collected from all workshops, adult and child, as well as all interviews, were transcribed verbatim. During this time, I had used a social-ecological frame (Murphy, Dugdill, and Crone, 2009) to begin making sense of the data. I used this to form an overall configuration of individual, interpersonal and environmental factors reported by the participants. I looked for differences and similarities between locales and parent’s and children’s experiences. A sample of the data this generated can be seen in appendix L. These tables were used to inform the stories that I shared in the Create workshop and the accompanying PowerPoint presentation used to guide the process (see appendices C and D). In Chapter 3, I note how the processes presented in the HCD Toolkit (IDEO, 2009) align with common ethnomethodological research practices (McGannon and Mauws, 2002). However, the HCD process was iterative and meant to generate information quickly. The analytic procedures functional for its design purposes may not reflect the rigour preferred for academic purposes. This was an important distinction to make as the data analysis incorporated into the design phases, like those in the Create phase, was part of the apparatus of HCD overall. The intent at this stage, however, was to communicate the fieldwork with enough structure and detail to provide a ‘mirror’ of their experiences for the participants (Virkkunen and Newnham, 2013) and an empathetic frame for the stakeholders (Neuhauser and Kreps, 2014).

All parents who had contributed to the initial workshops were contacted via email or text message and invited to come to these follow-up workshops to develop their input from the first workshop. Parents who contributed to the Create workshops were part of the participant group from Table 4. In ST, out of the 7 initial adult participants, 2 agreed to follow-up, and in RV, of the 12 initial adult
participants 4 attended the follow-up. However, in RV, Sarah invited a local councillor to the workshop, so that workshop had 5 contributors in total. The practitioner workshop was attended by all 4 of the stakeholders and included the SLP, EYP, NHS, and HLP (the replacement for the previous HLP). The pair of ST participants discussed their ideas for prototypes during a group interview held at the nursery lasting 90 minutes. The RV parents attended a workshop similar to that used in the Hear phase held in the local community centre. It was scheduled on a weekday evening and lasted from 6:30-9:00. The practitioners’ attended two workshops hosted at the university campus. The first was scheduled on a weekday afternoon from 13:00-15:00; however, we did not make it through all of the requisite content so a follow up session was scheduled one week later from 14:00-17:00. The outcomes from these Create events were summarised (see appendix M) in a consultation document used to communicate between stakeholders.

4.6.1.2 Parents’ Create Workshops
The parent interviews and workshops took place in January 2015 and the practitioner workshops took place in February 2015. I began with the ST interviews. I knew that I had not engaged the participants in ST to the same degree as those in RV. I had not found a key informant (Riley-Jacome et al., 2010), a partner like Sarah; I had not piqued their interest or engagement in the same way. I considered that the way to fix this was to widen my contacts and keep collecting data, but this would mean putting the RV location on hold because prototype development would have shared delivery and financial implications. I decided to keep going with the participants I had already recruited noting the varying degrees of engagement and observing the differences in location as the process unfolded.

The parents that contributed to the Create interviews in ST were not optimistic of any of our efforts making much of a difference to participation in IPA; however, they were supportive of ideas that offered contemporaneous communication of new and current programming so they could make best use of limited time. They also supported the development of community activities that facilitated participation of the whole family (beyond swimming) of which they felt there were very few.
In the RV parent workshop, the process began as outlined above with the sharing of stories and the collecting of post-it notes. However, the parents got caught up in listening to me talk and they forgot to write things down. When I tried to get them to look for patterns in the things they captured from the stories, they struggled with this. They tended to abstract straight to an idea from single instances. For example, someone noted down how the children had incorporated one-off experiences with their parents as a meaningful form of IPA (i.e. swimming on holiday or a family day out to a fun fair). Instead of linking this up with other experiences to look for patterns or themes (i.e. what is different about swimming on holiday versus swimming at a leisure centre, or how that family days tended to be at the weekends and family PA is more planned than spontaneous), most of the time they jumped straight to a related experience (i.e. a personal memory of their childhood or from their own parenting repertoire or a story of another parents’ experience). They were making associations without looking beyond or behind them. I made an effort to bring them through the process the first couple of times, but I could see I was making them uncomfortable. This is an instance where my lack of phronesis showed. I had not planned the right activities to take them through the process better. I assumed that it would be simple enough to do, but with a variety of educations and backgrounds in the room, I feared persisting to re-route them to a process they did not fully grasp would make some of them feel small. Instead, I decided to let them talk freely about their ideas and we went straight to the brainstorming phase. They did much better with this, and they were able to select their ideas to prototype. This process is examined in Chapter 6. I explained that I would take their ideas to the practitioner workshop where they would take their turn doing this process and that I would get back to them about which ideas were selected to try.

4.6.1.3 Practitioners’ Create Workshops

The practitioner workshop fared better with the creative processes, but it was not without its problems. The practitioners clearly had more experience of the types of processes outlined above, and they understood, to some degree, why they were doing them. The practitioners were able to capture more insights from the stories
than the parents did, but a couple of them wrote their insights as continuous notes rather than as points on successive post-it notes. Once I realised this was happening, I asked them to try to use the post-it notes because the purpose was to be able to select and rearrange them later. When we finished with the stories and the post-it notes had been collected, I asked the practitioners to choose 5 insights that stood out to them or were surprising and to identify why they were related (IDEO, 2009). This process became a distraction because they were chatting to each other as they were doing this, and some had not written the same things as others but wanted to use each other’s ideas instead of offering their own. This lead their talk toward solutions, i.e. straight to solving the problem. I had cautioned them from the beginning (particularly after my experience with the parents) not to do this because we did not want to assume that we knew what the ‘problem’ was and that we wanted to build up multiple views.

The HCD Toolkit (2009) recommends that in such an instance, because jumping straight to an answer using an unexamined frame is a human proclivity (Krippendorff, 1989), the facilitator is advised to ‘flip’ the solution by asking what problem the person is intending to solve by suggesting it. For instance, the SLP identified that perhaps placing signs within playparks to suggest games parents and children could play together would be a good idea. When I asked him to flip that solution, he acknowledged that the contradiction he had identified was that parents lacked ideas and that parks were opportunistic places for parent and child activity (both of which were specific instances identified in the stories/data). Because there were so few of them (4 of them and myself) and there was significant overlap in the insights they were selecting, they resisted trying to find patterns and themes because it just seemed repetitive. I decided to move them onto identifying opportunities. This is a transition activity from identifying what is to identifying what could be. During this activity they were asked to develop “how might we...?” statements; having 3-5 is recommended (IDEO, 2009). Using the insights they had gathered and framing them in a future-facing way they identified 4 statements:
• How might we get adults and children to interact together in parks and greenspace?
• How might we get parents to prioritise their own health needs alongside those of their children?
• How might we make it easier for parents and children to get involved in activities together?
• How might we facilitate better use of community spaces?

Next came the brainstorming phase. After a brainstorming warm-up activity which encouraged the practitioners to be “energetic and open-minded” (IDEO, 2009, p. 105), I prompted them to think as abstractly as possible. If they could imagine it, no idea was to be dismissed no matter how wild it sounded. At this stage, we did not have to worry about whether it would be possible to deliver because it was not the workability we needed. Instead we needed to view the opportunity statements and their relations in new and different ways that might not yet exist. This did not go well. It was, surprisingly, quite difficult. The group noted the difficulty they were having and that even though they were thinking of ideas it was difficult to set considerations like viability or resources aside. I tried to encourage patience with the process and offered some ideas to get them started. They humoured me and pressed on to generate some ideas; the main ones are identified in appendix M. As we began to move to the prototype stage, the HLP noted that they needed to leave for another engagement - HLP had taken down the finishing time of the workshop wrongly. The rest of the group did not want to carry on in HLP’s absence so we agreed to continue the process on another day. I collated all their work and held it until the next session which transpired one week later.

4.6.1.4 A process interrupted

At the follow-up session, after a quick review of the opportunity statements and the ideas they had noted from the previous session, we began to speak of prototypes. I had to go back to the parents with some options to try, and ideally, deciding what those would be was the goal of this session. As previously mentioned, the content of these sessions formed the data presented in Chapter 6,
but what is important to demonstrate here is the dynamics of the process that generated that data. The purpose of a prototype is to think through the question being answered with the prototype concept by developing the concept quickly and cheaply and using it to understand how people interact with it (IDEO, 2009). We began by going back through the opportunity statements; the intent was to work through prototypes for each one and work our way to 2, maybe 3 ideas to try. I mentioned previously that we began the work with the intent of taking a human-centred approach to the design which meant maintaining an empathetic stance and keeping the parents and children and their experiences as the arbiter of the decision making. This became difficult because the practitioners’ frame for the parents kept shifting. Instead of focusing on the stories we collected, hypothetical generalisations of parents that were a mix of the stories, the practitioners’ experiences, evidence narratives, and personal parenting experiences kept getting in the way. This might have been prevented if representatives from the parent groups had been present.

Additionally, the stakeholders were beginning to weary with the HCD process. They had commented more than once how different this was from how they normally developed programmes. They were quick to follow such a comment with a deferent annotation to account for this difference, namely that their processes “weren’t as academic” as mine. By this I understood that they were respectfully trying to convey that this HCD process was unnecessarily protracted, but they were going along with it because it had some academic value that benefitted me more than it did them. After one such instance, I took the time to reiterate the purpose of what was being achieved by this process – to think differently about something we think we understand and to see it with different eyes. In my explanation, I unthinkingly made the distinction that what I was proposing was a ‘bottom-up’ rather than a ‘top-down’ approach (I was thinking of how interventions are typically developed in academic environments beginning with evidence). This struck a dissonant chord. I was softly but matter-of-factly reprimanded by NHS that their normal practice in community work was almost exclusively bottom-up (Cacari-Stone et al., 2014; Kok et al., 2012). However, this
view was challenged by the HLP later in the discussion where the HLP reflected, “I just feel that there’s been so many times in the past where we’ve attempted to do something bottom-up, which is not really bottom-up, it’s about us kinda going in and, and trying to foster an interest.”

Three hours of discussions passed without any clear decision on prototypes. Time ran out again, and the session concluded with the agreement that I would collate all the ideas discussed and we would continue developing ideas via email. Appendix M shows the consultation document used to continue the email discussion. I sent the document around and I received one reply from each practitioner, but the consensus was clear that they wanted me to decide. I was no longer merely the facilitator; I had become the designer. This was exactly what I did not want, but it was happening anyway. I wanted to feel confident that I had a truly shared design as a final product, but this required mutual investment of responsibility that I had not managed to foster (Steen, 2008). I resolved to keep with the HCD process and maintain a participatory, empathetic stance by working back and forth between the practitioners’ and the parents’ frames. However, it was difficult to remain balanced, and I found myself favouring ideas generated from where I had more engaging participation (i.e. RV). Using the opportunity statements as a guide, I took all the practitioners ideas and all the parents’ ideas, and I chose 4 activities that combined the areas of greatest overlap from all of the ideas and made them into 4 prototypes.

4.6.2 Progression
The salient aspects of the practitioners’ and parents’ frames and how they were used to develop one specific intervention are developed in depth in Chapter 6. The processes that formatively contributed to the actual intervention design are presented here.

The main areas of concern for the practitioners were making use of existing programmes and links with schools, and incorporating evidence-based elements thought to make behaviour change. The parents wanted something local that had nostalgic elements that let them share their fond childhood memories with their
children, or something that helped them make use of limited gaps of time in a functional way. These broad themes inspired the 4 prototypes that were trialled, two in ST and two in RV. The prototypes were delivered in June 2015 just prior to the end of the school term (see appendix A), were free to attend, and both partner nursery schools facilitated the recruitment of participants to trial the prototypes. In ST, we trialled a past-times play day with parents and grandparents in the nursery school followed by a led family walk. In RV, we trialled a family activity class and a home-based play idea using content from the NHS fun-generator app (NHS, 2015).

4.6.2.1 Suburban Town Prototypes

The past-time play day was aimed at grandparents and parents that were homemakers or worked second or third shift working patterns. Parents and grandparents were invited to a play session lead by a trained play leader (supplied by the SLP) at the nursery school scheduled between the morning and afternoon sessions to maximise potential participants (who would either already be there to drop-off or pick-up). Parents and grandparents had two opportunities to attend – Tuesday and Thursday – during which time they played old-fashioned playground games with their children (i.e. tig, hopscotch/peeever, Chinese ropes/elastics, what’s the time Mr Wolf, etc.). These sessions were promoted in the nursery as part of a Generation Recreation week that culminated in a led family walk (i.e. with a walk leader) on a nearby greenway along a glen that had been the location of some of the parents’ childhood escapades. The greenway had recently been extensively improved and extended to connect to a large country park a few miles away. The family that could get the most generations to attend the walk won a prize.

The Tuesday play day was well attended, and the nursery teacher commented that she was surprised at the level of engagement. Six adults and 8 children attended, and importantly, there was engagement from male caregivers (2 dads and 1 grandad in addition to 2 grandmums and 1 mum) which I had so far struggled to achieve. The session went well due in no small part to the play leader who made everyone feel welcome. Such social situations were not an accepted convention, so those that attended did not know what to expect. They warmed to it easily and the parents, grandparents, and children all noted they had fun playing
these old fashioned games. Adults and children were encouraging of each other and cheered for each other as they took turns during the games. There were also various instances throughout the games when both the adults and the children found the activities physically challenging. The 45 minute session ended with refreshments, during which time I chatted with the children and adults. As we spoke, I learned that it was mums that had prompted some of the dads and grandparents to attend. They had taken the event as a school activity, and they wanted to make sure that their child participated. Because they were either at work or otherwise engaged they sent a proxy, but the dads and grandparents were happy to do it. One dad noted he attended because his shift patterns matched the time frame, and he did not often get to do such activities with his daughter because of the nature of his custody arrangements. One grandparent made sure to tell me that she thought the session was a great idea because her grandchildren spent too much time on their iPad.

Though this session was well-attended, the Thursday session did not proceed because only one grandparent attended. She was dropping her grandchild off anyway so she was not inconvenienced, but this was still disappointing. My attention turned to the led walk scheduled for the end of the week, Saturday morning. It had been a struggle finding coaches for the prototype activities, and this was true of the led walk. I was not able to find a walk leader for our event, so I would have to take it myself. I was an ACSM certified Health/Fitness instructor, and I had extensive experience of coaching and group fitness instruction so I felt confident taking sessions as required. However, in my role as a researcher, I wanted to be able to observe, and this would be difficult to do while also focusing on teaching. The weather was inclement on the morning of the walk. The event had been advertised as rain or shine and to dress for the weather. The attendees were instructed to meet at a park just in front of the gate to the glen, and I waited there in full view of all entrances and exits including the car park. No one attended. I waited for a full 15 minutes passed the start time before leaving to help with one of the prototypes happening in RV on the same day.
4.6.2.2 Rural Village Prototypes

In RV, one prototype involved programming family activities in their local community centre because the parents had noted their strong desire to live locally and also their displeasure at always needing to go outside their village to do engaging activities. The other activity involved trialling a version of the app idea that parents in both locales had identified in their possible solutions. This app prototype involving an existing app led to the development of a custom app which is detailed in Chapter 6. Because this is developed in depth in a subsequent chapter, I focus here on the family class prototype.

The family class was called Family Fit (FF) and involved game and fitness based activities that both parents and small children could do together. It was 45-minutes in length, and it was structured to facilitate moderate to vigorous PA in both parents and children. This class was promoted through the host nursery in RV. Flyers were sent home to all parents of nursery-aged children as well as to P1 (because some of the parents that would have contributed in the Hear stage would have had children now in P1). The flyer invited the parents to FF in their local community centre and offered 3 different days: Wednesday 6:30-7:15, Saturday 10:00-10:45, and Monday 6:30-7:15. The classes were led by coaches supplied by the SLP. I gave them the form of the class but they were able to choose the content specific to their specialism, so the Wednesday event was to be taken by a dance coach, Saturday, a football coach, and Monday, two judo coaches.

Flyers were supplied to the schools a week in advance, so when the Wednesday arrived, I waited with the coach at the community centre to receive any participants that came. But no one came. I was very perplexed by this. I knew that Sarah would have come, at least, and I discovered when I contacted her the following day that she never got a flyer. It transpired that no one received the flyer because the school did not distribute them; they forgot to include it in the children’s home-going messages. Because it was Thursday by the time I spoke with her and the school, we tried to act swiftly. The school sent the flyers out that same day, but it was very short notice now. Sarah decided to help me by posting the class information on the RV’s community Facebook page. As helpful as this was, what she
did not realise was that she had opened the pool of people beyond the host nursery school. I had purposefully worked solely with the host nursery school until the prototyping was complete, but now other parents from the other primary school in RV knew about the classes.

I did not expect to get to see the Saturday class because of the led walk in ST. However, as I waited to see if anyone would arrive for the walk in ST, I got a phone call from the coach taking FF in RV. This was the same dance coach that had waited with me on Wednesday night. The football coach pulled out at the last minute on Friday night, and the dance coach agreed to come take the Saturday class and incorporate football skills. She called to tell me that 11 adults and 18 kids had turned up some of which were babies, and the play worker had not turned up. The classes had been advertised as offering a crèche, so any children younger than 3 years old were to be in a separate room with a play worker where they would do games of their own. However, the play worker had not turned up, and the coach would struggle to deliver the session without help. I waited until quarter past, and when no one arrived, I drove straight to RV to fill the role of play worker.

I arrived to a room full of adults and children playing tig with tails. Each person had a fabric ‘tail’ tucked into their trouser waistbands, and they were running around trying to collect as many tails as possible. It was a lovely sight. There were mums and dads, older and younger siblings, friends and neighbours running around the room laughing and playing. There was only one baby; she was not quite 2 years old. She was weaving amongst everyone running and laughing. I decided not to take her out, mostly because she was the only one and did not want to leave her mum, but she was also participating. Instead, I ‘managed’ her from within the room following her around and keeping her safe while helping the coach where I could. When the class had finished, parents and children were sweating and pink-faced. I listened to chatter about how the class was “so much fun” and that they “really got a workout.” One parent remarked that they did not know they could get so “puffed-out” playing games. It was all I had hoped for, though it was not without its criticisms.
The parents from other parts of RV wondered why they had not received flyers about it at their school. I had to explain that this was part of a research project in its early stage and that all parts of RV would eventually be invited to participate in the activities. Other parents and children had taken the communication about the football-skill-themed class to mean that they would actually be playing football, so although they had fun, it was not what they thought it would be. However, that misconception may have accounted for the fact that of the 11 parents that attended that day, 3 of the parents were male. This was the most male participation we would see in any of the prototypes.

The final class on Monday evening had a respectable attendance of 8 parents (1 dad) and 14 children. This was a much more manageable size. The play worker attended this time, but there was only one (different) baby again so she stayed in the hall with us for the games, ‘managed’ by the play worker. The two judo coaches were very experienced and had thought through some creative ways of compensating for the size and ability differences between an adult and a 3-5 year old child. One clever activity they included was called the monkey and the tree. The adult lifted the child and held them to their front while the child wrapped their arms and legs around them to hold on. If the child was strong enough, the parent would be able to let go of them in this position with the child left clinging on. The child then had to crawl/climb around the parent crossing their back and returning to the front without letting go. This was an excellent activity that the parents and children found funny but also challenging.

While we were concerned about numbers and finding a format that would attract volumes of people, I observed other important aspects of the interactions happening in the classes. For instance, children were noticing their parents exerting themselves. It was apparent that this was an unusual occurrence, but it inspired the children to offer encouragement. These small children saw their parents working hard so they cheered them on. There was also positive physical touch and eye contact between the parents and children. Additionally, there was support for each other among the parents. They were able to exchange knowing glances that told of
their tiredness or their reticence to try an activity, but that also said, ‘here we go, let’s do it for the kids.’

By the end of June 2015, all the prototypes had been completed. The goal agreed with the parents and the stakeholders was to trial a version of these ideas on a larger scale coinciding with the new school term that began in late August 2015. I had only a few short months to develop a final version of these prototypes into a formative intervention that could be delivered on a wider scale.

4.7 Deliver – the Implementation Phase

The Deliver phase was concerned with making ideas from the Create phase feasible and viable. It was an iterative phase of “mini pilots” and further prototyping to develop a sustainable, deliverable version of an idea (IDEO, 2009, p. 125). The data collected in this phase did trial aspects of feasibility and viability in the real world implementation of two prototypes, but I found myself in a position where I was solely responsible for their delivery while also trying to develop their theoretical and academic merit. Here I discuss the processes I undertook to deliver the prototypes, and I reflect on the practicalities involved in delivering PA interventions within the community. The aim of this phase was to understand how individuals used an intervention.

4.7.1 Process

Based on the outcomes from the Create phase, the parents, practitioners and I agreed to trial a two part intervention that involved the development of a digital app called WeTime (WT) for use on parents’ smartphones that facilitated IPA anywhere but particularly in the home, as well as a weekly local community event in the form of FF classes. As with the previous work, the schools were the access point to participants and these same two prototypes were offered in both ST and RV. We now wanted to try the ideas we had developed beyond the two initial host schools and widen them to other parts of the community. The head teachers of both host schools used a common local education forum to announce the trial of WT and FF and invited any local school to participate. Five schools agreed to promote the initiative in their schools by helping to recruit participants and
distributing promotional materials (ST=3, RV=2). The intent was to launch both components by the end of September 2015. They were planned to run tandem for 10 weeks to the end of the winter school term.

Despite these plans, the work did not launch until week commencing 26 October 2015. The FF class ran until 22 December 2015 (8 weeks) and WT was available until 7 March 2016 (16 weeks). These two prototypes were linked but each could be used independently. In fact, of the 34 users that downloaded and used the app and of the 17 parents and 26 children that attended FF, only 2 families did both. The two components had appealed to entirely separate frames of IPA without much overlap in the sample group. As the aim of this phase was to understand how individuals used an intervention, I decided to focus solely on the app component for this because it allowed me to examine how parents intra-acted with an artefact for an extended period. The app was also meant to record data from the use episodes that would aide in constructing a picture of the app’s use and its outcomes. The findings from this phase pertinent to the thesis development are presented in Chapter 7, but here I focus on the processes of recruiting users, generating the data and delivering the app called WeTime (WT).

4.7.1.1 WeTime
WT was designed as a smartphone app to prompt parents with ideas for activities that they could do with their 3-5 year old children. This was based on parents’ stories about where and when they did activity with their children and how they went about initiating the activity. Parents commonly mentioned a lack of ideas and lacking time to engage their children and feeling guilty about it. The app was designed to address some of these contradictions. As Chapter 6 expounds, the app’s story was integrated with other features to construct a material-conceptual narrative.

4.7.1.2 App Development
The app was built by developers from the Scottish Centre for Enabling Technologies (SCET), a branch of the University Of The West Of Scotland. They worked with me on designing the app whereby I told them the functions and content the app
needed to have, and they built these into the design. This was an iterative process that was projected to take 3 months but took closer to 4; this accounted for the late start to the initiatives mentioned above. Developing the app involved three main aspects: the back-end, the app functions, and the user interface.

4.7.1.3 The Back-end

The back-end refers to the web-based hosting space from which the app runs. Apps are self-contained programmes for use on smartphone and tablet devices, but they operate from a digital, online space that is similar to a website. The web space was hosted on a server with capacity to run the app’s functions and store its data. During the trial of the WT prototype, SCET hosted the app’s back end on their secure servers.

4.7.1.4 App functions

Designing the app’s functions involved planning the purpose of the app and the ways in which the user was intended to interact with it. This aspect was complex and getting a good design was an iterative process of focusing and refining one, maybe two main functions (Kirwan et al., 2013). The main function of WT was to prompt activities at a specified time of the day when the parents were likely to be home with their child. The waking day was broken down into 3 equal segments between the hours of 9:00 and 21:00. The parent could choose in which segment they would like to be prompted by a notification inviting them to ‘make a moment’ with their child. A ‘moment’ in this context involved either accepting the suggested activity or selecting another activity and undertaking a brief bout of play taking roughly 10 minutes. This was the app’s main function. Additional functions included a pre-programmed calendar of FF classes and reminders were sent telling the parents that a class was occurring that day; recording of activity data using the phone’s inbuilt accelerometry capability; capturing feedback after a bout of activity occurred; asking for confirmation and feedback on whether a moment had been made that day with or without using the app; and setting weekly targets for moments made.
4.7.1.5 User Interface

Planning the user interface involved thinking through the user’s experience of the app. What comes first, second, etc.? What happens after this is touched or that is touched? What does the app look like, what aesthetics and experiences does it elicit? These various considerations form the app’s architecture and are considered more fully in Chapter 6. The experience of using the app must be intuitive, clear, and easy to navigate. Download to first use of the app should be achievable within seconds (Tang et al., 2015). The app design itself must be interesting, easy, and enjoyable, but these considerations had to be designed for a variety of phones. Functions, colours, sounds, etc., these and many other design elements differ from phone to phone or tablet to tablet. The potential devices had to be considered so the app was developed to function within a range of device generations. Choosing a minimum functionality included or excluded groups of people that may or may not have kept up with device upgrades.

4.7.1.6 Reflecting on the app design

These were the processes the developers and I worked through in designing WT. Chapter 6 discusses the content of the app and shows mock-ups of some of the user screens. I had no previous experience of designing an app prior to WT. In designing the app, I did not undertake processes that have been recommended in the literature for behavioural apps, i.e. incorporating evidence-based behaviour change techniques (Direito et al., 2014); testing the efficacy of my content (Mitchell, Farrow and Haycraft, 2013) or validating the accelerometer data to the user devices (Nolan, Mitchell and Doyle-Baker, 2014). The purpose of the app was intended to address specific contradictions in the parents’ stories rather than to apply known behavioural techniques. In keeping with the empathetic approach used in HCD, I wanted the functions of the app to reflect the parents’ stories and to address the contradictions in ways that they had identified. Because of this, I anticipated that efficacy would be relative, and I was more concerned to see how the parents meaningfully related to the narrative of the app, how they incorporated it into their experience.
Taking objective activity data using the app was a feature I had hoped to develop for the practitioners. If I could facilitate ongoing data capture on parent and child PA, this would have been a significant advance to the current NHS offering that my stakeholders would have valued. I spent considerable time working with the developers to make sure that the app could handle the heavy data load required to capture accelerometer data during the ‘making of moments.’ However, I did not discover until the app was nearly completed that no matter if the phone collected the data, I would not be able to transform it into intelligible PA-related data. This was something that I could have known if I had delved deeper into the literature about that specific function or had included a person with that expertise in the app development team. To use the data from the phone to measure activity, the rate of data collection specific to that device must be validated to a known measure of energy expenditure (Nolan, Mitchell and Doyle-Baker, 2014). This meant that I would have had to validate the app to every model of phone a potential user could have, which would have been impossible. This is why products like Fitbit communicate to smartphones via their own apparatus that has been validated to actual cost of energy expended in a given people group (Sasaki et al., 2015). Because this feature had already been incorporated into the app design and the launch of WT was already overdue, I decided to keep the function to see what kind of data it produced and whether the app and phones could handle the transfer of data as this could inform future iterations.

4.7.2 Progression

Flyers advertising WT were supplied to all 5 schools just prior to the October school holiday in 2015. The flyers were supposed to go out to all nursery and P1 children on the last day of school with FF classes beginning one week later when the children returned to school. However, the flyers were not distributed as planned. One school did distribute them, another two did so when the students returned from the break, and in the other 2 schools they were forgotten. The delay in their distribution was serendipitous because it turned out that there was a problem accessing WT.
4.7.2.1 App hosting

To make WT available for the parents to download, the app had to be made available in both of the two main ‘stores:’ Google Play for android phones and Apple App Store for iPhones. Not wishing to exclude any potential users, WT was developed as a cross-platform app. This meant that its functions were coded in a language that could speak to either device. This had advantages of broader coverage, but it also carried risks of decreased functionality by not being specifically designed for one platform or the other. There were very few restrictions for inclusion on Google Play; WT was accepted straightaway and made available for download. For Apple, however, all apps get reviewed prior to acceptance to the app store. WT was rejected for inclusion on Apple’s app store on two grounds: 1. they did not like the extensive information taken in the registration process, and 2. they did not like the look of the user interface. Because the app was part of a research project, registering for the app included the participant information and consent (see appendix I) and included extra demographic data beyond that normally taken by apps. Additionally, the aesthetics of the app were rushed at the very end of the development process.

The tight development window and the overrunning deadline meant that by the time this stage was reached, there was little time remaining, at which point I discovered that artwork and interactive elements were a set of skills the developers employed different people to do. They could have provided this, but it would have taken extra time and expense. To speed things along, I called-in a personal favour from a designer friend, and along with some stock icons and images we completed a workable design. This, however, was not up to Apple’s standards, so they would not host WT on their app store. Instead, they offered us a mechanism they use for testing apps via another app called TestFlight. A potential tester (i.e. our participants) had to download TestFlight which registered them as a tester. I had to know they were doing this so that their email address could be sent to TestFlight from which they were sent an email inviting them to try WT. If they accepted, WT appeared on their phone as normal for a period of 30 days. To use the app beyond the 30 days, the process had to be repeated. This was a definite fly in the ointment.
for participants with Apple products. These cumbersome additional steps made it difficult to recruit and keep some of our iPhone users.

4.7.2.2 App uptake

Over the 16 weeks that the app was available, it was downloaded by 51 unique users, and actually used by 34 of them. I was unable to invest sufficient time into promoting the prototypes as I would have wished; this should have been given more time and resources. WT was not promoted beyond the 5 participating schools nor with anything more than flyers. There were also some significant problems with the app’s functionality pertaining mainly to data capture and connectivity that required to be addressed in further iterations. Attempting to collect the live activity data proved too much for most of the user’s phones. If the phone could not connect to the server via a Wi-Fi connection, the phone would have to store the data until it could connect to WiFi or acquire a sufficient carrier signal. In the event of no or limited connectivity, the phone quickly became overloaded and the app crashed losing all data. After trying to fix this issue over the first 4 weeks with no success, I had the developers stop the app from collecting the accelerometry data. However, the connectivity problem persisted even with the smaller, more manageable rating and feedback data. Because of the intermittent and inconsistent capture of momentary data on episodes, I was unable to compare this information across WT users. On 7 March 2016, the trial period with the SCET host server expired, and WT was mothballed pending further development.

4.8 And they Lived...

As satisfying as it is to tell and hear an orderly tale of phases and processes, I think often of Caddick’s (2015) observation that after the research ends the story goes on. The FF classes were not overrun with participants but the parents and children who attended them were invested in keeping them going, and when it came time to withdraw from the work, I attempted to exit the field ethically (Tracy, 2010) by arranging a meeting in March 2016 with SLP and HLP, parents from RV and a community group working to regenerate their local park to consider ways in which the class could be sustained. There were a variety of issues that bogged down progress: health and safety, coaches, who would manage it and assume the risks,
how would it be funded, what would it cost. We left the meeting with a list of parents’ concerns to which the HLP would reply. This did eventually happen but three months had passed. The class had lost the momentum of participation, and though it was offered again, it was not in quite the same form and by September 2016, it was discontinued (see appendix A).

WT also had a mixed response. Some who downloaded it used it regularly, others used it briefly and then discontinued it. This was due to a variety of reasons: users ‘learned’ what to do and no longer needed the app; they used all the app content and grew bored; the app content needed regular updating; etc. This was an example of how a project must expand and contract (Hudson and Vissing, 2013). Products and people have life cycles, and the length or brevity of these cycles cannot be conflated with effectiveness measured only by an associated end when the function (and perhaps benefit) of the cycle was catalytic. This raised the question of sustainability and whether project outputs provided meaningful solutions, which was certainly a concern of the practitioners. Project sustainability considers whether the deliverables are usable in the community over the long-term. Schinke, Smith and McGannon (2013) suggest that “usability leads to sustainability” (p.466); however, Hudson and Vissing (2013) take a more chaotic view of sustainability. They levy a critique that sustainability is an unexamined concept operating as a buzzword to obscure competing agendas on one hand, and as a fuzzy, unarticulated form of social justice on the other. While some proponents say that sustainability is an extension of research translation into practice that can be predicted and controlled by refining methods (Scheirer and Dearing, 2011), Hudson and Vissing (2013) note that sustainability has a fundamental limitation, namely, “the ubiquity of change” (p. 5). Regarding our project of HCD, we did have deliverables, but its sustainability was not and should not be viewed as maintaining status quo (Lange-Morales, Thatcher and García-Acosta, 2014); rather, resources and support needed to be properly timed and weighted to keep the spark of progress burning whether it was at a stage of smouldering ember or raging flame (Lindsey, 2008).
Though I would like to claim that the overall work was successful, I do not feel that would be wholly honest. There is a stance from which I can defend the content, the process, and even the outputs, but for whatever merits they may have had, I did not do what I had hoped. Does Sarah feel her life is better, is she still doing physically challenging things with her 3 lovely daughters? Do the practitioners’ find their job enhanced; when they think about our work together will they feel increased or depleted? Am I the prime beneficiary of this process? While I do not know the answers to these questions, I do know that they are not to be found only here and now. All of the actions taken within these design processes have become sedimented experiences with voices and agencies of their own. Time, as they say, will tell the story of this work and of its ongoing (re)configuring of possibilities and commitments.

4.9 Summary
This chapter was my personal tale of becoming in participation with parents, children, practitioners and the many other agencies mutually constituting the material-discursive practices of this research. In the chapters that follow, I discuss the phenomena articulated by the apparatus configured in this chapter and Chapter 3. Chapter 5 begins the theoretical abstraction of the processes discussed here by presenting narrative typologies of parents’ and children’s stories of PA. Chapter 6 demonstrates how stories configured contradictions that led to imaginative possibilities for change. Finally, Chapter 7 considers the dynamics of meaning intra-acted with a storied object creating the capacity to reconfigure narrative development.
In chapter 3, I proffered that object of inquiry in this thesis was entangled. To distinguish it for study, it was essential to detail the research apparatus that configured the phenomenon being studied. To put it another way, the research participants (this included myself as the researcher, the parents, the children, and the practitioners) were not presumed to have pre-existing essential qualities. Instead, each participant and their various beings, doings, and sayings became determinate by their relation within the research process, but by making some agencies determinate, we necessarily made other agencies indeterminate. This chapter detailed all the research processes that configured the phenomena and subsequent findings reported in chapters 5-7.

The research processes followed the phases of Human Centred Design: inspiration (hear), ideation (create), implementation (deliver). Human Centred Design is a form of future-oriented research that designs solutions inspired by the real lives of people meant to benefit from them. Each design project begins with a design challenge, and the design challenge for this research was to understand how parents and children from one rural village and one suburban town in a Scottish local authority could be physically active together. The project was called IGNITE and encompassed one cycle of the 3 design phases spanning just under 30 months. Across all 3 phases, the project included 4 practitioners from health, leisure, and education services and a total of 29 parents and 15 children.

Phase 1 began with gathering stories. This was done by recruiting parents and children through a host nursery school in each of the research locations. Parents and children were invited to separate workshops in a convenient community location to participate in creative tasks and tell stories about their everyday lives and how physical activity featured with in them.

In phase 2, the participants’ stories were examined by both the parents and the practitioners looking for patterns and themes. From these, parents and practitioners identified opportunity areas they used to generate ideas for intervention prototypes. Prototype interventions are characterised by their rapid implementation. Prototypes should be made quickly with whatever resources are
to hand and tried for their feasibility and desirability. Four prototype designs were tried across the two locations.

Phase 3 involved fully implementing 2 of the prototype designs: a family fitness class and smartphone app. While both of these prototypes were implemented between October 2015 and February 2016, the work of this thesis focused on the design and delivery of just one, the smartphone app.

The design process was messy. The circumstances of the research prevented parents and practitioners from working together directly. Though not what I had intended, this put me in the middle as a facilitator and, laterally, as the main designer. The parents and practitioners had different ideas about what the outcomes of the work should be. The parents needed the practitioners’ resources and expertise, and the practitioners needed the parents’ behaviour and ownership. In the end, the competing perspectives prevented the energising elements of the interventions from achieving sustainability.
Chapter 5 – Establishing the Canon

5.1 Overview
Chapter 5 begins the first of 3 chapters that present the analyses from the design phases discussed in the previous chapter. The aim of this chapter was to gather stories from parents and children of PA in their everyday lives, and I was guided by these questions: how is PA meaningful to parents and children and how does it fit into their stories of everyday life. To do this, typologies were constructed of parents’ and children’s canonical experiences of PA with particular focus on activity in which both parent and child engaged and its dialogical relations within their stories. I begin by providing a theoretical background to the content of the chapter leading to an introduction to the narrative typologies. I then present 3 main typologies of the parents’ stories and 1 composite typology of the children’s stories. These are followed by a discussion of how PA behaviour was meaningfully configured.

5.2 Theoretical Background
According to Bruner (1986), humans “perfink” (p.69); that is, we perceive, feel and think at once. Such ‘perfinking’ is a threading through of a variety of agencies humans can be said to experience (Rosiek, 2013). Agencies are relatable in inclusive separation through a (de)constructive, dialogical hierarchy of signs denoted as self, other, environment, etc. Valsiner (2014b) calls this personal culture,

The person, through his/her acting weaves together linkages between different parts of the semiosphere [meaning environment]. This process entails the construction of personal culture which is unique to the person and is the basis of all human conduct (p.46).

Valsiner’s concept of personal culture permits a metaphor of an acting, intending person configuring their personal, physical, and social environment by meaningfully intra-acting or mattering it. In this work, the semiosphere was conceptualised as a material-discursive agency having a border of rigid to loose constructions that persons made and remade with signs they inherited and created. These borders had some stability, but constant meaning-making and restructuring made them
dynamic and therefore changeable. The stories and narratives considered in this chapter were understood as emerging in this fashion and were intra-acted by the participants in telling about their everyday world. In this respect Bruner’s (1990) and Valsiner’s (2014b) views are shared: that human beings write their own life stories even as they live them.

The stories of 19 parents and 15 children aged 3-5 who contributed to the Hear phase were analysed as outlined in chapter 3 using DNA to create narrative typologies (Smith, 2015). According to Bruner (1986), narratives must construct two landscapes at once: action and consciousness.

One is the landscape of action, where the constituents are the arguments of action: agent, intention or goal, situation, instrument, something corresponding to a "story grammar." The other landscape is the landscape of consciousness: what those involved in the action know, think, or feel, or do not know, think, or feel (p.14).

Understanding parents’ and children’s landscapes related to PA was of central concern during the DNA. The narrative typologies are interpreted as freeze-frames of the participant’s dynamic experiences related to PA. The typologies presented below have been constructed to demonstrate what Polkinghorne (1988) identifies as emplotment: “Emplotment is concerned with drawing out from the flow of events those that significantly contribute to the story under construction” (p.145), and the linkages made between these experienced events accords them meaning (Gubrium and Holstein, 2009). Emplotment of meaning should not be considered a linear sequence, but rather, an emergent structure that offered embedded, polysemic narrative coherence (Brockmeier, 2005). The typologies were brought together as ideal types, ones that Smith (2015a) describes as having “clearly defined narratives that are different from other ideal types and express something unique about participants’ experiences” (p.220).

5.3 Narrative Typologies
Typologies can be helpful in identifying the narrative resources available for constructing individual stories, and they are useful to think with, to make the
narratives observable. The parents’ typologies demonstrate their configurations of the meaningful linkages between themselves, their children and PA. They are not categories that contain the parent; they are threads, among many, out of which a parent might be woven. The typologies were named for the narrative action identified as the central theme of that ideal type. The parents’ data were interpreted into 3 main typologies:

1. **The Architect** (this typology has 3 distinguishable subtypes)
   a. Controlled
   b. Blocked
   c. Chaotic

2. **The Zephyr**

3. **The Sower**

The children’s data were interpreted into a composite typology called **The Grain of Sand**. This is a generic construct of how the children aged 3-5 generally experienced life with an emphasis on family physical activity, and emplotment was used to set out the structure, pattern, and effects of these experiences from a child’s point of view.

Prior to discussing the implications of the findings, the typologies constructed from the DNA are presented as case descriptions similar to what Sparkes (2002) refers to as “realist tales” (p.39). In keeping with the DNA, the typologies depict a synthesis not only of the whats and hows of the stories, but also their effects within that specific type (Frank, 2010; Smith, 2015). To demonstrate the complexity of the parents’ and children’s experiences of day to day life and the role of PA within it, and to allow the reader to engage with their stories, the narrative typologies are presented as distinct constructions without extended data excerpts (these appear later in the discussion). Following a brief introduction to each typology, the narrative types are structured to show physical activity, intrapersonal, interpersonal, and environmental domains as storied by the participants.
5.3.1 The Architect

This narrative was the dominant typology in that it was represented in some form in most, but not all, of the parents’ stories. An architect engaged in extended projects of design usually on a large or complex scale. They were creators that worked to plans or blueprints usually associated with structures. The architect narrative was characterised by the parents’ goal-oriented actions toward their child (or children) whom they considered to be under their construction. The parents had a future version of their child in mind and took actions that they felt were important in moulding them according to their imagined blueprint. Their blueprints had several distinguishable variations specific to the parents’ assessment of their child’s likes/dislikes, abilities/attitudes, etc., but they did have common features in that parents were working toward a positive design of their child, a healthy, successful, happy adult version of their child that was notably different (improved) from themselves. Parents with this narrative confidently anticipated that their purposeful actions now would produce the future outcomes they desired.

5.3.1.1 Physical Activity

PA was named among the means used in the parents’ ongoing construction of their children. The term PA was usually referred to when speaking about health, and parents who used an architect narrative often referred to it in tandem with other behaviours like healthy eating. Architects needed to attend to these behaviours as part of shaping their child. This was because they understood the outcomes they desired were mediated by behaviours like PA, i.e. confidence, health, better sleep, socialisation, etc. Most were aware of the public health guidelines for PA and were able to give partially correct accounts of the UK guidelines for adults and school aged children (i.e. 30 minutes of moderate intensity activity most days of the week for adults and 60 minutes of moderate to vigorous intensity activity every day), but none knew that there were specific and different guidelines for children under 5 (CMO, 2011). PA was never storied as an end in itself but only as a means to another end like being healthy, particularly when the children were older (i.e. adults), or for socialisation, which was often emphasised for its more immediate benefits. PA was also seen as an antidote for children considered to be ‘hyper.’
These children desired attention, something to do, or engagement that the parent may not have been willing or able to provide at a given time. If such behaviour was persistent and could not be mediated by a passive distraction like watching TV, the parent would facilitate the child to expend pent-up ‘energy’ by arranging play dates (at homes or soft play centres), sending them out to the garden, weather permitting, or taking them to sports clubs or activity classes.

Architect parents perceived the facilitation of PA as something they needed to initiate and control. This was a key feature of the architect narrative. Particularly for their children aged 3-5, free play (not directly supervised or arranged with specific children) was often considered unsafe, and though the parents might permit it at times, they experienced distress or worry in doing so. There was also a distinction made in the type of PA the parents selected, not just any PA would achieve the desired goal. Play was often acknowledged as important for their children’s development, but play was taken to encompass active and non-active types of activities. Because of this, parents using this narrative discounted unstructured play as having minimal value for their construction purposes, and they regularly sought for idea resources (usually from the internet or other parents) considered to be meaningfully constructive (i.e. educational, creative, skilful but also something within range of the parent’s skillset and personal preferences). Additionally, parents weighted skill-related types of activity (i.e. clubs or sports – dance, football, karate, ice skating, swimming are examples of activities specifically identified) as essential to their child’s successful future construction to which they committed a considerable investment of time and finances, even parents of modest means. These types of activities were understood to give their children a functional, emotional, and social advantage that everyday play alone could not provide.

Another application of the PA tool was for distracting children from technology. Technology was considered an embedded feature of the modern living environment that was equally helpful and harmful. Passive enjoyment of technology gave parents valuable time and space they needed for domestic, personal, professional or social activities, but it also provided children with important social and cultural skills which prevented parents from not permitting
children to have them, despite the deleterious effects the parents perceived them to have. Children who were content to engage in solitary play or watch TV or use digital devices like tablets or games consoles needed to be encouraged to play or get outside which meant that this, too, was a behaviour the parent needed to monitor. Architect parents tended to have had personal experience of sport or exercise which they described positively (i.e. they ‘enjoyed’ it or ‘liked but don’t now get to do’) and noted going to the gym, swimming, exercise classes, karate, badminton, running or outdoor pursuits, though many did not engage in these activities regularly.

5.3.1.2 Intrapersonal

The motivation for the architect narrative was a complex mix of past and present experiences and imaginings of the future. These parents gave no second thought to their architect conduct but considered that their efforts were the right thing to do based on current mores of good parenting. They did, however, experience some internal tensions that they had to find ways to resolve, particularly as regarded their childhood history of activity and of their present embodied experiences of activity. Parents recounted memories from childhood in which they recalled stepping out of the door first thing in the morning with barely a moment spared for breakfast and not coming home again until the street lights came on. They were out and active and creative all day, no parents hovering over them, and no one thought anything of it. The parents conveyed a warm nostalgia in telling their stories of childhood and considered their parents to be good parents, but as much as they remembered the experiences fondly and would wish their children to have similar experiences, they felt unequivocally that they could not parent their children in that same manner. Concerns for safety and for always knowing the whereabouts of the children prevented them from allowing it. This meant that in many cases spontaneous active play with peers, particularly vigorous play, was less likely to occur without the parents needing to make an arrangement or to be nearby.

When the parents reflected on how active they were as children compared to how active they were now, some were confronted by a paradox in this narrative whereby they assessed themselves as having been more active than their children
were at the same age, but were presently not as active as they expected their current efforts would cause their child to be when they grew to adults of the same stage. In some cases, they attributed this to role-modelling, noting that their parents did not exercise which accounted for them not being able to maintain regular physical activity now. In other cases, parents recalled being in active families, but observed that as they aged, regular physical activity was something they simply grew out of because it required too much effort to keep it integrated into everyday life, and in some instances they just didn’t prefer to spend time doing it – unless it was with their children. However when the parents configured their past to present experiences, they conceded that children simply grew-up differently these days and blueprints were now required. They were bystanders to how it happened, but however it did, the designs necessitated their role as architects.

5.3.1.3 Interpersonal
Controlling important aspects of the child’s life like sleep, eating, and play was more than just routine care of their child, but instead it held weighty value and responsibility for their worth as a parent and for the future of their child. The architect narrative also allowed parents to share in peer group esteem because of the social support and acceptance for those that upheld this mainstream narrative. Parents not engaging with this narrative were poorly understood by architect parents and were regarded with a goodly amount of perplexity and at times a mild disdain. Some parents who zealously portrayed their architect role expressed that nothing could prevent them from giving their child the best possible life to the level of their means and in some cases, beyond. In many ways, this narrative was child-centric and required such a degree of sacrifice in its enactment that the parents conveyed it with a sense of pride. Parents, the majority of which were mums, experienced their parental role as one among many others that they juggled (i.e. professional, domestic, social, familial, civic, and relational). There was physical and mental effort expended in maintaining these roles, but often in the architect narrative, this effort came at a cost to their personal desires. This also put a great deal of onus on the parent, and they regularly sought tools that might facilitate the
joint fulfilment of personal needs and the more efficient achievement of their constructive work.

5.3.1.4 Environmental

Architect parents looked to their environment for resources that they could use for their designs. Community spaces were the resources most commonly referred to and sought after. Parents made regular use of parks, community centres, libraries, leisure facilities and other communal services. They preferred these because they were typically free or low cost, they were local, and they often promoted socialisation and connection to the community which the parents valued. If what they needed could not be found through these channels, parents turned to the marketplace. They did not always know what they were looking for, but there was an expectation that the marketplace would speak to them (or their child) and tell them what they needed, as they were used to market trends reflecting both health and technological advances. Toys, bicycles, trampolines, video games, tablets – all were marshalled for the contribution they could make, particularly in home and garden spaces. If they could not find what they needed ready-made, some parents sought information or ideas they could use in making their own resources, but this was limited by the parents’ current skillsets and partially by the parents’ preferences. Meaning, while they did not mind learning new things, they did not want to have to go learn a brand new skill, and while they would often act against their preferences to model active or healthy behaviours, this was something they did not feel they could maintain. Instead, they preferred resources that allowed them to make use of current skill sets, and if their child preferred activities that the parent did not enjoy doing themselves or they did not have the skills to teach (like dancing for example), this was when parents sought out classes or clubs. This permitted a form of proxy role-modelling where the parents felt that if they were not able to model the behaviours they deemed necessary for constructing their designs, they would buy them – “do as I do for you.”

5.3.2 Architect Subtypes

The future-oriented, goal-directed activity that was the central feature of the architect narrative had a means<>ends quality that led to the development of three
subtypes of the architect narrative: controlled, blocked, and chaotic. This was because when their constructive efforts were employed toward their desired ends they variously experienced: a high degree of successful means to ends control resulting in a controlled, prototypical version of the architect narrative; or they experienced a blocked version when their efforts were temporarily thwarted but they persisted and retained a sense of control; or they experienced a chaotic narrative much like that described by Smith (2004) where they continued with the effort and intention of the architect narrative but they experienced little to no success or control and were constantly tossed by circumstances. These subtypes were named for the typical experiences parents identified when the architect narrative was enacted. These subtypes were fluid and subject to context. For instance, parents who had been experiencing a controlled narrative may identify with blocked or chaotic instances, or conversely, blocked architects may experience expanses of control whereby their blocked efforts become successful via active or passive actions.

5.3.2.1 Controlled
The subtype ‘controlled’ may be considered the ideal architect narrative. It was progressive and was characterised by a unity of effort and outcome, means and ends, self and action. Selves, in controlled types, were made in achievement. In this version of the architect narrative, the parents’ experience of success as measured by the parents’ level of satisfaction or congruence between their expectations, the child’s enjoyment and compliance, and the cost of means employed. This cost was perceived as low if the parent could also find enjoyment or other need fulfilment, like socialisation, while acting for their child’s benefit. Barriers may have existed, but if they did, the parents considered themselves equal to them and able to act upon them regardless of whether they actually chose to do so. Parents who considered themselves as physically active most often aligned with this narrative as did parents who did not consider themselves regularly physically active but who enjoyed specific types of PA with their children (i.e. walking or cycling). This was because they enjoyed the physical activity personally, and if they could do this with their child it provided a level of fulfilment that was enriching both as a parent and
as a self. This shared enjoyment also permitted a level of interaction or exchange through physical activity that approached the meaning-making of the Sower narrative (see section 5.3.4).

5.3.2.2 Blocked
Blocked parents shared the same goal intentions of the architect narrative, but they experienced their efforts as thwarted both from within and without. They experienced their actions to be progressive but also as requiring considerable effort because something routinely had to be overcome to continue moving forward. Intrapersonally, they encountered low motivation and low enjoyment of PA for its own sake, but these experiences were reorganised by their desire to act upon their children in a positive way creating an internal tension sometimes expressed as guilt. Parents who experienced this tension reflected feeling helpless to change such aspects of themselves, so they came to acknowledge this internal configuration with acceptance and labelled it as ‘laziness’, or in other words, as an integrated part of their character that they must work around. Also, chronic ill-health was a feature in this narrative and was characterised either with acceptance similar to the internal configuration noted above or as a temporary issue that might impede for a time but would be overcome or resolved.

Interpersonally, blocked architects encountered conflict, sometimes from their children or other times from peers. Conflict was also produced by individuals deemed to moderate their efforts like community centre managers, local government officials, or other community members whose non-engagement in community life prevented more effective progression of collective good. Externally, the challenges posed by the physical environment (poor park conditions, degree of walkability, safety, aesthetics, transport, etc.) were not always viewed as surmountable (as in the controlled architect), and this increased the personal cost of the effort required and decreased the frequency or likelihood of undertaking PA when other tools (i.e. more sedentary activities like crafts, reading stories, etc.) perceived to achieve a similar end would suffice. The recurrent blocking of their efforts increased the personal cost of progressing the architect narrative making
blocked architects most likely to stop and start their construction efforts and most likely to regularly seek a variety of tools – “the next new thing.”

5.3.2.3 Chaotic
Chaotic architects were goal and future oriented like their counterparts, but they experienced life as too disorganised and unpredictable to take confident action toward their desired outcomes. While blocked architects progressed toward a future objective despite persistent obstacles, chaotic architects had difficulty finding the horizon for the whirlwind around them. Day to day life was characterised by unpredictable working (shift) patterns, juggling myriad responsibilities for other people (like siblings or partners or family members), high amounts of effort expended without experiencing a successful return on investment, not being able to please any one, all resulting in a liminal sense of self. Though their stories retained a coherent narrative structure, when they considered their actions with regard to their children and themselves as parents, ‘they’ got lost in their circumstances. They did not expect their efforts to make much difference (Smith and Sparkes, 2004). These type of parents sought tools similarly to controlled and blocked architects, but they did not have much expectation for their success. In the group settings, chaotic architects were at times perceived as complaining or cynical, but they were highlighting the potentially illusory nature of the architect narrative itself (that purposeful actions result in intended outcomes). Chaotic architects shared some characteristics with the zephyr narrative (see section 5.3.3) in that their approach to their constructions had an immediate or day to day scope, but due to their goal orientations, they experienced this as frustrating and negative and referred to persistent stress from coping with constant change. Notably missing from this narrative type were experiences of enjoyment either personally or shared with their children, especially regarding PA. Chaotic architects struggled to make meaningful experiences like those in the sower narrative (see section 5.3.4).

5.3.3 The Zephyr
Named for a mild, gentle wind, this narrative type may be considered the opposite of the architect narrative. If the architect parent could be characterised by
progressive striving, the zephyr parent could be depicted as a feather floating along a breeze. The zephyr was not aimless but was either present-focused or pessimistic about the future and could be described as ‘living in the moment.’

5.3.3.1 Physical Activity
PA in this typology was less of a means<=>ends proposition and more of a backdrop of personal preferences, either the parent’s or the child’s. If the child or the parent wanted to engage in a particular activity that day, they did, and if they didn’t, they did not. Parents in this typology tended not to enjoy PA for its own sake, though they might have in their youth. Parental PA was characterised by activities of daily living, like walking, domestic chores, or gardening. Weather or mood or any number of transient influences might affect the amount and type of PA undertaken on a given day. PA was acknowledged as a healthy behaviour and parents were keen to encourage it in their children, but it was not something they needed to make happen. If they did encourage PA specifically, it was because they perceived a benefit the parent generally valued (i.e. learning to swim or cycle, going out to play and socialise), or it was something the child specifically asked to do. If a zephyr parent was partnered with an architect parent, the zephyr parent often facilitated PA in support of their efforts by providing transport or contributing financially to the architect’s constructions.

5.3.3.2 Intrapersonal
In this particular instantiation of the zephyr, the narrative type was a construct of sense-making of a number of serious life events that included living with chronic ill health, near death experience of sudden health-related events, diminished independent functioning during rehabilitation and after, and being an eye-witness to the life-threatening events of others. Parents remembered active childhoods and experienced internal tension in wishing to share similar experiences with their child but having to, themselves, rediscover this embodied adult version of themselves that was in many ways someone they did not know. The parents with a chronic illness were hostage to their bodies at times and in ways they could not always predict or control. However, this did not cause frustration as in the blocked or chaotic architect narrative; rather, parents generally expressed contentment with
their lives and circumstances. However, in some parents, often when looking to the future, this acceptance dipped into despair when zephyrs assessed that their life trajectory was one of decline. They wished for things to happen, like feeling better or getting some time to themselves, but this was not something upon which they tended to act.

5.3.3.3 Interpersonal
This narrative type was centred around the child but not in the same way as the architect narrative. The children exerted a good deal of control over the parents. If they did not wish to eat something they were given or if they wished their parent to leave a particular setting or discontinue a particular activity, the parent usually complied. Conflict was minimal because there was often little to no resistance. Due to zephyr parents’ experiences of life-threatening events, some of which involved the conception or birth of their child, the child took their central focus and were considered the most precious thing about their lives. Whereas in the chaotic architect, parents’ sense of self easily vanished into a whirlwind of circumstances, selves of zephyr parents often reappeared in their children. Zephyr parents exerted minimal amounts of control over their children and depended on other’s control. Living in the moment was facilitated by support from others (like a partner or grandparent or older sibling or teacher) who took a more proactive role in shaping the child’s life and vicariously added to the zephyr’s sense of contentment and even provided connection with social groups within the community.

5.3.3.4 Environmental
Without the strong goal orientations of the architect, the zephyr took their environment as it came. If community action was being initiated by others, they lent their support to such endeavours, but they did not initiate them. The developments initiated by an architect narrative were important for zephyrs because their narrative action was dependent on what others contributed to their environment, especially where PA is concerned. Because their PA centred on everyday activities, local infrastructure (i.e. safe walking routes to purposeful destinations like shops or schools; easy access to play parks; or local programming
at a community centre) had the greatest impact on the amount and type of PA they undertook.

5.3.4 The Sower
The sower narrative was a contrast to the previous typologies. Just as a farmer plants seeds and expects a harvest, the sower was both present and future looking, but rather than acting upon their child or only reacting, sowers cultivated an exchange that was mutually beneficial for both the parent and the child that was meant to be propagated and sown again. The sower was fluid like the zephyr, but rather than being carried along by circumstances, the creativity that characterised the sower narrative provided a perceived degree of mastery of their circumstances. Any situation, even really bad ones, could be re-made; this creativity was the seed of the sower.

5.3.4.1 Physical Activity
As in the other narrative types, PA was rarely an end but a means. In this case it was more of a stuff out of which meaningful exchanges were made, and it was meaning itself that was being exchanged. A sower parent wanted to share an experience where they felt they truly connected with the child and the child truly connected with them, the outcome of which would be a memory that they both could keep and sow again at a later time. PA was a means of facilitating this memory-making and had particular advantages of providing embodiment and action to the creative exchange. It did not have to be anything elaborate and the moments made together were often brief. The PA was usually storied and incorporated wherever and whatever was happening at the time. Pavement slabs, shoes, imagined characters were all animated and turned into games. Sower parents tended to get their PA from activities of daily living or outdoor activities like walking or cycling. Sower parents who mentioned attending organised classes noted that they did not maintain these and tended to go back to outdoor or home spaces for engaging in PA or exercise. Sower parents did access clubs and classes for their children, especially for developing skills perceived as life-skills (like swimming) or if the child themselves wished to do a particular activity (like dancing or gymnastics).
5.3.4.2 Intrapersonal

Personal constructions of this narrative drew from a variety of sources. In some cases, it was a difficult history and in other cases it was a long history (i.e. being aged old enough to have accessed a different generational narrative) and in still other cases it was an optimism that the parent themselves were still becoming. With the difficult histories, there was a hint of escapism in the deeply imaginative activities, particularly ones with an encompassing narrative. These were used to divert or remake difficult experiences as a way of working through them that reduced the damage they might cause. In instances where the parents identified that they, themselves, were still becoming, the creative activities were seen as developmental for the child and transformative for the parent and that the process to both outcomes could be shared. Despite the origin, the motivation for sower narratives was mostly about memories, either making or preserving them so that they could be handed down – the memory itself but also the way of making them. For the sower narrative, selves emerged from sharing. Personal satisfaction was gained from seeing the child begin to make stories or games of their own to share with the parent or with others. This was regarded as the sown seeds beginning to germinate.

5.3.4.3 Interpersonal

The sower parents possessed a capacity to convincingly (to a child) put themselves at the child’s level and to enter into the child’s own story. Sowers were compelled to share their creativity and noted sharing their stories and games at their local nursery or primary school. Peer group affiliation did not feature in the sower narrative as the characters tended to consist of immediate family. The sower’s confidence in their own creativity led them to make their own activities, in contrast to the architects who felt they had poor imaginations and sought resources to improve their creativity. When sower parents engaged in peer comparisons between their home-made activities and the ‘technologically’ advanced constructions the architects purchased, they consistently assessed their choices to have been the better ones.
5.3.4.4 Environmental

The environment was full of resources whether physical or imagined. Sower parents made their own fun and anything could be turned into anything. Sowers liked bringing past times into the present and linking old with modern. This fit with their motivation to hand down experiences, so blocks of wood or tin cans were regularly turned into toys. Their internal creative resources meant that they did not rely as heavily on external facilitation as the architects did, but they still mentioned consuming products that extended their creative media (i.e. garden toys, bicycles, jump ropes, etc.). They also relied on communal spaces in which to playout their stories, so parks and greenspaces, local infrastructure and neighbourhood characteristics all influenced the amount and type of activity they did. Interestingly, such spaces were also important because they could be accessed for large blocks of time. Sowers invested time and often spent large chunks of it letting a game or story run out.

5.3.5 The Grain of Sand

This typology borrows its metaphor from the first stanza of William Blake’s Auguries of Innocence (Bindman, 2000, p.42):

To see a World in a Grain of Sand | And a Heaven in a Wild Flower | Hold Infinity in the palm of your hand | And Eternity in an hour

Blake’s sentiment perfectly captures the function of this narrative typology which endeavours to sum a world in a single instance. The children’s stories could not be said to have had a trajectory as such; the child’s self (past, present, and future) and all the meaningful relations they constructed between themselves and others were all experienced as ‘right now.’ As explained in Chapter 3, these here-and-now constructions represented the fairly narrow range of past and future available to a child reflecting upon themselves and others (Valsiner, 2000). Hence, this typology sets out the structures and features of their lives jointly constructed while showing the actions and meanings these made possible.
5.3.5.1 Fields and Physical Activity

People were the starting point of the children’s stories. Mums, dads, siblings, grandparents and pets all set the perimeter of their story space, and the contexts available within that space were fields created when the child and these meaningful others overlapped. This should not be considered a direct reference to Lewin’s Field Theory (Chaiklin, 2011). Instead, the term field is used to denote the low level of autonomy a child possesses in terms of where they go and who they are with. At all times, a child’s personal context contained the overlapping context of another, and that space within a space is here being referred to as field. Some children had very narrow fields because family members lived in close proximity in a single locale with limited range of travel. Other children, particularly those whose parents were separated, had fields that ranged between cities.

Fields were contained in a variety of contexts: homes, gardens, parks, fun fairs, shops, neighbourhoods, and holiday destinations. All of these locations featured in the children’s stories about “activities they do with their mum or dad.” The questions that prompted the stories focused on the primary caregivers, and the children were left to add-in any other meaningful people, which they did. Grandparents, dads, and siblings jumped in trampolines, older siblings and cousins played games, dads played football or took them hill walking or played games, mums walked dogs, played action figures and video games, took them to the park, made crafts and baking, read books and magazines, and played with younger siblings (babies/toddlers), just to name a few. Children often interpreted the preposition with to denote proximity, so when they told about activities they did with their parents, it meant, at times, that the parents were simply nearby (like being taken to swimming lessons). The most common story of this type was of going to the park. This was an activity nearly every child mentioned, and aside from the home/garden, it was the context most associated with joint activity. However, the action the children storied in this field involved the children playing while the parents sat and observed or stood nearby observing/helping. Fields that involved actual joint activity most often occurred in the home/garden where children storied physical activities like playing football, tig, helping with gardening, and trampolining.
as well as sedentary activities like watching TV, using games consoles, reading, crafting, playing with toys or board games, or cooking/baking. Joint activity was also noted in spaces to which a journey was required, like a country park, in which they recounted riding bikes, walking, or hill walking together. The children also noted joint activity that occurred in the neighbourhood, like walking a dog or walking to the shops or to school, but this was often only understood from probing questions as many times the children did not, as a matter of course, associate these types of activities as being done together (with the exception of dog walking).

When asked to identify “their favourite thing to do with their mum/dad/gran” (or whomever the child had identified as their primary caregiver), a variety of configurations were noted that involved both sedentary and physical activities. While the conversations with the children were oriented toward physical activities in that general questions from the interviewers were often followed up with questions to distinguish specifics of physical activities, this did not preclude children from identifying activities that could be classed as sedentary, like baking, reading, playing with cars, action figures, or video games, watching TV, etc. These were already recurrent topics in their stories during the conversations. This point is made to demonstrate that the children felt free and were able to identify any activity that, at that moment, they felt was a meaningful instance of activity they enjoyed with their parent. These meaningful instances were interpreted into 3 types.

**5.3.5.2 As remembered**

The majority of stories recounted a specific instance of either a one-off activity like swimming at a holiday destination or a specific hill walk, or of a regularly recurring event like playing football in the garden with dad or taking the dog for a walk with mum. The stories were not often reported with personal expansions beyond that they were ‘fun’ or that the children ‘liked’ them, though they were sometimes embellished with imaginative elements that reflected the collective conversation that occurred while drawing and telling their story. For instance, one child who drew himself and his dad hill-walking also incorporated chicken spaceships which he called “chicken spacers.” These were an imaginative elaboration of another
child’s story about cooking a chicken. Interestingly, another child shared that she and her parent regularly took a “together walk.” This was an activity for which they had a specific, meaningful term. This reflects the type of meaning exchange intended in the sower narrative (see section 5.3.4).

5.3.5.3 As wished
Other stories were imagined and seemed to reflect a meaningful instance as the child would have liked for it to be. These stories tended to put people or things into the story that they did not presently have but wanted. Sometimes these involved a toy like a bike or trampoline that they did not have or used to have but was presently broken, or the story inserted people that the child wished to be with. The most notable of these was a child who drew his picture of his mum and dad and him taking a walk. While this may seem simple enough, it is notable because he had explained earlier that his dad did not live in his house, in fact, his dad and his other gran lived quite far away. His meaningful instance of PA involved recreating present circumstances as he wished them to be.

5.3.5.4 As indeterminate
Some children had real difficulty in choosing an instance to share. Some of the very young children, those that had only just turned three years old, did not contribute as much to the discussions as some of the older more gregarious children. When asked to draw and talk about their favourite things to do with their parents, these children would take extended pauses without ever really giving an answer. These children were facilitated to contribute by the interviewers who restated things the children had already mentioned, and they sometimes chose one of these to draw. Other children seemed to actively avoid choosing an instance. An example of this was a child who had demonstrated an ambivalence across his conversation relating to play or physical activity with his parents. He often answered questions with “I don’t know” or when he did recount specific instances, they often had qualifying restrictions, like living very near a park but his mum not allowing him go to it because dogs had been in it. When it came time to draw his favourite thing to do with his mum or dad, he did not immediately choose an instance like the others; instead he drew doodles and chatted with other children. He was prompted several
times as noted above, reviewing things he had mentioned earlier; he never gave a response. At the final prompting, he simply noted, “They’re always too busy...” and never chose an instance for his picture. This scenario provided insights of a child’s perspective of instances where parents noted feeling conflicted at having to decline their child’s requests to play because they were busy with other role responsibilities like domestic chores, work commitments, caring for younger siblings, etc.

5.4 Configuring Physical Activity

Each typology configured a contemporary physical activity narrative specific to the personal culture of parents and children in ST and RV. While the children’s typology adds a richness to the overall conception of PA being developed, the parents’ narratives are retained as the theoretical focus for the discussion below. It is important to emphasise that no parent or child should be taken as being any one typology in any fixed way. Though a given type might have been dominant in certain peoples’ stories, it must not be presumed to have a regulating function in relation to PA participation. Instead, it is best to think of the typologies as orienting conditions to PA, sedimented relations that account for boundaries in a dynamic personal culture. In the discussion that follows, I elaborate how these typologies provide a different way of conceptualising PA behaviour and how it might change based on the ontological assumptions developed in Chapter 3: meaning is a material agency enacted in these types; time gives them their topological orientation; and dialogicality is their dynamic relation.

5.4.1 Meanings Matter

The narrative typologies demonstrate how a variety of meaning configurations can underlie seemingly similar behaviours. These configurations are intra-actions of parents enacting their personal culture. Considering behaviour with such dynamics requires a conceptual move beyond dualisms that formally arrange discrete and static components. This troubles some current conceptions of behaviour change that rely mainly on cognitive models (Buchan et al., 2012; Toomela, 2010). Such models do not allow for intransitive relations or historical (dis)continuity but rather require independent phenomena in specific relations (Cabell et al., 2014; Valsiner, 2007; Valsiner, 2014c). Instead, the typologies presented above depict a system of
dynamic relations being regulated across a hierarchy of meanings constituted as the triadic phenomenology introduced in Chapter 3. For example, Natalie (a parent speaking with a predominantly architect narrative at the time), explained her sense-making around why she thinks it is important for her children to be active outdoors.

**AB:** When you go for walks, what do they [her daughters] do?

**Natalie:** They’re quite happy walking, they want to explore and pick flowers and climb. They like climbing, they seem to be very into climbing - We do like climbing. Then we’ll be walking and the youngest will be like, ‘I want carried,’ and, [gestures – ‘I say’] ‘No, come on, you can do it.’ Even just teaching them not to give up when something’s hard. Now that you’re making me think about it, all these things that I’m doing at home that you don’t realise you’re actually doing. I think just to teach them not to give up when things are hard and to push themselves. I think they can be very unhealthy and I’m not a hugely healthy person and I want my children to be more healthy and active than me... [5 second pause] Although I was quite active as a child... [2 second pause] but then at least they’ve had that as children.

This excerpt shows a moment of realisation that Natalie had as she reflected on her past experiences while simultaneously critiquing the logic of the statement she was making, even as she was saying it. She noted wanting to affect the character of her children through exposing them to physically active experiences so that they would be more likely to be motivated to push themselves to be healthy, a quality she did not ascribe to herself. This demonstrated the Architect’s configuration of PA (closed set) as a tool with which Natalie acted upon her children for an intended outcome (open set), in this instance, creating some aspect of the quality ‘healthy’ (border). Many authors have agreed with her premise that past experiences are predictive of future PA behaviour (Hamilton, Thomson and White, 2012; Hamilton and White, 2012; Jago et al., 2013; Martin, Chater and Lorenzatto, 2013), so culturally, evidence would suggest her reasoning was sound. However, her
extended pause acknowledged an earlier point in the discussion where Natalie noted with honesty that she does not prefer being physically active.

**Natalie:** What would I like to do? Probably napping and watching television, I’m quite a couch potato. I want to be a good role model for my children and get them outdoors and enjoy being outdoors. I’m not outdoorsy at all, I’m really not. I can walk, I don’t mind walking. My husband loves outdoors, he loves fishing and doing all that kind of thing, and climbing hills. It’s just not for me, I’m more of a lie-back and relax kind of person...

However, just prior to the revelation that gave her a moment for pause, she had been recounting a childhood story of attending karate classes with her brother and how this type of structured (versus unstructured) activity was more useful in forming enduring components of self (like confidence or self-esteem) that a child would find needful to persist with things like PA.

Natalie’s pause was an acknowledgement that her reasoning did not follow her own experience. Something different was at work in Natalie’s story. Despite her experience, Natalie was convinced that the premises underlying her actions were ‘supposed’ to be true. In social and cognitive psychological terms, Natalie’s feelings of conflict could be identified as cognitive dissonance, a mechanism of mind thought to determine behaviour (Michie and Abraham, 2004; Moghaddam, Lee and Harré, 2007). When such dissonance arises, the theory is that the mind acts to resolve the discord among its parts by the cognitive process of rationalising until the conflict is resolved, assuming the conflict occurs in conscious thought (Iso-ahola, 2015). From a relational stance, material-discursive agencies co-constituted Natalie’s experience meaningfully and contemporaneously (Slife and Christensen, 2013). Natalie intra-acted her story based on her configuration of her past with her daughters’ future using the cultural resources at her disposal for what they meant together at the time of the story’s telling. Meaning orientations allow an individual to be productively inconsistent with themselves whereby a person can know of a norm and expect it of themselves and others, but not do it (Valsiner, 2014b).

Santos and Gonçalves (2009) describe Natalie’s embodied response of hesitation as
a circumvention of a narrative reconceptualization. Natalie contrasted between a past and present self through meta-level reflection. She could sense a contradiction between the current and previous plots as they unfolded, but rather than allowing a new meaning to develop (a rupture of the border of the closed set), Natalie attenuated the innovation to fit with her macro-organiser (the Architect narrative). Her meaningful configuration enacted a border determining what mattered in relation to PA. This can be seen in Natalie’s qualifier, “but then at least they’ve had that as children,” which gave her configuration agency and a boundary allowing her to return to the valued social norm that her constructive efforts on behalf of her children during their childhood would produce physically active adults in the future (Ribeiro and Gonçalves, 2011; Valsiner, 2007).

5.4.2 Dialogical Relations

In enacting a particular meaningful configuration of PA, the parents made it possible for specific agencies to be capable of intra-acting their signification of PA. When other agential phenomena are encountered, they are held in relation dialogically (Salvatore and Venuleo, 2013). Valsiner (2002) defines a dialogical relation as:

Dialogicality is the general property of systems to entail relations between their parts as definitive for the system: System $W = (A <> B)$ (where $<>$ indicates a dialogical relationship). Dialogical relations are dynamic – the parts of the system can thus regroup themselves within the whole quickly and adaptively as the person-environment interchange demands (p. 251, emphasis in original).

An important distinction I make in this work is that such relations are not of distinct entities but inclusive separations intra-acted by material-discursive apparatuses. Dialogicality as I am applying it denotes a dynamic connectivity, a valence of affect, bodies, biography, symbols, etc. that enact relations at liminal borders of agency much like a relational force (Salvatore and Venuleo, 2013; Smith, Bundon and Best, 2016). These agencies reach out like attractors looking for connections providing the possibility for change or shift in their material-discursive configuration. Take
Daisy, for example. She was one of the participants to have a dominant Sower narrative. She was 50 years old and had four grown children of her own, but one of her daughters was in a difficult situation that required her children be removed to their grandmother’s care. Daisy recalled how it happened.

Daisy: With my daughter, it was situation after situation but this time due to circumstances, the situation with my two wee grandchildren is that they’re safe now and they’re happy. They’re not running around being frightened or anything, they’re not hiding and Ella’s definitely not sitting like that anymore thinking. When I first got her last year... I’m not frightened to tell anybody this... when I first got my grandchildren last year they were neglected. Ella sat on that couch [points to the opposite couch in the room], I’ll never forget it, and she looked at me and she was going like that [gestures to show how the child sat embracing bent knees with a fixed stare]. I said, ‘What are you doing?’ She said, ‘I don’t know Gran, I’m just trying to think,’ in a real old voice. I was, ‘No, no, no, no...’ I was like, ‘No, no, no, there’s no thinking in this house.’ [looks at AB ] She was only five! ‘Come on let’s go,’ and that was the start of it. That was the start of the thinking over. I said, ‘I’ll do the thinking for us, let’s go, we’ve got something to do.’

The “something to do” to which Daisy referred was the creative remaking that is characteristic of the Sower narrative. She did this by sharing herself via stories which incorporated various imaginative elements like faeries and talking shoes. However, this creative re-making was not a purposeful intervention so much as it was Daisy’s personal approach to life, and it perfused all that they did together. Daisy described a typical walk to the shops.

Daisy: Ella loves Mrs Bassey, this is a brand new game, I’ve come up with it myself. It’s for when we go out and it keeps them active, and at night as well, it tires them out a wee bit. I don’t need to do it, I’m on Mrs Bassey, I just say it and they do it, I just walk. We’ve got a line thing going down the street, and I’m like that to them, ‘Right, Mrs Bassey says, stay in a line but go
to the second pole hopping.’ So they’ll hop to the second pole, then I’ll go, ‘Stop,’ and they’ll stop. Then the wee one will say, ‘What’s Mrs Bassey saying now, Gran?’ I get to them and I’m like, ‘Mrs Bassey says see that red car over there, go and jump to it.’ Wee Kiara will go, ‘I don’t know how to jump but I can skip.’ ‘Right, you skip, jump, hop, run, do it all, just go,’ and we keep going like that.

Daisy went on to explain that she often joined in these games, and she did so without much thought or effort. She easily did what some of the parents with Architect narratives found very difficult to do. Noting the difference between Daisy’s and Natalie’s inclination to PA, for instance, is regularly explained as an *individual* difference in some cognitive, social, or developmental derivation of the individual, motivation, personality, and self-efficacy being the most popular (Michie et al., 2014), but in fact it is all of these and more. Relations are the true nature of motivation according to Jovchelovitch and Glaveanu (2012) who proffer that motivation is strictly a relational phenomenon that cannot be understood as self-enclosed in a brain or an individual, but as an experience, a phenomenological totality of situated being, doing, and undergoing (intra-acting) of agencies in dialogical relation. Daisy’s successive experiences of this type of play, not only with her children, but also now her grandchildren, facilitated her ongoing configuration of meanings for which she had developed a signifier - she called it ‘putting-in’ to her grandchildren.

Daisy: That’s what it’s about. I’m a believer that you just put into them. I watch my children now and I sit a dead proud mum and I really am, I’m not lying to you. I sit there when they come in and they tell me wee things and I’m like, ‘Yes, I’ve done that and they’re doing it now.’ It’s what you put into the generation yourself that will put it for the next generation. I’m a great believer in that. I think that’s what’s wrong with families today. A lot of them aren’t putting-in, they’re not putting-in to their children the way their parents put into them. I don’t know if you do that with your children? [Speaking to AB] You put a wee bit of what your mum and dad gave to you into your son. I do that with mine and it pays off by the way.
This meaningful ‘putting-in’ reached out for dialogical connections with just about anything. When a connection was made, for instance, with her granddaughters or her childhood memories, or when blocks of wood and lines in the pavement afforded what she desired, these connections impelled her. Not PA for its own sake, but for the imprint of memories that her grandchildren could enjoy, keep, and eventually pass on. Not all PA configurations permit such ease in dialogical connections, as in Natalie’s case, who sought specific relations for which she struggled to find connections.

5.4.3 Enfolding Time

Time was a key feature of the parents’ narratives and accounted for the shifting configuration of PA in the parents’ personal culture. Sato, Hidaka and Fukuda (2009) note that psychologists’ preoccupation with “revealing a time-free ‘true state’ of affairs” prevents them from “considering time seriously” and finding other possibilities (p. 218). Considering time seriously requires acknowledging the irreversibility of the ontogenic and the lived experience of time as well as the unity of space-time-matter. Eddie, one of the few dads to contribute, provided an example. His discourse aligned to the Zephyr narrative. A few years prior to the birth of his daughter he began experiencing symptoms of what he now knew was Crohn’s disease, but it took nearly seven years for him to get properly diagnosed and treated. He and his wife had real difficulty conceiving, and the pregnancy was problematic. They referred to their daughter as their “miracle baby” and much of their life centred on her and their personal struggles with chronic illness.

**AB:** What about you, Eddie, what would you like to do?

**Eddie:** I can’t think to be honest.

**AB:** What could a dad do with his little girl that was physically active?

**Eddie:** If she was a little boy it would be football.

**AB:** Why can’t a little girl play football?
Eddie: Because she’s not interested... I used to play football three times a week and then I got Crohn’s Disease so I can’t do anything like that anymore.

AB: Just hypothetically, if it weren’t for her right now and we were discussing how you could be more active, what would that look like?

Eddie: I don’t know, I think you’d need a miracle cure for both of us [he and his wife].

This exchange is an example of how Eddie’s future orientation was configured from his past through the present. In Eddie’s past, he was a healthy man that played football three times a week. Presently, he had a chronic illness that he had only just begun to manage. His only connection with physical activity was an interest he felt his daughter did not share, and his future was uncertain. Any considerations about PA with his daughter or for himself were necessarily enfolding past and future configuring the present. Because he could not imagine a future of physical activity, he could not presently be physically active. Valsiner (2014b) explains that past and future selves are dialogically related in the fleeting moments of the present. At any given moment, the future is not yet known and the past is selectively remembered and changeable, configuring a self in the evanescent present tantamount to consciousness (Valsiner, 1994). The selective configuring of past and present gives rise to the sense of an enduring self permitting continuity but also change via creative reconstructions in the future. This can have both positive and negative outcomes as seen in Eddie’s narrative.

With regard to PA, the past that he brought forward was ‘the Eddie that played football three times a week’ which must be reconstructed with ‘the Eddie that now has Crohn’s disease.’ He was unable to complete the creative process of reconciling past and future through the present giving rise to the Zephyr characteristic of feeling that life was merely happening to him (Brockmeier, 1995). His obscured view of the future was evident in his appeal to “a miracle” demonstrating a restricted horizon. In Tateo’s (2014) conception, in the same way that in the distance a perceptible line appears as the point where the sky meets
land, so the psychological horizon is where the real (as established by past experiences and present assessment of environment) meets the irreal (imagination, dream). Because of the ambiguity of his present circumstances, Eddie struggled to imagine a physically active version of himself. Ribeiro and Gonçalves (2010) note that without being able to imagine life differently, problematic narratives like Eddie’s can get trapped in a cycle of ambivalence that blocks development. Change, or according to Valsiner (1994), the emergence of novel forms, would be unlikely for Eddie. He might require help to expand his meaning configurations (Santos and Gonçalves, 2009). Brockmeier (2009) explains that meaning, particularly as enacted through narrative, is essential to human agency which expresses itself in choice, action and imagination; it creates the real and possible worlds in which humans are equally at home.

5.5 Summary
Parents’ narrative personal cultures contributed to the distinction of three main typologies and 1 composite typology from the children. These typologies were offered as canonical configurations of parents’ and children’s situated experiences of PA in everyday life. In keeping with the abductive approach begun in Chapter 3, the discussion demonstrated how the local instances, the typologies, modelled the processes of the general theory being proposed in this work: meanings were a key performative material agency intra-acting parents’ experiences which came to be signified as PA; the relations between the material-discursive phenomena of PA experiences were dialogical and (re)configurable; and persons dynamically enfolded time which means that any conception of change must account for both past and future. The following chapter considers how a future-looking version of PA, signified as IPA, can be made to matter.
Chapter 5 – Summary Box

How are we to understand physical activity in the context of this research? We have to first relationally configure what physical activity was in the everyday, situated lives of the parents and children. Such a task was especially suited to narrative inquiry. In inviting the participants to tell their stories, we participated in an act of measurement that configured relations within an otherwise undistinguished entanglement. This creates what is known as inclusive separation.

In this chapter, the stories that parents and children told of their everyday lives configured what could be understood as physical activity in this research: its roles and functions, its trajectory, its contexts, and how all of these coalesced into material-discursive lived experience. Using dialogical narrative analysis to examine the meaningful linkages in the parents’ and children’s stories, four distinct types of narrative relations were identified (3 parent and 1 child). The parents’ physical activity experiences were characterised into the 3 main types: the Architect, the Zephyr, and the Sower. The children’s experiences were formed into a composite type called the Grain of Sand.

Across the typologies, we see that physical activity was not merely the by-product of cognitive processes, or strictly a ‘behaviour.’ Instead we see it was a relational phenomenon that was simultaneously material (embodied, ecological) and discursive (situational, cultural), which is to say, it was meaningful and mattered in specified ways. In understanding physical activity by its meaning, the typologies showed that, for parents, physical activity was performative and allowed them to participate in normative discourses while also enacting value-rooted heuristics. Simultaneously and in concert, the meaningful agencies in the parents’ stories gave physical activity a form or object-ness. In marking physical activity as a phenomenon with specific relevance, the participants’ stories enacted borders that set various aspects of their lives in dialogical/material relation not only according to their experiences, but also according to the other voices or agencies participating in the stories (i.e. time, the physical environment, social norms, bodies, etc.).
Together these relations configured what I have termed the participants’ ‘narrative personal culture’ and physical activity’s place within it. This relational starting point is foundational to the following chapters, but should be recognised as contrasting current behaviour change practices. Prevailing evidence-based approaches to intervention pre-configure physical activity, the parents, the children, the setting – the whole intervention endeavour – according to generalised understanding of the phenomenon we call physical activity/inactivity. Such post-factum relations can tell us what is, but they cannot tell us what can be. The narrative personal culture provided the canon of relations by which change could be understood in the ongoing phases of research.
Chapter 6 – Intervention as Future-forming: creating a model world

6.1 Overview

The aim of the work presented in this chapter was to engage in co-designing a prototype intervention with parents and practitioners designed to create the new behaviour of intergenerational physical activity (IPA). In working toward this aim, I was guided by these questions: how can multiple stories from different perspectives be used to design an intervention and what can be learned about BC from the process of parents creating IPA for themselves and their children? In this chapter, I examine the design processes undertaken to produce a prototype intervention with which parents could create IPA for themselves and their children. I begin, below, by providing a theoretical backdrop to the design process of framing; then the parents’ and practitioner’s frames are expounded. The final section of this chapter tells an augmented story of the participants’ frames through a material object in which selected contradictions have been amplified. Intervention design is portrayed as creative analytic practice in the production of a storied object, or as it may also be considered, designing a model world.

6.2 Theoretical Background

Krippendorff (2006) explains, the focus of design is different from that of science because science endeavours to explain reality while design endeavours to create it. Designers “endeavour to create alternative worlds that would not come about naturally (Krippendorff, 2006, p.30).” Importantly for understanding behaviour change, this type of world-building is a human preoccupation. Bruner (1986) points out that humans experience meanings as reality, and relating to Bruner, Brockmeier (2009) notes, “It is far more important to investigate the ways human beings construct their real and possible worlds […] than it is to establish the ontological status of the products of these construction processes” (p.214). This type of reasoning inspired the Design Thinking (DT) employed in HCD (Brown and Wyatt, 2010), and this is what the parents’ and practitioners were asked to do in the Create phase – reconstruct their world with IPA in it.
Design is an abductive process. Dorst (2011) explains that deductive or inductive reasoning, the type of problem/solution formulation typically employed in scientific studies, is insufficient for solving problems like BC (Neuhauser and Kreps, 2014) marked by indeterminacy, confusion, conflicting values and unclear ramifications, or in other words, ‘wicked problems’ (Buchanan, 1992). This is because such reasoning is predicated on closed systems where either the process (how) or the object (what) are known or assumed depending on the purpose of inquiry: induction (discovery) or deduction (justification). Abductive reasoning is different because it assumes neither the process (working principle) nor the object (thing) are known (see fig 5). Instead, designers must reason backwards from a point of shared value to create a ‘thing’ and its ‘working principle’ through which that value can be realised as depicted in figure 5.

To help with this process, experienced designers develop frames (see fig. 6) to gain a novel perspective of the problem. Dorst (2011) defines a design frame as, “the general implication that by applying a certain working principle we will create a specific value” (p.524). Frames are often guided by metaphors that seem like common sense but are comprised of complex relations. They can be phrased as if/then propositions allowing the designs to be tested against the value outcome in an iterative process.

**Figure 5.** Dorst’s (2011, p.524) open form of ‘design’ reasoning.

```
???
(thing)  +  ??? 
(working principle)  leads to  VALUE
(aspired)
```

**Figure 6.** Dorst’s (2011, p.524) design frame.

```
WHAT  +  HOW  leads to  VALUE
____________ FRAME ___________
```
This can seem similar to intervention models that suggest applying an evidenced-based theory in their design, essentially framing the design with a given theory’s working principle (NICE, 2007). However, evidence alone is not a direct advantage in material production, particularly when derived nomothetically, and especially when the desired outcome is change or innovation. Behavioural theories are generally not predicated on the production of artefacts that convey their working principles (i.e. a material object that crystallises the theorised mediating operations as a negotiated value with their intended user – see Rückriem 2010). Even if an intervention designed to apply the theory could be considered such an artefact, the user or some aspect of their frame is usually presumed to be manipulated by the theory’s proposed mechanisms so the value may not be shared. Interventions of this type tend to be corrective; a problem and its causal mechanisms are identified so that the offending factor or factors can be controlled and the problem can be fixed (Salvatore and Valsiner, 2014). The abductive reasoning presented here via the design process contrasts current intervention practice by taking a constructive, future-forming approach that guides the design without imposing an outcome or form. This chapter develops the working principle and the value of the design side by side to produce an artefact by exercising Gergen’s (2014a) dictum to go from “mirroring to world making” (p. 294).

6.2.1 Relating Narrative Orientations
The narrative typologies from the previous chapter showed that parents experienced a variety of canonical meaning orientations to IPA, and that from the parents’ point of view, there are very different worlds being built. These meaning orientations influenced the parents’ thinking regarding this specific behaviour of IPA. This can be observed in the formation of the parents’ Create working group (see Section 4.6.1). Remembering that typologies are not fixed essences of the parents and that all typologies can be present in a given experience, what is pertinent to understand here is that 5 of the 7 adults who contributed in the initial Hear phase and again in the Create phase were parents whose dominant meaning configurations of IPA were of the Architect narrative type. Acknowledging the role
context has in the experience of a given instantiation of IPA, the narrative types represent a range of normative meaning orientations toward IPA (Brinkmann, 2012; Harré, 2016c), though certain typologies can be understood to dominate the specific phenomenon of IPA for a given parent (Papathomas, Williams and Smith, 2015).

6.2.2 Mirroring, Contradictions, and Borders
The stories from the Hear stage were presented to both the parents and the practitioners in the Create workshops. Virkkunen and Newnham (2013) call this practice ‘mirroring,’ a formative intervention phase also undertaken in design (Brown and Wyatt, 2010) and appreciative inquiry (Bushe and Paranjpey, 2015). This mirroring is a reflective process where the persons or organisation are asked to examine themselves and identify “problematic aspects of current practice” (Virkkunen and Newnham, 2013 p. 49) or “life-giving properties of the organisation” (Bushe, 2011 p.89). In HCD, participants were asked to look and listen for statements or stories that were “surprising, interesting or provocative” (IDEO, 2009, p. 94). Participants were encouraged, as Sparkes and Smith (2011) call it, to think with stories where the listener joins with the story’s “logic, causality, and temporality” (p. 369) whereby they relate the narrative structures in a persistent, dynamic state of tension (but not necessarily equilibrium). Engestrom (2011) identifies the recognition of these embodied tensions as ‘contradictions’ which he notes are “not the same as problems or conflicts” rather they are dialectical “accumulating structural tensions within and between systems” (p.609).

Throughout this chapter, such tensions are explored as normative sources of change (Moghaddam, Lee and Harré, 2007) because they generated disturbances, sometimes conflictual but also sometimes imaginative and innovative (Brockmeier, 2009; Valsiner, 2014a), with the potential to become narrative expansions of a personal culture.

The participants’ framing of the design challenge (DC) was dynamic and showed the relations of the contradictions they experienced as parents considering being active with their young children or as practitioners planning an early-years health improvement intervention. Because contradictions are not necessarily
problematic, they were not considered barriers as they are sometimes labelled (Royce et al., 2003), but more like potential ruptures which may permit new meanings to emerge (Cabell and Valsiner, 2011). This notion of ‘rupture,’ and that of ‘border’ introduced in the previous chapter, belong to the German psychological concept of *Gegenstand*. Valsiner (2014) defines *Gegenstand* as, “an object that limits its own course of being through constraints inherent in its own emerging structure” (p. 117). Borders are held by the dynamic tension of opposites; a *Gegenstand* is an object that objects (Gegen + stand = stand against). For instance, time can be considered a *Gegenstand*. The present is a border because it has a direction towards the future, but the future opposes its direction at the limits of its knowability and maintains the dynamic, dialogical tension at the border of the present.

Applied to psyche, Valsiner (2016) explains the *Gegenstand* comprises 3 interdependent processes: intentionality, agency, and socio-historical context. Human beings turn things (material and conceptual) into objects and imbue them with agency. By acting toward an *other*, the conditions of alterity are created under which the *other* material discursive agencies resist one’s actions, and humans are able to reflect upon this through the use of signs (like language). According to Valsiner (2016), this gives the *Gegenstand* its triadic structure of “acting, counter-acting, and self-reflexivity” (p.9). The tension between these maintains the border in dynamic stability, but contradictions can lead to ruptures, and if nurtured, these can lead to new topologies, or change. Zittoun and Cerchia (2013) explain that it is imagination that creates the expansive conditions necessary for such a ‘border-crossing,’ and in the sections that follow I expound how the parents’ and practitioners’ frames created a developmental zone (or *adjacent possible* as discussed in ch. 2) via imagination that would act as an attractor to draw action toward it.

**6.2.3 Imaginative Ruptures**

Imagination has had a varied history in psychology ranging from Aristotle’s phantasia (senses creating mental images) to Descartes’ synthesis of present sensation and past memory as a precondition for abstraction to Vico’s assertion of
imagination as a form of knowledge compatible with and generative of rational thought (Tateo, 2016b). The main thrust of some contemporary debates regarding imagination is whether it constitutes a reproduction of images of reality or whether it actually creates new thinking. In this thesis, these positions were elaborated from a dynamic perspective by considering imagination as a rupture in the ongoing process of relating and experiencing (Zittoun and Cerchia, 2013). Ruptures are postulated to open a space where different modes of thinking are made possible until they terminate in a return to perceived reality forming a loop. They are mainly considered in two forms: gap-filling or expansion (see figure 5). The former conception is based on human experience as fragmented and incomplete. For example, Pelaprat and Cole (2011) consider imagination as providing a “feeling of oneself in relation to the world” (p.399). This feeling is afforded by the gap-filling capacity of imagination much the way we can form a coherent story from blocks of images in a comic strip by ‘filling-in the gaps.’ Rupture in this conception is imposed, a problematic gap that arises from a human inability to fully apprehend reality. The gap may be “temporal, perceptual, informational or conceptual” (Zittoun and Gillespie, 2015, p. 306). Understanding and reality do not connect, so it is the role of imagination to fill the gap.

**Figure 7.** Zittoun’s (2013, p. 308) two conceptions of imagination.
Conversely, imagination conceived as expansion is a distancing from the here and now “to explore the past, the future or alternative realities” (Zittoun, 2016, p. 130). This process can be passively triggered or deliberately chosen. In this reading of imagination, the rupture can be engaged through play, through fiction, poetry, cinema, or any number of facilities that permit a temporary leave of one’s usual experience of reality. When such a gap is opened by the activities of a person, they create for themselves their own zone of proximal development (Vygotsky, 1997; Zittoun and Cerchia, 2013) making the rupture in this conception both expansive and generative (Gergen, 2014a; Valsiner, 2014b). Brockmeier (2009) notes no mode of imagination is more constructive or flexible as narrative discourse because “it is the most complex and comprehensive construction site of human imagination” (p. 224) and through it is possible to live in more than one reality.

Applying the expansive concept of imagination, the frames discussed in this chapter are proffered to represent a border and a void, a space for imagining how what is could become what could be. The participants intra-acted these border zones demarcating where they perceived their present borders to be and where there was space for development or creation to happen. The space that did not yet exist (i.e. IPA) was pre-adapted via imagination in these frames. These frames also demonstrated Dorst’s (2011) design elements (see figures 5 and 6) of working principle (How) and shared value output (Value) as identified by the parents, including the things or actions they understood would bring them about (What). Zittoun (2016) explains how imagination disengages proximal processes and engages distal experiences via a feed forward loop (rupture) which can be conceptually deconstructed to examine: “what triggers it, what nourishes it, and what it enables” (Zittoun and Cerchia 2013, p. 318). This useful heuristic was applied to the participants’ frames with the addition of Engestrom’s (2011) concept of contradiction to allow consideration of precursors to the rupture.

6.3 Parents’ Frames
The parents identified 3 main frames by which they imagined or fed forward IPA. While the parents had several distinct ideas, they mainly served to develop these 3 frames in various ways:
6.3.1 Environmental Frame

The environmental frame featured the parents’ conception of family life in their community. The parents initiated their discussions with this frame. They began by looking to their surroundings and identifying contradictions in their experiences of IPA. The negative aspects were easiest for them to identify and they noted problematic issues with outdoor or community play spaces with a degree of vigour. In ST, though they had access to a variety of play parks in the town, parents noted problems that prevented them from going to their local parks.

**ST parent 1:** The parks are covered in dog dirt and glass. And then you’ve got bigger kids that go to it and vandalise it. They [the council] take things away and it’s ages before it’s replaced.

**ST Parent 2:** There was a new park up at [ST neighbourhood] near the sports barn. Their dad took the kids up one night and it was covered in glass and dog dirt and it was such a shame.
ST Parent 1: There’s a new one up by [another ST neighbourhood] and I think it lasted two days. The one at Station road, the council knocked it down. One morning on the way to school the council were there cutting the swings down.

In RV, there was only one main park in the village, and it was in a state of extreme disrepair. Broken equipment; gaps in the fences meant to protect from a road; bottles, needles, and other signs of anti-social behaviour were regularly encountered; and in addition, the park was poorly sited in an isolated location too far to walk to with small children if you lived at the bottom end of RV.

RV Parent 1: Our park is run down... It’s covered in broken glass. I even seen a dead rat there once...

RV Parent 2: Yeah, and its where the... ‘undesirables’ hang out.

RV Parent 1: I was there with [daughter] and she was in one of the safety swings – you know the kind with the bar? And it [the bar] broke right off while she was in it!

RV Parent 3: It didn’t used to be like that. Our park was famous. People would come from Glasgow in buses to spend the day. We had the longest chute [slide] and a bandstand and a boating pond...

The parents experienced equal dissatisfaction with the community and leisure spaces. ST had its own leisure centre (LC), but the facility was aging and had been reconfigured over the years. It housed a swimming pool, and after park spaces, this was a common setting identified for parent and child PA, even though adult to child ratio restrictions meant that one parent could not take more than one child swimming if they were under the age of 4.

ST Parent 1: I was going swimming every day and that pool up there is full of old men every morning. And they stand in groups of 2 and 3 and talk in the middle of the pool and you have to swim round about them. And I've seen me going in there and thinking after 20 minutes, I'm outta here. That's it.
And if you go later or the back of 10:00, it's empty, but you've not got enough time to swim because you've got to be back up at nursery.

**ST Parent 3:** It's also freezing and it's horrid.

In RV, they had no leisure centre, but they had a new community centre (CC). This was a combined community and social care facility used as a day centre by social services for a variety of client groups while also housing community groups like mums and toddlers and for-profit providers like Taekwondo clubs and dance schools. The facility also housed a small library and is a council-owned property. However, there was a great deal of controversy around this facility with parents feeling that their voices had not been properly represented in the initial consultation on the centre design, and thus, they are not getting the benefits they expected from the new facility.

**RV Parent 1:** Because it’s primarily for social care, and the people of [RV] have to fit in after that. If there are any spare rooms, you'll then get them. Not once has anyone been encouraged to go out to the garden, the garden is for the social work, they don’t encourage you know...

**RV Parent 3:** I brought that up and got told off...

**RV Parent 4:** Everyone should be using that garden.

Despite the difficulties identified within their environment, the parents also noted contradictions that were considered positive and advantageous in their environments. For instance, parents in ST noted how well-connected their town was. It was entirely walkable. The pavements were well-maintained and laid out in a grid such that practically any part of the town could be traversed on foot. Not only this, but the pavements extended to neighbouring towns making it possible to walk the few miles distance between ST and a large country park. In RV, the rural setting was important to the parents. The changing of the seasons, local livestock in the surrounding fields, these were considered advantages of their particular environment and an important reason for why they lived there. The parents desired ways to encourage their children to better connect with these aspects of
community and rural life. In both locales, parents professed a love and loyalty for their communities and a desire to be able to live more of their life locally.

It is not uncommon for environmental concerns to be identified as barriers to PA in families (Bartholomew, 2015; Kottyan et al., 2014; Maitland et al., 2014). This idea of identifying barriers or supports to a given behaviour like PA is associated with a social-ecological model of behaviour (Royce et al., 2003) most often derived from the early work of Urie Bronfenbrenner (Tudge et al., 2009). However, the adapted use of his early, layered model for PA promotion (King et al., 2002) does not fully account for dynamicity, i.e. the interactions of a person engaged in a particular process in a given context over time (Bronfenbrenner, 2005). Further, as this present work seeks not to assume discrete interacting entities but rather intra-acting entanglements, what may be considered just another example of environmental supports or barriers to PA may instead be considered dialectical contradictions in the parents’ ongoing experiences that have the potential to be catalytic to the development of PA behaviour. Considering how parents would act to remediate such experiences of their environment enables not simply the identification of common barriers to PA; rather, the interest lies in understanding the conditions under which a behaviour develops in a whole of intra-acting agencies (Beckstead, Cabell and Valsiner, 2009). For the parents, considering IPA through an environmental frame allowed a complex of things to happen – improvement of physical community spaces, development of a sense of community in their children, gaining a feeling of pride in where they lived, assumption that difficult to articulate ‘feelings’ of what they would like to happen – what they could imagine – would affect their PA behaviour. An example of this was the RV parents’ snow day story.

Just prior to the Create session in January 2015 discussed in chapter 4, it had snowed across the region comprising ST and RV. The fresh snow drew parents and children from neighbouring communities including ST to the park in RV. The parents mentioned that their park used to draw day-trippers due to its various amenities one of which was a very long slide. This chute took advantage of the fact that the park was built on an enormous slope, and it had an actual top and bottom which
the chute had famously traversed. In the Hear sessions and again in the Create session, the RV parents spoke of their memories of the park. Some of the contradictions they experienced about the condition of the park were nourished by what they sensed as a lack of fairness because they felt by-passed while neighbouring towns received investment. Recounting this one of the RV parents remarked, “We’re a very forgotten little village.” However, reflecting on the snow day, the parents experienced a condition, a feeling they wished to apply to the DC using this particular frame. That day had all the elements: the poor condition of the park was washed white by the snow; they shared fun experiences with their neighbours; they ‘just decided’ to join in – there were no schedules or costs involved; and it was local - they didn’t need to go to someone else’s village, and as it happened, the other villages came to them just as they used to.

RV Parent 2: See if something is local and free and the kids enjoy it, you are more inclined to take that up than to jump in your car and pay god knows how much for soft play for you to sit… although the soft play in [larger town about 15 miles away] you can go in with the kids… The other soft plays you’re left sitting with a coffee.

RV Parent 3: Take the weekend there for instance – in the park with the snow… It was free… Alright, a lot of people got in their cars to go there because it’s up at this end and by the time you get there you’re knackered and the kids are knackered. So, you know, you want maximum time… but it’s free, all you needed was a sledge or a plastic bag.

RV Parent 4: And people came from [neighbouring villages including ST] because we have that big hill...

The parents wanted to capture the whole experience of that day in their idea. They wanted the ability to recreate it at will, and to feel the pride of their community space. The contradictions experienced in this frame were always present; they were disunities that the parents lived with, a border that was maintained until a rupture was occasioned by the research. The environmental frame was the parents’ initial sense-making of how their reality resisted the imaginative rupture of IPA. Parents
nourished their feed forward loop with meaningful artefacts like their snow day experience which became a metaphor for how they imagined IPA could be. Valsiner (2014) notes that such use of metaphor is a process of schematisation, of wrangling feeling and percept into a concept communicable in words. Using metaphor to feed the rupture enabled the parents to consider possible futures, to pose possible consequences and causes, to predict and anticipate. Parents engaged in ‘bricolage’ (Smedslund, 2012a) as they re-read their past into the future, but use of metaphor showed how they did so with an embodied fullness (Brinkmann, 2015b). Pern (2015) asserts that the use of metaphor in imagination “is the active force of sense-making, tied to the environment by affect and kept in contact with the past states by memory” (p.172). It was these material-discursive practices that parents used to probe the possibilities in the environmental as well as the other frames. The snow day story fuelled a raft of other ideas from the environmental frame that expanded the metaphor of the snow day, and included: park equipment requiring both the child and parent’s effort to operate, adult/child skate parks, guided country walks, community garden and building projects, monthly family game days in the park, and den-building. This last idea of den-building was born of a relational contradiction identified by parents which they elaborated into the relational design frame.

6.3.2 Relationship Frame

In this frame, parents discussed contradictions in relating with their children. Parents identified that they did not understand some of the activities that their children engaged in as ‘play.’ They were perplexed by their children’s persistent use of technology and their inability to engage in the same types of play that they had done when they were children. Parents recounted these experiences to each other as observers, as if they were watching their children from behind glass without being able to affect them to any great degree. For instance, parents in ST recalled how their young children used digital devices.

ST Parent 1: Yeah. I've got a little girl she's 3. She loves iPad. If you give her iPad, she will sit and use it all day.
ST Parent 2: Does she sit and watch YouTube videos?

ST Parent 1: Yes!

ST Parent 2: Of kids opening Kinder eggs and toy reviews?

ST Parent 1: Yes!

ST Parent 2: That’s all [son] watches... Paw Patrol and other kids playing with this toy or that toy that he has!

ST Parent 1: She would use iPad and watch YouTube all day long and it's trying to get the balance between allowing them time to do that and then saying no you can't have it, but then you have to be able to say, go do something else.

Finding that “something else” to do was perceived as the parents’ responsibility. Parents noted that each of their children were different and what would entertain one would not interest another. Parents felt obligated to orchestrate these diversions and recalled how their parents did not have to worry with such things.

RV Parent 1: When we were wee, we went out at 9:00 and played football till we got shouted in or the streetlights came on. Half the time you didn’t even stop to eat. But now it’s all computers and games consoles and Facebook and stuff like that.

RV Parent 2: I think computer games steal away their imagination. When we went out, you’d build a treehouse or you had a den. You went up into a field and you made something. You’d have this great idea like, “this will be our camp” and all sorts of things. Whereas, if told my daughter to go play in a field, she would be like, “What will I do in a field?”

AB: Why do you think they don’t play like that?

RV Parent 2: I think safety is a big issue... we are all more aware of the bad that’s around us. I limit where they can go and I want to know where they are at all times.
The parents’ feelings of responsibility toward their children may be considered a differentiation of ‘otherness.’ Barad (2007) notes, “Responsibility is not a relation between two subjects; rather, the otherness of the Other is given in responsibility” (p. 391). The differentiation functions not to identify an entity external to self but to be separately connected as parts of phenomena. This dialogue continued to develop with parents admitting that they felt their fears for their children’s safety were likely not based in fact (referring to a statistical likelihood of something bad actually happening) but that they could not overcome it, either personally or socially. Parents elaborated that they got around this difficulty by sending their children to organised activities as described in the Architect narrative. This practice permitted the parents to maintain their configuration by remediating their children’s behaviour, but it did not close the relational gap they experienced by not sharing PA with their children. However, this relating occurred in other settings and the parents drew on these alternate experiences for their ideas in ways that were both constructive and destructive for the DC. For example, one of the parents from ST noted that PA would not be her choice for reducing the tension of relational contradictions.

**ST Parent 1:** See mine prefer creative things with me, but not active things... Because I’ve got three, they just want me and them to sit down and do something quiet together. Or even [son] will come and put his arm around me, and we we’ll sit and watch a cartoon: “Mum will you watch this with me?” not mum, will you run up and down the stairs with me.

**Other Parents:** Yeah, yeah...

**AB:** Do you think they do that because that’s what they know you would agree to do?

**ST Parent 1:** No, I just think they like the wee closeness. No, I think it’s they want just you, just your attention. So, if you are doing play dough or beads, they know you are just focused on them. Whereas if they are running around with you, well I know I can get easily distracted.
**ST Parent 2:** Yeah so do I...

**ST Parent 1:** They know that if you do a quiet thing, even reading a story, they know that they’ve got your attention, you’re talking directly to them. I think for them quiet time is when they get your undivided attention.

The parents sought meaningful connections with their children – experiences that were simultaneously shared and mutually constitutive (Slife and Christensen, 2013; Valsiner, 2014b). Parents made distinctions about the type of activities that they felt could be *shared*, i.e. would mutually constitute themselves and their children. Salvatore (2006) calls this function of the activity ‘thirdness’ – “the function of mediation between opposites (therefore between the subject and what is other-to-it) which enables their relation to transcend them and transform them into a new whole” (p.127). While mediation is an artefact of Cartesian separateness (Barad, 2007), Salvatore’s (2006) principle is similar to Kauffman and Gare’s (2015) triad. In wishing to relate to her child, PA did not have a suitable thirdness (i.e. an inclusively separate agency) to intra-act the parents’ mind (or measurement) in creating the possibility for transformation. When the loop of imagining IPA as a way of sharing herself with her children closed, the configurations she had pre-constructed therein proved unproductive in relation to the design challenge. As a design frame, this working principle would not achieve the valued outcome for her.

Conversely, for parents in RV, PA did have transformational thirdness. They were able to elaborate this design frame and expanded their configurations to pre-construct more than one possibility, though they tended to be variously in the form of classes (e.g. family sport or activity classes, craft classes, cooking/baking classes) or events (e.g. day trips to parks or the seaside, gala days or church/school events). These classes or events created what they felt was a socio-culturally acceptable space for parents and children to share activities and experiences, much like that described in the Sower narrative; though in that typology, parents were able to create such an experience practically anytime, anywhere. While these ideas showed how parents could imagine relating with their small children in an active way, they noted that these options were not preferable to similar opportunities made
possible by the environmental frame because classes and events implied schedules and cost, and these were deemed restrictive. Parents also noted that they quite often found out about classes or events after it was too late to do them and felt that communication of these opportunities was poor. This relationship frame was emotive and desirable to the parents, and the ideas generated by it were enabled, or not, by the environmental frame, and as we shall see below, also by the self-situational frame.

6.3.3 Self-situational Frame
The self-situational frame emerged from the relational frame and was the least expansive. Constructions from the relational frame led parents to reflect on themselves and their role in creating IPA. The parents identified contradictions that referenced aspects of their person in relaying their experiences of IPA; hence, I have labelled this frame as self-situational to denote that this frame characterises the parent’s conceptions of themselves and their feelings in specific situations of IPA. In working creatively with their stories and ideas of IPA, parents began to add instances where they judged themselves as contradictory and attempted imaginative ruptures that might help them help. Parents’ configurations of this frame expressed contradictions like guilt that they ‘should’ be doing PA with their children. This related to their role in the family and the pressures they experienced because of it.

Parents, mostly mothers, experienced a typical day as a list of tasks and chores. Getting the children up and out to nursery; going to work or back home to domestic duties; getting the children from nursery or school later in the day; caring for aging relatives; making or arranging for meals; then homework, bathing and bed. In a typical day, the amount of time a parent would experience as ‘free’ that overlapped with their child’s free time was very brief. During the week, this was usually a small window of time between the evening meal and the child’s bedtime with much larger blocks of time available at the weekend depending on work and activity schedules and whether the child lived between more than one home. However, by evening time on a typical day, parents were tired and lacked motivation for physically demanding interaction with their children. In recounting a
composite instance of daily life with her children, a parent from ST explains how sometimes she just did not feel like taking the time to engage them.

AB: Is it a hurdle to get over, the “not wanting to?”

ST Parent 1: It's not that you don't want to...

ST Parent 2: It’s just... you’ve got life...

ST Parent 1: it’s just life commitments get in the way. I know that sounds terrible, I know that sounds terrible but... You’re saying all the time, "I'm doing something. I'm doing something. Can you wait a minute? Gimmie two seconds ‘til I fold that...?" I say that to them all the time.

ST Parent 2: It’s household things...

ST Parent 1: I probably could just leave it and go, but then I’d have to go back and do it again and it would take me longer to do it the second time.

When asked what the parents thought would help them with this, they noted needing a distraction, and that the only way to achieve this was often to leave the home setting. This, however, required planning and a commitment to go spend time with “just them [their children].” However, the parents had already explained that such relational experiences were less likely to be regularly undertaken purely because they had to be planned and usually incurred an expense. It was difficult for parents to imagine a way around their life commitments or to imagine their lives restructured in a way that permitted change. This crowded view of life is often identified as one of the most common barriers to PA, lack of time (Mailey et al., 2014; Thompson et al., 2010). Though all are afforded the same number of hours in a day, the ‘lack of time’ the parents experienced referred to leisure time which Iso-ahola (2015) defines as “one’s life space in which he/she has freedom of choice to do what he/she wants to do” (p.290). Hamilton and White (2014) reported that when leisure time was quantified in a sample of mothers of young children, up to 12 hours per week of such free time was spent sitting, from which the authors rationalised that mothers had sufficient actual time to meet the minimum physical
activity guidelines (DoH, 2011). However, McGannon and Schinke (2013) explain that such leisure time is not always experienced as ‘free’ and under a parent’s own control, especially for mothers who may be perceived as “bad or inadequate (p. 183)” in taking time for themselves. In ST, Parent 1 described, the conflict between wanting to and not wanting was draining. The tension created between needing to fulfil her domestic role and having to regulate her impulse that PA is something she should do with her children may either have required self-control (as she has intra-acted it) to do the PA later, or have licensed an alternate activity she found relaxing because according to her macro-organiser she deserved not to do PA (Hofmann, Vohs and Baumeister, 2012).

A parent in RV illuminated another contradiction that demonstrated the complexity of sense-making involved in constructing a ‘self’ that would be active with their child. The discourse of the group had moved into discussing health and the difficulties involved in managing healthy behaviours for themselves and their children, though this pertained mostly to eating-related behaviours. When prompted to reflect on PA specifically, the narrative had chaotic Architect characteristics.

**AB:** What do you think about being physically active with your child? Is that something you think you would like to do?

**RV Parent 1:** Absolutely.

**RV Parent 2:**

1. I feel...
2. My parents didn’t take part in any exercise whatsoever.
3. I take part in no exercise whatsoever, and
4. I don’t want to end up doing that to my child.
5. I know I am lazy, but I’ve always been lazy.
6. My husband doesn’t do much. He likes to cycle and does a bit of ‘keep fit,’ but he doesn’t do any team sports or anything – he doesn’t even watch football.
7. So I’m worried that my boys aren’t going to have any role models, and it does worry me.

**RV Parent 3**: I agree with [RV Parent 2] 100%. I would word it almost exactly what she said.

This is an example of where the availability of narrative resources in sense-making can constrain the imaginative rupture thereby limiting its expansion and ultimately its enabling. Two narrative types are identifiable in this brief excerpt of discourse, a controlled Architect and a chaotic Architect. They are Architect narratives because the action of the discourse remained directed at creating outcomes within their children, but the controlled or chaotic orientation fed (or didn’t) the imaginative loop. RV Parent 1 experienced no contradiction from the facilitating question giving a swift and affirming answer. RV Parent 2 had to schematize the contradiction she experienced by linking key narrative resources that helped her to make sense of the negative answer she wished to convey. She referenced her parents (line 2), herself (lines 1, 3, and 5), an imagined consequence to her child (line 4), her husband and her understanding of his behaviour (line 6), and finally how these coalesced in the concept of ‘role model’ and the consequences that having or not having one would bring. In a single instance of sense-making, RV Parent 2’s self-construction of a physically active identity drew on her past and her adult judgement of her parents’ role modelling by current cultural mores; her past through present into future understanding of herself as irreparably lazy; seeking alterity she turned to her husband and found no compensation from him in the present or the future; so she concluded that her boys’ future with regard to their physically active identity was in jeopardy and she was at a loss to remediate it.

In this instance, RV Parent 2’s understanding of role modelling was a limiting narrative resource (McGannon and Smith, 2015). Role modelling is associated with social learning theory and is thought to be crucial for building values and habituated behaviour particularly in young children (Mitchell et al., 2012). In RV Parent 2’s narrative, her identity was not worthy of modelling nor was her husband’s. Being a good parental role-model is a socially desirable quality and associated with “self-
governance, individual responsibility, and self-control” (McGannon, McMahon and Gonsalves, 2017, p. 132) in those who exhibit it. In her narrative, RV Parent 2 had no role models in her parents, now she was not a role model, so the cycle would continue.

Getting around limiting self-constructs required what Smith, Bundon and Best (2016) identify as “amplifying stories,” stories that “expand people’s narrative resources through sharing – not prescribing but offering - different stories” (p. 146). As the parents discussed their imagined working principles of this self-situational frame, the sharing of their experiences acted as amplifying stories that helped this difficult rupture to expand enough to develop some ideas. The parents felt that particular things would help them in instances where they felt pressed for time or unwilling to engage their children. For example, parents were able to recall moments where they might have paused to consider ‘doing something’ but couldn’t think of anything to do, or they recalled ‘organic’ moments where they found themselves doing an activity naturally, i.e. playing a board game or taking a walk or a spontaneous game of football. Imaginative expansion of these moments enabled parents to see themselves as incorporating such activities into daily life as a matter of course (much like the Sower narrative) if they had the right resources, namely: something to help them recognise an opportunity; something to give them an idea that would appeal to them and their children; and something that appealed to the value endpoint of this frame – a positive parenting identity. In other words, parents looked for a material, non-human form of otherness (Chamberlain and Lyons, 2016). Parents in both locales mentioned that they had attempted to manage similar contradictions by using digital resources, mostly websites and digital smartphone applications (apps) like Pinterest. Parents discussed various design features they thought an app should have including activity ideas and a function that made them aware of parent/child activities in the area at the time and place they happened to be. The app was the only idea the parents developed specifically for this frame.
6.4 Practitioner’s Frames

The parents’ frames were not the only ones that had to be considered in the intervention design. The physical, financial, and human resources required to enact the intervention were provided to serve the value outcomes of the practitioners representing the contrasting but complementary professions of early years’ education, health improvement, and leisure services. The practitioners constructed their frames from their interpretation of the parents’ and children’s stories. They were encouraged to think with the stories shared during the design process just as the parents had been, but they were admonished to keep the parents’ and children’s perspectives at the forefront of their creative efforts as ‘outsider’ members of the target group. Human-centred design is about designing for the people-group of interest by creating a shared design challenge. This proved difficult for the practitioners because they had competing frames that were difficult to reconcile to their interpretation of the parents stories.

The function of the relationship between the contradiction and the imaginative rupture was a key process in the parents’ creative framing of IPA and was derived from their immediate experiencing. Their frames were pre-constructions of possible ways the parents would reshape their canonical experiences of PA with their children in consideration of the design challenge presented to them – that of promoting intergenerational physical activity in parents with children aged 3-5. For the practitioners, however, the challenge was different. They had to frame their designs, not with first-hand experience as a parent with a 3-5 year old child living in either RV or ST, but with second-hand understanding. To create their design frames, practitioners had to try to understand these parents who were representative of the people group in whom they wished to create this behaviour of IPA. This is what Krippendorff (2006) calls second-order understanding: “Understanding someone else’s understanding is an understanding of understanding, an understanding that recursively embeds another person’s understanding in one’s own” (p. 66, italics added). It is this second-order understanding that is considered in the practitioner frames below. Though they had to undertake the same creative sense-making process as the parents did (i.e.
experience a contradiction, open an imaginative rupture, nourish (or not) the rupture, and consider what it might enable), the design frames discussed here demonstrate how the practitioners worked between this second-order understanding and their own first-hand experience as practitioners. This second-order understanding was used to create connections between the parents’ stories and a working principle that would achieve the outcomes (or the value endpoint) the practitioners required. This means that the contradictions that gave rise to these frames were generated from the practitioners’ interpretation of the parents’ stories through their first-hand experience as practitioners; therefore, the contradictions and the imaginative ruptures upon which these frames were based also came from the practitioners’ own sense-making just as the parents’ frames did.

As before, the frames discussed below were labelled for 3 variations of relation between contradictions, imaginative ruptures, and what nourished (or didn’t) the ruptures. What this process enabled (or didn’t) informed the value endpoint + working principle connections (aka design frames) identifiable in the practitioners’ small stories during the Create workshops. The practitioners had a much easier time with some of the workshop processes than the parents did, particularly processes that required abstraction, like looking for themes. However, they felt that the processes were unnecessarily protracted, and they had less patience for the steps that encouraged thinking with the parents ‘and children’s stories. They wanted to go straight from hearing the stories to generating ideas for prototypes. It was evident that doing so fitted more with their usual practice. They had been trained to use input from the target group in their evidence-based designs rather than using evidence in the target group’s designs, which is more like what they were being asked to do in the workshops. The frames they generated demonstrated a contrasting relation of value endpoint and working principle to the parents’ versions. In generating their prototype ideas, the practitioners employed 3 frames:

1. Empathetic Frame
2. Practice Frame
3. Evidence Frame
6.4.1 Empathetic Frame

Empathy is a hallmark of HCD and entails an interpretive, emotive ‘seeing the world through another’s eyes’ (Brown and Kātz, 2009). Practitioners used the parents’ stories in this frame to ‘feel-in’ to the parents’ lives and to find common experiences that linked context, memory, history and emotion. This was the practitioner’s most expansive frame in that it generated ideas closest in value endpoint and working principle to the parents’ frames. All but one of the four practitioners had children of their own, and stories of their own experiences were used to validate or expand the parents’ experiences. For instance, some of the stories that inspired the parents’ self-situational frame were interpreted by the practitioners as parents’ actually needing time away from their children. They identified with them by sharing that they, too, had felt busy and bogged-down, and at times lacked inspiration even as active people.

**NHS:** You know, I think one of the reasons why a lot of adults sit on the bench, go to toddlers group, sit and chat, have a cup of coffee, it’s because they actually need time out.

**HLP:** They need to get away from that head space of a … a 3 year old, you know that way?

**SLP:** Yeah, we get that at 9 o’clock when Eastenders is done and they’re in their beds.

**NHS:** Aye, but... but the flipside of that is if you’re not with the child all the time, cause I was working, that you actually want to spend time with them...

**EYP:** Yeah... you want to maybe...

**NHS:** yeah ...you’re kind of like... when you’re not with the child all the time cause you’re in work or you’ve got other things, there’s also that thing of it’s nice to do things together and I, I can, as an active person looking around, I think ‘there’s nowhere I can go where we can do something together.’
Practitioners tried to negotiate parents’ potential motives in such a scenario by linking with stories of parents preferring to take their kids to classes.

**EYP**: Because that was the other thing, I said earlier the thing that struck me [from the stories] was that there was this split: so yes, my children will be active and I will watch them or I will drive them rather than...

**HLP**: yeah... facilitate it but not... [gestures participation/interaction]

**EYP**: Yeah, facilitate... And I mean, I know I’ve sat in parks and part of it is actually you want your child - you said that transitional period of 3 to 5 - where you feel, ‘I shouldn’t be holding their hands all the time but if I’m wanted I can be there to get a leg up the, the climbing frame or just to make sure with the big high slide or whatever.’ And it’d be interesting actually to indicate some of those comments.

**NHS**: But, but that’s split because and I think it’s, it’s the thing that we’ve seen before in the evidence, children are active and then you start to see the scaling off and particularly in non-structured activity. The fact that they’re being pushed into clubs as a, I’m kinda putting my parent cap on and thinking...

**SLP**: ‘Babysitting…’

**EYP**: ...Right [laughs]! No, tick that box, tick, tick, tick. They’re active, they’re healthy...

**SLP**: Enriched...

**EYP**: They’re doing all these things. Yeah.

Here practitioners were elaborating and challenging aspects of the Architect narrative by identifying that on the one hand, parents might view their actions to promote independence in their young children as developmentally appropriate, yet on the other hand, when coupled with ‘evidence’ on the decline of unstructured
play, the facilitating of club-type activities was portrayed as a form of abdication from the parents because they could take advantage of ‘babysitting’ while they were ticking boxes on a metaphorical ‘healthy child’ checklist. In this instance, the reference to ‘babysitting’ was an empathetic one. The practitioners interpreted it this way because they had done similarly. However, the inclusion of the reference to evidence as interpreted through their practice permitted them to distance themselves from the parents’ story and make a judgment about it. Using evidence pulled practitioners away from their empathetic frame; this is discussed further in the evidence frame.

Practitioners were also empathetic with aspects of the parents’ environmental frame. They elaborated that play parks were not parent-friendly spaces.

**SLP:** Most of the parks I go to now are... are... we both jump on the zip slide with [daughter], who’s 5 and I’m on it too with her cause she’s too wee for it.

**All:** Uhuh... yeah...

**NHS:** But then your bum’s scraping along the ground, isn’t it!?

**SLP:** Not, not, mine! [laughter]

This instance was followed almost immediately by a reference to historical experiences. Interestingly, in the parents’ and in the practitioners’ frames, the instinct to bring selected historical experiences forward and integrate them into the current situation featured prominently in both participant groups, particularly when speaking about the environment.

**HLP:** What I was meaning by the products and services is that there is so much out there now, much more than generations before, ‘go to this or go to that’ or you know, ‘pay for it and it’s done’ as opposed to...

**SLP:** But you lose skills then...
HLP: ...staying at home and go out in the back garden.

EYP: And having to ... to actually come up with your own ideas.

SLP: You lose the skills.

HLP: Absolutely.

EYP: Like playing dead man falls and things like that.

HLP: But, but yeah, but it meant, but again thinking about this, I remember having this conversation with a friend of mine whose mother didn’t work growing up, cause mine did...

NHS: Right...

HLP: ...and I remember [friend] saying ‘yeah, my mum didn’t like do lots with us, in fact she was usually just chucking us out, out the house.’ But then they were creative...

ALL: Yeah

EYP: Right and it was like ... ‘go and play’ and that’s what it was, it was go out and play and, and I think we’ve lost and I was saying to you that I think there’s also a cultural thing about being anti-child and that we actually don’t... like all these signs saying don’t play games or grumpy neighbours don’t want you ...

NHS: Yeah, no ball games...

Practitioners noted, as the parents did, that the demand for parents to facilitate play and other active opportunities was a new one. They recounted personal or shared experiences of historic parental roles that fostered a different relationship with the immediate environment around the home and community. Their assessment was that this difference was due to a cultural shift that cast children in different roles resulting in a loss of skills for the parents and yielding a social environment not readily accepting of small children spending days out at
unsupervised play. This discourse raised a similar safety issue that the parents had also identified regarding play spaces and threats from strangers.

**EYP:** You said it didn’t come up in your conversation … maybe the kids were too young but there is that stuff and I think ... your community safety and stuff, [SLP], I mean there’s also that ... you know a police man will tell you there’s no paedophiles in the park, they’re all online...

**NHS:** Uuhh...

**EYP:** And we stick our kids in front of computers instead of sending them outside...

**SLP:** Yeah ... you and I talked about how there’s possibly a perception out there that it’s not safe to let children play out.

Eliciting empathetic responses from the practitioners was the purpose of employing an approach like HDC. Practitioners were encouraged to think imaginatively with the parents’ stories to develop a connection with the firstness or immediacy of the parents’ experiences (Sparkes and Smith, 2011; Tateo, 2015). These examples demonstrated that the practitioners empathised with selected aspects of the parents’ stories. They validated specific contradictions like needing time away from their children or finding play parks a difficult space for parental engagement in IAP. They also expressed a shared view of how the role of parenthood has changed in response to socio-cultural evolutions and acknowledged the difficulty caused by such historical discontinuity. Relying on mainly structural approaches for inspiration practitioners generated a variety of ideas in empathising with the parents’ environmental frame (Murphy, Dugdill and Crone, 2009). They discussed forms of social marketing (Keller et al., 2014) at length by proposing positive signage to promote play or invite ball games including pictures in parks suggesting games a parent and child could play together. This idea progressed into a thorough-going discussion on the design and installation of parent-powered park equipment, an idea that had also been discussed in the parents’ workshops. The purpose of this idea was to invite an occasion for brief, moderate to vigorous intensity effort from
both the parent and the child as they operated a tandem mechanism for some amusement, i.e. zoetrope or roundabout, etc.

**EYP:** They’d need to have a purpose and a function so if you were doing something to, in order to make something work for your child.

**HLP:** Uhuh...

**NHS:** Then that kinda gives you, it kind of gives you...

**EYP:** A role in it...

**NHS:** ...you know, bridges that gap, doesn’t it? It gives you the leverage to get involved whereas some people might feel self-conscious about that.

**HLP:** Absolutely.

**AB:** Yeah, especially in a public space.

**NHS:** No, that’s a good one.

This discussion continued to generate ideas that included ‘jog and dog’ sessions (led jog sessions with families and their pet) and grandparent story walks (group walks with grandparents and small children that involved storytelling about local history, etc.), leading to a discussion about flagship walking towns (large-scale campaign to get a town badged as a walking-promoting town).

Adding their empathetic inspiration to the parents’ frames, the practitioners began to explore the participatory thinking that Brown and Kātz (2009) note leads to innovation beyond the present context reached by functional and emotional collaboration. This ‘extending of boundaries’ is as biological as it is conceptual. As Kauffman and Gare (2015) explain embodied intentionality is both extant-contextual and possible-contextual permitting every present condition to be potentially enveloped by an emerging ‘actual’ extending the organism’s border. This is a form of emergence that Favareau (2015) explains is common to all living systems, both individually and communally: a form of biosemiotics that “captures” salient aspects of immediate experiencing and preserves them for “future
interaction possibilities as biologically instantiated signs” (p. 588). This unified view of biology and meaning-making proffers an explanation of ‘becoming’ that is cumulative, systemic, goal or end directed, yet also meaningful, valenced, and requiring others (human and non-human agencies) for its essential amplification. By sharing empathetically in the parents’ stories, the practitioners were engaging in change possibilities beyond just generating ideas; they were becoming part of what could become. For Kauffman and Gare (2015), evolution, and life for that matter, is a succession of ‘adjacent possibles’ that permit persistent but unpredictable becoming. However, all becoming is constrained by alter agencies that press back against ones’ borders extending, as is evidenced in the practice frame.

6.4.2 Practice Frame

Practice in this sense refers to the normative professional practices and modes of working to which the practitioners representing the various domains of health, leisure, and early years education were accustomed. During the create workshops, these ways of working became antagonistic to the empathetic frame in the design process. The contradictions in this frame contracted the imaginative ruptures developed in the empathetic frame. Processes that should have aided creativity did little to expand or catalyse development when working with this frame. An example came from a discussion about the relevance of the processes of the create workshops. In identifying ideas that addressed parents’ frames, the practitioners began to question the worth of continuing to develop ideas if they might not be feasible or if they could not guarantee outcomes. A mismatch of values and working principles was emerging. The practitioners were sceptical that working principles derived from the parents’ stories would lead to their necessary value outcomes; rather, they might lead to the parents’ idiographic value outcomes making the design and the outcomes themselves truly bottom up (derived from parents) but lacking wider instrumentality. By implication, their current approach to work was construed as top down (derived from practitioners). This caused some concern for the practitioners who viewed their everyday practice as aligning with a bottom up approach known as asset-based community development.

**NHS**: Uuhh, we actually don’t just do top down work just, just ...
AB: Oh, no, of course...

NHS: because what you’re describing to me is community development and we’ve been doing that with our health promotion for many, many years. It’s just we wouldn’t go through...

AB: No, please don’t, please don’t misunderstand...

NHS: Oh no, I’m, no I’m not, it’s, I’m just, I guess as you’re talking and describing it all,

AB: Uuhh...

NHS: I’m thinking, right, to me, that you know, in my world and in my language that is just community development and asset building. So rather than going through some, you know, this process which is obviously founded in, you know, literature etc. We would just go out and engage with groups and talk to them and get ideas and generate interest that way, so it’d be done in a much less kind of I guess ‘academic’ way.

Asset building is a community development approach where work builds on assets currently available in the community (South, 2014). This view says that solutions to community problems pre-exist within a community’s assets. Following this line, practitioners wanted to foster engagement and responsibility within the community members, especially when considering the parents’ stories about park and community spaces. However, the practitioners saw this as linked to parents’ desire to change and that their motivation to do so must be directed to their outcomes.

SLP: Yeah, cause, cause we’re talking, we are talking about brainstorming here, but I think there’s, you know, we’ll have all our products and all have
our opportunities here that ... but I think there’s a few other things that... that we’re identifying here that are going to need...

**NHS:** Yeah...

**SLP:** ...going to need a community group.

**AB:** Okay, uhuh...

**SLP:** For, for me... You know some sort of constituted group who’s going to say we’ll look...

**EYP:** Take ownership...

**SLP:** Cause it’s back to this ownership, parent responsibility, buy-in, you know...

**EYP:** I think this is where I struggle sometimes to, I know you’re saying be creative and take the professional hat off, but I keep thinking capital costs.

**NHS:** Yeah.

**EYP:** I keep thinking community groups need to be fostered by their community.

**NHS:** Yeah.

This dialogue showed the practitioners’ concerns about whether prototyping the parents’ ideas would produce outcomes or become self-sustaining. Reflecting on the idea of the parent-powered park equipment, the same idea that had featured positively in the empathetic frame, now took a lack-lustre turn when concerned with outcomes like behaviour change and motivation.
**EYP:** I suppose as well for me there’s a... Before we get to our outcome data... we’re assuming that people will show up...

**NHS:** Yeah...

**EYP:** ...and the people will go and, and I mean just looking again at some of these parental factors, you know it’s the usual old stuff - oh I’m too tired, I’ve got work, I’ve got this, I’ve got the other thing - actually if we don’t tackle, if we... The thing is that by making it easy and making it difficult to not get involved, because if you don’t do that then it’s too easy, because from everything you said the other day, I am, I have no confidence that those parents want to change.

**AB:** Yeah, no they don’t, especially, but I think that’s the point.

**NHS:** And, and unless they want to change then actually it doesn’t matter what we put on. Cause as I was doing this earlier as well I was kind of thinking... I don’t want to talk homogenously about people, but all the same barriers are going to still be in the way.

**EYP:** Cause uhuh, ‘I’m too tired to push, no, just push yourself...’

**NHS:** Uuhh...

**EYP:** Forget the blinking, you know - pulley thing, ‘just climb up the hill yourself.’ ‘ You know, and so you end up then having this lovely stuff [referring to park equipment] and actually the child is creating a furrow beside it because they’re [the parents] ignoring it.

The practitioners were disparaging of parents’ continued engagement or ownership of the ideas they had produced, and they were confident their previous experience gave them good reason for this. They associated a desire for change...
with engagement, and engagement with ownership. By noting that the parents were not specifically asking for help to change their behaviour, the practitioners took this lack of congruence with their value endpoint as a sign that parents would not engage in the activities if developed. Though many of the parents that contributed to the design work had exhibited engagement and had contacted community trusts and the local authority on their own, particularly about their local parks, practitioners noted that their number was not sufficiently large enough as a sample group to convince them that they were anything more than a handful of parents who would be keen at the beginning but would not ‘stick with’ programmes. They preferred the security of building on existing programmes for the prototypes, but they conceded that did not work either.

**NHS:** Yeah, I do think you have to go with looking at what assets we have and trying to build on them and remove the barriers because, and I guess that’s why I’m struggling a bit with the kinda... I mean I’d love to just kinda go like ‘yeah, let’s do this and let’s do that’ but I keep thinking ‘will that cost money, will it ever get used?’ You know, just all the kinda questions you’re sort of saying about...

**EYP:** Absolutely.

**AB:** Yeah, yeah...

**NHS:** So to me, it’s about understanding what’s there. I mean I know that we tried that locally through the toddler’s group to try to kind of co-locate and kind of align adult activity classes with activities for the children and unfortunately it didn’t work either. There’s still got to be an appetite but I think it has to be small steps and a lot of it’s about making sure that people receive the information, they’ve been prompted, they’ve been cued and, and we’re making it easier.

This process of informing, prompting, cuing and removing barriers was the form of work the practitioners associated with community health improvement, and they extrapolated it to lifestyle behaviour change, though it became clear that the
process and outcomes related to this expectation were unclear. One of the practitioners picked-up on the contradiction and opened an opportunity for the design process to be plausibly considered. Although HLP could see possibilities in the approach, it was also unclear how practitioners’ and parents’ ideas would lead to change.

**HLP:** There needs to be an appetite there, and there needs to be a will to do it. We can obviously facilitate that if we think that there’s an opportunity to try to get interest and get people together and stuff, but I guess I just feel that there’s been so many times in the past where we’ve attempted to do something bottom up, which is not really bottom up, it’s about us kinda going in and, and trying to foster an interest and what happens to that interest? [Shrugs] You know...? But it maybe through what you’ve done in the 2 areas that, I don’t know... I don’t know number wise whether they would... [looks to AB]

**AB:** You’re exactly right, the point of us trying to do it this way... For instance, an idea that we think might be feasible, I’m going to go back to them [the parents] with it, and if they say ‘no we won’t,’ we’ll have to come back. But that is the purpose of a prototype, low investment, low risk. You only build on the bits that work.

Ideas from this frame favoured working with existing partners through school and leisure programming, work for which outcomes were already known or established. Practitioners offered ideas for linking community projects with CfE, developing forest schools, trying walking groups timed for dropping children at school, ‘come and try’ fitness sessions during swimming lessons; all things they had previously tried before and that were considered ‘good practice.’ Innovation can come from current practices; a ‘brand new’ practice is not always what is required to catalyse change (Brown and Kätz, 2009). However, the difficulty with the practitioners’ focus on outcomes rather than empathising with stories was that they struggled to see their desired outcomes through the parents’ experiences.
The tensions in this frame arose from the perennial struggle between evidence and practice in generating health-related outcomes. Practitioners were ever aware that their efforts and the resources that supported them were linked to achieving specific outcomes for which they must give account. In contrast to the empathetic frame, practitioners felt constrained to begin with the outcomes they required and work backwards from practices they understood to produce those specific results. The evidence-outcome link is considered established enough that the problematic inconsistencies between academic findings and practice effectiveness has shifted scrutiny and responsibility for outcomes to the practitioners who in turn shift it to the individuals they wish to help because practitioners cannot control whether they change (Kok et al., 2012). Ironically, the outcome-based approach as applied by the practitioners was at odds with developmental approaches that advocate participation, co-production, and relationship building because the outcomes of these person-oriented approaches are still linked to a top-down translation of an evidence-derived ‘problem’ that required to be solved whether or not it was a problem as defined by the persons (Elwell et al., 2013). For the practitioners, change was the desired outcome and parents’ held the key; they were the limiting reactant of the practitioners’ inputs into the change formula. However, the meaningful mismatch may be between the phenomenon of behaviour change as described by accepted ‘evidence’ and the lived phenomenon of changing behaviour.

6.4.3 Evidence Frame
As the Create workshops progressed, ‘evidence’ became a recurring contradiction in the prototyping process. Though never fully articulated, the role of evidence was very important to the practitioners, and they were concerned to link their practice to evidence. This link related mainly to outcomes that they were required to demonstrate in their practice and to processes they understood to lead to such outcomes, though this aspect was much less clear. Since the design challenge involved promoting a specific physical activity behaviour, they often mentioned needing to get ‘behaviour change’ as a by-product of their work because without it the effort and investment would be low merit.
EYP: You know we’ve got our, our GiRFEC and so on and so forth happening just now, but at a more policy level, you know. What, how do we actually engage parents, you know? Taking it to the second question about, you know, their [parents’] health needs, how do we actually change that behaviour, how do we get that behaviour change...

AB: Right, uhuh...

EYP: ...from them? And that, you know... just from the groups that you’ve been consulting with, all I know is it was kinda pulling teeth at ST a little bit, and it tends to be, that if those are already the parents that are engaged... particularly the ones that are going along to do it, but they might also be the ones that are already, you know, travelling to [nearest country park] or travelling here or travelling there. How do we make sure that by doing this we’re actually targeting the people that we want to target and changing that behaviour?

Understanding how behaviour change could be made was a persistent concern, and it did not resolve. The changes that the practitioners were looking for from the parents were never specified, and the target group the practitioners were concerned about reaching frequently shifted beyond the context of the design work to hypothetical parents who were considered ‘hard to reach.’ In the segment above, EYP spoke about the parents participating in IGNITE as being already engaged, and EYP was correct in that these were the parents who were willing to take action. However, most of the parents that contributed to the design workshops were not regularly active by their own admission nor did they regularly do physical activity with their children. The majority of the parents did not exhibit the behaviour they were working to form. Practitioners were concerned that because these parents had engaged with the design process, any solutions that would satisfy them would not be effective in their latent target group in whom their desired outcomes were most elusive. These were individuals they considered ‘hard to reach.’ From the original planning meetings, I understood the practitioners’ use of this term to mean individuals that were likely to be most affected by
socioeconomic deprivation and inequalities; however, in policy speak, this term also extends to “black ethnic minorities, asylum seekers, people with disabilities, young people, and old people” (Cinderby, 2010, p. 240). These groups attracted the majority of their funding, so it was important for practitioners to improve outcomes for these groups.

**NHS:** I just, I just think, you know, if you’re thinking about bell shaped curve, obviously there’s the hard to reach who we’re going to really struggle to, to get kind of engaged and will constantly find barriers as to why they can’t. But it’s going back to what you were saying about is the sort of kinda proportional universalism there as well, isn’t it? If you kind of shift the bulk or the mass then everybody kinda shifts with it. But I do think that there’s going to be a whole lot of people in that bell shaped curve who are not currently active to the required level who actually will engage if things are made a bit easier.

**EYP:** And so do I.

**NHS:** Uuhh, we might not get the, the hardest to reach, I don’t think. I think that’s always going to be an issue.

These first two excerpts of data above showed the main contradictions in this frame: the processes for changing behaviour were unclear, and any designs we developed needed to produce outcomes that affected individuals taken not to be the ones engaged in co-producing this design.

The practitioners had expectations that any actions they took needed to have a broad effect to make behaviour change and to do so on a scale that would affect those hardest to reach. In referencing “proportional universalism,” NHS understood that getting a large enough effect in the majority of a population would have an accompanying effect on groups in the ‘tails’ of the bell curve. However, according to Macdonald, Beetson and McCullough (2014) proportionate universalism (PU) is “the resourcing and delivering of universal services at a scale and intensity proportionate to the degree of need. Services are therefore universally available, not only for the most disadvantaged, and are able to respond
to the level of presenting need” (p. 3). When interventions are applied universally, those groups with the most access or skills are considered best able to take advantage of them, yet targeting disadvantaged groups can lead to their stigmatisation and to resentment of public funds being used selectively. PU policies and work that supports them, like that of the practitioners, tend to be offered across the social gradient with effectiveness measured by the degree of change in the worst performing target groups. The practitioners wanted the output of this design work to be able to achieve change in the sample group on a scale that would affect the worst performing target groups, though how this might be achieved was unclear.

In design terms, practitioners were thinking recursively between their value outcomes and their previous practice and applying a working principle that linked them together. They wanted this working principle to be evidence-based, and they had formulated it in this manner: \textit{parents have motivation if they exhibit engagement with activities that the practitioners make available via their knowledge and resources. The application of their resources equates to empowerment which, in its fullest expression, means that the parents would take over ownership of and responsibility for the programming and related behaviour so that the continued need for practitioner input was diminished.} This was the type of change they were expecting. In the exchange below, the practitioners were at the beginning of the Create workshop and while discussing their insight statements, their working principles for behaviour change were evident.

\textbf{SLP:} What about this, how, how are we actually going...

\textbf{HLP:} in terms of physical activity...?

\textbf{SLP:} to capture their imagination or engage with them as a broader market, you know...?

\textbf{AB:} You haven’t got an idea to market yet, though. We don’t have an idea yet.

\textbf{SLP:} I know, but you’re going to have to market it.
**NHS:** What do we, what do we...? It’s how do we effect behaviour change?

**EYP:** Yeah ... isn’t it, yeah.

**SLP:** I know, but that’s, come on, that’s the broadest thing ever.

**HLP:** [offering an alternative wording] How do we motivate people to become active?

**SLP:** No, I think, how are we going to, what’s the carrot? Or not what’s the carrot, but how might we, how might we attract someone to buy a product or to go to a free product...?

**NHS:** So how might we get parents to prioritise their health needs aligned...

**EYP:** Alongside the children, yeah...

**NHS:** ...or alongside, yeah...

**AB:** Right, let me, let me change this for you just a little bit. You’re on the right track, and we’re going to get where you want to go, but that’s still the end game, that’s an outcome. What we have to do for this purpose is to keep the person [the parents and children] and their stories at the centre of our thinking. Right? So we need to refer to the person in whatever you decide.

In this instance and others throughout the Create phase, practitioners viewed the parents instrumentally; they had to. Using an evidence frame required understanding behaviour not as an expression of the parents in their ongoing experiencing of life, but as objects upon which the practitioners’ actions could have an effect in producing behaviour change. Salvatore and Valsiner (2014) refer to this as the “psycho-bug metaphor” (p. 220). Given the plurality of psychological domains, interventions were understood to operate by a coupling between some dimension explained by scientific knowledge and a specific, corresponding psychological quality in which the adjustment of the dimension had a corrective effect on the ‘malfunctioning’ psychological factor. Thus, the function and social
value of a lifestyle intervention was to eliminate the psychological or social cause of a normative violation as identified by the practitioners via evidence, not by the parents (Salvatore and Valsiner, 2014). This was an example of efficient causality as a working principle for the practitioners, and it formed the basis of their conception of evidence-based practice. They expected that change could be variously caused by influencing the mediating factors of imagination, engagement, carrot dangling, motivation, or self-prioritisation. Such thinking corresponds to classic intervention models where an efficacious treatment or model taken to provide a nomothetic solution to a problem could be applied in a real-world setting to achieve the desired outcomes (Abraham et al., 2009; Glasgow and Emmons, 2007), and this was what the practitioners wanted from this frame and the design overall.

**NHS:** I think, I think … we were probably hoping for some sort of panacea, you know, some, some sort of intervention that, that you know and we could apply across global settings...

**EYP:** Well, aye...

**NHS:** …that, that, you know would really encourage people to get out there and do more.

**AB:** I understand, but what if that’s [global application] not possible?

**EYP:** I think actually what I was hoping for was more of a sense that... more of a sense that if you offered us something we are ready to, go and get it.

**NHS:** Yeah, no, yeah, uhhuh.

This evidence-outcome relationship meant that practitioners could not justify working with individuals in a meaningful person grammar (Brinkmann, 2011); rather, when considering behaviour change, they felt they had to achieve broad-ranging outcomes.

Equally conflictual for the practitioners was their conception that behaviour change was capable of being produced and that such a product could be globally (within a given population) effective. Smedslund (2012a) identifies this as the ‘scientist-practitioner model’ referring to the pressure placed on practitioners in
mental and behavioural health to achieve their outcomes by scientific means (Baker, McFall and Shoham, 2008). He contrasts this with the ‘bricoleur’ model of psychological practice which involves “work[ing] in innovative ways with people in their life-situations, relying on knowledge of human nature, language and culture, and specific individuals” (Smedslund, 2012a, p. 644). Smedslund (2016, 2012a, 2012b, 2012c, 2009) and others (Brinkmann, 2015a; Harré, 2016c; Salvatore and Valsiner, 2014; Toomela, 2010) have been critical of the utility of statistically derived psychological models for extending the theory and practice of psychology not least because practitioners require to be open, to not take anything for granted, and to show sensitivity to people and their situations. In applying this frame, the practitioners were responding to the tension between the scientist and bricoleur approaches whereby their practice and empathetic frames, which are resources in a bricoleur approach, could not be reconciled with the evidence-based demands of producing outcomes using a scientific approach. Because of my academic role, practitioners expected me to have ‘scientist’ skills that would afford more precision, regularity, and control of outcomes than their current modes of practice. This frame produced no prototype ideas as no working principles and accompanying actions were identified as producing the value outcomes the practitioners required.

6.5 Telling the Story of a Model World

The frames from both the parents and practitioners produced a variety of ideas for interventions including some stark contrasts in the diversity of values and outcomes expected from them. Developing an intervention using the various design frames required integrating the parents’ and the practitioner’s trajectories into an intervention that favoured the parents’ common sense understanding of IPA while also incorporating the parents’ and practitioners’ value frames. Together these required to be, as Salvatore and Valsiner (2014) suggest, “…projected onto the representational space of the scientific knowledge and in so doing providing the heuristic and theoretical devices for interpreting it” (p.223). This part of the process was the designer’s contribution and was presented from a story analyst’s perspective in the sections above. However, in shifting to the role of designer, I worked abductively between the stakeholder’s frames and the theoretical
abstraction of the phenomenon using a narrative approach to create, not an intervention as such, but a material-discursive intra-action of a model world. In this thesis, phenomena were not considered pre-existing but were made knowable in their entanglement by the measurement apparatus constructed to differentiate their particular instance of wholeness (Barad, 2007). Having applied a narrative apparatus, the phenomena in this instance were the storied worlds of the participants and the orientation of IPA within them. Though multiple voices and stakeholders contributed to the frames, Krippendorff (2006) notes that their intents and understandings need not be shared to create a design using narrative theory, “The narratives of users may go only as far as they have to… An artefact has the chance of becoming real when narratives fuel interactions within the network of stakeholders that can make it happen” (p. 247). Intervening in this sense entailed enacting a possible future based on the imagined intra-actions between the person and the artefact of the intervention, which itself becomes a material-conceptual bridge between the framing of the person’s canonical understanding of IPA in everyday life and the theoretical elaboration of the phenomenon as a whole that could account for the output of the intra-actions. Engestrom (2011) and Virkkunen and Newnham (2013) identify this as the process of ascending from the abstract to the concrete.

Theory is used to conceptualise a new activity coming into being in a given system, and its simple, initial relationships are modelled; this is abstraction (Davydov, 1999). Engestrom (2012) identifies the resulting model as a germ cell, “the smallest and simplest, genetically primary unit of the whole functionally interconnected system”(p.288). The abstracted germ cell gives way (ascends) to a concrete reality through its use, by forming dynamic connections in the system that become enriched and expanded by interaction resulting in transformation and ultimately generality. This explains why, as Virkkunen and Newnham (2013) note, “nothing historically new is born as empirically and statistically general” (p. 44); novelty can only emerge from the exception to the rule. In my role as designer of the intervention prototype, the participants’ frames were abstracted from the stance of a storyteller to create a storied germ cell whereby their data was “recast”
and expanded “to show a story and, in turn, a theory through CAP [creative analytic practice]” (Smith and Sparkes, 2009, p. 283) that through its use might be capable of creating novelty.

The parents’ and practitioners’ designs generated a variety of ideas that could have been prototyped. While a number of these ideas were initially pursued and more than one was prototyped, only one was examined in this thesis: a digital smart phone app. Adopting the stance of a storyteller in designing the prototype entailed letting the participants’ stories speak. Not only were stories expressive of the persons who made them, so to tell them meant not to intervene on them, but also, their telling had to be crafted from a point of view, so the theoretical contribution was, instead, shown rather than given, and control of its interpretation relinquished and entrusted to its audience (Smith and Sparkes, 2009). While storytelling in its various forms usually employs narrative tools like plots and characters and other narrative structures (Sparkes, 2002), material objects also offer a form of storytelling (Chamberlain and Lyons, 2016). Objects can be physical (occupying 3-dimensional space) and non-physical (concepts, processes, systems), but both are material in that they matter in their entanglements with people and happenings in socio-cultural relation (Humphries and Smith, 2014; Valsiner, 2014b). This ‘enmeshing,’ to use Ingold’s (2004) term, was evident in the participants’ frames. When asked to think about how a person might engage in PA with a small child, without exception, the parents and the practitioners evoked a mediating action, concept, or object in their frames.

In considering a behaviour that did not yet exist, the parents and practitioners imagined scenarios that set selected aspects of their lives and persons in relation to material objects that by their intra-action would lead to the specified behaviour. Zittoun and Gillespie (2015) interpret such a request for an artefact as a demand for semiotic reconfiguration whereby the participants sought a guided (via the artefact) imaginary experience to be made real through intra-action. This is similar to Harre’s (2002) task-tool metaphor and Brinkmann’s (2011) technological artefacts by which they postulate that human lives are normative and constructed by complex symbolic exchanges facilitated by tools (which includes the brain) and
material artefacts/technologies that maintain their connections. Applying these theoretical contributions to the material production of the app, the app became a material-discursive device designed to narrate the storied germ cell as a symbolic resource with which parents could dialogue to re-configure their personal culture through agentially constrained intra-actions from which unprestatable outcomes would emerge. The object narrative of the app is presented here as its design: its **story**, its **images**, its **content**, and its **design specifications**.

**6.5.1 The Story - WeTime**

Because the parents were the inspiration and therefore the target for the app, it was important that their stories and their orientations to IPA were prevalent in the design. The design incorporated a variety of aspects from the parents’ frames. WT’s most distal relation was to the environmental frame in that some of its content incorporated community and outdoor exploration, while many of its functions addressed contradictions from the self-situational frame where parents expressed that they lacked ideas and the ability to recognise opportunities in the moment. However, the overarching story for the app drew from the relational frame in which parents desired ways to connect with their children in meaningful ways. Since the majority of the parents that contributed to the design generally displayed an Architect orientation to IPA (see section 6.1.1), their ideas across the frames were most expansive when they imagined being able to do what those with a Sower orientation did naturally, making meaningful moments in any time or place.

The app was called WeTime and it invited parents to spend small blocks of time with their children. The name was an elaboration of the idea of a parent ‘making a moment’ with their child. This was implicit of a meaningful, memorable moment that both the parent and the child found mutually rewarding and was therefore shared. Various combinations using the word ‘moment’ were initially used to generate a name for the app with input from parents, children, and some of the nursery school teachers. However, in the context of the two main hosting sites for the app, Apple’s App Store and Google Play, ‘moment’ was a well-used term that mainly referred to photo-related apps. In an effort to retain the metaphor of time having both brevity and depth when spent meaningfully while distinguishing
the app within its intended marketplace, WeTime was the name I selected after several searches of the hosting sites to iterate non-conflicting names. WeTime was derivative of the colloquial notion of ‘me time.’ This turn of phrase is used to imply the need be alone to reduce stress and invigorate one’s self. Language that overtly related to fitness or physical activity was avoided because this was not a feature of the parents’ stories. The app encouraged parents to make ‘moments’ with their children. Moments were facilitated by the content of the app that featured only physically active suggestions, though this was not explicitly noted. When the parents were emotive and imaginative about IPA, they imagined ways to relate with their children that would help them make plans or that would interrupt the routine of life with something they could both enjoy. By focusing on the brevity and immediacy of the activities (most required little to no preparation), parents with contradictions like those from the self-situational frame could capitalise on small gaps of time, making use of the spaces in the day when they were most likely to be home and with their children, usually the small window of time between dinner and bedtime on a given day. The content featured activities that primarily suited a home environment, but most activities could be done anywhere.

6.5.2 WeTime Images

The story of WeTime was extended through its use of images including its icon, its promotional images and its user interface which included an animated character.

The icon (figure 8) featured the app’s name with an integrated clock image set in a colour selected from Pantone’s colour of the year palette 2015.

**Figure 8.** WeTime app icon
This icon was incorporated into two main promotional images that showed how the story of WeTime might be applicable in situations similar to those shared by the parents (see figures 9 and 10).

**Figure 9. Boy in the rain**

![Boy in the rain](image1)

This image related to the fall/winter roll out of the prototype app when the nights were long and parents noted spending a lot of time in doors.

**Figure 10. Girl in the sun**

![Girl in the sun](image2)
This image evoked how fleeting childhood was and encouraged parents to make every moment count.

Even though the app was aimed at parents, an animated character was added to the user interface to encourage goal setting and communication with the children around accumulating ‘moments’ of IPA. Custom animation was too expensive to add at the initial prototype stage of the design, so stock imagery of a bird was used as the character named, Tweet. Upon installation of the app, Tweet was asleep (see figure 11). To wake him, the parent and child had to make moments. During the set-up of the app, parents could select a target number of moments to make in a week. The more moments they made, Tweet would be seen in various stages of waking until, when the goal was reached, he was fully awake (see figure 12).
Figure 11. Tweet asleep

Figure 12. Tweet awake

6.5.3 WeTime Content

Content as explained here refers to all the written content of the app including the user instructions, the activity library, and the actions that the user interface made possible (reporting, feedback, data capture, etc).

When parents downloaded the app, they were made aware that they were participating in a research project. Because the prototype was delivered as a piece of research, the set-up and user instructions included extra information regarding participant information and informed consent and also asked for expanded
personal data that would not typically be requested in an app registration. Figure 13 shows some of the extra information requested in the registration process before the style designs had been incorporated.

**Figure 13. Registration interface**

One of the features of WeTime was to prompt parents with an activity at the time of the day they were most likely to be home with their child(ren). The hours of 9:00 to 21:00 were divided into 3 equal blocks and parents could choose to be prompted with an activity during one of these blocks. Parents were also directed to select a goal for the number of moments they thought they could achieve in a week which corresponded to the animation of Tweet. Figures 14 and 15 show the goal-setting interfaces.
Figure 14. Goal-setting interface (1)

Weekly Target
Please enter your weekly target.
High: 7+, Medium: 4-6, Low: 1-3
3

Log out

Figure 15. Goal-setting interface (2)

Completed this week
0

Your weekly target
3

Tweet is sleeping. It's rumoured that making moments will ruffle his feathers, so let's get playing! Tap Tweet to start an activity!
Tweet’s animation corresponded to the number of moments selected, meaning if 3 moments were selected, he would be fully awake by the time 3 moments had completed; whereas, if 7 had been selected, he would be fully awake by 7 moments. Each stage of animation was accompanied by an encouraging statement directed toward waking Tweet by making yet another moment (see appendix N for the list of statements).

The content included an activity library (see appendix O) with an initial set of 20 activities: 5 activities from four categories – learning activities, eco activities, imagination activities, sport/fitness activities. The activities mixed games, tasks, household chores, roleplay, outdoor exploration, and learning activities that incorporated literacy, numeracy, and eco-friendly topics. Each activity was designed to take 8 to 10 minutes if carried out once, and during that time the nature of the activity promoted brief bouts of moderate to vigorous activity for the parent and the child if done together as instructed. Figure 16 shows the user interface for selecting an activity.

**Figure 16.** Activity selection interface, e.g. role play game

![Activity selection interface](image-url)
In figure 16, the green start button related to another of the app’s features. Most modern smartphones are capable of recording triaxial accelerometry, and WeTime was designed to collect such data once an activity was initiated. For the purposes of the prototype, when an activity was begun, parents were asked to press the start button and then wear their phone on their waist in a secure carry strap provided for them. Then when the activity was completed, parents were instructed to press the red stop button at which time they would be asked to rate the activity (see figure 17).

**Figure 17. Activity feedback interface**

While the story of the app was derived mainly from the parents’ frames, much of the functional content was derived from the practitioners’ frames as they were concerned with incorporating evidence-based features of behaviour change.
like prompting, goal-setting, time management, and self-monitoring (Direito et al., 2014). It is postulated, in accordance with the stated assumptions of this research (see Chapter 3), that contrary to their representation in the literature, these features do not have intrinsic forces that act upon components of persons eliciting a predetermined effect. Rather, if these material-discursive agencies intra-acted in a particular instantiation of measurement (i.e. app use), their agency would be detectable by their variability in the parents’ experience (more on this in Chapter 7).

6.5.4 WeTime Design Specifications

Design specifications pertain to the technical and back-end requirements of running and managing the app. To be inclusive of as many parents in the prototype locations of ST and RV as possible, WeTime had to be designed ‘cross-platform.’ This meant that the app had to meet the operating requirements of both Mac and Windows devices for their previous 4 versions. As mentioned in Chapter 4, this caused some difficulty in making WeTime available for download.

When a parent downloaded WeTime, any input data was sent to SCET’s secure servers and stored. During the app trial, the back-end was managed via SCET’s developers; none of the design team (i.e. myself, parents or practitioners) had independent access to edit content or review data. This was mainly due to extra work and cost required to make a back-end management system, but this was a feature that could be added later. A data signal or Wi-Fi was sufficient to send small-bit data like registration information; however, because the activity data was initially recording large-bit data for accelerometry, it regularly overwhelmed the phones’ capacity and crashed the app resulting in incomplete or lost data. Even when this feature was later disabled, many users struggled to send feedback from their activities because the app made intermittent connection with the server due to poor signal strength or lack of Wi-Fi. Regarding the accelerometry itself, because of WeTime’s cross-platform requirement this additionally meant that the app was designed using a kind of coding template rather than making a custom design each for Mac and Windows. The use of this template meant that the accelerometry could only be captured at max 10 Hz and not all phones would record all three axes.
This was not discovered until the app development was near completion so the function was trialled in principle to test the parents’ use of the function and to see what kind of data was returned; however, as already noted, most phones were not able to cope with recording and sending the quantity of data required which made its use frustrating for the parents. All the content, coding and data from WeTime was hosted on SCET’s servers for a period of 4 months after which WeTime and its data was mothballed.

Together, the stories, images, content, and design specifications of WT formed an object that is a germ-cell of possibility. Its materiality amplifies a narrative that invites an imaginative experience in its user, thus its story is necessarily unfinished requiring to be elaborated through use. For its user, WT has the function of providing alterity, a strangeness that may be used for narrative reproduction, or may rather be assimilated in an innovative way.

6.6 Chapter Summary
Beginning with a conceptual orientation to the practical and theoretical processes of design, this chapter developed the parents’ and participant’s approaches to creating novel conduct. Parents developed environmental, relationship, and self-situational frames for imagining IPA. Across the parents’ frames, a variety of experiential value endpoints were derived, though interestingly, none of these designated IPA as a value end in itself. Practitioners wrestled with empathetic, practice, and evidence frames for producing IPA. Practitioners began the design process with the empathetic frame using it to identify aspects of the parents’ lives and circumstances that could be leveraged for producing change. However, the practitioners were uncertain about how to produce the kind of behaviour change they desired mainly due to a mismatch between expectations and experience as respectively raised by evidence and lowered by practice. Selected contradictions across the participants’ frames were developed into a storied object, a digital smartphone app, which is the germ cell of a model world with its own dialogical agency. The next chapter follows the implementation of the WT story to understand how it spoke and how it intra-acted (or didn’t) IPA.
Chapter 6 – Summary Box

Given the relational foundation laid in chapter 5, this research could not presume ‘appropriate’ steps to take for creating this behaviour of intergenerational physical activity. The practitioner frames expounded in this chapter, demonstrated the contrast between the relational approach developed in this thesis and an evidence-based approach. In normal intervention practice, the process would begin with community consultation, usually in the form of a needs assessment. This would provide the practitioner with context and, hopefully, buy-in from the community (as in asset-based community development). Then that information would be interpreted according to the evidence and the practitioner would use their ‘toolbox’ of evidence-based techniques for manipulating the desired change. The practitioner is in the role of an expert, and the selected technique guarantees the outcome that can be expected. If the outcome is or is not observed in a given time frame, then the intervention worked (or did not) by the skilled (or not) use/application of the technique and by the passive reception (or not) of the ‘mechanism’ on the part of the participant. The practice approach outlined above can be considered linear as it functions by an input/output logic. In contrast, this chapter demonstrated a non-linear or emergent approach to intervention design. It is predicated on the understanding that nothing new (i.e. change) can come from normativity; this can only come from variability. To use a radio metaphor, evidenced-based intervention tries to create change from the signal, but the relational approach applied here searched the static for variations.

This chapter used dialogical narrative analysis to explore the relations the parents enacted as they worked to ‘make’ intergenerational physical activity. The parents worked back and forth between their past experiences and an imagined future through the present. This was a process of border testing and a form of abductive reasoning. The parents constructed their meanings of intergenerational physical activity according to their past experiences and projected these into an adjacent space of possibility (using imagination) based on contradictions they currently experienced. This triangulation was important and
constrained what was possible individually and collectively. These contradictions were notable as exceptions to the parents’ narrative canon, and they were key to intervention design. They showed where the ‘borders’ of physical activity within the narrative canon were not fixed because the contradictions were creating tension either as a problem (negative valence) or as possibility (positive valence).

Designing an intervention, then, became about selectively amplifying this border variability with the parents. This was done meaningfully (i.e. according to the parents’ meanings and not according to the evidence narrative). The parents were trying to feel-in to a possible world they were modelling with their imagination. If they changed the environment or if they changed a relationship or if they changed themselves, each action would generate a slightly different possibility, but in terms of generating intergenerational physical activity, could all equally ‘work.’ After prototyping a version of each design frame to understand its feasibility within each intervention context, both a family fitness class and the digital smartphone app were implemented, though the app, called WeTime, was retained as the object of investigation for this thesis.
Chapter 7 – Examining the Narrative Dynamics of Intervention

7.1 Overview
This chapter presents the final HCD phase which aimed to implement the co-designed prototype and examine how parents use and experience it, and in doing so, I was guided by these questions: how do individuals use an intervention and does the prototype intervention generate narrative innovation? This chapter explicates parents’ use of the prototype app, WeTime (WT), developed in the previous chapter. By reconceptualising intervention as dynamic narrative development, this chapter examines how WT functioned in the personal cultures of the parents who used it. To begin, Vygotsky’s method of double stimulation is expanded as a potential method for detecting narrative innovation followed by a situated account of the research design. The findings of the prototype trial are then presented as varieties of narrative (non)innovation followed by a discussion of their application in advancing a dynamic conception of behaviour.

7.2 Theoretical Background

As the previous chapters explain, WT was co-created by practitioners, parents and children, and myself. Its design tells the story of a specific framing of the intended behaviour, IPA, based on the contradictions the parents and practitioners experienced and the model worlds they imagined would reconfigure them. This study was concerned with understanding how the parents used WT with particular focus given to the role of the story of WT – to understand how it spoke and what it did in the parents who used it. To examine this, Vygotsky’s method of double stimulation (DS) was incorporated with a psychotherapeutic approach to narrative innovation known as i-Moments.

7.2.1 Double Stimulation, a brief history

Vygotsky was interested in the dynamic interrelation between affect and reasoning in the development of distinctly human or ‘higher’ psychological functions (HPFs) (Toomela, 2016). He maintained that psychology’s focus on “fossilised behaviour” (p. 171), a term he used to critique a preoccupation with measuring outcomes, led to the ‘entification’ of human behaviour which he viewed as essentially dynamic
and therefore developmental (van der Veer and Valsiner, 1991). Vygotsky, instead, advocated for the prospective study of psychological processes and their emergence via his own functional method of double stimulation (Vygotsky, 1997). In formulating his approach, he found inspiration from Kurt Lewin in his conditional-genetic method and from Wolfgang Köhler’s comparative psychological work in structured situations (van der Veer and Valsiner, 1991). Lewin’s conditional-genetic method was based on a Gestalt understanding of holisms (Witherington and Heying, 2015). In relation to social phenomena, this meant understanding what conditions gave rise to what structures and under what conditions (Chaiklin, 2011). To this principle Vygotsky added Köhler’s work on problem-solving in a structured situation whereby goal-directed action was influenced by 3-dimensional space and the fourth dimension of time to create a situated instance of object identification and tool use in a specific environment (Sawyer, 2002). Vygotsky’s quest to understand concept formation moved him to build upon these Lewinian and Köhlerian principles and to incorporate what was, essentially, a fifth dimension, that of meaning: the human subject in a given situation generated meaning by the use of signs, including language, and used them to reconstruct the setting in a meaningful way that allowed them to act (van der Veer and Valsiner, 1991).

How this principle led to the method of DS can be seen in Vygotsky’s account of Lewin’s waiting experiment also known as the meaningless situation (Vygotsky, 1997):

The subject is asked to wait for a long time and to no purpose in an empty room. She vacillates—to leave or to continue waiting, a conflict of motives occurs. She looks at her watch; this only reinforces one of the motives, specifically, it is time to go, it is already late. Until now the subject was exclusively at the mercy of the motives, but now she begins to control her own behavior. The watch instantly constituted a stimulus that acquires the significance of an auxiliary motive. The subject decides “When the hands of the watch reach a certain position, I will get up and leave.” Consequently, she closes a conditioned connection between the position of the hands and her leaving; she decides to leave through the hands of the watch and she
acts in response to external stimuli, in other words, she introduces an auxiliary motive (p. 212).

This is the principle of DS in sum. The first or initial stimulus was the problem situation as observed in the conflict of motives. This aspect of conflict is essential to the method of DS and, just like the concept of ‘contradiction’ in the previous chapter, it is often experienced as a hypergeneralised tension or an embodied feeling before it ever enters cognitive-rational thought (Sannino, 2015b). The second stimulus came from artefacts which the person in the example above turned into a sign by attributing them meaning as demonstrated when she used the watch to construct new understanding, gain control, and to reconstruct the problem circumstances (Engeström, Sannino and Virkkunen, 2014; Sannino, 2011; Sannino, 2015b). For Vygotsky, DS demonstrates a key process through which persons transform themselves and the world around them.

7.2.2 Double Stimulation and Volition
In DS experiments, the roles of researcher and participant do not fit the usual mould; both the researcher and the participant are active in the ongoing interpretation of the experiment. The researcher might structure the experimental setting to create a context of intervention aimed at provoking transformational processes. This can be considered as the researcher’s agency in the form of an apparatus. The participant also makes a contribution with their own apparatus by constructing meaning which they use to redefine the setting according to their own agency (Engeström, Sannino and Virkkunen, 2014; Sannino, 2015b). DS experiments function to objectify psychological processes by modelling how participants identify and process these intra-actions (Sannino, 2016). This means that the participants control the influence of the intervention or apparatus which was a crucial distinction for Vygotsky, as van der Veer and Valsiner (1991) note:

Vygotsky developed a methodological scheme that introduces the dynamic emergence of novel structures of psychological phenomena as the main focus of empirical investigation... The human subject always “imports” into an experimental setting a set of “stimulus-means” (psychological
instruments) in the form of signs that the experimenter cannot control externally in any rigid way. Hence, the experimental setting becomes a context of investigation where the experimenter can manipulate its structure in order to trigger (but not “produce”) the subject’s construction of new psychological phenomena (pp. 398-399, italics in original).

DS has been used to study psychological phenomena such as memory and attention (Damianova and Sullivan, 2011; Martin, 2012; Puzyrei, 2007) and concept formation (Hedges, 2012; Kozulin, 1986; Towsey and Macdonald, 2009), but recently, and interestingly for understanding behaviour change, it has also been applied to the development of volition (Sannino, 2015a; Sannino, 2015b; Sannino, 2016; Sannino and Laitinen, 2015). Sannino (2015b) defines volition as “the human ability to deliberately influence mental processes, behavior and external circumstances” (p.4) and uses the term interchangeably with will, agency, and intentionality. Vygotsky proffered that a person creates both the stimuli and the tools for regulating his/her own behaviour, and he does so by two apparatuses: one that facilitates a decision to act in a certain way via an auxiliary motive, and another that activates the decision made in the first. The path to doing so must pass through obstacles, hence, the generation of tension and thereby volition (Sannino and Laitinen, 2015) and motivation (Jovchelovitch and Glaveanu, 2012).

7.2.3 Double Stimulation Extended
Sannino and Laitinen (2015) and Sannino (2016) recently reconstructed the waiting experiment with individuals and collectives, respectively, and their findings, produced entirely of detailed qualitative analyses, expanded Vygotsky’s account in three key ways. First, the volitional action to leave the room emerged through a much broader array of possibilities for signifying stimuli than the immediacy of the room, demonstrating the function of personal culture. Construction of the second stimuli encompassed elements of the experimental situation, such as interactions with the experimenter prior to entering the room, while other participants incorporated the experimental situation into their life activities using compromises that permitted them to inhabit the experiment and their own lives simultaneously.
Second, the processes encompassed in DS were dynamic and fluid, and the phases were not strictly temporally ordered. Constructing second stimuli involved multiple spatial-temporal shifts and ambiguities born either of interference from attempting to integrate life activities and the experimental setting, or of attempting to conform to a personal interpretation of the experimental set-up. Third, Sannino (2016) found that, in collectives, the same volitional processes identified in the individuals were constrained by the social situation resulting in people remaining in the room despite individual attempts to create and pursue second stimuli. Though collaboration was evident, individuals suppressed their conflict of motives by employing compromises to act in favour of the collective ambivalence.

7.2.4 Narrative development

These expanded findings show at work the same complexity of social, cultural, contextual, cognitive and historical forces of development that inspired the selection of narrative as the phenomenon of interest detailed in Chapter 3. However, Moen (2006, p. 59) makes explicit that narrative, especially, fits with Vygotsky’s imperative to understand phenomena as complex wholes by adhering to his criteria for an appropriate unit of analysis: “The unit of analysis must be...”

- An integrated whole
- A living part of the whole
- A unified system that cannot be broken down any further, though further division of the whole into elements is possible but results in its decomposition as a living and unified entity
- Must also maintain the characteristics of the unified whole, though internal contradictions and oppositions may exist
- Must be capable of development, including self-development

Brockmeier (2012) attests to narrative’s capacity to organise such human complexity not least because narratives are constructive sense-making processes but also because their personal meaning is a possibility (or not) for action (Brockmeier, 2009). Narratives have been used to detect change and innovation in psychotherapy contexts (Barbosa et al., 2017; Gonçalves et al., 2016; Ribeiro and
Gonçalves, 2011; Santos and Gonçalves, 2009), and their material forms have also been considered as variables in affecting social (Steinemann et al., 2017) and behavioural (Whitaker, Pae and Jones, 2016) change.

In narrative psychotherapy, personal narratives are taken to be constructions individuals use to make sense of themselves (Bruner, 1986; Polkinghorne, 2000; Sarbin, 1986b). However, in this thesis I used narrative as an apparatus of measurement, a material-discursive agency that relationally constitutes persons and their dialogical relations, similar to Valsiner’s (2014b) personal culture. These relations enact the ongoing flow of experience through sedimented, storied configurations and maintain a normative macro-organiser, a person’s general rule of acting, thinking, and feeling (Santos and Gonçalves, 2009).

In this chapter, WT was implemented to understand how the app participated in the parents’ personal culture and whether/how its story innovated the parents’ macro-organiser. This research also extends the application of narrative innovation beyond a therapeutic/clinical to an everyday/free-living setting in understanding parents’ experiences of using WT. Particular attention was paid to the emergence (or not) of narrative or semiotic innovation, as in the psychotherapeutic applications, paired with the application of the method of DS to examine how the material narrative form of WT intra-acted.

7.3 Design, Data Collection, and Method of Analysis
As detailed in Chapter 4, the WeTime app was launched at the end of October 2015 and was promoted in participating nursery schools in RV and ST initially via posters and leaflets in the school and community venues and by sending a letter to all nursery and P1 parents. This was followed by another leaflet distribution and social media (Facebook) posts during the last 6 weeks of the trial. The parents were instructed to download the app, set it up as they preferred, and then use it however they chose. When parents downloaded WT, they acknowledged, by agreeing to the terms and conditions (which consisted solely of the participant information sheet, see appendix I), that they were participating in research on the prototype app, that their registration and usage data would be collected and analysed, and that they would be contacted to be interviewed about their
experience of using WT within 6-8 weeks of download. Initially, as part of the attempt to capture accelerometry data, parents were also asked to wear their phone in a secure running belt while participating in the activities (made available for free uplift at the participating schools). However, as already described in previous chapters, this part of the trial had to be abandoned due to insufficient data capacity and poor connectivity with many of the phones.

During the time of the trial from 26 October 2015 to 7 March 2016, 51 people downloaded the WeTime app, and 34 of these individuals actually installed and used it. All 34 of these individuals were emailed and invited to interview. This invitation was extended on 3 occasions, and of the 34 installs, 10 users agreed to be interviewed (see table 6). It should be noted that none of these 10 parents had participated in the preceding design workshops. Each of the respondents had downloaded and retained the app between 6-8 weeks at the time of interview. Eight of the interviews took place in the parents’ homes and two took place over the telephone due to difficulties in scheduling a face-to-face meeting. The interviews ranged from 30-90 minutes in length with an average length of 50 minutes. All interviews were audio recorded. The interviews were semi-structured but followed a narrative form in that stories and episodic recall were specifically invited (Brinkmann and Kvale, 2015). The bulk of the interview centred on the parents’ story of using the app as they were asked to, “Tell me your story of using WeTime. Begin with when and why you downloaded it and continue up to today.” Within this context, parents were also asked to detail specific episodes of using the app and were encouraged to recount their experiences of engaging in activity with their child(ren).
Table 6. WeTime app-user demographics

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</tr>
</thead>
<tbody>
<tr>
<td>1 Gail</td>
<td>28</td>
<td>1</td>
<td>4yrs</td>
<td>Part-time</td>
<td>Some secondary</td>
<td>Separated</td>
<td>&lt;12,000</td>
</tr>
<tr>
<td>2 Greg</td>
<td>48</td>
<td>1</td>
<td>6yrs</td>
<td>Part-time</td>
<td>Completed college or uni</td>
<td>Married</td>
<td>&gt;50,000</td>
</tr>
<tr>
<td>3 Sue</td>
<td>30</td>
<td>3</td>
<td>4yrs, 6yrs, 9yrs</td>
<td>Part-time</td>
<td>Some college or uni</td>
<td>Single</td>
<td>20,000-29,999</td>
</tr>
<tr>
<td>4 Valerie</td>
<td>34</td>
<td>1</td>
<td>6yrs</td>
<td>Full-time</td>
<td>Some college or uni</td>
<td>Married</td>
<td>&gt;50,000</td>
</tr>
<tr>
<td>5 Isabel</td>
<td>32</td>
<td>1</td>
<td>6yrs</td>
<td>Full-time</td>
<td>Completed secondary</td>
<td>Married</td>
<td>20,000-29,999</td>
</tr>
<tr>
<td>6 Moira</td>
<td>33</td>
<td>1</td>
<td>8yrs</td>
<td>Full-time</td>
<td>Some secondary</td>
<td>Single</td>
<td>12,000-19,999</td>
</tr>
<tr>
<td>7 Zoe</td>
<td>31</td>
<td>2</td>
<td>1yr, 5yrs</td>
<td>Full-time</td>
<td>Completed college or uni</td>
<td>Married</td>
<td>&gt;50000</td>
</tr>
<tr>
<td>8 Candace</td>
<td>36</td>
<td>2</td>
<td>5yrs, 6yrs</td>
<td>Full-time</td>
<td>Completed college or uni</td>
<td>Married</td>
<td>&gt;50000</td>
</tr>
<tr>
<td>9 Mandy</td>
<td>37</td>
<td>1</td>
<td>7yrs</td>
<td>Part-time</td>
<td>Completed college or uni</td>
<td>Separated</td>
<td>20,000-29,999</td>
</tr>
<tr>
<td>10 Olivia</td>
<td>29</td>
<td>3</td>
<td>6mos, 4yrs, 5yrs</td>
<td>Full-time</td>
<td>Completed college or uni</td>
<td>Married</td>
<td>40,000-49,999</td>
</tr>
</tbody>
</table>
All interviews were transcribed verbatim, and dialogical narrative analysis (DNA) as explained in chapter 3 was employed again to explore the dialogical relationships between the parents, the app, their children and this phenomenon of IPA. DNA has already been described as inherently relational, and Frank’s (2010) maxim served as an important guide: “The objective of hermeneutic interpretation is not to display mastery over the story, but rather to expand the listener’s openness to how much the story is saying” (p.88). Taking this view, the parents’ stories were examined for functional intra-actions as mutually enacted in their apparatus of telling (inclusive of me) (Caddick, Phoenix and Smith, 2015). The principle of DS was incorporated into the DNA as dialogical questions (Caddick, 2015; Frank, 2010) to consider whether and how WT functioned as a second stimulus in the participants’ stories. The interplay of dialogues in the parents’ personal culture was further considered holistically by following the development of parents’ IPA narrative from download to the time of interview.

7.4 Findings
The use of WT generated 10 very different stories from the participants. Each person’s story had such idiographic nuances that a case could be made of each one. To condense them, the findings were organised around differentiating agencies enacted in the parents’ stories. Using DNA permitted the feel of motion, of happening within the data such that the findings can be considered as narrative models of ‘processes in progress.’ The first level of organisation is by the type of contradiction that led to the download and use of WT (Figure 16 shows their analytic rather than functional relations). Each of these types have further sub-types that show the variety of narrative development the use of WT generated in the parents’ personal culture. For the sake of clarification, the term contradiction is here representative of Vygotsky’s first stimulus. Throughout this thesis, contradiction has been taken to be a dynamic, historical configuration of personal culture capable of generating tension. Because according to the method of DS the first stimulus functions in a similar way, these terms have been used interchangeably, so the term contradiction is retained to promote continuity and minimise confusion.
7.4.1 Two Types of Contradictions – How WeTime became Meaningful

The principle of DS was helpful in considering how WT entered the parents’ personal culture, or in other words, how it became meaningful. DS was evident in the parents’ stories, though how it operated depended on whether the contradiction was experienced as personal or referred. The differences between these can be seen by comparing the narratives of 1st and 2nd stimuli as shown in tables 7 and 8.

Each case in table 7 is offered as an example of a personal contradiction because the initial match between WT and the experienced contradiction was made directly by the parent themselves. The parents identified with the story of WT (2nd stimulus), and in interpreting it, they made the functional link that generated tension between the current configuration of their personal culture (1st stimulus) and what they imagined it could become.

For example, Gail saw the flyer for WT (see section 6.4.2) and noted she wanted “to see if it helps [her daughter] ‘cause she, she just doesn’t want to do nothing, right enough.” However, she explained that this was relevant because,
**Gail:** I kept saying I have to do more activities with the wean because we don’t, don’t do a lot of things... Just because I don’t get to see a lot, like things she can do. See like when she’s doing stuff in nursery and that? They’re, they’re learning that she can do - it’s like I went to pick her up one day, I can’t even mind what it was, and they told me something that she’d done and I was like, I’ve never known she can do things like that. So it’s to see what she can do and that as well, so...

Gail had recently gone back to work after having been a stay-at-home mum since her daughter was born. She missed being with her, but when they were together at home (which was now mainly in the evenings), all her daughter wanted to do was “sit and watch the telly.” This scenario was a recurrence she experienced as a contradiction. However, when she saw the flyer that communicated the story of WT it became a second stimulus when Gail constructed a signifying link between the contradiction and the possibility facilitated through the WT story.
<table>
<thead>
<tr>
<th>Parent</th>
<th>2nd Stimulus Narrative – Why downloaded</th>
<th>1st stimulus Narrative – Contradiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gail</td>
<td>Gail saw the leaflet and thought it would help her daughter.</td>
<td>Gail and her daughter don’t spend time together in the home. She is missing her daughter grow up now that she is back to work, and she needed help to manage this.</td>
</tr>
<tr>
<td>Isabel</td>
<td>She saw the leaflet and thought it might help with ideas for ‘family time.’</td>
<td>Isabel is a childminder and her house is always full of children. She feels that her own child doesn’t feel special/loved. She feels guilty that she should make more of an effort.</td>
</tr>
<tr>
<td>Zoe</td>
<td>Her friend mentioned it, and she thought that her family needs to be more active and this would help (by family she had specifically in mind just her and her son).</td>
<td>Zoe felt bad that she was always so busy and that her younger daughter gets most of her care and attention at the expense of her older son.</td>
</tr>
<tr>
<td>Moira</td>
<td>A friend told her about it. She thought her daughter might like it.</td>
<td>Moira felt that she missed her daughter quite a lot because her work schedule includes 3rd shift. She also anticipated a negative reaction from her daughter whenever she tried to</td>
</tr>
</tbody>
</table>
engage her in activities she enjoyed (i.e. going for a walk).

<table>
<thead>
<tr>
<th>Sue</th>
<th>When she saw the leaflet she thought it might have things to do with her kids that didn’t involve clubs because she doesn’t have time for that.</th>
<th>Sue’s personal health problems and her son’s severe asthma that required regular treatment prevented her, physically and financially, from having fun with her 3 children.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valerie</td>
<td>Her friend had used it. She wanted to see how fit/active she actually was. She felt they do a lot as a family and liked the idea that the app might measure and confirm that.</td>
<td>Valerie wanted reassurance she was doing the right things (i.e. being active enough). She worries she is not doing enough, and that as her children grow and isolate themselves (with technology in particular) that she needs more ways to engage them. She wants to be needed for as long as possible.</td>
</tr>
</tbody>
</table>
Not all instances of WT use were initiated in this way. In some cases, the 2\textsuperscript{nd} stimulus was referred to the parent by another person who not only made the meaningful link themselves but also on another’s behalf. In these instances, the process of DS could still be seen, but its function in relation to WT and the parent with the referred contradiction was changed. Table 8 shows examples of this type in the parents’ stories.

In these examples, WT engaged the parents’ personal culture through contradictions not related to the WT story, but related instead to other contradictions of roles, relationships or identity signified by another person’s overt request for them to use it. This meant that the initial relation between these parents and WT was one of ambivalence. For instance, Greg agreed to download the app at the direct request of his wife (2\textsuperscript{nd} stimulus) because of a contradiction linked to his parental role (1\textsuperscript{st} stimulus).

\textbf{Greg}: For me personally, at the start it feels like ‘aw you’re doing dad duties’ so you’re kind of ticking a little bit of a box.

In this instance, Greg made no imaginative link with the app, and at this stage, found no possibility in its use. This is similar to Sanninio’s (2016) work examining DS in collectives where she found that in a social setting, the conflict of motives or tension created between the 1\textsuperscript{st} and 2\textsuperscript{nd} stimulus resulted in compromise actions and low volition. However, beginning with a referred contradiction did not preclude these parents from creating signifying links with the WT story (i.e. via a 3\textsuperscript{rd} stimulus). One important difference between this work and Sanninio’s is that while the experimental setting offered a discrete and brief situation in which to closely examine the DS phenomenon, it did not consider what happens when the tension of the second stimulus is extended beyond the initial occurrence. To explore this, DNA was used to understand the narrative development in the ongoing use of WT from download up to the time of the interview.
<table>
<thead>
<tr>
<th>Parent</th>
<th>2\textsuperscript{nd} Stimulus – Why downloaded</th>
<th>1\textsuperscript{st} stimulus – Referred Contradiction</th>
<th>3\textsuperscript{rd} stimulus – emergent contradiction (elaborated or resolved)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greg</td>
<td>Wife told him to.</td>
<td>‘Dad duties’ are a required part of his parental role.</td>
<td>Guilt&gt;Protest&gt;action Values must be met on his own terms.</td>
</tr>
<tr>
<td>Candace</td>
<td>Trying it because a friend was.</td>
<td>She was new to the neighbourhood and wanted to form friendships.</td>
<td>Discovery&gt;context Found a different role, ‘fun mum.’</td>
</tr>
<tr>
<td>Mandy</td>
<td>Friend convinced her to try it.</td>
<td>She felt she was helping a friend.</td>
<td>Felt strange&gt;not necessary ‘Big’ experiences are more important.</td>
</tr>
<tr>
<td>Olivia</td>
<td>Friend downloaded it for her.</td>
<td>She hates using her mobile phone.</td>
<td>None - Devices detract from living</td>
</tr>
</tbody>
</table>

Table 8. Referred contradiction narratives
7.4.2 Personal Contradiction: Tension Maintenance

The stories of Zoe, Isabel, and Gail demonstrate cases of WT use in which parents made a personal and meaningful connection with the story of WT which prompted its regular use. Because of the connectivity problems, the app usage data across the cohort was incomplete and could not be compared alongside the parents’ stories, so the manner and extent of the use of WT was derived from the parents’ verbal accounts. For our purposes, however, this was still the most salient information because, to reprise Brockmeier (2009), it was more important to understand how persons constructed their experiences than it was to verify their experiences.

In these 3 cases, the parents’ macro-organiser relevant to PA was generally characteristic of the Architect narrative. These parents noted feeling responsible and concerned about the effects of their actions upon their children. These tensions were interpreted and signified with the story of WT motivating the parents to use the app to reconfigure them. When they used WT, their experiences were consistent with the imagined resolution included in the initial signifying link, so in this respect, the app ‘worked’ for them. Over time, the ‘working’ or the tension maintenance either stayed the same, promoted innovation, or began to be circumvented.

7.4.2.1 Tension stayed the same

Zoe’s contradiction regarding spending time with her son was nearly an everyday experience. At some point each day, she would have to spend extended blocks of time caring for her daughter (the younger sibling), doing housework, or on certain days, going to her part time job, among many other activities of daily living. The tension would be experienced when she would see him playing console games or using his iPad and realising that he had been doing this for some time.

Zoe: I’d rather that he wouldn’t be sat watching the TV but he’s still at that age that if he’s in the house I don’t know what else he can be doing to keep himself occupied that he could be... - if he’s in the house with me unless I’m doing something with him, he doesn’t really do anything. If he’s outside it’s great, even if it’s a bit colder he can go outside as long as there’s not rain
and he’s, he’s fine but, for me, I would probably sit and watch SpongeBob with him or watch baby TV with [daughter] because I’ll just like, I feel like at times I’m just done, exhausted, just trying to wind down.

In this excerpt, the Architect narrative was at work whereby Zoe’s meaning orientation promoted the feeling of personal responsibility for her son’s activity. She released him from any responsibility by noting that she didn’t know what else he could do when indoors, so the only way to interrupt this was to do something with him herself. However, by this time of the day (when they are all home together), she was still feeling the pressure of her many other responsibilities and just wanted to relax. Zoe noted that this was in contrast to her childhood where she recalled very different experiences of being out all day and active, so such a thing was never a worry for her parents. Knowing this created further tension, but she could not escape her view of the modern parental role.

**Zoe**: I, I mean I would like to find the solution to everything, like to, to be able to have what I had when I was younger and had the experiences that I had but then again, it was a bit dodgy situations going on there with... We used to play games where we would throw bricks at each other, so I’m kinda glad that like... [laughs and shakes her head]. Someone would be up on the top of a bin shed, and there would be a wee gang of children down the bottom and literally we would be throwing bricks up and down! So it’s probably good! I’ve got, I’ve still got the scar there where someone actually managed to crack me across the head – there was a lot of blood. I’ve got, actually got, quite a lot of scars from my childhood, so. Do you know it was, it was good and it was fun and I enjoyed it and it was - we had the freedom. But I don’t know, I feel like with [son and daughter] I want to wrap them up a wee bit more and I want to have them enjoying physical things where it’s in a controlled environment, so it’s at a club or it’s right outside my doorstep, doorstep where I can see them. So if I’m in here with [daughter] I know that they’re outside. I can peep out and see them. If I don’t see them then that’s when I panic.
These meaningful tensions accompanied the signifying link with the WeTime app and were attenuated when Zoe and her son used it.

**Zoe:** So we did the tiger in the jungle after that and that was really good. [It’s] the one where you’ve got the, the little tail coming out, so I had a scarf coming out the side of my, the strap that we were wearing, and Jacob had another little scarf coming out and then we had a wee bucket in the middle there, the wee yellow bucket. So one person would stand in and would count, the other person would hide, and [son] loves hide and seek anyway, so the other person would hide and after that need to try and find them and at that point [son] just like loved the running about bit so it was, it was... it was hilarious! [Husband] was putting [daughter] up to bed and he had to come down and tell us to keep quiet!

It was just, there was a lot of laughing involved and things like that, and the majority of, in fact pretty much every activity that we did, there was a lot of laughing. There was a lot of giggles and it was good. It was nice just to see him just get all excited and having that loud shriek and things like that. It was good seeing him happy and smiley, and we were doing something together and that was probably good for him as well and good for me because it is, it’s normally... [daughter] dominating everything.

In this episode, Zoe experienced what she had pre-configured could be different when she initiated use of WT. Instead of feeling helpless at her son sitting watching TV, Zoe was able to create motivation to do something differently by signifying the app with an auxiliary motive. In using the app, the object story of WT was told in its use-experience. This fit with her macro-organiser and allowed her to maintain her narrative orientation of a busy mum in a modern parenting role while acting to reduce the tension of the contradiction. Because the app fit with her macro-organiser and because the circumstances creating the tension did not change, Zoe
continued to need the app and expressed concern at knowing the app would be discontinued.

**Zoe:** So I’m, I’m just trying to find that balance where I can try and do things with [son], hence this study’s been quite good for it and even after the study I want to, I don’t know, will the app still be available to do some things? ‘Cause [son] really loved it.

Zoe used the app regularly and thereby increased the instances of IPA she undertook with her son over her 8 weeks of use, and she expressed a desire to continue using the app and thereby the PA behaviour. The contradiction in her narrative personal culture that initiated the PA behaviour was still present, so the tension continued to produce novel thinking and action in accordance with WT’s signification. For Zoe, the novel IPA behaviour reinforced an improved version of her macro-organiser and WT functioned to help her maintain it.

### 7.4.2.2 Tension promoted innovation

In Isabel’s case, she also aligned with an Architect narrative concerned to shape important aspects of her son’s development. Her contradictions arose from a complex of circumstances that included her full-time job as a childminder in her own home which was quite compact. Several of her minded children were very young (under the age of 2), so she controlled the environment in a regimented fashion to keep on top of everything. When her son came home from school (P1), he would join the group of minded children, and she would not get time with him until later in the evening when all the other children had gone. From this time until her son went to bed, she had a small window in which to catch up on activities of daily living and complete necessary activities like homework. Isabel was concerned that her son was feeling pushed out of her life, and she had already made attempts to address this by asking her husband to give her more help.

**Isabel:** I kinda just thought that I don’t, I don’t really make an effort quite as much as I probably should with [son] because I work with kids all day. I thought in a way it would be good to, to look at trying to do more things,
just me and him. Just for a better kinda, like kinda more family time with [son] and to make sure he feels as loved as he is, do you know that way? I said that to my husband, do you know, I says, I don’t stop until it’s time to go to bed because the minute these [gestures to her minded children] all go away at 6 o’clock, it’s then time to get the house all organised and tidy and dinner done and everything and organised for the next day. So I was saying to him I’m like, you get more quality time with him even though you’re out at work all day cause you get your quality time when he comes in at night because I don’t stop. But I consciously try and, I tried to stop that, like getting my husband trying to help me more in the house, and we try to spend more time before bed as a family so that we’re equally getting quality time with him …

Isabel saw WT as a way of addressing this tension by using the app to set aside a specific time in the evening to do the activity. It also gave her son a reason and permission to engage her; she noted that often he was the one that initiated the activity. Because the app implied mutual participation in its design, when asked by her son to play one of the games, she felt it was easier to say yes as opposed to feeling ‘interrupted’ while she was doing other things.

A particular instance of using WT showed signs of narrative development for Isabel. In recounting a particular episode of playing the ‘Tiny Chores’ game, Isabel noted that she started to see things differently.

**Isabel:** In fact the one I liked was, was it tiny chores or something like that? I couldn’t believe actually how much he wanted to help like because it was a game, do you know? And he was making his bed and he was putting his clothes away and I’m going, you don’t normally do this! And I’m going, I think I need to make more of a game into tidying up more often. Because I think, I ask them all to tidy up down here and they do put the toys away and stuff like that, but when it comes to his room and putting clothes away, I’ve never actually gave him the responsibility of putting his own clothes away. Do you know, that sort of...? And using the hoover - he was using the
This episode with her son is an example of a combination of Santos and Gonçalves (2009) i-moments, specifically action, reflection, and performing change i-moments. An example of an action i-moment would be Isabel’s participation in the WT games where she acted in resolution of the contradiction. A reflection i-moment is when a person demonstrates thinking processes that indicate new understanding that makes them think about a problem differently, as when Isabel was able to see her son as capable of more than she thought. This caused her to have to reconsider her relation to him (i.e. juxtaposing her innovation with the qualifier that he was her only child); however, she concluded with a performing change i-moment where she indicated a future-oriented test of her new position by planning to let him do more for himself and help around the house.

Santos et al. (2009) explain that action and reflection i-moments are common in the initial emergence of novelties and actually derive directly from the contradiction itself. Isabel’s case showed signs of narrative emergence, at the point of interview; however, notable reconceptualization requires such i-moments to become elaborated and amplified permitting a new meta-position within a person’s narrative personal culture (Valsiner, 2014b). For Isabel, WT not only intra-acted IPA behaviour, but it elaborated possibilities about how that behaviour could progress and different ways in which it could become meaningful. These relations began to intra-act variability within her narrative personal culture from which a novel conception of her relation with her son was emergent and in which the role of IPA was instrumental.

7.4.2.3 Tension was Circumvented
Conceptualising a person’s dynamic system of meaning-making necessitates that the relationship between WT and the parent is understood as a dialogical one. This means that an object, the WT app in this instance, enacted voice and agency through its use. Whereas in a therapeutic situation, the dialogue is construed as
two people interpreting, intending, and emoting, the dialogue in using WT is that of *Gegenstand* – an emerging sign object that limits its own course (Valsiner, 2013). WT participated in narrative production via its object narrative (Humphries and Smith, 2014). This ongoing intra-acting dialogue has a regulatory function over the emergence of novel meanings, as not all meanings are permitted to develop. For instance, Gail recounted positive experiences of using WT with her daughter. She was much easier to engage in activity, and her daughter often initiated WT use.

**Gail**: It’s a wee bit of both, aye, cause if I’m sitting with my phone she’ll say mum can we go onto WeTime and I’ll be like that, right okay. And then other times that she’s sitting, cause she plays with a tablet constant so I’ll be like that right, she’s been on that too long and I’ll say to her right, come on we’ll do something else and put your tablet down to give yourself a wee break.

Gail was using the app in a fashion typical to the other Architect macro-organisers previously considered. However, over time, though the contradiction persisted and so too the use of WT to reconfigure it, the dialogue of its use began to cause the tension to shift away from the initial signifying link between the contradiction and the WT story.

**Gail**: I think it’s strange like having to use an app to make you spend more time with, like with the wean. ‘Cause I should actually be saying to myself look, go and do something with her instead of just letting her do what she wants. So it is, it’s strange having to use an app to spend time with her, but it’s, it’s good fun though.

**AB**: Why do you think it feels strange?

**Gail**: Because I shouldn’t be like basically relying on an app to tell me to spend time with my wean. I should be like doing that anyway.

Here we see what Santos (2011) explains as “mutual in-feeding of voices” (p. 131). This refers to an oscillation between two positions: one emerged as a novelty and
one indicative of the macro-organiser. Gail, having successfully engaged in new behaviours that addressed her initial contradiction, felt this new position as weak and incompatible with her macro-organiser. These two voices oscillated and the recursive process made narrative development more difficult because the cycle promoted stability in the problem narrative. Gail was having second thoughts and the narrative innovations were being circumvented. Though she and her daughter enjoyed playing together using the app and though WT functioned as she had originally signified it, these successes were being circumvented and returned to the problem narrative that gave rise to the initial contradiction as when Gail considered that she should not require ‘help’ to spend time with her child. This caused the tension created by the initial signifying link to begin to shift in favour of the macro-organiser rather than the imagined world (i.e. as it did for Isabel). Promoting stability in the problem narrative, as demonstrated in Gail’s case, has been associated with poor outcomes for change (Gonçalves et al., 2011; Santos, Goncalves and Matos, 2011). WT generated IPA behaviour and initial experience of the WT story matched Gail’s model world. However, the continued dialogical relation created tensions that circumvented the novelty as a poor match for her macro-organiser because of the means by which it was generated.

7.4.3 Personal Contradiction: Tension Decay

In the previous stories of tension maintenance, there were proliferating connections between the initial signifying link and the imagined model world sustained by the tension promoting continued use of WT. In some instances, however, the connections did not proliferate and the tension decayed over the first few uses resulting in discontinued dialogue with WT. This was due to specific aspects of experience that changed the parents’ relationship with the initial signifier, and thereby, the potential for narrative development from using WT. This happened when episodes of use resulted in an experience-imagination mismatch or an experience-contradiction resolution.

7.4.3.1 Experience-imagination Mismatch

Sue’s story was an example of an experience-imagination mismatch. Her meaning orientation to IPA vacillated between a Chaotic Architect and a Zephyr narrative.
Sue was just coming through a very difficult situation when she saw the WT flyer in her daughter’s backpack. Though she did not specify the circumstances, Sue had recently had an accident involving a hair dryer that put her in a burn unit for an extended stay. She was already receiving ongoing treatment for iron deficiency that left her feeling constantly drained and requiring regular B12 supplementation. She was self-employed when the accident happened, and as a single parent, the only carer for her 3 children. At the time of the interview in mid-December 2015 she confessed, “I didn’t think I was actually going to see this Christmas to be honest with you.” She noted that she was always looking for things to do with her children and that they liked to try new things. Downloading the app was a brief negotiation whereby the children wanted to try it, and this satisfied a contradiction she had about not being able to offer them organised activity experiences (like clubs) because of her poor health and personal circumstances.

A typical use scenario might involve some brief participation on Sue’s part, but mainly it permitted her to join in the activity vicariously by directing the episode while the older children filled the adult role required for the games to be played.

**Sue**: The first one we done was the one, we just used the kitchen and the living room, and it was the colours. And I think one of them picked pink, it was to find items that were pink. And then find items, I think it was white, but they were trying to take the microwave down and trying to take my toaster and I was like that, no! So that was pretty fun.

I think the other one was a dance one, I can’t remember them all. Was one a dance one? Make up, make up your own dance or something ‘cause even my wee boy was, he was doing, he was breakdancing on the floor and I’m going, I didn’t know you could do that! And my wee girl, she was doing a big roly poly and I was like that, right, okay! It was fun.

I sat and timed those and obviously they were bringing stuff through, it was a Sunday ‘cause I was absolutely exhausted after the weekend. So they just done it their selves and then they done the exercise one I think it was. But
I’ve not got the energy to do anything like that. They done it their selves.
They’re quite happy as long as I’m sitting watching them.

These episodes were enjoyable for her and from them she felt enriched by the experiences that she was facilitating through the app. She participated in the model world she had imagined.

**AB:** What did it [WT] do that you liked?
**Sue:** I think just sitting watching them and like their, the team building. They were like playing against one another, and they’re quite - well obviously kids do play against one another quite a lot. I think cause you’re seeing them getting on and helping one another rather than ‘I done this better than you’ sort of thing - a competition. Just they were spending time together. They just, they were liking spending that bit of time and doing things together.

Sue’s experience of WT maintained the tension required for continued use until other aspects of the model world began to breakdown in the form of her children losing interest and the app’s poor functionality. The older children became bored of the games resulting in her youngest child not wishing to play by herself. Not only this, but connectivity problems with app meant that their ‘moments’ were not being registered, so Tweet did not always wake up. Without the dialogical contribution of these other elements, Sue’s signifying link broke down and the tension generated from the conflict of motives decayed. Though the contradiction remained in her personal culture, WT could no longer function to elaborate it and potentially catalyse change.

**7.4.3.2 Experience-contradiction Resolution**
Sometimes tension also decayed because the contradiction itself was actually resolved in WT use. This was indicative of Valerie’s story. Valerie had heard about WT through a friend, and her initial signification was with the measurement function of WT. Her orientation to IPA could be characterised as a Controlled Architect, but with preferences toward a Sower narrative. Her children participated in many different structured activities that ranged from gymnastics to music.
Valerie: I just, I wanted to see if there was anything that would help us do things together as a, as a group, as a family, mostly that. And also, just to see, and I wanted to see how fit we actually were, what we actually did do as a family because it’s alright you saying well I do that and she goes here and I go there, but I wanted to see what, what do we actually do.

What became clear was that this initial signification arose from a contradiction about wishing to be with her children as much as possible. She noted, “I just like to be with my children all the time,” and if she had her way, she would go to school and to their clubs with them so that she didn’t miss any of their lives. This contradiction had a complex construction linked to Valerie’s fond childhood memories of spending evenings with her family. When her dad came home from work they would have dinner and then her mum and dad and 4 other siblings would all go to their local park. Her own family’s adult version of this was frustratingly dissimilar as instead of making those types of memories, her children spent their evenings on their own either at clubs or playing with technology.

Valerie: It’s me that initiates all these things, yes, it’s always me. Always me. They would be quite happy to sit, sit in the house, and I get it sometimes because the kids have such a busy week. But I didn’t have that much of a busy week with them, so I then want to do something with them. I don’t know if that’s good for them now that I’m saying all this to you. I don’t sound very good... I think you just want to feel needed for as long as possible.

The WT story had the relational element Valerie was looking for, but when she used the app with her youngest daughter, the experience was not what she imagined.
Her daughter only played the games a few times and quickly lost interest. This was because, though she was only in P1, she was used to the much more demanding physical and mental challenges experienced in her many clubs that the games did not hold her attention. This troubled Valerie until she came to a sudden understanding that resolved the contradiction, and thereby, its ability to create continued tension. Susan explained how the resolution happened.

Valerie: Maybe just to say Valerie you’re actually doing alright and you’re quite active with your child or no, you’re not. Cause you know, we always worry; mums always worry you’re not doing enough with your children. But I don’t know if, ’cause I was feeling … I actually made myself feel a wee bit guilty about it, about the fact that she [her youngest daughter] was out and I wasn’t doing the things with her. But then my husband was saying, but you’re doing other things with her, like the jigsaw, her homework, you’re still spending time with her, it’s not, it’s just that you’re not out there running the street with her.

In speaking with her husband, Valerie came to the realisation that her children were actually quite active and so was she, and that her need to spend time with them did not have to be in the specific form of PA. This resolved the contradiction arising from the need to affirm “what they actually do” leaving only her desire to spend more time with them which would require a different signifier because her daughter did not engage with WT. This is what Santos and Goncalves (2009) call a reconceptualization i-moment. Reconceptualization i-moments are characterised by being able to recognise differences between a past and present self-configuration and an understanding (in a relative not absolute sense) of the processes that mediate transformation between the two. Valerie was able to reconstruct the events that she understood to mediate between her initial contradiction and her experience of using WT with her daughter. This allowed her to affirm the differences between the two positions resolving the 1st stimulus. Though this resulted in a reconceptualization and therefore resolution of one contradiction linked to the need for and use of the app, it is important to note that
this could not have happened without first having signified and experienced WT, and she was still concerned to spend time with her children.

7.4.4 Referred Contradiction
In the 4 stories of the referred contradictions, the parents did not initially make a personal signifying link with the WT story. However, because of tensions generated by other contradictions, they agreed to use WT anyway. The processes examined in this group concerned how the story of WT was able to meaningfully connect (or not) with the referred parent by linking with an existing contradiction leading to a 3rd stimulus. The parents’ stories demonstrated two cases where a 3rd stimulus did occur (Greg and Candace) and two cases where it did not (Mandy and Olivia).

7.4.4.1 Third stimulus occurred
In using WT, Greg and Candace were able to make a signifying link that generated tension consistent with the WT story. In Greg’s case, he used the WT app because his wife asked him to. As noted above, this started as a ‘box ticking exercise’ for him but it lead to something else.

Greg: Once you’ve done it [Teddy Bear Rescue] once and you see how much fun your son is having, and you feel how much fun you’ve had actually, even competing with your spouse, that, all of that quickly moves on from being something obligatory to something that you really want to do. And so when inevitably your son says, ‘again and again and again’ it, it didn’t feel like a problem at all, and then in fact you, you, you entirely forgot about time and you could have probably extended the game much further.

Greg further explained that this particular experience of seeing his son happy and laughing and gratified by spending time with him revived in his memory every time he received a prompt from the app. However, Greg resented the notifications because the regularity they promoted seemed artificial to him; he preferred the spontaneity of organic moments of play even though he acknowledged they didn’t happen very often. However, Greg noted that the tension from the notifications would build up. He would feel guilty that he was depriving his son of that
experience in his memory, so he resolved it in a way that he preferred, which was to take the whole family on active weekend outings.

In Greg’s case, the signifying link with the WT story did not come until after its use. Instead of forming a bridge to a model world as in the cases of personal contradiction, his link was to a memory, the specific experience of having tried the app and seeing his son happy and having fun. The experience linked with values Greg noted caring a great deal about, “Because I do firmly believe in the value of play, of active play and of just spending time like that with your children that’s just fun and meaningless.” Brockmeier (2010) explains that memories are more than archives; they are story-worlds that in every reconstructive event of remembering mingles elements of past experiences with elements of the present in a way that is neurologically indistinct from direct perception. The prompting of the WT app caused this kind of remembering every day, but without being acted upon, the tension would build up as guilt because of the value connection to which Greg protested. Such moments of protest are another form of i-moment whereby Greg critiqued his position in relation to the problem/tension then asserted himself and acted in congruence with the reposition (Santos and Gonçalves, 2009). Though this did not result in regular use of WT, it was a form of innovation and did result in an increase in instances of IPA but on Greg’s own terms.

Candace admitted that she downloaded WT due to “peer pressure.” She explained that she already spent time with her children doing homework, reading stories, and playing board games. The board games were of particular use for her because, from a typical Architect orientation, she found they had constructive value, “It teaches them about respecting each other and taking turns and how to be a good loser and how to be a bad loser.” However, in playing the Pirate Islands game with her daughter, she intra-acted something new.

Candace: The pirate islands one was good ‘cause it was, just the kind of holding hands and singing together, [daughter] and I are quite close anyway, we kind of, we read quite a lot together and just be daft and that was quite nice just when we were singing and it was quite nice.
AB: And what was nice about it for you?

Candace: I don’t know just, just being close to each other and, I don’t know, just being like physically holding hands and just being close and singing together just don’t know, it’s just nice.

Candace had difficulty articulating the feeling she got from spending time with her daughter in this way. She went on to explain that the meaningful thing to her was to see her daughter and her son respond to this ‘different type of mum.’

Candace: I think their reaction probably to you just kinda letting your hair down and being, being daft with them and they, do you know they think it’s quite funny and it’s, it is it’s good fun just sort of being out of the role of mum a wee bit and playing with them like a child can.

This was an instance of a contradiction emerging. Candace had quite a Controlled Architect orientation to PA, and she did not feel contradictions about spending time with her children. However, in using WT, she experienced a combination of action, reflection, and reconceptualization i-moments that permitted her to see herself differently in relation to her children (Gonçalves, Matos and Santos, 2009); she discovered that she could be “fun mum.” This enactment caused a signifying link with WT, and she came to use WT regularly. She was also able to elaborate on the experiences of using WT by making plans to build garden beds so that she could grow vegetables and flowers with her children as she had done as a child.

7.4.4.2 Third stimulus did not occur

The cases of Mandy and Olivia were examples of a complete lack of dialogue with the WT story. Both Mandy and Olivia had downloaded WT through the cajoling of a friend, and in Olivia’s case, she was not even actively involved in the process. Olivia never actually used WT. She explained that this was because she was too busy at the moment to take on anything else; moreover, she felt that having experiences through screens detracted from real life.
**Olivia:** He needs to experience as much of life, I think, as he can. So yeah, it’s just I have a, a real loathe for screens.

Olivia’s meaning orientation had facets of Controlled Architect and Sower narratives. At times she was actively concerned about producing outcomes in her children, but when it came to PA, this was a way of life that every member of the family shared – it was how they lived together. From coaching and participating in youth rugby to spending every weekend outdoors no matter the weather, active time together was fully integrated into family life, so no signifying links could be made because no contradictions were experienced.

In Mandy’s case, she too was encouraged by a friend, and she did actually use WT, similarly to Candace. However, in contrast to Candace’s story, no signifying link emerged from playing the games. Mandy recounted an episode of playing the How to be a Superhero game with her son.

**Mandy:** Okay, the first, the first app that we done was the superhero one, and we went up the stairs – [son] has quite a lot of dressing up clothes, so we put on a cape each and I was wonder woman, [son] was Batman. He’s always Batman! And then we were just pretending we were at superhero school, and we were just doing silly things, you know, like pretend you’re jumping off a building or pretend you’re capturing the baddies. And then [son] said, ‘oh let’s be superheroes that do cartwheels’ and I was like oh I don’t think this superhero could manage a cartwheel! And then we were like you know jumping off the couch, which I wouldn’t, I wouldn’t normally let him jump off the couch, but I thought well, since we’re being superheroes we can jump off the couch. And then he was kinda doing some forward rolls, ‘cause his superhero was going to do some forward rolls, and then we were doing some, just like sort of running around the living room pretending to catch baddies. And then he pretended he caught me and then I had to wear handcuffs and then he took me back to jail. We done that one twice and he quite liked doing it. Both, the both times we done it he quite liked, he quite liked doing it.
This extended account of her use episode demonstrated that Mandy made a real and engaging effort in playing the game with her son, and in that respect, it could be classed as an action i-moment (Santos and Gonçalves, 2009). However, she had no existing or emergent contradiction from which to make a signifying link with WT, so she could not engage meaningfully with it other than acknowledging that her son enjoyed it. She did not see any advantage in doing this type of activity over any other everyday activity they did together. She considered that her son was quite active already by going to swimming lessons and playing with friends, and her efforts were best spent in working to give him experiences, particularly because she was recently divorced from his father and she did not want him to view this as a disadvantage.

Mandy: My life, my life now is all about [son], so you know I work so we can do things together... I’d always rather... at the end of the day they’re only young once. You know, you want to spend as much time with them, and I think because his dad and I aren’t together now, [son] gets probably, and he gets way more now than what he would’ve done if his dad and I were together. So he’s, you know, he’s getting the best of both worlds. He’s getting too much probably and he’s only 5 but that, that’s just the way it is unfortunately. But I don’t think these things should stop just because his dad and I aren’t together any more. You know and I want to do things like that with him cause I, you know, I don’t want him to feel like he’s not being able to do these things just because he’s, you know, only at home with me.

Though she wanted to spend as much time with her son as possible, Mandy did not signify WT as a way of facilitating it despite her episode of using WT. Her contradiction was related to specific instances of ‘doing things together’ that needed to be on a grander scale like going on holiday or taking a trip to Legoland for which she was presently saving. No meaningful connection was made, so no tension was generated, and therefore, no novelty emerged.
7.5 Interpretations
These findings confirm the ability of the general theory of dynamic narrative personal culture developed throughout this work to explain the processes of contingent instances of behaviour creation. Taking the phenomena of parents’ WT use as a whole permitted understanding of both the co-presence and co-absence of novelty in narrative development and the processes associated with its progression. This local application enriched the general theory in 3 main ways: by illuminating the function of DS, by detecting variability in narrative development, and by prioritising meaning as an agency of change.

7.5.1 Double Stimulation
The principle of DS was consistently observed in the parents’ downloading and use of WT. By intra-acting narrative personal culture as the phenomena of interest, as opposed to behaviour alone, it became evident that engagement with WT did not begin at point of use, but before, in the variability of the contradictions in parents’ everyday experience. WT engaged these contradictions dialogically as they were unified in the parents’ personal culture in the form of hypergeneralised meaning configurations, and thereby, not necessarily or even fully elaborated in parents’ verbal or cognitive schematisation (Valsiner, 2014b; Zittoun, 2011). Parents were not always aware of the contradiction until encountering the story of WT making WT a form of pleromata (Valsiner, 2014b), “a hyper rich depiction that stands for another reality or irreality that acts in opposition to schematisation” (p.239). As such WT, functioned as an agency of pleromatization meaning it permitted parents to generalise beyond what was immediately perceivable in a rich and complex way that acted against schematisation (reduction to a category). In this sense, WT was not a simple instance of tool mediation; rather, its holistic depiction was capable of actually generating tension that was field-like rather than point-like (Sannino, 2015b). The contradictions may have been contextually specific to IPA but they were, themselves, complex phenomena incorporating emotion, memory, attitude, imagination and any number of material discursive practices that, at a given moment, contributed to some aspect of a signifying link.
In recounting their reasons for downloading WT, the parents conveyed their schematized impressions of the 2\textsuperscript{nd} stimulus in reflecting on the hypergeneralised first stimulus or contradiction through the pleromatizing function of the WT story. For example, the reason for using WT (2\textsuperscript{nd} stimulus) was explained in terms of the 1\textsuperscript{st} stimulus. Importantly, understanding the signifying link as pleromatic explained why, in practically every instance, the parents interpreted the story of WT as intended. This is because pleromatic signs enact a generalised concept that transcends the sign (object) itself. In creating a field-like approximate, pleromatic signs ensure interpretation as suggested by the sign, though specific incorporations by a person are unique and not predictable (Valsiner, 2013). This accounts for the consistent interpretation of WT in both the personal and referred contradiction groups while also explaining the varieties of narrative development in its use. Valsiner (2014) remarks that this directional impact of a signifier like WT is its most important feature, “The specific transformations do not matter since it is the direction of human conduct that is at stake in most social negotiations of individual variability of actions” (p.241), and parents generally acted, at least initially, as signified by WT.

7.5.2 Narrative Development

The tension created by the signifying link with WT was observed to have a catalysing role in parents’ narrative personal culture. When this link was maintained, novelty was promoted. In some instances this novelty was circumvented, but in other instances it was elaborated and new configurations were emergent. Conversely, where the signifying link could not be made or was not maintained, tension decayed and narrative development diminished. The dialogical relation between the agencies of an object narrative like WT and a meaning-making person may favour imaginative over verbal encoding for narrative development. Valsiner (2014c) explains that affective imaginative processes promote an intuitive ‘feeling-in’ that precedes creativity. This becomes important when considering narrative development as a future-forming dialogical relation similar to Vygotsky’s zone of proximal development (ZPD). Traditionally, the concept of ZPD has been applied to the way children learn in conjunction with a more experienced other
who helps them progress beyond their actual level of development via the process of scaffolding (Harré, 2016c). However, in adult narrative development, a more autonomous version of similar psychological development can be facilitated through the triadic function of meaning-making (Tateo, 2016a).

In signifying and then using WT, parents engaged in an act of interference that situationally objectified the contradiction forming a boundary (Valsiner and Van der Veer, 2014). Recalling the triadic phenomenology introduced in Chapter 3, parents were able, in a self-organising, self-reflexive way, and in accordance with their macro-organiser (1) to determine the placement of the IPA boundary (2) and thereby, its complement (its negation or non-macro-organiser) (3). In using the app, parents engaged in relational dialogue with WT testing and sometimes elaborating or reinforcing their boundaries at the border of their present experience and their imagined possibilities. In instances of congruence between their experience and their model world, the boundary became more flexible and permitting of new meanings to emerge deviant to the macro-organiser. Where there was lack of congruence or where there was mutual-in-feeding of voices, the boundary was affirmed and the macro-organiser was maintained. Taking this view of behavioural development explains the amplifying role of stories (Smith, Bundon and Best, 2016; Smith et al., 2015). Stories can amplify or diminish a certain version of reality (Frank, 2010), and in a given system, amplification of even small variations or deviations can become generative or degenerative (Cabell and Valsiner, 2014).

7.5.3 Meaningful Outcomes

From the parents’ perspective, use of WT can be viewed as an act of meaning. The initiating contradiction was undifferentiated tension in the parents’ personal culture until, intra-acting through the story of WT, possibilities were enacted. Salvatore and Valsiner (2014) identify this as a performative interpretation of experience that results in a request or demand as when the parents essentially made a request of WT in downloading it. Parents’ experiences of using WT selectively differentiated between their canonical formations of IPA and their imagined ones. Where the imagined experience did not harmonise with the ongoing relational dialogue between WT and its objects (i.e. inclusive of the parent,
the child, and the functional capacity of the app itself, etc.) the potential for novelty development was markedly diminished. This reinforces the idiography of psychological phenomena and the fact that seemingly similar behavioural outcomes, the kind that would normally be explained by representative sampling, produce notably variable experiences (Cabell and Valsiner, 2014). In this light, intervention is recast as the catalysing of creative conduct rather than the remediation of specific cognitive components in discreet relation typically associated with behaviour change.

WT was able to amplify the parents’ contradictions enough to initiate download, and the ongoing relational dialogue of use promoted narrative elaboration in some parents, particularly for Isabel, Zoe, and Candace. This was achieved not because WT was a translation of evidence accounting for a nomothetic process, but because, having been based on a canonical contradiction, the material-discursive story of WT was told to elaborate its variability, or in other words, to elaborate the liminality between historically configured experience and imagination. This emphasizes the need to make multiple PA stories available based on localised experiences and to understand more about the range of contradictions parents’ experience of IPA including the range of phenomena capable of amplifying their variability to a point of shift. Further research is required to follow these varieties of narrative topology and consider more fully how time functions in narrative forms of development. Importantly, the range of material forms and practices of telling, performing, innovating, or perhaps, intra-acting stories needs to be proliferated (Smith et al., 2013) expanding the focus of intervention practices beyond achieving outcomes to helping people live their own meaningful lives (Smith et al., 2015).

**7.6 Summary**

This chapter explored how the material narrative of WT intra-acted IPA in the parents’ personal culture. It was possible to identify contradictions in the parents narratives of WT use from which narrative development could be followed. A variety of configurations were noted including emerging narrative novelty, narrative circumvention, as well as narrative maintenance. Also worth noting was that the
WT narrative was communicable. There were similarities in parents’ experiences that permitted dialogical relations between WT and a variety of idiographic contradictions. This points to the ability of the general theory developed within this thesis to detect and explain variability in normative PA canons and of a material narrative object designed upon it to intra-act with agency of its own. In the following and final chapter, I gather the insights generated across this thesis to draw conclusions, offer recommendations, and open a world of possibilities.
Chapter 7 – Summary Box

This chapter considered the implementation of the WeTime app and how parents used it. The WeTime app, itself, was designed (as explained in the previous chapter) as a model world storied according to specific contradictions in the parents’ narrative canons. Contradictions from across the parents’ design frames were selected and amplified as physically active elaborations of the parents’ everyday experiences with their children.

Ten parents used the WeTime app with their 3-8 year old child(ren) over a period of 8 weeks. At the end of 8 weeks, parents were interviewed and their use stories were analysed using dialogical narrative analysis. The analysis included a unique application of Vygotsky’s concept of double stimulation which aided the understanding of how parents made their initial connection with WeTime. The double stimulation concept showed how parents initially engaged with WeTime without making a decision. Their attraction was drawn first by a tension generated from a contradiction like the ones discussed in chapter 6. Another way of thinking about this is that parents had a personal meaning valence that needed the meaning valence (or sign) of WeTime to enact the possibility of something new. Only after that initial connection was their conscious attention turned toward the object of the app. When they did ‘think’ on WeTime, they did so in a way that mirrored the framing process the parents had employed in the design exercises in chapter 6. They worked from past to future through the present imagining specific modifications based on what they thought WeTime would do. At that moment, they were fitting WeTime into the ongoing story of their lives toward a model world and not directly considering the behaviour of physical activity.

During the 8 weeks, nine of the ten parents increased their instances of intentional tandem physical activity with their child(ren) as the app suggested. However, the ongoing app-use varied the dialogue between the app, the parent, and the child in relation to how the experience of using it fit with their model world. As long as using WeTime elaborated the parents’ everyday experiences according to their model, the tension with WeTime was maintained and novel
relations expanded parents’ stories to include new behaviours, meanings, and motivation. The ongoing tension generated these connections with various agencies within the parents’ narrative. In instances where the tension diminished or was weak in the first place, very little novel behaviour was seen because new relations were not made or maintained. Importantly, when use of WeTime was successful in resolving the initial tension, use of the intervention stopped. This may explain the phenomena commonly referred to as relapse. There is no reason to expect that a person would not continue to require ongoing relations with old and/or new signs for behaviours to continue to emerge.

From this we learned that interventions do not act on passive people. They are participatory and have a sign quality that fit with some users and not with others. The experience of intervention was more important than specific mechanisms because, like a screwdriver, a tool designed for a specific purpose can be used for an infinite number of projects. While people tended to participate with WeTime according to its story, its ongoing use was transformative only according to its facilitation of a persons’ meaningful becoming of their own lives.
Chapter 8 – Discussion and Conclusions

8.1 Overview
In this concluding chapter, I consolidate the work of previous chapters by articulating my original contributions to knowledge through the achievement of my research aims. I fulfil my final research aim in this chapter by demonstrating the relevance of my findings to the theory and practice of BC by proposing a model of intervention design. The Relational Innovation Model is introduced then articulated in subsequent sections as a synthesis of my findings with Salvatore’s (2016) General Theory of Psychological Intervention. In summarising the model, I encapsulate the core findings of my research which I go on to contextualise within PH practice. I then draw the thesis to a close by reflecting on the strengths and limitations of the work and by looking forward to the possibilities beyond.

8.2 Summary of Contributions
With the findings of this thesis, I make significant contributions to the body of knowledge on BC intervention by demonstrating how meaning enacted lifestyle behaviours, specifically intergenerational physical activity (IPA), and how stories participated with meanings and caused them literally to matter. I started from an unusual onto-epistemological position and enacted a narrative apparatus inclusive of rigorous dialogical narrative analysis. Through the research apparatus, my original contributions were generated, the first of which was: that meaning-making is the dynamic intra-action of everyday life and PA within it. This is phenomenon not of mere cognitive processes leading to behavioural outputs, but rather, of a relational entanglement of multiple material-discursive agencies that extends beyond the human body and the present moment, a phenomenon I have termed narrative personal culture (NPC).

In addition, I employed an abductive research design centred around a creative task of co-production with the research participants, enabling my second original contribution: that the entanglement relations of PA within the NPC are dynamic, dialogical, pre-conscious (sedimented), and tension-generating, and that these tensional relations (termed contradictions) provide a basis for meaningful
intervention design in which specific relations can be imaginatively expanded or re-storied via specific material-discursive intra-actions.

I demonstrated my third original contribution in the implementation of a particular intra-action in the form of a storied object, the digital smartphone application, WeTime (WT). Through parents’ use of WT, I showed that an expanded object story was uniquely signified via a variety of contradictions across a variety of NPCs while maintaining the general meaning and direction of the object story which, when signified, intra-acted a tension-generating dialogical relation that, in some parents, enacted a developmental zone of possibility into which the NPC expanded and novel PA conduct was created.

I provide my fourth and final significant contribution in this chapter by synthesising my original contributions in service of my final research aim: to model a narrative form of PA intervention. The Relational Innovation Model demonstrates the relevance of my contributions to the theory and practice of behaviour change (BC) for public health (PH) and offers possibilities for re-conceptualising lifestyle intervention as a practice for which behaviour is no longer its object and change is no longer its outcome.

8.3 Relational Innovation Model
In this section, I propose a new model for designing lifestyle interventions that I have called the Relational Innovation Model (RIM). Relational refers to the core onto-epistemological assumptions about the target phenomena as an intra-action of material-discursive agencies, and Innovation refers to the performative and collaborative practice of generating novelty among the relational agencies. The RIM is based jointly on the findings of this thesis, which provide the phenomena, the apparatus, and the dynamic of the model, and on Salvatore’s (2016) General Theory of Psychological Intervention (GTPI), which provides a conceptual framework for organising the findings into an intervention process based on abstraction rather than normativity. I begin by providing a brief orientation to Salvatore’s GTPI followed by an introduction to my new RIM for designing lifestyle interventions.
8.3.1 Salvatore’s General Theory of Psychological Intervention

The GTPI was developed to address an issue specific to psychological intervention that is linked to psychology’s pursuit of scientific status: to be scientific, psychology must transcend the everyday, common-sense life in which its practices must necessarily apply (Salvatore, 2016). While the current interpretation of such transcendence is grounded in the pursuit of ever increasing technical expertise through the development of psychological treatments, GTPI proffers that a psychologist’s efforts pertain to the zone in-between the advancement of generalised knowledge to which scientific practices aspire and the liminal, situated experience of persons in whom that knowledge must find expression and derive warrant (Salvatore and Valsiner, 2014).

As discussed in chapter 2, BC interventions are predominantly based on data gathered from large samples of aggregates upon which the notion of evidence-based practice is established, or in other words, the idea that actions based on such knowledge will be mostly right (or effective), most of the time (Valsiner, 2016b). A problem with this approach is that the data is regressed to statistical means resulting in the possibility that no individual case actually exhibits the qualities attributed to a statistically normative group. This is a problem for psychology and particularly BC because variability is ignored as error leading to an overreliance on explanations that only apply if representative persons are taken to be interchangeable, reflecting no one life-as-lived in particular (Sammut, Foster and Ruggeri-Andrisano, 2016) and ignoring the variability that leads to novelty. This is not to say that nomothetic psychology is not useful; many helpful practices are based on it and people have benefited from them. However, these benefits are variable and their efficacy constrained by the common-sense resources they must negotiate to ‘work’ (Smedslund, 2012c). Salvatore (2016) explains that the purpose of intervention is to create a nexus between the technical expertise of professional practice and the persons who engage with the intervention and is usually enacted in one of two ways: normative or abstraction.

The normative way is guided by the body of scientific knowledge that defines the phenomenon; for instance, one goes to the doctor because one has
trouble sleeping and not because one binge watches TV. The conditions that create the demand constrain the requests that can be made. Medical science has the hegemony to impose its system of knowledge at cultural levels, so beginning with an evidence-base is sufficient for its interventions regardless of the reason for the person’s request for help because the request is constrained by cultural norms (Salvatore, 2016) – people understand that they go to the doctor to fix particular domains of problems so the physician needs only to offer a treatment known to work in that domain. This is not the case for BC interventions. As could be seen by the initial differences in the design frames of the practitioners and the parents in chapter 6, the demand quality of the parents’ requests was nothing like the practitioners’ expectations (Beggan, 2016a). Parents had no intention of changing their behaviour or being more active, nor did they wish to be empowered to create their own opportunities – all of which the practitioners required. Practitioners had no intention of capital investment in community spaces or transport, of creating IPA opportunities just for particular locales, or of acting on the ideas of ‘engaged’ people – all of which the parents required. There was no convention that defined the intervention relationship and its possibilities. This lack of common ground is characteristic of many BC interventions from both pathogenic and salutogenic perspectives because in both instances, the relation of the nexus between the professional input and the target group is defined by the evidence-base and its methods of production, even when targeted people groups are consulted.

Abstraction is an alternative to the normative approach. Rather than the phenomena of interest being defined a priori as determined by scientific knowledge, the phenomena of interest becomes the portion of the world enacted by persons in the common sense language of their experience and abstracted to a general theory of its dynamic. This process intra-acts the configurations of salient agencies present in entangled experience (actuals) while creating the conditions for the relevant next (possibles) (Favareau, 2015), in other words, abstraction co-configures the apparatus of intervention including its object and its function. According to Salvatore (2016), such an intervention apparatus attends to “5 intertwined components: theory of the request, theory of the object, theory of the
function, theory of the setting, and theory of change” (p. 18). In the subsequent sections, I synthesise my findings from the preceding chapters with Salvatore’s (2016) five components extending his previous work with my original contributions by demonstrating the function of his theorised components in my new model for lifestyle intervention.

8.3.2 The Apparatus of the Relational Innovation Model
A key feature of the RIM is that, unlike typical linear process models of change, it is based on a dynamic, emergent, relational phenomenon, which does not easily lend itself to representation as a static figure. For instance, figure 19 has a hierarchal appearance, but this is artificial yet necessary to make the components and their relations distinguishable for discursive purposes. It would be better to think of these relations and processes as happening and re-happening in instants and expanding/contracting in all dimensions. Topological forms have such qualities (Snell et al., 1999).
Figure 19. Relational Innovation Model
Accepting the limitations of the current medium for fully representing the dynamics as well as the processes of the RIM, the relations, components, and progress of the model can be understood as delineating the specific material-discursive arrangements that intra-act the phenomena of the RIM, or in other words, they comprise the measurement apparatus by which some properties of a given instantiation of its use become determinate and other properties are excluded, and thereby, complimentary (Barad, 2007).

The processes of the RIM were based on the triadic model of development I have explicated throughout this thesis. The dynamic of the model begins with co-creating a storied nexus (denoted by the green space), as I did in Chapter 5, which formed a closed set comprising aspects of NPC (denoted by the yellow space), which is understood in the common sense language of experience configured at the level of an individual, group, organisation, community, etc., and of the professional competence (denoted by the blue space) which began with the tasks of interpretation and abstraction and expressed in the language of the general theory of the model. From this nexus, dialogical relations were examined and interpreted to identify contradictions in the relational agencies as I demonstrated in Chapter 6 (this is depicted by the partially determinate intra-actions of the common sense language contributing yellow agencies in the green story space and of the professional competence contributing blue agencies in the green story space). This required a creative task to test the variability of the border of the closed set and to amplify specific relations as conditions of possibility. The abstractions from this creative task were elaborated into concrete designs of material-discursive outputs, in this particular instance, the digital smartphone app, WT, which represented the value of the professional competence as intra-acting a model world (denoted by the purple closed set with the grey sets with dotted lines representing designs not enacted). This model world held its own as it intra-acted with other NPCs which, themselves, determined the expression of the model world via the intra-actions of their own apparatus, as observed in the parents’ use-stories in Chapter 7. I explicate each of these processes in turn in the sections that follow.
8.3.3 Enacting a Storied Nexus

Intervention is an intentional process that implies the taking of action from which an outcome is expected, but by necessity it is also an interpretive process that requires an in-depth understanding of the phenomenon targeted by the intervention. I make the claim that for BC, designing interventions from an evidence-based starting point, as is the current recommended practice (NICE, 2007), is neither necessary nor sufficient for achieving the desired outcomes. What is necessary but perhaps not sufficient is a common-sense understanding of the phenomenon as experienced, or a canon. Salvatore (2016) calls this common sense understanding ‘the theory of the request’ and refers to the reason a person engages a psychologist’s services, which he proffers is usually initiated by a violation of a person’s canonical experience and is considered a desire to resolve the violation and return to what feels ‘normal.’

In initiating the process of HCD in this research, the request was open and prospective and not inherently problematic. More importantly, it did not begin with a request, as such; rather, it began with stories. This distinction is a crucial one because the sense- and meaning-making required to story experience makes a difference to the starting point of intervention. Stories make knowable the way we make meanings and from what and Brockmeier (2009) contends that meaning provides the possibility for action and narrative is its exponential extension. Telling and sharing of stories at the beginning of the research enacted multiple agencies which necessarily encountered other agencies of the story itself, the storyteller and its hearer (Frank, 2010) which, together, shaped the borders and becoming of the phenomenon. In other words, it was the beginning of the measurement apparatus (Barad, 2007) in the language of everyday experience, as evidenced in the narrative typologies in Chapter 5. An evidence-base could not have provided a dynamic picture of the phenomena-at-hand the way that the parents’ and children’s stories did.

Also necessary but alone insufficient for achieving outcomes from intervention is the requirement to abstract the common-sense version of experience (or canon) into the language of the general theory of the dynamic by
which it becomes a ‘phenomenon’ (Salvatore, 2014), what I have termed NPC based on my theoretical abstraction of the narrative typologies in Chapter 5 according to the dynamics of narrative and cultural psychologies (Murray, 2015; Smith and Sparkes, 2009; Valsiner, 2014b). This represented the beginning of the professional competence in the design process and in the configuration of the measurement apparatus. This is depicted in Figure 19 which shows how the dynamic phenomenon of NPC (yellow space) and the professional competence (blue space inclusive of the person(s) and the professional expertise they represent) began their relational becoming via the co-production of stories (green space). It is precisely from such an entanglement that intervention must begin because the relevant complexities of the canon and the phenomenon inhere in their relations within the storied whole and not in pre-existing categories, such as the location (internal or external), the substance (mind or matter), or the origin (individual or social) of its parts, from which evidence-based efforts usually begin (Brug, Oenema and Ferreira, 2005). The co-production of stories with which this work began intra-acted the ‘actual-with-possible’ worlds, a space adjacent to ‘reality’ that would give the intervention its warrant and its possibility; or to take Kauffman and Gare’s (2015) perspective, all the world is becoming and stories can be considered a ‘measurement’ of it that “change[s] the world which then becomes again, based on the unentailed outcomes of measurement” (p. 235).

At the beginning of the design process, parents and children told me and each other about their everyday experiences of PA. Going on the content of the talk alone, themes common to most BC research were identifiable. Parents highlighted issues such as lack of time, lack of transport, lack of facilities, lack of social support, lack of opportunities, all commonly cited as barriers to PA (Berge et al., 2012; Mailey et al., 2014; Royce et al., 2003). Parents also named motivation, enjoyment, role models, and health benefits among the promoters of their own PA, if they did it, and as their sources of interest in their children being active, again, all well-documented in the literature (Bauman et al., 2012; Dewar et al., 2013; O’Dwyer et al., 2012). In the normative or evidence-based mode of intervention design, any of these factors or mechanisms could be ‘adjusted’ according to their correlation to or
efficacy in increasing PA in this population group. For instance, if the evidence showed that being a role model increased parents’ motivation for being active with their child but they lacked the opportunity to model the activity due to lack of social support and opportunities that included child care (McGannon et al., 2015; Thompson et al., 2010), then an appropriate intervention design would be to create an opportunity with a form and context that permitted role-modelling inclusive of elements of social support with child care. Parents’ engagement (regardless of the reason) with this opportunity would cause motivation to increase which is predictive of increased PA (Teixeira et al., 2012). Success could be measured by its impact on motivation correlated with the amount of PA undertaken, and adherence to the increased PA, understood to be the effect of increased motivation, would constitute BC if the behaviour was maintained for an extended period of time (usually at least 12 months) (Springer, Lamborn and Pollard, 2013). But in this mode of design, where was the common-sense language of the request? Unlike the RIM, it began instead with evidence and detached research questions (i.e. why are/aren’t you active). In this example, the person and the professional domains remain closed sets where the force of the intervention lay with the evidence and the professionals wielding it, the person was an object belonging to a class, the nature of the request was entailed in the classification, and the outcome was pre-determined by the entailed efficacy of the treatment function.

In the abstraction mode employed in the RIM, the request required co-production (tell me about PA in your life… what would it look like if you did PA with your children). The parents’ and children’s entire stories and their telling, not just their content, was of interest. The relations within the story, the connections and possibilities, the backdrop and the foreground, the characters and the plot, all of these intra-acted PA. The dialogical relations identifiable in the participants’ stories demonstrated how discourses similar to the common themes in the example above belonged to narratives enacting 3 types of the parents’ canonical experiences of PA: Architect, Zephyr, and Sower. In these types, PA had a relational ontology that participated in the parents’ experience of the world. Any storied instance of PA was simultaneously in the past, present, and future; occupying a sedimented position as
well as many possible positions; and open (or not) to dialogical connections with other entangled agencies. It was a means to an end for the Architect, a transient happening for the Zephyr, and a meaningful exchange for the Sower (Beggan, 2016b). The storied agencies, when participating together, configured the phenomenon I have termed narrative personal culture. Abstracting the parents’ canonical accounts of PA to the language of the theory intra-acted the specific material-discursive arrangements of NPC delineating the phenomenon to which the intervention must pertain and the technical and common sense languages in which it must be spoken and enacted. In this initial process of the RIM, the act of measurement began to determine what would become, and measurement began with a story (Kauffman and Gare, 2015).

8.3.4 Finding the Borders and their Variability

Though NPC was the phenomenon intra-acted by the research apparatus, the specific components and their relations became determinate through the storytelling and not the language of the theory. This meant the object of the intervention could not be stated in advance purely by generalised knowledge of the phenomenon because finding its borders and its points of variability required the parents’ stories. Practically, it would have been inappropriate to presume from the outset that the object of the intervention was specifically behaviour and that its function was to change that behaviour purely because a different behaviour was a desired outcome. Using the language of the general theory to abstract the common-sense phenomena transformed it into a theoretical object with idiosyncratic and local agencies (Salvatore, 2014). This was where the use of a narrative apparatus began to show the unique forms of knowledge it permitted: two key ones being dynamics and intransitivity. Because of the relational ontology, the storied dynamics were the appropriate starting place because points of variability between agencies of the NPC and of the professional competence, and not central tendency, were where shifts could be most readily made (Valsiner, 2016a). Because of the dynamics, linearity of relations could not be assumed (i.e. P>Q, Q> R); in fact, bifurcations and cycles were presumed instead permitting intransitivity (i.e. P > R or R > P) (Valsiner, 2013). These characteristics mean each
intra-action of intervention must be examined for its unique points of variability. For example, if the current research was repeated in a different location with different people and the same apparatus was used to intra-act NPC, the same points of variability could not be guaranteed even if their narrative typologies displayed normative discourses capable of being indexed as Architect, Zephyr, or Sower types. This is why Salvatore (2016) admonishes that a theory of the object and a theory of the function must be enacted for each instance of intervention.

The object/function relation joined the ‘thing + working principle’ aspects with the ‘value’ aspect of Dorst’s (2011) design reasoning as in Chapter 6. A creative task was required to enact imagination because imagination sets and tests the borders (Valsiner, 2014c). Imagination determined where the horizons were and what variabilities maintained them (Tateo, 2014). When asked to reflect upon PA in an open way as they were invited to do in the design workshops, the parents surveyed their experience for meaningful connections with PA and, constrained by the theory of request as explained above, instances became identifiable to them by tensions within the sedimented narrative of their experience. These were identified as contradictions in Chapter 6 (Engeström, 2014; Miettinen, Paavola and Pohjola, 2012). The parents’ contradictions were of 3 main types: environmental, relational, and self-situational. These types showed the complexity of the relations that enacted PA for the parents. There were agencies identifiable as socio-cultural voices that delimited the roles of the parents and the children including appropriate settings for parent-child interaction. The settings themselves (i.e. play parks, programmes, leisure facilities) played a role because the physical environment enacted feelings of comfort/discomfort, safety/danger, pleasant/unpleasant that pre-configured parents’ ideas of PA. There was also considerable tension generated by the differences in childhood and play practices between the parents and their children, making the reconciliation of the parents’ history and their children’s future a significant feature of PA as they considered it in the present. These historical memories and future possibilities were tangible to the parents, and they wrestled with them.
The connections extended to relations with their children and how parents managed everyday life in terms of what they expected life to look like. These connections were often times expressed in the language of self/identity inclusive of affect, such as pride or guilt or helplessness, and of values, by their use of obligating words like “should” or “ought.” These are just some of the meaningful, value-laden terms in which parents described their experience of PA, and all of these relations together enacted PA for the parents. For PA to be intra-acted differently by the parents, the relations that configured it had to become the object of the intervention. An important difference with regard to the theory of the object applied in the RIM compared with typical BC interventions was that these contradictions were not considered separate entities physically existing equally for all parents as members of a representative sample, as they might have been if they were construed as barriers. Instead, they were understood to intra-act a unique and meaningful material-discursive configuration of PA (the object) in each parents’ NPC (the phenomenon) that could only be understood by its relations. The analysis of the design frames demonstrated that contradictions were relations that included possibilities that had not yet happened but had a value outcome for the parents. Interestingly, and by way of contrast, the practitioners’ inability to articulate a theory of the object as the parents had prevented them from forming ideas in the design workshops, particularly in their evidence frame. They had only a function in mind with no clear object to which to direct it, and as demonstrated in Chapter 6, both are required for a design using the RIM.

The theory of the function is the nexus between the output claimed by the professional competence and the value of the outcome for the person seeking that competence (Salvatore, 2016). In this scenario, outputs belong to the professional competence and are stated in the language of the general theory, while outcomes belong to users of the professional competence and are stated in the language of their common sense value. As explained using Dorst’s (2011) abductive model of design reasoning in Chapter 6, thinking the object together with its working principle allowed value to be derived. Together, these formed the functional
outcome for the user and the meaning and economic value of the professional practice.

This distinction between output and outcome is important and distinguishes the RIM from other approaches because BC interventions claim to achieve outcomes; it is their social and economic value in the public health context. I demonstrated in Chapter 2 that outcomes for both pathogenic and salutogenic forms of health promotion were framed in terms of the nomothetic evidence generated from the pathogenic perspective. This spoke to the notion that the output of professional actions in lifestyle interventions resulted in an outcome value as determined by the professional practice, in most cases this meant as determined by evidence. In Chapters 4 and 6, it was clear from the practitioners’ perspective that they viewed my role as representative of ‘professional practice,’ albeit of a different order to their own, but their expectation was still that our collaboration would result in outcomes as defined by normative evidence, (i.e. a change in behaviour that equalled increased IPA in families [preferably hard-to-reach ones] that was self-sustaining [due to actual change having occurred] using resources already available). Because the policy-evidence relationship was imbricated according to one specific interpretation of outcome attainment, the public health funders and policy makers expected to control the nature of the value outcome without taking cognisance of the fact that this meant they needed their participants to share their same value outcome for their efforts to be successful. However, in chapter 6 the RIM demonstrated that the value outcome belonged to the participants first, and it was to their meaning/value relation that outcomes pertained. As I reflected in chapters 4 and 6, the value the parents derived from the intervention prototypes was subjugated to the larger scope and impact required by the practitioners’ to which the parents’ outcomes were deemed to negligibly contribute. This disparity was caused when the professional competence sought to control both the outputs and the outcomes of intervention.

It is problematic, for psychology particularly, when its professional practice defines its own value outcomes based on the perceived normativity of its outputs, which psychology does in stronger and weaker ways (Salvatore, 2016). Both
positive psychology and psychotherapy are examples of strong versions of normativity in psychology whereby a happy life or a non-malfunctioning mind, respectively, are pre-defined in the outputs of the professional practice, or in other words, the output is the normative definition. A weak version of normativity is where scientific constructs are taken as explanans of culturally defined norms. In this version, instead of directly defining the correct state of affairs as in the strong version of normativity, psychology establishes an empirical link between a (un)desired state of the world and one or more psychological constructs and then leaves society to determine the value. This weak version is the approach most often seen in BC research. Society defines physical inactivity as an undesirable state of affairs and asks psychologists to identify psychological constructs that can prevent or reduce it, but the undesirability of physical inactivity is not a psychological statement (Salvatore and Valsiner, 2014). Salvatore (2016) asserts that psychology must reject any such normativity, strong or weak, on the grounds that: psychology must, necessarily, concern itself with human processes and dynamics for their own sake; psychological practice must maintain a precarious position at the edge of social-cultural norms so that it can remain within the common sense of human action while also striving to explore it; and despite the way psychological processes are readily indexed, there is no stable, invariant relation between mental processes and behaviour, and behaviour and its corresponding social value (Salvatore and Valsiner, 2010).

The design approach applied in the RIM addressed Salvatore’s (2016) criticisms by developing the nexus between output and outcome in a non-normative, contingent way because both were defined within and as a function of the general theory operating in local conditions. In the instance of this thesis, the general theory of the phenomenon (NPC) permitted the object(s) of the psychological competence (meaning-relations of IPA) to be identified allowing the functional output of the intervention to be described in the language of the theory and not in accordance with normative systems of value. Meaning, in this instance, the functional output of the professional practice of intervention was the capacity to intra-act novelty in narrative personal culture, as opposed to the normative
approach in which the outcome would match the social demand for specific patterns of action, namely, increased instances of the behaviour indexed as intergenerational physical activity (IPA). Because the function was not defined in these culturally normative terms, the psychological output acquired different forms of expression (outcome). The novelty produced as the output of the professional competence was constrained or elaborated according to parents’ experience of it, meaning the value outcome itself actually belonged to the agencies configured as the NPC. Generating the capacity for narrative innovation did not prescribe how this new capacity was used by the parents, and as demonstrated in chapter 7, the same intervention output led to very different outcome experiences for them.

These findings challenge BC intervention as it is currently practiced because they call into question the applicative nature of ‘behaviour change techniques’ (Cane et al., 2015) as procedures with invariant functions (Salvatore, 2016). The outcomes of the intervention prototypes were not taken for granted but were first established by their local meaning and value. When the parents framed their ideas for IPA as presented in chapter 6, not one expressed IPA as a desired outcome, but rather as a means to other ends they did desire, ends they found meaningful (Beggan, 2016a). From this perspective, the function of interventions for BC could be considered more like the development of innovation competencies (Salvatore, 2016), or perhaps, more like the proliferation of narrative-based tools for the creation of conduct (Smith et al., 2015) where the output and outcome are collaborated rather than predicted.

8.3.5 Elaborating a Model World

So far, the RIM has demonstrated the ability to set a storied nexus between the everyday experiences of a people group told in their own common-sense language and the knowledge, skills, and resources of the professional competence as abstracted into the language of the general theory of the phenomenon. Together these formed the collaborative exception to the canon that became the theory of the request, and simultaneously, the material-discursive manifestation of the research apparatus as in the narrative typologies from Chapter 5. Within these specific arrangements, relations configured the meaning/value and outcome of the
common sense experience along with the object/function and output of the professional competence which were identified from the contradictions in Chapter 6. The contradictions enacted conditions of possibility due to the variability of their relations within the NPC. The contradictions showed points where the collective story was not firm, where new meanings were possible, and where the current border of the closed set of the design story could be extended. In terms of intervention design, this returns attention to the dynamics of the phenomenon itself and how the borders of a NPC might be extended. As the object of the intervention was the parents’ meaning-relations of PA they had linked with specific value outcomes set in the future, the output of the professional competence had to have the capacity to effect these relations. This capacity was enacted via the abstracted object-function relation in the language of the meaning-outcome and became the causal story of the intervention whose telling required Salvatore’s (2016) final two intervention components: theory of the setting and the theory of change.

The theory of the setting was the performance of the intervention and the theory of change was its plot. The theory of the change explained the action of the intervention and set the expectations of experience while the setting made the experience meaningful and expansive. Together, they enacted a model world (the purple triadic form at the top of figure 19) that told both a story of the meaning-outcome relation in the language of common-sense (via the theory of the setting) and of the object-output relation in the language of the theory (via the theory of change). In the context of normative interventions, setting refers to the material and immaterial conditions in which the intervention takes place: time (in history), space/place, costs, cultural rules, the nature of the relations that happen within it, etc. (Trickett et al., 2011). In the abstracted version of intervention, setting was not only the conditions of the intervention as noted above, but also the performance of it, which, according to Salvatore (2016), was a “performance of strangeness” (p. 35). The aim of the setting of the intervention was to elaborate the request, or in the case of this work, the story, with which the design began for the purpose of proposing a different interpretation of experience. The theory of change was the
professional competence of interpretive abstraction by which it transcended the common sense to say something specific about the phenomenon, which in typical BC research would refer to behaviour, but in this instance, it referred to NPC. Salvatore (2016) notes that a theory of change is needed to empower the strategies of intervention and that change must be modelled in order to be investigated. In the RIM, what constituted change depended entirely on the measurement apparatus and the phenomena it intra-acted.

In typical BC research, the measurement apparatus configures a different phenomenon to that proffered in this thesis because it is based on a different causality story. Behaviours like PA are typically understood by their correlates or determinants: pre-existing entities interacting with a physical human body to cause an event chain based on mechanical physics. This is evident in Michie et al.’s (2014) definition of behaviour,

Anything a person does in response to internal or external events. Actions maybe overt (motor or verbal) and directly measurable, or covert (activities not viewable but involving voluntary muscles) and indirectly measurable; behaviours are physical events that occur in the body and are controlled by the brain (p.36).

This definition implies a causality story that requires an objectively external entity (like a researcher or an extension of them such as an instrument or technique) to identify and manipulate whatever is thought to affect a person’s internal architecture by finding a way to increase or insert components that are deficient but needed to elicit a given behaviour, like self-efficacy or motivation, for example (McGannon and Mauws, 2000). Cause and effect is understood by a clear distinction between subject and object whereby a pre-existing state of affairs is represented then intervened upon via specific manipulations (Hacking, 1983). According to Michie, van Stralen and West (2011), BC interventions manipulate in nine ways: “education, persuasion, incentivisation, coercion, training, restriction, environmental restructuring, modelling, enablement” (p. 7). These nine functions are taken to affect the phenomenon they interact with which, for Michie, Atkins
and West (2014), is the basic behaviour system (COM-B model) comprised of capability, motivation, and opportunity that generate behaviour in a given context. From this perspective, the purpose of intervention is to target one or more components of the system as part of the design process by extrapolating causal links from the desired behavioural target in a given context (Michie, van Stralen and West, 2011). Even though Michie and colleagues assume a systemic phenomenon, their intra-action of BC does not account for change in the system’s components in relation to the whole; they only account for modelling the effect of a function-component influence (i.e. coercion (function) effects reflective motivation (component) by changing conscious evaluations (a process leading to behaviour).

By only examining the influence of predefined function-component relationships, Michie, van Stralen and West (2011) fail to match their systems model with a systems understanding of psychological change. In developing systems, cause and effect are dialectically related; one eventually trades places with the other resulting in synthesis (Valsiner, 2015b). To understand synthesis, qualitative changes of the whole, the parts, and their relationships must be examined at the level of a whole phenomenon since a change in one specific functional relation may not result in the emergence of a qualitatively novel whole (Toomela, 2014a). Meaning, from a systemic perspective, a behaviour change cannot occur without interactions that result in qualitatively identifiable synthesis. The failure to fully grasp this concept can be seen in the notion of ‘physical activity adherence’ (Pridgeon and Grogan, 2012) which, in principle, should not be necessary if change has actually occurred. When synthesis occurs, the qualities of the components change as they become part of the whole taking on some of its characteristics and acquiring new capacities and qualities in the same way that hydrogen and oxygen are only wet as H₂O (Toomela, 2014a). This means that whatever combination of components may generate a given behaviour, if by some mechanism they become integrated into a person (whatever ‘person’ might mean according to a given apparatus), the components themselves are not separable from and are only identifiable in their relations, and they will function to serve the
highest level of the hierarchy (i.e. the whole person) and not just a part of it (i.e. its brain) (Harré, 2012; Toomela, 2016).

In contrast, NPC was a phenomenon that intra-acted an organic body with its history, its setting, surroundings, and its future according to a uniquely meaningful narrative cohering with its measurement apparatus. I maintain that in behavioural research, objectivity is limited to the epistemological functions of the apparatus which objectifies a relational phenomenon ontologically. ‘Behaviour’ is not a pre-existing entity any more than a ‘person’ is a pre-existing entity. A would-be knower intra-acts these and other phenomena via the continuous act of measurement called ‘mind’ using the material-discursive apparatuses at their disposal. Parents intra-acted themselves and their PA behaviours according to their specific material-discursive apparatus, and the practitioners intra-acted the parents according to their own specific material-discursive apparatus. Using a narrative apparatus permitted me to intra-act these phenomena together, and I abstracted them using a particular story of causality. With regard to the theory of change in the RIM, the story of causality was an extension of the agentive realism introduced in Chapter 3. Beyond the linear or systemic causality of the BC examples previously presented, the innovation of the RIM was that change was defined as a form of triadic development from which narrative novelty could be expected as an output but not an outcome of intervention based on the general theory of the phenomenon.

All meaningful experience has an irreducible triadic structure (Tateo, 2016a). I have represented this relation throughout this thesis using a closed set, a border and an open set, and I have based the representation of the RIM on how such triadic relations might configure and reconfigure according to a narrative apparatus. The relations of development in the examples of typical BC research considered so far are dyadic or binary (i.e. two or more closed sets affecting one another by mechanical forces like balls on a billiard table), and therefore, can only be reactive or adaptive (Valsiner, 2014b). Dyadic relations only permit substitution or adjustment of content rather than leaving space for change or transformation to occur. Conversely, the triadic development expounded in Chapter 7 created a space
of indeterminacy beyond the dyadic relations taken to have pre-existing given-ness and offered possibilities (Tateo, 2016a), which are often not factored into the BC process because they are taken not to be given. The double stimulation in the WT-use stories from Chapter 7 was identifiable because parents were pre-adaptive; they were interpreting relevant aspects of their relations and preserving them as possibilities for future emergence (Favareau, 2015; Tateo, 2016a). These relations were preserved by semiosis, or networks of meaning relations of increasing complexity, that created boundary conditions from which emergence or development became possible, similar to what Kauffman and Gare (2015) called the adjacent possible or what Vygotsky conceived as the zone of proximal development (Gelo and Salvatore, 2016). This is depicted in figure 19 by the triadic relations of the purple model world. The closed set of the model world created a signifier that permitted parents to determine their relation to it, but also a border and complimentary space which they used to imagine a different position. For the parents, such meaning-making was a storied, future-oriented phenomenon because only stories could handle open-ended, creative complexity while configuring a space for all future possibilities (Brockmeier, 2012; Kauffman and Gare, 2015). The abductive design of this research permitted the parents’ stories to be abstracted as an instance of this general theory; meaning, the general theory was able to explain the dynamic of the phenomenon (i.e. NPC) such that the processes of WT-use could be understood as a local working of the general theory. I make the claim that the future-oriented meaning-making capacity of NPC intra-acted the prototype intervention as a model world, the ongoing experience of which generated novelty with the potential to extend or regress its borders in triadic relation, though the outcome of the novelty could not be pre-stated. I have termed this theory of change, agentive narrative intra-action (see figure 20).
Figure 20. Agentive Narrative Intra-action

n=novelty; n(d)=novelty decay, NPC=narrative personal culture
In Chapter 7, parents who were not part of the original design process engaged with WT via their own NPCs in ways similar to what the parent-designers had imagined, and their use-experiences created a variety of continuations to the WT story. The participation relation began immediately upon encountering the model world of WT. For some, this process happened in an instant – in the time it took to regard an object such as WT and either download it or not. When a parent participated in WT, they stepped into a world they had pre-configured and inhabited it for a while, experiencing it bodily, socially, emotionally, practically, etc. (this is depicted by the mingling of the purple of the model world and the yellow of an NPC). When they did, the conditions (i.e. motivation or self-efficacy, for example) required to intra-act the model world coalesced (as opposed to preceding or succeeding it) according to the meaning the parents performed with it. The conditions continued (re)configuring depending on the relations of agencies in the parents’ ongoing experience of WT use, but what would become of the intra-actions of this model world could not be predicted by an entailing law because outcomes belong to the indeterminate border relations within and beyond the NPC. From the data in Chapter 7, it was notable how different each intra-action of WT was. In the instances where novelty was observed, the theory of change modelled as agentive narrative intra-action was notable.

In figure 19, the top of the RIM depicts the selected model world (model world 2) as having open, indeterminate relational potential. Figure 20 represents agentive narrative intra-action of relational data described in Chapter 7 as ‘personal contradiction with tension maintenance’ as an example theorising how intervention might enact a particular relational potential. Multiple agencies intra-acted a NPC together with the model world of WT. Some agential relations generated novelty through their ongoing dialogue of use as represented by the n intra-actions. For the parents with this type of use-experience, novelty expressed itself variously as different behaviour, as new meanings, and as different positions of IPA within their macro-organiser. This novelty was generated in relations where signification with WT maintained tension between the contradiction and the experience of the model world, but in relations where tension was resolved or never did emerge, novelty
decayed along with the signifier maintaining the dialogical relation as depicted by the \textbf{n(d)} intra-actions. The dotted lines represent the variability in the borders of the NPC where parents like Isabel and Candace began to expand their NPC by trying new meta-positions and forming new roles and actions to amplify the novelty in their experience. Some borders regressed, as in the case of Gail, who initially generated novelty in accordance with her model world, but found that agencies configured in her NPC resisted the meanings she was making and created tension contrary to the WT story because of how the novelty was being made. In other words, WT was elaborating her model world in the way she had imagined, but her experience of it conflicted with agencies within her NPC that created tension against the use of WT itself.

In the present data set, the signifying relations with the contradiction, the narrative intra-action of novelty from the contradiction, and the expansive/regressive potential of the ongoing interpretive dialogue of meaning have been established as integral and functional to participation in an ‘intervention.’ However, it cannot be established that, in this instance, novelty was amplified to a sufficient degree to enact a new boundary; this aspect of the dynamic requires further investigation. It is unclear what a shift in parents’ meaning configurations of PA, or of its position in the parents’ IPA narrative would mean relative to NPC, or how specific behaviours like IPA might become both performative and sedimented. For instance, in the case of Valerie in Chapter 7, participation with WT resolved her contradiction entirely resulting in PA maintenance but not in the specific type of PA signified by the WT story as IPA. It was clear that, together, signification, tension maintenance, and dialogical elaboration of meaning with a storied object like WT was capable of producing a behavioural performance in accordance with the intervention story. This phenomenon was not unlike the outcomes reported in much current BC research, except they are called effects because the specific behaviour was intra-acted linearly and defined in culturally normative terms. However, what was overlooked in typical BC intervention was the storied beginning of a meaningful request (Salvatore, 2016); consideration is not usually given to what it means that a person
is participating in an intervention. The process represented in the RIM is a model of
the general dynamic of any participation in a lifestyle or BC intervention. The fact
that behaviour was different in the direction signified by the intervention during or
even immediately after participation was to be expected, and as Smedslund (1997)
asserts, data that empirically verifies such a process says nothing new about the
phenomenon itself and everything about the accuracy of the instrument applied
because such a happening is logically necessary and not a matter that is
strengthened or weakened by data. What this research, and indeed much of the
current body of BC evidence if viewed from this perspective, tells us is that PA
behaviour can be enacted by intervention as it participates in the ongoing story of
the NPC. Behaviour as a construct is an insufficient focus and too narrow an
outcome upon which to base lifestyle intervention. It is best understood by its
relation relative to NPC, the becoming of which cannot be controlled by
intervention but can perhaps be amplified and expanded by it.

8.4 Implications for Public Health Practice
The findings of this research have significant implications for the practice of PA
promotion and for lifestyle intervention. Considering the issues raised in the
literature review in Chapter 2 together with the research findings as organised in
the RIM proposed above, I proffer a new narrative for BC interventions.

In Chapter 2, I established that the main two modes of intervention
practices, pathogenesis and salutogenesis, operated according to mechanistic or
structuralist metaphors of behaviour, respectively. Metaphors direct social
practices and can be as restrictive as they are expansive (Smith and Sparkes, 2004).
While these primary modes intra-act their phenomena differently, their PH
applications are constrained by an evidence-based story of actions and outcomes
adhering to one particular version of causality. At the present time, practitioners
and researchers working for BC are funded and driven by the achievement of
outcomes indexed in normative language. However, for people actually doing the
ongoing work in this or any other area of health, what they think they are doing,
the metaphor of their work, affects the work they do and how they do it (McKenna,
2017). This was evident in the practitioner data from this research. This group of
people who genuinely cared about improving the health of parents and children could not permit designs tailored to the parents’ experiences because they ‘knew’ they would not continue to come and the programme would not be ‘sustainable.’ Why should parents continue to come and how long does a programme need to be sustainable? These are the evidence-based worries of neoliberal attempts at individual body management (Crawshaw, 2013; Scheirer and Dearing, 2011). The findings of this research provide a metaphor for a different, additional strand of PH based on a kind of ‘novogenesis.’ By looking toward our generative capacities, the RIM changes the intervention story and opens up what Fullagar (2017) calls “the politics of possibility” (p. 250) whereby reified generalisations are no longer used to represent, explain, and control individuals.

The RIM retains a focus on the community as being the most agile setting for interventions (Carter, 2015). Actions taken in communities are impactful and resources, relatively speaking, are affordable. Also, stories of everyday life always include relevant aspects of space and place (Bell et al., 2015) which resists the neoliberal focus on individuals and labelling and necessitates considerations of structural agencies and shared responsibilities (Baum and Fisher, 2014; Sparkes, 2013). Beginning intervention design from a storied nexus as proposed in the RIM allows co-designers to detect contradictions relevant to that community. For instance, the storied nexus might show that the need to improve a park or create better public transport is equally as needful as promoting individual walking behaviours using nudges. While this promotes collective responsibility, practitioners and funders would have to commit to taking considered and holistic actions which is not always expedient based on current funding models.

From the perspective of RIM, the role of BC practitioners would shift from evidence/research translation and implementation to designers working directly with community members. Practitioners trained in formative and design-based methods and in narrative/cultural theories of qualitative psychology would apply skilled abductive reasoning to generate a variety of conditions of possibility. Though this research focused on one particular Model World, WT, the design process generated at least 3 ideas that could have been prototyped and refined. If the
function of intervention were to generate model worlds tailored to the variabilities in communities, the role of designers and their teams of community members, researchers, and any other needful stakeholders would be to perpetuate design cycles. Though our project was slower than I would have preferred, the designs generated interest and momentum that dissipated because there were no structures ready to receive them. If such a design approach were applied at an organisational level, once practitioners had established collaborations, design processes would move quicker enabling a rolling offering of possibilities on a variety of scales. Without such a change at an organisational level, the time and effort required to generate designs might not be feasible.

Since the object and function of the intervention is to create novelty in relations specific to contradictions, the practitioners would look to maximise the novelty possible by a programme’s unique signification (which they understand will not last). Practitioners would start thinking in terms of programme or product life-cycles as opposed to lasting solutions because they would understand such is the nature of the phenomenon. Interventions do not need to last and people do not need to adhere because we can collaboratively generate meaningful behaviours but not collectively change them. However, from these experiences change becomes possible where it had previously not been. Finally, because funders will always want to audit their investments, instead of measuring outcomes in terms of normative indexing, practitioners can observe engagement with the designs and determine if the designs are participating as desired in the collective story. This requires maintaining an interpretive connection throughout the design cycles to know if borders are firming up in areas that had once been variable, following where the variability has moved to, and analysing which efforts continue to generate novelty so that communities can continue to develop in ways that are meaningful to them.

8.5 Strengths and Limitations

In Chapter 3, I offered possible criteria for this work, and I use them here to reflect upon its strengths and weaknesses.
I invited my reader to Sparkes and Smith’s (2009) concept of connoisseurship which I apply as a global criterion for considering how the research cohered and how all of its moving parts participated in concert. I feel this aspect of the work was most notably evident in my careful attention to developing and maintaining my onto-epistemological positioning (Smith and McGannon, 2017) which provided the basis for my original contributions to knowledge. Because I applied this positioning with consistency throughout the research, it is a strength that adds clarity, novelty, and robustness to the findings. However, my positioning is also a potential weakness in that it opens the work to criticism from the various perspectives that I have joined together to create the conditions of possibility for this work. Critics might note that I have chosen to feature some aspects of these various theoretical perspectives and not others or that I have simply used a different vocabulary to speak about similar phenomena. I maintain the non-foundationalist stance that any application of ‘mind’ is measurement which is both material and constructed (Kauffman and Gare, 2015; St. Pierre, Jackson and Mazzei, 2016), and that as long as the measurement apparatus and its arrangements are clearly articulated (including my role as the researcher), any knowledge it intra-acts can be judged on its configuration which can be refined by continued use (Barad, 2007; Salvatore, 2014).

With regard to the specific material-discursive arrangements of the research apparatus I offered four criteria that demonstrated how this particular instance of intervention design could be judged as craft skill by highlighting ways in which it resisted consumerist criteria in research (Demuth, 2015b). The first of these was efficiency. The commitment to taking the time and effort necessary to get to know the participants and their circumstances enabled rich understanding of their stories. While this research intentionally did not take the shortest route to producing its findings, there may have been an optimum amount of time from design to prototype that would have improved the outcomes of the work for parents and their communities.

The second criterion was calculability. I took care to put as little constraint on the research and design process as possible and this strength yielded an open
understanding of the localised PA experiences. However, the bias toward females and Caucasian ethnicities as well as a lack of extremes in the PA experiences of the voluntary sample requires to be overcome in future research. Other people groups may not have felt able to or interested in participating in the ways I offered, so the stories of wider community segments and diverse populations require to be understood with designs of their own.

The final two criteria were predictability and control. I have noted previously how these did not fit with the phenomenon as intra-acted in this thesis; however, it might be helpful here to address the role of direct PA measurement within the research. I explained in Chapters 4 and 6 that direct PA measurement via accelerometry had been a desired function of the WT app to accommodate the practitioners’ evidence frame, but this function did not work in the prototype. While including this data may have added a different dimension of observation, and thereby, an additional voice to the DNA in Chapter 7, the inclusion of continuous monitoring would have changed the story and the signification of the WT meaning its use experience would have addressed different contradictions. This highlights how circumspect intervention designers need to be about the way gathering data impacts the theory of the setting, and thereby, persons’ experience of the model world (Zwolinsky et al., 2013), but it also highlights the adaptability of the RIM to incorporate multiple perspectives as agencies within its apparatus offering a post-disciplinary approach to PH intervention (Fullagar, 2017).

8.6 Future Research

There is so little behavioural research joining new materialist and qualitative psychology perspectives that the research possibilities are wide open for expanding and re-interpreting our current understanding of behaviour and how it changes. Based on the findings of this thesis, there are two main areas that I consider to require priority focus.

The first area seeks deeper understanding of the phenomenon of BC itself. I have judged that current BC research has not sufficiently grasped this phenomenon much beyond bioecological theories of ontogeny and social learning theories. My
work takes the initial steps toward understanding BC beyond behaviour alone to its material-discursive phenomenology as NPC, yet by my own apparatus, I do not consider to have observed what could be qualitatively described as an extension of a boundary position. I plan to address this by gathering a range of cases whose PA narratives are marked by meaningful changes in trajectory. Such post-factum research using DNA will refine the general theory of the dynamic and increase its sensitivity by expanding understanding of local workings of the dynamic and its variations.

To this work, I seek to expand a second area recommended by Valsiner (2014c), that of pre-factum methods, or in other words, research that examines the creative act of boundary expansion. Using the refinements from the case-based research, I will seek to apply the general theory of the phenomenon of NPC to better understand the range of experiences and tools people use to create triadic development, or in other words, how they story-forward and what role interventions can play in the story’s becoming. This work will give more focused consideration to the design stories and their performances (settings) to ascertain the role of specific designs or stories in actualising possibilities that include an increase in PA. This would require expanding understanding of the dynamics of intervention experiences from initial signification to tension maintenance and decay and overall programme life-cycles.

Together, the insights from the post and pre factum work will enhance the usefulness of the RIM as the processes of becoming are more clearly articulated. Broad application of the RIM in intervention practice would require funders and practitioners to relinquish control of persons and of outcomes. Based on the findings from this work, that is an unlikely state of affairs at present; it seems intervention practice itself now has a border with an open set of possibilities awaiting a model world.

8.7 Conclusion
I began this thesis with the questions: what makes physical activity matter and can it be made to matter? The exploration of narrative dynamics accomplished in this
research has clarified partial answers to these questions while some areas remain liminal, as is the wont of knowledge practices. PA interventions look markedly different when they are not about changing individuals into a physically active something or someone else. Meaning causes PA to matter in an ontological sense as it is such a generic doing of everyday life that it only ‘becomes,’ meaningfully, in relation to other things, yet its meaningfulness is no guarantee of its performance. Barad (2010) notes, “This ‘beginning’, like all beginnings, is always already threaded through with anticipation of where it is going but will never simply reach and of a past that has yet to come” (p.244). No single event, including this thesis, is only one. The entanglements enacted through this research have an ongoing differentiation that are now written into the stuff of the world. They cannot be disentangled but will or will not find new connections. This is how an ‘ineffective’ programme still participates in change, how today’s stories are ancient stories, and how behaviour and the life-story that encompasses it, no matter how brief, come to matter.
Chapter 8 – Summary Box

The evidence produced through this thesis makes 3 key contributions to the theory of behaviour change:

First, I have demonstrated a plausible theoretical foundation for considering behaviour as a dynamic phenomenon that is both material and discursive. In chapter 5, rather than locating behaviour solely ‘in’ a body bound as an expression of its physiological structures or locating it solely ‘out’ of a body in socio-ecological structures or language systems, I demonstrated the union of these agencies in a wider configuration I have termed ‘narrative personal culture.’

Second, I have proposed a theory of the motion of behaviour change. By employing a narrative research apparatus, chapter 6 showed that meaning holds the narrative personal culture in dialogical relation giving it its form but also its dynamism. Meaning was both normative and idiographic allowing shared common experiences but also individual expression/progression of them. Meaning was expressed in a lived-narrative form that persistently and selectively brought past and future to bear in each ephemeral moment of the present through a form of agential measurement.

Third, I demonstrated an applied instance of my general theory as dynamic behaviour creation in chapter 7 by showing how a new behaviour emerged into a liminal space adjacent to the present. This space was a future-oriented model world opened by imagination at the border of the present. Energised by a tension generating sign-relation, parents used the intervention as a scaffolding apparatus to cross the border from the present into their modelled world. All the agencies in their narrative personal culture participated in this ongoing experiential phenomenon of scaffolding orchestrating its progression.

These key theoretical contributions have 3 corresponding implications for practice:

First, based on a dynamic understanding of behaviour, intervention practices need not be outcome-driven. Outcomes belong to the meaning-making person using the intervention. Instead, practitioners can expect their professional
outputs to produce novelty as identified by exceptions to the narrative canon at various levels of discourse and performance. This type of public health practice could be considered ‘novogenesis’ guided by my Relational Innovation Model.

Second, beginning behavioural intervention from a shared story redresses imbalances of blame and responsibility. Behaviour, as understood through narrative personal culture, is entangled; both an individual and a collective phenomenon. We cannot justify the promotion of continuous self-regulation toward ‘positive’ life choices with the goal of homogenising lives toward ‘the middle.’ By definition, we create some of the health disparities we wish to reduce by framing both the problem and its solutions in evidence-outcome terms. Certain types of lives become devalued commodities in this way.

Third, the preceding assertions would mark a notable change to practice if implemented. Instead of translating evidence, practitioners would require to become skilled designers. They would be trained to look for and maximise variability working toward the cycling of intervention ‘products’ rather than searching for a primary, sustainable solution. This would allow the amplification of many different stories and the creation of more possibilities.
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## EYC Project Timeline - Overview

### YEAR 1

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<th>Project Activities</th>
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<td>Oct '13 - Nov '13</td>
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<tr>
<td>Recruit design team</td>
<td>Dec '13 - Jan '14</td>
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<tr>
<td>Determine design challenge</td>
<td>Feb '14 - Mar '14</td>
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<tr>
<td>Choose locales and recruit nursery schools</td>
<td>Apr '14 - May '14</td>
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<tr>
<td>Recruit participants and Workshop 1 - ST</td>
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<td>Recruit participants and Workshop 1 - RV</td>
<td>Aug '14 - Sep '14</td>
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<td>Collate/transcribe/interpret data - phase 1</td>
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### YEAR 2

<table>
<thead>
<tr>
<th>Project Activities</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collate/transcribe/interpret data</td>
<td>Oct '14 - Nov '14</td>
</tr>
<tr>
<td>Create Workshop - Parents (ST and RV)</td>
<td>Dec '14 - Jan '15</td>
</tr>
<tr>
<td>Create workshops - Practitioners</td>
<td>Feb '15 - Mar '15</td>
</tr>
<tr>
<td>Collate/transcribe/interpret data - phase 2</td>
<td>Apr '15 - May '15</td>
</tr>
<tr>
<td>Initial prototypes delivered</td>
<td>Jun '15 - Jul '15</td>
</tr>
<tr>
<td>WeTime and Family Fit designs developed</td>
<td>Aug '15 - Sep '15</td>
</tr>
</tbody>
</table>

### YEAR 3

<table>
<thead>
<tr>
<th>Project Activities</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>WeTime and Family Fit designs delivered</td>
<td>Oct '15 - Nov '15</td>
</tr>
<tr>
<td>Data collection - interviews - phase 3</td>
<td>Dec '15 - Jan '16</td>
</tr>
<tr>
<td>Parent/Practitioner follow-up session</td>
<td>Feb '16 - Mar '16</td>
</tr>
<tr>
<td>WeTime Mothballed</td>
<td>Apr '16 - May '16</td>
</tr>
<tr>
<td>Family Fit Discontinued</td>
<td>Jun '16 - Jul '16</td>
</tr>
<tr>
<td></td>
<td>Aug '16 - Sep '16</td>
</tr>
</tbody>
</table>
Appendix B – PowerPoint of Parent Workshop – Inspiration Phase

**WELCOME TO YOUR FAMILY PHYSICAL ACTIVITY WORKSHOP**

with Angela Beggan
University of the West of Scotland
angela.beggan@wws.ac.uk

**Tonight we will...**
- Discussion 1 (45 minutes)
- Break (10 minutes)
- Discussion 2 (45 minutes)
- Break (10 minutes)
- Discussion 3 (45 minutes)
- Wrap-up (10 minutes)
- *Times are approximate*

**Introductions**
- Name
- Number of Children and ages
- How long have you lived in ...?

**DISCUSSION 1**
Tell your story of a typical day.

**Discussion 1 – What's it like living in ...?**
- For Children –
  - Likes
  - Dislikes
- For Adults –
  - Likes
  - Dislikes

**DISCUSSION 2**
Who is the healthiest person in your family? Why?
Discussion 2 – What affects your family’s health?
- GIRFEC
- Early Years
- Collaborative
- Physical Activity Guidelines

DISCUSSION 3
Do you want to be active WITH your child?

Write the first thing that comes to mind...

Discussion 3 – Design Challenge
- Should intergenerational physical activity be developed in your community?
- Yes? What would it look like?
- No? What should be?

Write the first thing that comes to mind...

WRAP UP
ANYTHING YOU WOULD LIKE TO ADD OR DISCUSS?

What's next?

Hear  Create  Deliver
Appendix C – PowerPoint of Parent Workshop – Ideation Phase

LET’S CREATE IDEAS
with Angela Beggan
University of the West of Scotland
angela.beggan@uws.ac.uk

Tonight we will...
- Go over what we’ve found so far
- Decide what is important
- Create some ideas

DATA STORIES

Sharing Stories...
- While I tell the location stories...
  - Take notes on post-its
  - Notes should be small pieces of information
  - Easy to remember
  - Be thinking, “What could this information mean for us?”

Living in [Location] – Likes/Dislikes (Adult)

Likes
- Community
- Friendly, neighbourly
- Community spirit
- Know each other
- Community events
- Friends and family
- Generations and extended family
- Have friends in the village
- Rural Location
- Fresh air
- Can walk to things
- Can interact with nature/countryside
- Good Schools

Dislikes
- Amenities
- Not enough for kids/families
- Park is in danger
- Need better access in and around the community centre
- Having to travel for amenities
- Limited access and barriers in access
- Transport
- Poor choice of public transport
- Transport is unreliable
- No walking routes to [neighbouring town]
- Traffic/traffic calming
- Places to meet/socialise
- Need pubs, clubs
- No where to socialise indoors

Living in [Location] – Likes/Dislikes (Child)

Likes
- Rural Location
- Fresh air
- Rural great for growing up
- Getting to see animals
- Space to be outdoors
- Some organised activities
- Denning
- Toddler Groups
- Friends
- Have neighbourhood friends
- Feel safe
- Safe to be out and play if supervised
- Good schools

Dislikes
- Lack of play spaces
- Park is not maintained
- Community centre has no play spaces
- Classes/organised activities
- No family classes
- Some classes have age restrictions
- Have to go outside of [location]
- Limited access to free things
- Safety
- Main road is dangerous
- No safe walking or cycle paths
- Park doesn’t feel safe
What your children thought...
- Parks
- Garden (chute or trampoline)
- Dog walking
- Hill walking
- Reading magazines
- Board games
- Bake cakes and cookies
- Mum and Dad too busy
- Play with siblings/cousins
- Play with friends
- Play toys
- Ride bikes
- Play will
- Go to McDonalds and KFC
- Go Shopping
Some struggled to think of things. They associated doing things “with” parents because the parents were in proximity and not always as participants.

Identify Patterns
- Select Key information
  - Look across the information from the stories
  - Edit details that are not important
  - Choose information you find surprising, interesting, worth pursuing
- Aggregate Big Thoughts
  - Are some thoughts linked?
  - If so, take several related pieces and re-write them as one big insight.
  - Work at the same level
  - Are the things you have identified at the same level – Are they all Big Thoughts?

7 Rules of Brainstorming
- Shop around
  - There are no guidelines at this point. There will be plenty of time to judge ideas later
- Encourage wild ideas
  - It is the wild ideas that often create real innovation. It is always easy to bring ideas down to earth later.
- Build on the ideas of others
  - Sometimes ideas challenge your own views. Don’t wait and don’t reject them. Challenge yourself to make the best of it.
- Get反馈 on ideas
  - You will get better output if everyone is disciplined.
- Be bold
  - Bold ideas promote the logical and the creative state of the brain.
- One conversation at a time
  - Allow voices to be heard and built upon.
- No for quantity
  - Set a big goal for number of ideas and worry less. Remember that not all great concepts need to be created in one session and not all great ideas should be the result.

TO HELP FAMILIES IN
... AND ... BE ACTIVE TOGETHER

Original Design Challenge

Create opportunity areas
Brainstorm new solutions

BRAINSTORM-45 MINUTES

Make ideas real
Plan feedback opportunity

PROTOTYPE – 60 MINUTES
Make ideas real

- In pairs, pick one solution:
  - That you are most passionate about
  - That is the most possible
  - That is the furthest in the future
- Make your solution tangible
  - Draw your idea
  - Include a prototype address and what key questions you still have.

What’s next?

- Hear
- Create
- Deliver

Thank you for your time!

- If you would like to have continued input, please feel free.
- Thanks so much!
Appendix D – PowerPoint of Practitioner Workshop – Ideation Phase

IGNITE Workshop: Human Centred Design

3 Lenses of HCD

The HCD Process

Today we will...
- Synthesise
- Brainstorm
- Prototype
- Plan Feedback

Synthesise – 40-60 minutes
Empathetic Design Method
Share Stories
Identify patterns
Find themes

Original Design Challenge:
To help families in ... and ... be active together
Sharing Stories...

- While I tell the location stories...
  - Take notes on post-its
  - Notes should be small pieces of information
  - Easy to remember
  - Be thinking, "What could this information mean to the project?"

Overview

<table>
<thead>
<tr>
<th>DATA</th>
<th>ST</th>
<th>RV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Child</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>

ST

- Environment (exosystem)
- Community (mesosystem)
- Family (microsystem)
- Individual

RV

- Environment (exosystem)
- Community (mesosystem)
- Family (microsystem)
- Individual

Identify Patterns

- Select Key information
  - Look across the information from the stories
  - Edit details that are not important
  - Choose information you find surprising, interesting, worth pursuing
- Aggregate Big Thoughts
  - Are some thoughts linked?
  - If so, take several related pieces and re-write them as one big insight.
- Work at the same level
  - Are the things you have identified at the same level – Are they all Big Thoughts?

Themes

- Look for categories in the patterns and insights
- Are things related?
- Can they be clustered?
Brainstorm-60 minutes
Create opportunity areas
Brainstorm new solutions

Create Opportunity Areas

- This is where we switch from analysis mode to **CREATE** mode.
- Opportunities are phrased, “How might we...?”
- Opportunities are a re-articulation of a problem or need in a generative way – from current to future.
- We need 3-5 HMW questions to take forward for Brainstorming.

Brainstorm Warm-up

- Pair-up with a partner
- Person A – plan a dream family vacation, pose ideas of places to go
- Round 1
  - Person A come up with one idea after another
  - Person B must say NO to each idea and say why it wouldn’t work
- Round 2
  - Person B come up with one idea after another
  - Person A say YES to each idea and build on it and make it bigger

7 Rules of Brainstorming

<table>
<thead>
<tr>
<th>Rule</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Start juggling</td>
</tr>
<tr>
<td>2</td>
<td>No judging</td>
</tr>
<tr>
<td>3</td>
<td>No changing ideas</td>
</tr>
<tr>
<td>4</td>
<td>Build on the idea of others</td>
</tr>
<tr>
<td>5</td>
<td>Any idea is good</td>
</tr>
<tr>
<td>6</td>
<td>Get focused on ideas</td>
</tr>
<tr>
<td>7</td>
<td>No restraint</td>
</tr>
<tr>
<td>8</td>
<td>Everyone in a role</td>
</tr>
<tr>
<td>9</td>
<td>No fear of failure</td>
</tr>
<tr>
<td>10</td>
<td>Can’t get ideas down</td>
</tr>
</tbody>
</table>

How Might We...?

- How might we get adults and children to interact together in parks and greenspace?
- How might we get parents to prioritise their own health needs alongside those of their children?
- How might we make it easier for parents and children to get involved in activities together?
- How might we facilitate better use of community spaces?

Consider...

<table>
<thead>
<tr>
<th>Where</th>
<th>Who</th>
<th>What</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>home</td>
<td>mum</td>
<td>Games</td>
<td>afterschool</td>
</tr>
<tr>
<td>parks</td>
<td>dad</td>
<td>Toyballs</td>
<td>After dinner</td>
</tr>
<tr>
<td>garden</td>
<td>grandparents</td>
<td>Walking/hill walking</td>
<td>weekends</td>
</tr>
<tr>
<td>community</td>
<td>younger siblings</td>
<td>Trampolining</td>
<td>holidays</td>
</tr>
<tr>
<td>Clubs/teams</td>
<td>elder siblings</td>
<td>Zoo</td>
<td>After breakfast</td>
</tr>
<tr>
<td>indoor</td>
<td>friends</td>
<td>Sailing park</td>
<td>Going shopping</td>
</tr>
<tr>
<td>outdoor</td>
<td>pets</td>
<td>Storytelling</td>
<td>Baking/crafts</td>
</tr>
<tr>
<td>On the way to other places</td>
<td>Tanktops</td>
<td>Swimming</td>
<td>Running around</td>
</tr>
</tbody>
</table>
Parental Factors

<table>
<thead>
<tr>
<th>Personal Influence</th>
<th>Facilitators</th>
<th>Nurtured</th>
<th>Identiﬁed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helplessness</td>
<td>Insecurity</td>
<td>Discouragement</td>
<td>Difficulty</td>
</tr>
<tr>
<td>Stress</td>
<td>Disorganization</td>
<td>Discouragement</td>
<td>Difficulty</td>
</tr>
<tr>
<td>Risk factors</td>
<td>Perceived threat</td>
<td>Discouragement</td>
<td>Difficulty</td>
</tr>
<tr>
<td>Parental behavior</td>
<td>Perceived threat</td>
<td>Discouragement</td>
<td>Difficulty</td>
</tr>
<tr>
<td>Parental involvement</td>
<td>Perceived threat</td>
<td>Discouragement</td>
<td>Difficulty</td>
</tr>
</tbody>
</table>

Prototype – 60 minutes

Make ideas real
- Plan feedback opportunity

Prepare for feedback
- Which ideas will we take back to community designers?
- When
- How

Make ideas real
- In pairs, pick one solution:
  - That you are most passionate about
  - That is the most feasible
  - That is the furthest in the future
- Make your solution tangible
  - Draw your idea
  - Include and enactment of use
  - Identify what need your prototype addresses and what key questions you still have.
Appendix E – WeTime app-use interview guide – Implementation Phase

History

Tell me your story of using WeTime. Begin with when and why you downloaded it and continue up to today...

Why would this app be useful?

What prompted you to download the app?

How did you do activity together before using the app?

What is different now that you have used the app?

How does physical activity fit into your life usually?

Experience

How do you use WeTime?

Who initiates the use of the app?

What do you like best about using the app?

What does [child] like best?

Please recount an instance of using the app – can you tell me what happens from the beginning?

How does the app fit into your day?

What have you noticed in your child? Did they ask to repeat the experience? Did you? – why or why not?

How did you feel when using the app?

Artefact

What do you think the app was designed to do?

Did it do what you expected? Please give me an example...
What did you like about it? (features)

What did you dislike about it?

What would you like the app to do that it doesn’t currently?

What do you think of being active with your child? How does it usually happen? Did the app affect this at all? What does affect it?

What would improve the experience for you?
Appendix F – Sample of Dialogical Narrative Analysis from chapter 7

<table>
<thead>
<tr>
<th>Stories</th>
<th>Narrative Themes</th>
<th>Narrative Structures</th>
<th>Narrative Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gail</td>
<td>Gail has a blocked architect narrative with some sower elements. It seems that she has identified aspects of [Daughter] behaviour that she doesn’t like or thinks isn’t good – too much screen time – and she wants to intervene on it. This prompted her downloading the app and is the first stimulus. But also, she is working now and is missing time with her daughter and needs ways of engaging her because her previous attempts had been unsuccessful. She</td>
<td>Direction/Objectives In terms of the objectives, Gail felt that she was having success – apart from the apps poor functioning – her experiences allowed her to address the contradictions she experienced.</td>
<td>What does the story make narratable? Her working frame becomes narratable – she notices a deficit of time and an abundance of a behaviour in her child that she finds undesirable – too much time on tablet. The fact that she has gone back to work is difficult for her and is making her feel conflicted. The app is helping her do things to resolve some tensions and is expanding her imaginations – which are part of changing. The change was not radical but there were differences. What is unclear is the level at which the meaning exchange is happening, i.e. p. 242 Valsiner 2014.</td>
</tr>
</tbody>
</table>

Evaluation
Her assessment of the activities were fun and that [Daughter] enjoyed them. She didn’t enjoy the messiness of some of the activities and judged that M had difficulties with some of them, but she found one that she really enjoyed and that made it worthwhile. As was observed in some of the architect narratives regarding...
identifies that she lacks imagination where her daughter and the step dad do not. So her use of the app is a blend of architect and sower meaning orientations.

<table>
<thead>
<tr>
<th>What does the story do for and on the person, how does it shape a person’s conduct?</th>
</tr>
</thead>
<tbody>
<tr>
<td>The story of using the app shows some success. Gail’s framing of the problem or tension in her experience was matched with her use of the app though not to the degree she had intended because the app did not function as anticipated, and she could imagine, after using the app, ways in which the useful functions could be expanded. – what does this mean for ongoing development of this specific PA behaviour with her child – never mind her own behaviour??</td>
</tr>
</tbody>
</table>

Attitudes

Gail seemed positive toward the experience initially and found it beneficial in specific ways. She did not regard herself as active – this she associated with keep fit classes, but she was able to recognise that her active travel contributed to activity.

Obstacles

Her working schedule was difficult and this had an impact for her physically and mentally that made it difficult for her to do things that she did before. She felt she was missing aspects of [Daughter] life and that this might be something to help with that.

She seemed to have tried a sampling of the activities but [Daughter] liked the balloon one best. It seemed from her stories that the focus of the activities was on [Daughter], and she did not feature much. It is unclear how much she participated, but she did facilitate the activities and participated in the learning activities clubs and classes, the app allowed Gail to achieve her parenting expectations with regard to PA even when she could not be ‘bothered’ to participate herself.
and the helping activities. It seems that her second stimulus focused on building a bridge between her and her daughter. Her daughter preferred playing with her tablet and did not fancy the mothers’ previous attempts at engagement, but the app allowed for them both to initiate activity. The mum would offer and the child would agree or the child would ask and the mum would accept and in this respect, the mum mentioned this was better – that if there was version for the children, she

She also mentioned cost as an issue for some. She noted not being a very confident person and this allowed her to engage her child in a specific way without requiring her to manage a social situation that would be uncomfortable and require that kind of social effort.

It’s also worth noting that though there was dialogue with the app on an interactional level as an object in her environment. The app’s poor functioning did not give her the feedback she was expecting – the bird waking up. The app’s side of the dialogue was poor so she worked between self and other (her and child), self and app.

Contradictions
She identifies her nightshift to morning though these are included.

What resources are drawn upon to shape their story?
The functionality of the app was an issue and it affected the experience and expectation of using the app. The exchanges in the experience – things were fun, a riot, imaginative, different – these aspects formed part or the narrative including self-reflections – a person in time and circumstances – plus some element of guilt about needing the app. Important was the ability to be able to overturn contradictions of guilt by satisfaction with the outcome.

How does the PA narrative change?
Her personal narrative of previously being physically active does not change much, but on a
would come to her (mum) more.

For me it is just worth noting here now that if we had done a pre-post test of activity before and after the intervention there would likely be no significant change in outcome particularly because my outcome and hers were not the same, but there is evidence of developmental differences that importantly need further connections to continue.

scenario where she stays awake to be with her but she is tired. So she doesn’t always fully participate or moderates her actual activity, but her reason for using it is facilitated because M likes it and she doesn’t need to think of things. An imaginative example was when she suggested that M should have the app on her tablet too. She was imagining with the app thinking how the scenarios could be expanded to include M coming to her because of her own interaction with the app, though she did

Reflections
She reflected Cause I should actually be saying to myself look, go and do something with her instead of just letting her do what she wants.

very micro level there are subtle changes between her and her daughter that have fostered more time together and that time together has been spend doing active things. But this is not the main problem she wanted to solve.

Why are they using the app and how?
The app is being used as an imaginative resource to influence behaviour but also to create connections between the mother and daughter that the mother seems to find difficult.

How/do they create novel structures?
The novel elements seem to come mostly from the child – adding imaginative elements. The mum’s novel structures come through contradictions she has experienced and that the app may offer solutions –
This is one of her reflections about thinking that she shouldn’t need an app to help her do things – this is an example of a self-examination brought on by using the app. This is a meaningful reflection and she uses it positively – she identifies this tension, but resolves it with the outcome to allow her continued use of the app – but it is unclear if this tension could cause decay overtime.  

**i-moments**  
Did she have i-moments – the others haven’t yet...  

---

i.e. lacking imagination, causing her daughter to prompt her, facilitating a way for her and her daughter to share time, but also allowing her to feel that she is doing something productive even when she ‘can’t be bothered’ – the tiredness and effort can allow the meaningful element to be fulfilled without the actual activity the app was designed to prompt.  

**How do they select and direct meanings – attention<>affect?**  
There is something in her self-reflection that she should not need an app to do the things that the app is helping her do. She judges herself critically and finds the scenario strange but thinks the outcome is good so that circumvention happens again where the
contradiction is overturned.
Appendix G – Adult participant information pack including covering letter, information sheet and consent form.

Letter of invitation

13/05/2014

Dear Parent/Carer,

My name is Angela Beggan, and I am a lecturer and doctoral researcher at the University of the West of Scotland. I am working in partnership with [LALT], [NHS], and the [EYC] to explore the benefits and barriers to families being physically active together within [LA]. You have been given this letter because you are a parent/carer/grandparent of a child attending nursery within [LA].

We know that being physically active improves the health and wellbeing of adults and children, but we don’t always know why and how families are or aren’t active together. We want to involve the community in helping to answer these questions, so we are inviting families like yours to help us. We need around ten families with nursery-age children to participate in a workshop being held in early June (a day and time that is most convenient to everyone will be confirmed). Your input is important because you have local knowledge and first-hand information about living life in [LA] with a young child.

I will be at [workshop location] on Monday 19 May from 1:00-1:30 and Tuesday 20 May from 9:00 9:30. During these times, I will be available to give you the full details of what’s involved and to answer any questions you may have. Alternatively, you may call or text me on [phone number]. Your contribution is very
important, and I would be grateful if you would consider finding out more about it. I look forward to seeing you at the nursery soon.

Kind Regards,

[Signature]

Angela
PARTICIPANT INFORMATION SHEET

Title of study: IGNITE: Inspiring Generations in [Location] to get Active Together

You are being invited to take part in a research study to explore community perceptions of and preferences for intergenerational physical activity programming. Before you decide, it is important for you to understand why the research is being done and what it will involve. This study will protect your identity and you may withdraw at any time. Please take time to read the following information carefully and discuss it with others if you wish. Please contact Angela Beggan if you would like more information.

What is the purpose of the study?
The purpose of this study is to explore the benefits and barriers to families being active together within [Location]. We know that being physically active improves the health and wellbeing of adults and children, but we don’t always know why and how families are active together. Findings from this study will inform the development of intergenerational physical activity opportunities within South Lanarkshire.

Why have you been invited?
You have been invited to participate because you are a parent/carer/grandparent of a child attending nursery within [location]. This study is designed with the specific intention of involving the community in the development of programmes that are specific to their needs and to their local area. This is why you and your nursery-aged child are invited to participate in this community-based participatory research (a separate sheet is provided for more information on the children’s activities).

Do I have to take part?
No, you do not need to take part. It is entirely up to you to decide whether or not to take part. If you are interested in taking part you should contact Angela Beggan (details above) or your nursery’s head teacher within 1 week of
receiving this participation information leaflet. You can ask for further information as required, and you will be required to complete a consent form if you agree to participate. If you decide to take part you are still free to withdraw at any time without giving a reason. If you withdraw from the study you have the right to ask that any information collected about you to be destroyed.

**What will happen to me if I take part?**

You will need to agree to consent to be part of the study. If you consent then you will be invited to participate in a maximum 3-hour workshop that will take place at the Nursery Centre, or other locally convenient location (date and time will be confirmed). The workshop will involve other families from the community, and together we will discuss family physical activity opportunities best suited to your community. The session will also be facilitated by an experienced researcher and will involve interesting, interactive discussions. You are encouraged to participate but this will be up to yourself as to how much or how little you contribute to the group discussion. You will also be invited to a further follow-up workshop that builds on the discussion from this initial workshop.

**What are the possible disadvantages and risks of taking part?**

There are no disadvantages or risks to taking part in the study. You are merely asked for your opinions and viewpoints related to aspects of intergenerational physical activity.

**What are the possible benefits of taking part?**

There is no direct benefit to taking part in the study. However, your input will result in the creation of physical activity opportunities within your community that you and your family can access.

**What if something goes wrong?**

It is anticipated that there will be no risk or harm to participants. You are free to withdraw without giving any reason.

If you wish to complain or have any concerns about any aspect of the way you have been approached or treated during the course of this study, please contact the researcher in the first instance. Alternatively you can contact Dr Jean Rankin on : j.rankin@uws.ac.uk.

**Will my taking part in this study be kept confidential?**

All information collected about you during the course of the research will be kept strictly confidential, known only to the research team and stored in accordance with the Data Protection Act (1995). Information obtained will remain confidential and stored in a locked cabinet or on a UWS password protected PC accessible only by the research team. The audio recordings will be used only
for analysis and no one outside the study will be allowed access to the original recordings. All data will be kept securely for 5 years following the study then destroyed. If you agree to video recordings, edited portions may be used for the communication of data or for training others in participatory research.

**What will happen to the results of the research study?**

It is intended that the results of the study will be published and a summary will be made available to you prior to publication/any presentation of the results. Verbal quotes you have made may be published or included in the researcher’s final report but you will not be able to be identified in any reports or publications.

**Who is organising and funding the research?**

The University of the West of Scotland in partnership with [LALT], [NHS], and [EYC] are supporting this study.

**Who has reviewed the study?**

This study has been approved by the University of the West of Scotland ethics committee.

Thank you for taking the time to read this participant information leaflet, which you may keep. If you decide to take part in the study you will also be given a signed copy of the consent form to keep.

**Contact details**

If you would like to take part in this study, please do not hesitate to contact: Angela Beggan, angela.beggan@uws.ac.uk phone: 01698283100, ext 8475

If you would like to contact someone other than the researcher, please contact Dr. Jean Rankin, email: j.rankin@uws.ac.uk.
CONSENT FORM

Title of study: IGNITE: Inspiring Generations in [Location] to get Active Together

Name of researcher: Angela Beggan

1. I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had my questions answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time.

3. I understand that data collected during the study may be looked at by the researcher or individuals from the research team.

4. Please tick the box if you agree to take part in the study.

5. In addition, please tick the boxes if you agree to the following:
   a) I agree to verbal quotes (not identifiable) being used in publications.
   b) I agree to the session being audio recorded.
   c) I agree to the session being video recorded.
Name of Participant                  Date                                    Signature

Name of Person                        Date                                   Signature
taking consent
Appendix H – Child participant information pack including covering letter, information sheet and assent form.

Letter of Invitation

17 June 2014

Dear Parent/Carer,

My name is Angela, and I am a lecturer and researcher at the University of the West of Scotland. You may remember receiving a letter earlier about participating in a workshop about family physical activity. We would like to also invite the nursery children to a workshop of their own which will be held [Location] during nursery session hours (one session in the morning and one in the afternoon) on Tuesday, 24 June 2014.

Your child(ren) is (are) invited to participate in a 45 minute to 1 hour workshop during school hours where they will be asked to draw, talk about, and play the types of physical activity they like the best (see attached information sheet for more details). The purpose of this ongoing study is to explore the benefits and barriers to families being active together within [Location]. We know that being physically active improves the health and wellbeing of adults and children, but we don’t always know why and how families are active together. Findings from this study will inform the development of family physical activity opportunities within [Location].

If you are happy for your child to participate in this workshop, please read over the attached sheet with your child, sign it, and return part 3 to the nursery teachers by Monday, 23 June 2014. If you have any questions, please do not hesitate to contact: Angela Beggan, angela.beggan@uws.ac.uk phone: 01698283100, ext 8475.
If you would like to contact someone other than the researcher, please contact Dr. Jean Rankin, email: j.rankin@uws.ac.uk.

Kind Regards,

[Signature]

Angela Beggan
INFORMED ASSENT FORM

PART 1:
What is the purpose of the study?
The purpose of this study is to explore the benefits and barriers to families being active together within [Location]. We know that being physically active improves the health and wellbeing of adults and children, but we don’t always know why and how families are active together. Findings from this study will inform the development of intergenerational physical activity opportunities within [Location].

Why have you been invited?
Your child has been invited to participate because they attend nursery within [Location]. This study is designed with the specific intention of involving the community in the development of programmes that are specific to their needs and to their local area. This is why you and your nursery-aged child are invited to participate in this community-based participatory research.

Does my child have to take part?
No, your child does not have to take part. It is entirely up to you to decide whether or not to take part. If you decide to allow your child to participate you are still free to withdraw at any time without giving a reason. If you withdraw from the study you have the right to ask that any information collected to be destroyed.

What will happen if my child takes part?
Your child(ren) is (are) invited to participate in a 45 minute to 1 hour workshop during school hours where they will be asked to draw, talk about, and play the types of physical activity they like the best. This workshop will be audio and video recorded. The purpose of the recording is to assist recall workshop after the event and to allow for data analysis. It is only the researcher and transcriber who will have access to the recording.

What are the possible disadvantages and risks of taking part?
There are no disadvantages or risks to taking part in the study. Your children are merely asked for their thoughts related to physical activity.

**What are the possible benefits of taking part?**
There is no direct benefit to taking part in the study. However, your input will result in the creation of physical activity opportunities within your community that you and your family can access.

**What if something goes wrong?**
It is anticipated that there will be no risk or harm to participants. Your child(ren) is (are) free to withdraw without giving any reason.

If you wish to complain or have any concerns about any aspect of the way you have been approached or treated during the course of this study, please contact the researcher in the first instance. Alternatively you can contact Dr Jean Rankin on: j.rankin@uws.ac.uk.

**Will my taking part in this study be kept confidential?**
All information collected about you during the course of the research will be kept strictly confidential, known only to the research team and stored in accordance with the Data Protection Act (1995). Information obtained will remain confidential and stored in a locked cabinet or on a UWS password protected PC accessible only by the research team. The audio recordings will be used only for analysis and no one outside the study will be allowed access to the original recordings. All data will be kept securely for 5 years following the study then destroyed. If you agree to video recordings, edited portions may be used for the communication of data or for training others in participatory research.

**What will happen to the results of the research study?**
It is intended that the results of the study will be published and a summary will be made available to you prior to publication/any presentation of the results. Verbal quotes you have made may be published or included in the researcher’s final report but you will not be able to be identified in any reports or publications.

**Who is organising and funding the research?**
The University of the West of Scotland in partnership with [LALT], [NHS], and [EYC] are supporting this study.

**Who has reviewed the study?**
This study has been approved by the University of the West of Scotland ethics committee.

Thank you for taking the time to read this participant information leaflet, which you may keep. If you decide to take part in the study you will also be given a signed copy of the consent form to keep.
Contact details
If you would like to take part in this study, please do not hesitate to contact:
Angela Beggan, angela.beggan@uws.ac.uk phone: 01698283100, ext 8475
If you would like to contact someone other than the researcher, please contact
Dr. Jean Rankin, email: j.rankin@uws.ac.uk.

PART 2: Please read this with your child.

Hello. My name is Angela I want to learn about how boys and girls like you
play and are active with their families. I would like your help with this, but you
don’t have to help if you don’t want to.

I want your help because you go to nursery and because your mum, dad,
carer or grandparent have also agreed to help. But even though they are
helping, you don’t have to help if you don’t want to. I am going to come and
visit your nursery to talk to you and some of your friends. When I do, I am
going to ask you to draw pictures about how you play with your family, tell
me stories about what activities you find really fun, and show me how to play
your favourite games. When you draw your pictures and tell me your stories
and play your games, I am going to video record it so that I can remember
what you do and say, but no one else will see or hear this video but me.

When I have talked to you and your family, I am going to put all I find out into
a kind of story. I will share this story with your parents/carer/ grandparents,
and they can tell you about how your drawing and stories and games helped
answer my questions.

Remember, it is up to you if you would like to take part. No one will be angry
or disappointed with you if you say no. You can think about it and tell us later
if you want. You can say "yes" now and change your mind later and it will be
okay. You can ask me questions now or later. You can also ask your teacher
or your family questions. I have left details where you can reach us, and if
you want to talk to someone else that you are comfortable with, that’s okay
too.
PART 3: CERTIFICATE OF ASSENT

I understand that this is a study to explore what my child thinks of being physically active with his/her family. I understand that he/she will have a visit at nursery where he/she will draw and tell stories about physical activity, and play games. I have read this information. My questions have been answered and I know that I can ask more questions later.

Parent/Carer:

1. I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had my questions answered satisfactorily.

2. I understand that my child’s participation is voluntary and that he/she is free to withdraw at any time.

3. I understand that data collected during the study may be looked at by the researcher or individuals from the research team.

4. I agree to let my child(ren) participate in the children’s workshop.

5. I agree to verbal quotes (not identifiable) being used in publications.

6. I agree to the session being audio recorded.

7. I agree to the session being video recorded.

__________________________  __________________________  __________________________
Name of Parent/Carer                Date                                    Signature

Child(ren):

If unable to read or write:
A witness must sign, and child participants should make a mark of their own or make their thumb print.

I have witnessed the accurate reading of the assent form to the child(ren), and confirm they have been given the opportunity to ask questions. I confirm that consent was given freely.

Name of witness ______________________

Signature of witness ______________________

Date ______________________

**Child's Mark or Thumb Print:**

(Child one) 

(Child two) 

Researcher (to be completed at the workshop):
I have confirmed the reading of the assent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the child has given assent freely.

Name of researcher_______________________

Signature of researcher_______________________

Date____________________
Appendix I – Participant information for WeTime app study

What is the purpose of the research?
The purpose of this research is to involve parents/carers/children in designing their own health improvement services.

Why have you been invited?
You have been invited to participate because you are a parent/carer/grandparent of a child attending nursery or primary school. This research is designed with the specific intention of involving the community in the development of programmes that are specific to their needs. This is why you and your 3-8 year old child(ren) are invited to participate.

Do I have to take part?
No, you do not have to take part. It is entirely up to you to decide whether or not to take part. This form tells you of what is involved, but you can ask for further information as you wish. You will need to agree to participate by giving your consent which you give by creating your personal log-in and completing the app download. If you decide to take part you are still free to withdraw at any time without giving a reason. If you withdraw from the study you have the right to ask that any information collected about you be destroyed.

What will happen to me if I take part?
You will need to download the free app called WeTime onto your mobile phone. The app works with both android (4.3) and Apple (IOS7) phones. Once you download the app, you must register (this can also be done on a PC for convenience), and once registration is complete, you simply use the app on your phone as you would any other app. The trial runs until early 2016 (after which the app will be withdrawn for updating), so we ask that you use the app for approximately 8-10 weeks, though you may delete the app at any time if you wish.
In addition to downloading and using the app, we need your help with two further parts of the research:

1. When you do an activity, please wear your phone in the special belt that will be provided (you can collect one from your local nursery). This allows the phone to record information about the intensity of your activity.
2. Near the end of the trial, you will be invited to an interview to talk about your experience of using the app. This is an important opportunity to get feedback on your experience and hear your ideas for improvement.

**What are the possible disadvantages and risks of taking part?**
There are no disadvantages or risks to taking part in the study.

**What are the possible benefits of taking part?**
There is no direct benefit to taking part in the study. However, your input will contribute to service development for families with early years children in your area.

**What if something goes wrong?**
It is anticipated that there will be no risk or harm to participants. You are free to withdraw without giving any reason.
If you wish to complain or have any concerns about any aspect of your experience during the course of this study, please contact the researcher in the first instance. Alternatively you can contact Professor Jean Rankin on: j.rankin@uws.ac.uk.

**Will my taking part in this study be kept confidential?**
All information collected about you during the course of the research will be kept strictly confidential, known only to the research team and stored in accordance with the Data Protection Act (1995). Information obtained will remain confidential and stored in a locked cabinet or on a UWS password protected PC accessible only by the research team. The audio recordings will be used only for analysis and no one outside the study will be allowed access to the original recordings. All data will be kept securely for 5 years following the study then destroyed.
What will happen to the results of the research study?
It is intended that the results of the study will be published and a summary can be made available to you upon request. Verbal quotes you have made may be published or included in the researcher’s final report but you will not be able to be identified in any reports or publications.

Who is organising and funding the research?
The University of the West of Scotland in partnership with [LALT], [NHS], and [EYC] are supporting this study.

Who has reviewed the study?
This study has been approved by the University of the West of Scotland ethics committee.

Thank you for taking the time to read this participant information leaflet, which you may keep.

Contact details
If you have any questions, please do not hesitate to contact: Angela Beggan, angela.beggan@uws.ac.uk
If you would like to contact someone other than the researcher, please contact Professor Jean Rankin, email: j.rankin@uws.ac.uk.
Appendix J – Participant Demographic sheet

**Participant Information**

(Please fill in all the blanks.)

**About you...**

Postcode: _____________________________

Gender: ______________________________

Age: _________________________________

**Ages of Children in the household:**

Child 1: __________________

Child 2: __________________

Child 3: __________________

Child 4: __________________

Child 5: __________________

**Household Status (please circle one):**

Married

Partnered

Single

Divorced

Separated

Other

**Employment Status (please circle one):**

Part-time
Full-time
Homemaker
Retired
Disabled
Temporarily unemployed
Other
Appendix K – Photographs of sample data from workshops
Appendix L – Initial Insights

Initial Insights

<table>
<thead>
<tr>
<th>Individual</th>
<th>Structural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults looking for time out</td>
<td>Sense of pride about where they live</td>
</tr>
<tr>
<td>Majority of input was from mums, what about dads or other family members?</td>
<td>Greenspace and parks – what prohibits being active at the park?</td>
</tr>
<tr>
<td>Enjoy activity because they see it as play</td>
<td>Children seemed to concentrate on domestic settings of activity (domestic vs. external activity)</td>
</tr>
<tr>
<td>Low interaction from some parents</td>
<td>Walking was a common theme</td>
</tr>
<tr>
<td>Activity is already multi-generational just not together?</td>
<td>Need for community-linked activity</td>
</tr>
<tr>
<td>Acknowledge parenting ‘peer pressures’</td>
<td>Perceptions of lack of access to community space in Lifestyles</td>
</tr>
<tr>
<td>Social element is important for parents</td>
<td>Times of activity are afterschool, holidays, and weekends</td>
</tr>
<tr>
<td>Child health is a priority</td>
<td>Not accessing existing services</td>
</tr>
<tr>
<td>Most every parent communicated a nostalgic story of their own childhood play</td>
<td>Looking for low cost activities that appeal to children and adults</td>
</tr>
<tr>
<td></td>
<td>Children are going outside</td>
</tr>
</tbody>
</table>

Insights as themes

<table>
<thead>
<tr>
<th>Individual</th>
<th>Structural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents (mothers particularly) report the notion of children’s activity being a form of ‘care’ they need to provide for their child’s development. They attach a variety of outcomes to it for the child, including confidence, socialisation and future good health, but also for</td>
<td>Families spend the majority of their time in or near the home punctuated by routine (school, shopping, family commitments) or planned (classes/clubs, outings) activities.</td>
</tr>
</tbody>
</table>
themselves in the form of intrinsic and extrinsic affirmation of their ‘good’ parenting.

<table>
<thead>
<tr>
<th>Parents can feel subjugated to their children’s needs and look for ways to facilitate time for their own self expressions.</th>
<th>Families have a love and loyalty for their local environment but express frustration at being unable to engage with it as they would like.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fathers are conspicuously absent in that only a couple volunteered to contribute, but they are noted in the data by mothers and children as being the ‘one who plays.’ Dads are an important piece of the puzzle.</td>
<td>Settings of volitional intergenerational physical activity most often occur outdoors.</td>
</tr>
<tr>
<td>Parents enjoy spending time with their kids and enjoy sharing their own history as well as creating new family experiences.</td>
<td>Walking and forms of play are the most common types of intergenerational physical activity already occurring.</td>
</tr>
</tbody>
</table>
Appendix M – Outcomes of Create workshops leading to initial prototypes

IGNITE – “Create” workshop summary

Below is a brief summary of the work from our recent CREATE workshops. I attempt to summarise the process we undertook by giving an overview of each, all of which culminate in some prototype ideas. Throughout, I am keen for your comment and feedback, particularly if you think anything has been missed-out or misinterpreted.

Introduction

Parents are interested in facilitating their children to be active and healthy. Children associate shared activity mainly with home and park environments. Clubs and classes are things that parents and children do independently, and mums (in the main) are the facilitators of this making multiple trips in a single day, at times, to get the children where they need to go.

Parents seem less intrinsically motivated to do activity of their own, though they express willingness to do things with their children. Parents seem to subjugate their own needs in facilitation of activities for their children, and in some cases this may be viewed as a compensation of sorts for their own lack of activity. Those parents who do participate in activity themselves note having social support that facilitates this. In intergenerational contexts, time and schedule constraints are a factor, as are multiple siblings, and cost. There is also a perceived lack of space in relation to time – available gaps are few and too brief to do planned activities, and parents express lack of ideas about how to use such time gaps.

With regard to parks, this is the space that both parents and children identify as a major influence on intergenerational activity. It is where they both identify being active together. However, both parents and children report deficiencies in these spaces: parents do not like the park environments available locally, and all parents give accounts of travelling to preferred park spaces (though transportation makes this a less frequented option for some than for others). Children report that parental engagement in these spaces is limited and
most of the children identify that their parents take an observational role in these settings, with some exceptions.

It is clear that issues surrounding the design and development of intergenerational physical activity (IPA) can be viewed from both individualist and structuralist perspectives (Murphy, Dugdill, and Crone, 2009). It should be noted that despite what programmes may be running currently or previously, evidence on facilitated physical activity opportunities for adults and children in the 3-5 years age group are rare, and we do not yet know enough about how they work. Research literature suggests that parental physical activity and parent-child bond may mediate such activity as do ecological factors (Dzewaltowski, Ryan, Rosenkranz, 2008), which is represented in our data so far. This indicates the issue is complex and likely to be context specific. This suits the approach we have taken as we intended to approach both locations with different tacks, and the HEAR stage data has shown that there are significant differences but also many similarities (with the majority of differences representing structural factors and the majority of similarities representing individual factors). See appendix A for tables of both individual and structural factors identified in the data.

Storytelling

In our first workshop, while I was ‘storytelling’ (feeding back the data), you took notes that we intended to use to identify patterns. I asked you for ‘insights,’ things that jumped out at you, that made you sit up and pay attention. Table 1 below shows the mix of insights you identified; for purposes of discussion, I have broadly grouped them into observations representing individual or structural characteristics.

<table>
<thead>
<tr>
<th>Individual</th>
<th>Structural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults looking for time out</td>
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</tr>
<tr>
<td>Low interaction from some parents</td>
<td>Walking was a common theme</td>
</tr>
</tbody>
</table>
Activity is already multi-generational just not together?

Need for community-linked activity

Acknowledge parenting ‘peer pressures’

Perceptions of access to community space in Lifestyles

Social element is important for parents

Times of activity are afterschool, holidays, and weekends

Child’s health is a priority

Not accessing existing services

Most every parent communicated an instance (often nostalgic) of their own childhood play

Looking for low cost activities that appeal to children and adults

Children are going outside

These insights should be viewed as extrapolations from individual stories that represent overarching truths for us to consider. Time did not permit the opportunity to develop these to further depth and carry them through as insights, as expressions that allow us to see our challenge in a new way. I offer the following (Table 2) as a possible interpretation of such expressions, but your feedback is appreciated in refining them and ensuring that they represent your thoughts.

Table 2 - Insights as themes

<table>
<thead>
<tr>
<th>Individual</th>
<th>Structural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents (mothers particularly) report the notion of children’s activity being a form of ‘care’ they need to provide for their child’s development. They attach a variety of outcomes to it for the child, including confidence, socialisation and future good health, but also for themselves in the form of intrinsic and extrinsic affirmation of their ‘good’ parenting.</td>
<td>Families spend the majority of their time in or near the home punctuated by routine (school, shopping, family commitments) or planned (classes/clubs, outings) activities.</td>
</tr>
<tr>
<td>Parents can feel subjugated to their children’s needs and look for ways to</td>
<td>Families have a love and loyalty for their local environment but express frustration</td>
</tr>
</tbody>
</table>
Facilitate time for their own self expressions.  

Fathers are conspicuously absent in that only a couple volunteered to contribute, but they are noted in the data by mothers and children as being the ‘one who plays.’ Dads are an important piece of the puzzle.

Facilitate time for their own self expressions.  

Fathers are conspicuously absent in that only a couple volunteered to contribute, but they are noted in the data by mothers and children as being the ‘one who plays.’ Dads are an important piece of the puzzle.

Parents enjoy spending time with their kids and enjoy sharing their own history as well as creating new family experiences.

Settings of volitional intergenerational physical activity most often occur outdoors (in parks or gardens).

Parents enjoy spending time with their kids and enjoy sharing their own history as well as creating new family experiences.

Settings of volitional intergenerational physical activity most often occur outdoors (in parks or gardens).

Opportunity Statements

Next, we used the notions from our insights to create statements of opportunity. This brings us back to our “How might we...?” questions. We developed four of these to help focus our work in a generative, future facing way:

- How might we get adults and children to interact together in parks and greenspace?
- How might we get parents to prioritise their own health needs alongside those of their children?
- How might we make it easier for parents and children to get involved in activities together?
- How might we facilitate better use of community spaces?

You may notice that we have neatly, and perhaps intuitively, identified 2 individual and 2 structural opportunity statements, two that focus on an individual’s internal spaces and two that focus more on structural enablement (or ecology). Having, as we now do, the insights refined into themes – would you change anything about the opportunity statements? For instance, the current statement, “How might we get parents to prioritise their own health needs alongside those of their children,” might you adapt it in light of the insights to something more like, “How might we help parents experience personal space...?
and socialisation while facilitating their child’s needs?” You may or may not, but this is also something upon which we can reflect.

**Brainstorming and Ideation**

I next asked you to take these opportunity statements to a ‘pie in the sky’ level of abstraction to facilitate new ideas, new ways of viewing what is possible (including new ways of viewing/using existing services or structures). I have to say we struggled with this in reviewing the data; clearly our feet are firmly on the ground! We did have some good ideas though, and I have attempted to organise them here (Table 3) around King’s (1991) social-ecological model showing four levels of physical activity intervention (personal, intrapersonal, organisational/environmental, institutional/legislative). I have also included the parent’s ideas (Table 4) for intergenerational physical activity (IPA) as well as the children’s data (Table 5) on what they already do with parents. For clarity, the personal level refers to face-to-face or mediated interventions that focus on the individual’s cognitions/motives and involve things like information, personal monitoring and feedback, health risk/benefit. Intrapersonal levels involve proximal relationships like family members and peers or support groups and either personal and/or public monitoring and feedback. Strategies here include classes, peer-led groups, information, and group problem solving. Organisational/Environmental channels include structures like organisations (schools, churches, neighbourhoods, workplaces) and environmental features like parks, public pathways, shopping centres, etc. These usually employ behavioural strategies like point of choice prompts, incentives, and aspects of social marketing.
<table>
<thead>
<tr>
<th>Idea</th>
<th>Personal</th>
<th>Interpersonal</th>
<th>Organisational/Environmental</th>
<th>Institutional/Legislative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child-led classes or forest school</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile app</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Pedometer challenge with school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information resources</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idea boards in parks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitated activities in parks (like regular games days, nature walks – learning)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly family events leading up to gala day</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitated jog and dog</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Historic trails</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grandparent story walks</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Parent-child classes</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Parent-powered playground equipment</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Forest Schools</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Sponsored PA challenges through school</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Flagship walking towns (multi-level community campaign?)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Active travel mapping</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Traditional Game days at schools – involve parents/ grandparents</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Lose weight while kids get fit (crossover motives)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
Table 4 – Parent’s ideas

<table>
<thead>
<tr>
<th>Idea</th>
<th>Personal</th>
<th>Interpersonal</th>
<th>Organisational/Environmental</th>
<th>Institutional/Legislative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family swimming opportunities</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent/child classes</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
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<tr>
<td>Mobile app (note needing ideas)</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Skate parks</td>
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<tr>
<td>Walking paths</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Parks and other outdoor spaces for unstructured activity access</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Outdoor gyms</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
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<tr>
<td>Breakfast clubs</td>
<td>x</td>
<td>x</td>
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<td></td>
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<tr>
<td>Out of hours access to school play spaces</td>
<td></td>
<td></td>
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<td>x</td>
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<tr>
<td>Organised family activities as recurring calendar events</td>
<td>x</td>
<td>x</td>
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<td></td>
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<tr>
<td>Link with community organisations (like churches) and arrange family bus trips</td>
<td>x</td>
<td>x</td>
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<td></td>
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<tr>
<td>Soft play that adults can participate in</td>
<td>x</td>
<td>x</td>
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</tbody>
</table>

Table 5 – Children’s ideas

<table>
<thead>
<tr>
<th>Idea</th>
<th>Personal</th>
<th>Interpersonal</th>
<th>Organisational/Environmental</th>
<th>Institutional/Legislative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trampoline (sometimes solo play)</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baking and crafts</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Play with toys/costumes</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Run about</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
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<tr>
<td>Play football</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Bouncy castle</td>
<td></td>
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</tbody>
</table>
### Prototypes

Taking into account all of the above, I offer a summary of prototype ideas based on our previous discussions. I hope that after reading to this point, you may also have different perspectives and more ideas/questions yourselves, and maybe it would be possible to do some brainstorming via electronic exchange – it’s awfully hard to brainstorm on your own! Just by way of reminder, I would like to say that, at this stage, we still don’t fully need to consider feasibility or outcomes. We just have to pose some answers to our “how might we questions” for each location. I will take two to three of our ideas back to the parents and see what their feedback is, and then we can further develop the prototype involving feasibility and outcomes. I will, with everyone’s input, design an implementation plan to address these things when we progress to the DELIVER stage.

So, to get us started, I will offer the following ideas based on discussions across both parent and practitioner workshops:

1. How might we get adults and children to interact together in parks and greenspace?
2. How might we get parents to prioritise their own health needs alongside those of their children?
3. How might we make it easier for parents and children to get involved in activities together?

4. How might we facilitate better use of community spaces?
### Question 3

<table>
<thead>
<tr>
<th>ST</th>
<th>RV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helping parents see that little episodes of activity make a difference for them and their children. Parents noted the limitations on their resources of time and finances, and helping them maximise little blocks of time without having to be anywhere other than where they are with anything other than what they already have might help promote the behaviour.</td>
<td>The only thing is that only the parents would have control (as having the app on their phone) and it might be nice to develop a synced version that the child could operate from a tablet for instance and therefore also be able to initiate the activity. Especially if we had existing community events to link to like in question 4...</td>
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### Question 4

<table>
<thead>
<tr>
<th>ST</th>
<th>RV</th>
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<tbody>
<tr>
<td>‘Community spaces’ seems a bit broad, but going back to the data, other than parks (which has its own question), the only public spaces mentioned were Lifestyle centre in Stonehouse and the Leisure centre in Larkhall. It seems that a parent /child leisure offering could be trialled in each location. Such</td>
<td>In RV, we would need to develop a class for the community centre. There are no LALT related activities within RV so access to local activities might promote such classes.</td>
</tr>
<tr>
<td>The parent’s didn’t really like ST Leisure centre (as an environment), but most of them acknowledged going there regularly at certain points for swimming lessons. Could we accommodate a parent /child swim class (this would require the rules to be bent – could this be facilitated)? It would need</td>
<td></td>
</tr>
</tbody>
</table>
offerings don’t exist so we would need to develop the content. Just for discussion sake, I suggest…

Question 2
I don’t know that we can get parents to prioritise their needs so much as we would need to facilitate the parents satisfying their perceived needs (say, of socialisation or personal time) simultaneously or as a by-product of other forms of care. This is the most individualist aspect we have identified and these are usually addressed on a one-to-one basis.

Question 1
Play parks are really designed for children – the parents assume the role of guardian/observer. This is understandable particularly if you have more than one small child to one adult. We considered a park space designed to facilitate short bouts of interactive play based on park apparatus or otherwise. If it were concentrated in a space that had a kind of track round Forest schools or purposeful articulations with [local greenway] would be a useful development here – the child-led walk idea facilitated through the nurseries, for instance This could be facilitated in both locations, but as Stonehouse seems to have plans for park redevelopment underway, it would be great to trial a more effective playground design here first.

We could include a motivational interviewing session as part of the parent/child class design. A bit like a gym induction, you get one free when you start the class. This could be offered in both locations – wherever the classes were held.
about it, parents could walk
or use outdoor gym
equipment from the
perimeter while keeping an
eye on the kids in the
middle.

We could trial any one of these or we could also go big, like the idea HLP had of flagship
walking towns, and try a community campaign approach. However, I would be of the mind
that that might be the step following the trial of prototypes like these.

These are some initial ideas. I would love to see your feedback/ideas to develop this
further. Have a think and I look forward to hearing your input. Let me know if you have any
questions.
## Appendix Individual Factors

<table>
<thead>
<tr>
<th>Differences ST</th>
<th>Similarities</th>
<th>Differences RV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data from this group happened to represent the idea of the need for creativity around children’s activity. The one grandparent-carer was very creative and noted her constant behaviour of turning everyday things into games and stories and activity. Another parent represented a wish for this creativity but was unable to think of such things and noted information seeking behaviours for this type of information</td>
<td>Barriers of time* (working schedules, household duties, and children’s activity schedules), personal health constraints, lack of personal motivation for activity at times, lifestyle factors (personal preferences, enjoyment, economic and demographic factors), ideas (lack of knowledge of what to do, what is available)</td>
<td>Communicate a feeling of close knit community experiences as being important</td>
</tr>
<tr>
<td>Parents who may not perceive themselves as ‘sporty’ struggle for ideas, but value children’s involvement in activity</td>
<td>Family ties</td>
<td>Access to countryside and rural feel is a personal ‘like’ about Stonehouse and a reason they remain (next to family ties).</td>
</tr>
<tr>
<td></td>
<td>Pride/loyalty to community</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Life history associated with location by at least one parent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nostalgic connection with certain community spaces like schools or parks or greenspaces</td>
<td></td>
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</tbody>
</table>
Facilitation of PA opportunities at parental (or grandparental) expense of time (usually mum) and finances

Motives for current related behaviours are almost exclusively child-centric (the one exception being to socialise with other mums) and include: health (with perceived influence on future behaviours), socialisation, confidence, new experiences, sharing of the adult’s childhood experiences or providing experiences as replacement of adult’s remembered experiences that aren’t now perceived as acceptable or available (i.e. playing out all hours, building dens, connection with nature and with other friends).

*It is interesting to note that this perceived busyness is communicated in a rigid way. By that I mean, it is easy to think that people make time for what they want to do, and that sentiment holds truth, but the parents (mainly mums) reference these constraints as fixed obligations – they don’t perceive themselves as making a choice of preference. Rather, they seem to perceive these time constraints as “duties” for which they make personal sacrifices.
### Structural Factors

<table>
<thead>
<tr>
<th>Differences ST</th>
<th>Similarities</th>
<th>Differences RV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Condition of local leisure spaces</strong></td>
<td>Reference the need for structures to facilitate communication around EY services/activities</td>
<td>Access to local community space (desire more types of services offered at Lifestyle centre)</td>
</tr>
<tr>
<td><strong>Condition of, amenities at local park spaces</strong></td>
<td>Access to greenspace (both have access, but ST shows poor awareness of spaces like [local greenway], while Stonehouse mention being surrounded by countryside but feel it is unsafe to access with small children, i.e. paths, etc)</td>
<td>Access to local park spaces</td>
</tr>
<tr>
<td><strong>Grandparents were mentioned as a possible mechanism of activity facilitation</strong></td>
<td>Main shared activity spaces identified are gardens (personal, other familial, or friend’s) or parks</td>
<td>Transportation links</td>
</tr>
<tr>
<td><strong>Acknowledge that no matter what is on offer, some people just won’t bother</strong></td>
<td>Difficulty in identifying/finding planned or facilitated intergenerational PA opportunities</td>
<td>Community action underway to develop park spaces</td>
</tr>
<tr>
<td><strong>General disquiet at the length of time it takes for public service improvements to be undertaken.</strong></td>
<td>Family times are represented as evenings between dinner and bedtime and weekends (specifically Sunday being noted as the most common “family” day). In two-parent homes, this may mean just</td>
<td>Note that most of the work in the community is done by the same few engaged people</td>
</tr>
<tr>
<td>one parent and child depending on shift patterns.</td>
<td>Both locations report going ‘outside’ their community space to access other parks and class-based activities in [local neighbouring locations]</td>
<td>Note feeling not listened to by public servants; feel that Stonehouse has been “forgotten.”</td>
</tr>
</tbody>
</table>
Appendix N – Tweet Talk

1. Tweet is sleeping. It’s rumoured that making moments will ruffle his feathers, so let’s get playing! Tap Tweet to start an activity!

2. Tweet is still sleepy! He needs more moments!

3. Look, it’s working!

4. Tweet is waking up! Tap him again to make another moment!

5. You’re getting closer to your target. Well done!

6. Tweet is getting excited! One more moment to go...

7. Super Job! You’ve reached your goal. Tweet is SO happy!
Appendix O – WeTime Activity Library

Learning Activities

1. Number treasure hunt

How to play:

Number separate sheets of paper from 1-10 (you will have 10 sheets when finished). Give 5 sheets to the child and take 5 sheets yourself and “hide” them in obvious places all throughout the house. Go to your starting place (the couch, for instance), and say “Go!” Hunt for the numbers all through the house. Every time you or the child finds a number, you must run back to the starting place and lay the number down in numerical order. Keep running back and forth until the numbers are found and placed in order 1 to 10. Repeat until the fun runs out!

2. Colour bin race

How to play:

Place two bins/boxes in a room in the house (maybe the living room or kitchen). Pick two colours (maybe each person’s favourite colour to start with) and assign that colour to one of the bins/boxes. Mark on a clock or set a timer for 3 minutes, and then say “Go!” Race around the house to find items of the selected colours – the goal is to help each other fill both bins/boxes with as many items of the chosen colour as possible. At the end of 3 minutes see which colour has the most items in it. Repeat with different colour choices.

3. Name sounds jump

How to play:

Write the letter of every player’s name plus a few extra letters not being used on a separate sheet of paper (or if playing outside, write them on the ground with outdoor chalk) and arrange them randomly in a block on the floor. Start in one
corner and hop with both feet onto each letter saying the letter sound of each as you go. For example, if you hop onto “S” say ‘sssss.’ Once you have hopped on all the letters, spell out your name by hopping with both feet (or try one-legged hops) onto the letter of your name. If you have enough space, do this together; if not, take turns.

4. Photo safari walk

How to play:

Go for a walk with your child and have them point out colours that they see. When the child identifies a colour, let them take a photo of the item with the phone (or help them to). Collect as many items as you can and take the time to look back through them all saying the names of the colours when you return home.

5. Match and dance

How to play:

Start by gathering materials – you will need scissors, some card or paper and painter’s tape. Write 10 to 12 letters of the alphabet on small squares of paper, and make space on the floor (move furniture if required so that you have room to dance). Use the painter’s tape to make the same letter shapes on the floor as there are on the cards (or you could just write them on paper and stick them down). Choose some music that you and your kids like to dance to and start dancing. After a minute or so, stop the music and choose a square from the pile of letters and hold it up (take turns doing this with all the dancers). All dancers have to get to the matching letter as fast as they can. Return the letter to the pile and start again.

Eco Activities

6. Litter-bug tidy

How to play:

This activity can be played indoors or outdoors. Crumple several sheets of paper (newspaper, old magazines – whatever you have) into little balls. Pick someone to
be the litter bug and scatter these all over the room or the garden. Place “recycle” bins/boxes at one end of the room or garden and race each other to pick up all the litter the litter- bug left behind. Repeat and take turns being the litter- bug.

7. Map your neighbourhood

How to play:

With your child, draw a simple map of your immediate neighbourhood using at least three landmarks. For example, draw your house as a starting point, then a street lamp, then a garden fence down the street. Between each landmark draw a different kind of line, for example, the line between your house to the street lamp might be a solid line; the line between the lamp and the fence might be a dotted line; and the line back from the fence to your house might be a dashed line. Each type of line represents a different kind of travel that you can decide. A solid line might mean to run, the dotted line might mean to hop, the dashed line might mean to skip, and so on. You can make up your map however you like with as many stops and ways of traveling as you like.

8. Sounds and shadows walk

How to play:

When the days get shorter, it can be fun to take advantage of the dark evenings. For this activity, you will need to dress-up warm and bring a torch (you can even use the one on your phone). Take a walk with your child and ask them to focus on sounds. Stop still every so often and ask your child to listen and identify what sounds they may hear – wind, rain, cars, birds, etc. While you are walking, encourage your child to shine their torch on various objects and see the shadows they make.

9. Tiny chores

How to play:
Even little hands can learn how to help. Sweeping, raking or dusting are good activities for little ones to help with. Plan a tidying chore that you can take the time to do together. Another example could be washing floors or cabinets, which mixes water play with activity. Fill the bottom of a basin or pail with warm water (careful the water isn’t hot) and a couple of drops of washing up liquid. Using a cloth or sponge, let the child help you clean the floor or wash the cupboard doors. Be prepared for sloppy, messy fun that ends in ticking a chore off your list – hopefully!

10. Helping Hands

How to play:

Today, you and your child are community helpers. Ask a parent, grandparent, sibling, friend, or neighbour if they have a small but active project that needs doing. For example: walk their dog, run an errand to the shops, sweep their path/steps, tidy their room, pull some weeds, etc. There is nothing quite as rewarding as helping someone else.

Imagination Activities

11. Teddy bear rescue

How to play:

You and your child are super sneaky secret agents. Place soft toys (one for each player) in a room in the house. Belly crawl from your starting point to where the Teddy hostage needs rescuing. Grab the Teddy and crawl back to base where they will be nice and safe. Repeat until all Teddies are safe from the baddies!

12. How to be a super hero

This game is a version of ‘Simon says’ or ‘mirror me.’ You and your child are in super hero training. Begin by having your would-be hero copy what you do. Teach them to fly, have them run hard on the spot for super speed, try press ups for super strength, jump up high to leap tall buildings, leap frog each other to power up, and
any other super powers you can imagine. Make sure to take turns so that your little super heroes have to train you!

13. Pop star challenge

How to play:

Choose your favourite pop song or music video and make-up or pick out some moves to make into a routine of your own. You could also look some up on the internet. Put your moves together with your music and put on your own show. You can do this together like a pop group, or separately and have a solo dance off!

14. Pirate Islands

How to play:

Get 5 or 6 sheets of construction paper or card and place a large “X” on one of them. Turn the sheet over so that the “X” is hidden and shuffle with the other sheets of paper. Place the sheets around the room like little islands making sure the “X” isn’t showing.

Sit on the floor with your child opposite you with feet touching. Grab hands and row back and forth as if rowing a boat and sing a verse of the Pirate Song below. Then jump up and do one-legged hops to an island and check to see if it is the treasure island with the “X.” If not, row and sing again and then choose another island until you find the one where “X” marks the spot.

The Pirate Song

When I was one, I sucked my thumb, the day I went to sea

I climbed aboard a pirate ship and the captain said to me

I’m going this way that way, forwards and backwards, over the Irish Sea

A bottle of rum to fill my tum, now that’s the life for me.

v2: When I was two I buckled my shoe
v3: When I was three I bashed my knee

v4: When I was four I scrubbed the floor

v5: When I was five I went for a drive

15. Tiger in the jungle

How to play:

This is a version of hidey-tig. Give each player a tail by putting a sock or scarf or something similar in the waistband of their trousers. Choose who will be “It” while the other players hide. When a hidden tiger is found, the tiger must run. He/She must be caught by removing their tail before they make it back to their tiger den (base). Everyone should take turns being “It.”

Sport/Fitness Activities

16. Exercise Surprise

How to play:

Make a list of challenging activities. Here are a few examples: 3 star jumps, run on the spot for 10 seconds, 5 press-ups, 5 sit-ups, 4 bunny hops, walk like a crab, 2 burpees, etc. Cut the list into strips with one activity on each strip, then fold and place in a bag or bowl or small box. Each player takes turns drawing a surprise activity from the container for the other player to do. Take turns drawing activities for each player until they are all used up, then start again to keep the fun going.

17. Obstacle course

How to play:

Arrange the obstacles (pillows, empty plastic bottles, boxes, etc.) in a line or a circle, depending on how much space you have. Decide how you will get over, under or around them – will you climb, hop, jump or crawl? Each person who completes the course in the right order and in the right way gets 10 points.
Variations: Make the game more difficult by timing each other. Or reverse the order so that you have to tackle the obstacles in the same way, but from the other direction – can you remember what to do.

18. Keepy uppy challenge

How to play:

Take a ball or balloon or wad of paper and flick or bounce it upwards, using your feet. It’s harder than it looks – you will have to do it very gently to keep control of the ball. Don’t let it touch the ground!

Variations: Instead of just using your feet you could use your head, hands or knees.

19. Boot camp

How to play:

It’s easy to make an exercise circuit in your home or garden. Just choose six activities from the list below and set aside an area for each one (called a ‘station’), along with any equipment you might need to do it. Then, using a watch, get everyone to start at a station and time them for a minute as they do the activity. Everyone then moves to the station on their right, does that activity and continues around the circuit. It is hard work but great fun.

Here are some basic activities you can include in your circuit:

- Star jumps may be slow or fast, depending on how hard you want to work. Remember to bend your knees on landing

- Line jumps. Jump across a line that is directly in front of you, then jump back over it.

- Sit ups. Lie down with your knees bent and feet flat on the ground. Put your hands out in front of you as if trying to touch your knees or clasp your hands behind your head and keep elbows out to the side. Then slowly lift your head and shoulders off the ground before lowering back down again.
• Press ups. Get down on your hands and knees keeping your fingertips facing forward and your wrists under your shoulders. Then straighten your legs behind you so your body is long and straight. If this feels too difficult, bend your knees and let them touch the ground but keep your back straight. Then slowly lower your body to the ground then press back up to where you started. Repeat this as many times as you can for a minute.

• Squats. Stand in front of a chair with your feet shoulder-width apart (as if you are going to sit down). With your hands out in front of your as if holding onto a bar, slowly go to sit down on the chair, but before you actually sit down, stand up to your starting position. Repeat as often as you can in one minute.

• Skipping or Jogging. Using a rope to skip or just jog on the spot as quickly as you can.

• Hula-hoop. Try to keep the hula-hoop going for as long as you can.

• Vertical jumping. You can do this one on the spot – or hold a piece of chalk and jump next to a wall, marking as high as you can each time you jump.

20. Balloon Volley Ball

How to play:

 Blow up a balloon of any size and make a line on the floor using sticky tape. Players stand on either side of the line and bat the balloon back and forth over the line without letting it touch the ground. Try to keep the balloon in the air going back and forth as long as you can.

Family Fit

The final activity on the list is the Family Fit class so that a parent can select this activity when they go to the class and have the activity within recorded.

21. Family Fit Class

How to play:
Check the schedule for a Family Fit class near you. Family Fit is a 45-minute activity class for parents/carers and their children aged 3-8. Come try a variety of games and skills and have active fun getting fit together!