

Developing Scientists Into Leaders: The Role of Shared
Leadership Development and Engagement
in an R&D Organization Undergoing Change

By

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ABSTRACT

Organizations may face a number of challenges in the current economy. In particular, the environment is rapidly changing and knowledge intensive firms must motivate autonomous professional workers toward organizational goals. This thesis therefore investigates the role of shared leadership as a means to address some of these challenges. However, shifting to a shared model of leadership fundamentally requires the development of knowledge, skills and abilities to effectively share influence. Thus, this study sought to investigate whether a shared Leadership Development Program (LDP) impacts on employee engagement, and whether this affects organizational change efforts. It probed these relationships through the single case of a Research and Development (R&D) organization forced to undergo a change in response to changes in the external environment and an internal organizational crisis.

Results showed that in conjunction with conditions for shared leadership, developing a multi-level leader identity was an effective means to develop shared leadership skills that were tied to the organizations goals. However, shared leadership conflicted with existing organization structures and was limited by an effective group size. Nonetheless, the LDP provided antecedents to engagement by; increasing personal resources, establishing meaningful identities, providing valuable job characteristics and was symbolic of organizational support. Job crafting and social exchange theory offered an explanation of how these antecedents contributed to greater levels of work and organizational engagement. Interestingly, engagement appeared to be a process of inter-relating components, with the final state of engagement fluctuating over time and in some cases increasing relative to a baseline level. Once engaged, these individuals went on to spread their engagement to colleagues, encouraging them to support the new direction. Furthermore, the future leaders initiated projects that generated additional revenue and new customer bases, which suggests that the LDP played a role in the organizations financial turnaround – although this was not conclusively proven.

This study therefore provides evidence that organizational transformations may be more effective if shared leadership is developed. This can lift engagement in a core group of staff, who can garner the support of their colleagues, and increase overall engagement with the organization. Further research is required to generalize these findings beyond a single case and more accurately quantify the relationship between shared leadership development, engagement and organizational transformation.

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INTRODUCTION

It is argued that advanced economies and their organizations increasingly rely on the tacit knowledge of highly educated employees (Knowledge Workers; Blackler, 1995; Burke and Ng, 2006). These employees are looked at as a source of competitive advantage in an innovative environment that is also rapidly changing (Blackler, 1995; Burke and Cooper, 2006; Drucker, 1992). However, this unstable environment can also create organizational-environment misfit requiring large-scale transformations to align within the new operating context (Dunphy and Stace, 1993; Weick and Quinn, 1999).

Organizational change, leadership and the engagement of knowledge workers

Organizations are investing significant resources into developing future leaders, who are capable of navigating this complex environment (DeRue et al., 2011). However, there is increasing acknowledgement the individual leaders are at a knowledge disadvantage compared to the masses of knowledge workers. Therefore, it is suggested that organizations may benefit from collective decision making and strategy formation (Pearce and Conger, 2003; Shuck and Herd, 2012). Moreover, these knowledge workers seek greater influence in these organizations and value autonomy in their work (Von Nordenflycht, 2010; Wilensky, 1964). In light of this, it is argued that hierarchical leaders relying on top-down commands and tight regulation of work practices can gain compliance, but may also encounter resistance from knowledge workers (Carmeli et al., 2011; Haslam et al., 2010; Nag et al., 2007).

The solution – shared leadership development in knowledge organizations

Arguably, knowledge organizations may benefit from leadership approaches which contrast the traditional command and control models (Day and Harrison, 2007; Pearce and Conger, 2003). One such model is that of shared leadership which views leadership as a “team sport” where individuals with the knowledge or skills to

effectively contribute to the leadership of a situation can do so (Cox et al., 2003; Pearce and Conger, 2003). Shared leadership in this research is defined as:

“a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals...this influence process often involves peer, or lateral influence and at other times involves upward or downward hierarchical influence”

(Pearce and Conger, 2003, p.1).

Allowing staff to contribute their specialized knowledge to leadership throughout the organization has been shown to lead to greater growth, innovation and has been implicated in successful change efforts (Ensley et al., 2006; Hooker and Csikszentmihalyi, 2003; Hornung and Rousseau, 2007; Pearce, 2007). Furthermore, allowing knowledge workers to participate in organizational leadership provides them with the autonomy and influence in more meaningful organizational tasks (Carson et al., 2007). This can lead to greater engagement with work and the organization which contributes to individual and organizational outcomes including; job and organizational performance, job crafting, organizational citizenship behaviours and a service climate (Agarwal et al., 2012; Harter et al., 2002; Saks, 2006; Salanova et al., 2005; Tims et al., 2012). An engaged workforce has also shown to contribute to positive organizational change as employees are committed to and support change from within (Avey et al., 2008; Porras and Silvers, 1991).

Limitations in current knowledge

Currently, research into how an organization develops shared leadership is limited, despite one of the fundamental failings of this model being a lack of leadership skills (Houghton et al., 2003; Pearce, 2004). Calls have therefore been made to explore these concepts more deeply, particularly in regards to how shared leadership is developed and maintained in organizations (Day and Harrison, 2007; Ensley et al., 2006; Pearce, 2004; Shuck and Herd, 2012). Furthermore, whilst studies have indicated the importance of leaders in organizational change as well as establishing an engaged workforce, a majority of research does not describe how leaders can

have such a major influence (Nadler and Tushman, 1994; Shuck and Herd, 2012). This thesis therefore aims to fill some of the gaps in the current research on these concepts.

Research outline

This research investigates the concept of shared leadership and how it can contribute to organizational change in a knowledge intensive firm. In particular it seeks to explore whether developing shared leadership contributes to employee engagement and how this influences change efforts. It does so by posing two research questions:

RQ1: How does a shared leadership development program impact on employee engagement?

RQ2: How does developing shared leadership contribute to positive organizational change?

As yet, it appears that there is little research that specifically looks at how shared leadership can impact on organizational change, or employee engagement and there are no current studies that look at these three components together. Understanding how these concepts are related will be valuable for organizations developing initiatives to lift employee engagement, improve organizational leadership and contribute to organizational change (Shuck and Herd, 2012).

Research design

This research investigates a single case of a New Zealand (NZ) based Crown Research Institute (CRI) that no longer fit its environment due to changes in the Government's objectives for national innovation. This required the organization to undergo significant transformation to align itself with the new objective, and a shared Leadership Development Program (LDP) was implemented to do so. The organizational context is described in more detail below.

The organizational context

Following its establishment from a centralized, national R&D entity in 1992 the CRI's objectives were to perform science for "the benefit of New Zealand" and to remain financially viable (NZ Ministry of Science and Innovation, 2012). For the next decade these CRIs competed intensely for Government funding as low levels of private R&D investments were a limiting revenue source (Barry et al., 2012; OECD, 2007). As a result, it relied heavily on a strategy based on the creation of spin-offs and subsidiaries in an attempt to get new products closer to the private markets, and provide additional revenue for financial viability (Davenport et al., 2002).

However, in response to one of the lower levels of productivity in the OECD, the Government looked to its CRI's to help make NZ businesses more competitive in the global knowledge economy (Gluckman, 2009; OECD, 2007). They set a new objective for CRIs to commercialize R&D for NZ businesses and thus provide greater returns for the economy as a whole instead of serving their own financial goals (Jordan, 2010). Following this strategy, the Government has changed its policies on R&D by: altering funding policies in line with this strategy, increasing R&D expenditure to 1.3% of GDP, restructuring its science and innovation departments, and introducing R&D tax credits (OECD, 2012; Statistics New Zealand, 2011). In addition, the organization was beginning to fail under its spin-off strategy, reporting a net deficit of \$5.7 million in 2007 following the disestablishment its largest spin-off company. Redundancy rounds saw staff numbers drop by 30% from 2005 to 2007 and staff publicised complaints of frustration at the "relentless pursuit of commercial objectives to the detriment of science" (Macfie, 2006). In 2006 a new CEO was charged with aligning the organizations strategy to meet industry engagement objectives and improve its financial standing.

Whilst the scientists and engineers were internationally recognized for their scientific excellence, the CEO was less confident that they possessed the business leadership skills to perform under this new direction. Therefore a Leadership Development Program (LDP) was seen to be essential for building the necessary capabilities as well as re-engage employees. The LDP was based on the CEO's definition that leadership was an "activity, action or a principle that operates at all

times, at all levels.” It comprised of three inter-related components; a personal assessment performed by an organizational psychologist, a residential development centre dedicated to personal development with an organizational focus and an academic program which focussed on developing business leadership. At its peak, the organization had sent roughly a third of its 300 staff through the LDP from its beginnings in 2007 to 2012.

Summary

The unstable knowledge based economy may require more frequent and widespread change from organizations to maintain their fit with this environment (Weick and Quinn, 1999). It is therefore suggested that organizations would benefit from having a cohort of leaders who are capable of navigating this process, and employees who are engaged with and supportive of change efforts (Nadler and Tushman, 1994; Porras and Silvers, 1991). Based on current research we propose that developing shared leadership can create a cohort of positive, engaged individuals who can effectively contribute to and lead change (Aryee and Leong, 1991; Bakker et al., 2011; Shuck and Herd, 2012).

CHAPTER ONE: LITERATURE REVIEW

This chapter reviews research on the topics of knowledge organizations, leadership and its development, organizational change and employee engagement to provide a theoretical background for this study.

Knowledge, Organizations and Work

It is suggested that the current environment presents a more complex and turbulent context for industries compete in (Burke and Ng, 2006; Drucker, 1992; Uhl-Bien et al., 2007). In this environment there is a greater wealth of knowledge and technology, which requires organizations to specialize and compete on innovation rather than efficient mass-production (Bertels and Savage, 1999; Burke and Cooper, 2006; Drucker, 1988). This environmental shift appears to have a significant impact on how knowledge intensive organizations operate, the nature of the workforce and how they are best led as will be discussed below.

Knowledge organizations

The rise of knowledge organizations is widely debated. Some suggest that organizations in this knowledge era are more likely to resemble hospitals or universities where; business is based social innovation and tacit knowledge, corporations are less hierarchical and more team-based, and leaders are less controlling instead encouraging participation and empowerment (Bertels and Savage, 1999; Drucker, 1992; Grant, 1996; Pearce and Conger, 2003). However, other researchers are critical of the concept of knowledge organizations and knowledge work. Firstly it is argued that many of these “new” conventions existed in industrial organizations and secondly knowledge organizations have increased managerial and social controls and standardized work practices (Alvesson, 2001; Cooke, 2001). These controls create cages which direct and constrain the actions of knowledge workers which is counterintuitive to recommendations for more flexible,

democratic structures in knowledge organizations (Alvesson, 2001; Barker, 1993; Parker and Jary, 1995). This point is not disputed in this research as the LDP was used as a means to encourage scientists to perform for the organization. However this study takes the view that some organizations are inherently knowledge-based. These are characterized by the application of an institutionalized body of knowledge, to solve complex problems, through creative and innovative solutions (Alvesson, 2001).

R&D organizations as knowledge organizations

Research and development firms are arguably the pinnacle knowledge organization as they are directly concerned with acquiring or producing new knowledge (research) and the application of it i.e. development (Bock and Scheibe, 2001). Additionally, these organizations rely on a highly educated scientific workforce to solve complex technical processes and generate and commercialize new knowledge (Thamhain, 2003). As indicated in the introduction, as an R&D the organization of study can be characterized as a knowledge organization their workforce presents a number of challenges as will be discussed below.

Professional scientists

Research has shown the typical scientists is naturally introverted and intrinsically motivated finding great enjoyment from investigating, analysing and thinking critically about complex problems in isolation (Lounsbury et al., 2012). Whilst such traits may lead to self-selection for the scientific career, they are also reinforced through the education process where scientists adopt the social norms of this discipline including; universalism – verified, independent researcher, communism – sharing knowledge with the science community, scepticism – the withholding of judgements until all the facts have been obtained, and autonomy or academic freedom (Bailyn, 1985; Jain et al., 2009; Wilensky, 1964). This self-selection and socialization process establishes a professional identity which directs one's attitudes and behaviours in a work setting (Jain et al., 2009).

The conflict between knowledge workers and organizations

The above section alludes to an inherent conflict that arises when professionals are introduced into an organization with different goals and values. Where professional identities are salient, the focus is on protecting the standards and upholding the success of the profession whereas organizational leaders requires commitment to institutional values and goals (Aryee and Leong, 1991; Von Nordenflycht, 2010; Wilensky, 1964). This conflict can have negative outcomes for individuals and the organization. A strong professional identity can decrease organizational commitment and result in pursuit of professional goals at the expense of formal role performance, and these individuals may have lower job satisfaction as a result of poor person-organization fit (Aryee and Leong, 1991; Chang and Choi, 2007; Wilensky, 1964). Moreover, leaders that require to comply with organizational goals, rules and norms may find they are “herding cats” as these individuals are highly sceptical of hierarchical commands (Lounsbury et al., 2012; Von Nordenflycht, 2010). The balancing of these two value systems is therefore a critical task for leaders of knowledge organizations.

Leadership in knowledge work

Leadership in knowledge organizations often presents professionals with a conflicting power structure. Whilst the intellect, and means of production is found in the knowledge workers have to accept that their autonomy is limited by the presence of “laymen” with positional power and decision making authority (Wilensky, 1964). This can lead to feelings of inequity may result disregard for the goals and values of the organization in favour of the profession (Aryee and Leong, 1991). Wilensky suggests this conflict can be resolved by either; the presence of professionals in management positions, or by ensuring leaders collaborate with professionals to incorporate their need for authority and autonomy (Wilensky, 1964). More recent research supports the former as participation in managerial decisions has been associated with increased professional and organizational commitment (Bogler and Somech, 2005). However, whilst scientists are often good technical leaders, they often are promoted without formal training in business leadership which may be a barrier to professionals in leadership positions (Elkins

and Keller, 2003). In regards to the latter suggestion, this approach allows knowledge workers to self-manage - provided that desired outcomes are achieved – which fits with the professional values but may not resolve the conflicting identity issue (Bailyn, 1985; Elkins and Keller, 2003).

Summary

Whilst the existence of knowledge organizations is contested, R&D organizations are inherently knowledge-based operating in a rapidly changing technological environment (Bock and Scheibe, 2001; Roth, 2003). In addition they are faced with the difficult task of finding a means to integrate professional and organizational goals (Aryee and Leong, 1991; Von Nordenflycht, 2010; Wilensky, 1964). These knowledge organizations are increasingly looking at new forms of leadership that may help the organization navigate this complex environment, and motivate these knowledge workers to invest in the organization.

Organizational Change

In an uncertain and rapidly changing environment, organizations may be forced to adapt to maintain their fit with the environment (Brown and May, 2012). Organizational change is necessary when environmental shifts mean they are no longer effective, or if they face internal challenges such as low morale or a merger (Appelbaum et al., 1998). This section will review the area of organizational change, discussing its different forms and the role of employees in change efforts.

Types of organizational change

Theorists describe organizational change based on; the frequency of change – whether change is continuous or discontinuous (infrequent), how it is initiated – planned or emergent (spontaneous) change, and the scale –smaller organizational development efforts versus large scale organizational transformations (By, 2005; Weick and Quinn, 1999). It is argued that organizations that undergo continuous,

developmental changes are more successful in a volatile environment as they can adapt as required (Burnes, 2005; By et al., 2011). However, continuous change can lead to stress and burnout in staff who are required to constantly adapt (By, 2005; Weick and Quinn, 1999). Moreover, the rapid rate of change means it is likely that organizations are forced to “catch up” with the environment and undergo large-scale transformations (Dunphy and Stace, 1993; Weick and Quinn, 1999). It is this concept of organizational transformation that this study focuses on, as changes to the external environment in NZ has forced its CRI’s to undergo a significant transformation. However, these large scale transformations are more complex, and involve changes to the organization’s current paradigm which is often deeply entrenched and enduring (Porras and Silvers, 1991).

Organizational transformation

Porras and Silver (1999) present a model for planned organizational transformation (Figure One). This model targets a change in the organizations vision and work setting in order to change individual cognitions, and thus behaviours lifting both individual and organizational performance (Porras and Silvers, 1991).

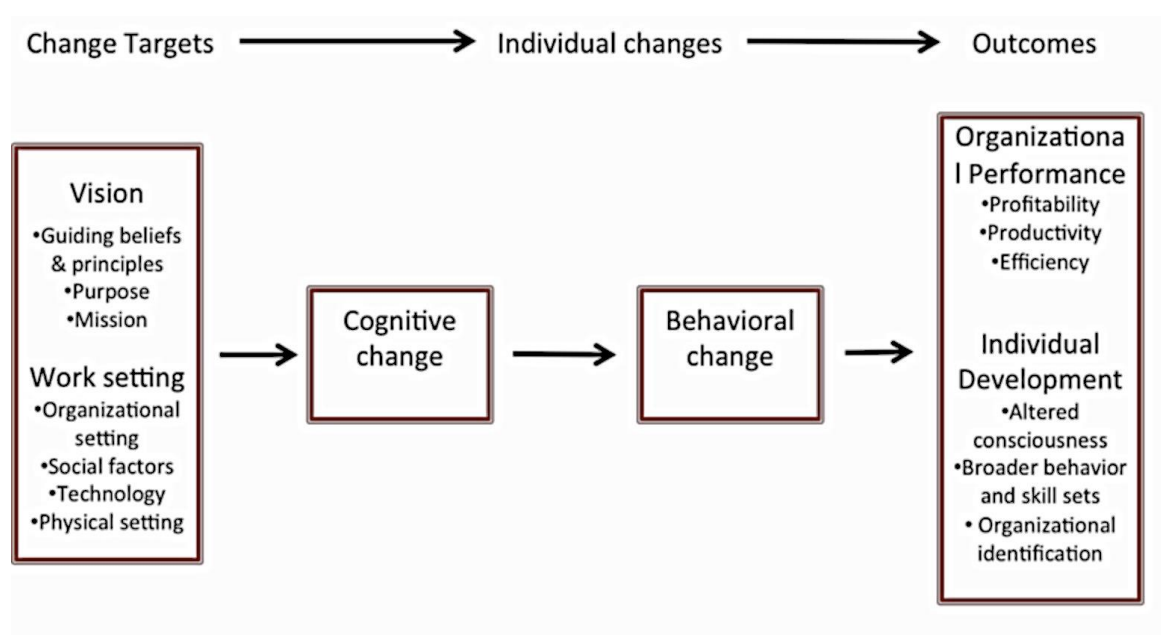


Figure 1 - Model of planned organizational transformation (Adapted from Porras and Silver, 1990)

Change targets

Following the model in Figure One, initiatives should target changes in the organizational vision, and work setting. This alters the internal working environment to signal the changes to employees (Porras and Silvers, 1991). These initiatives are typically made by “prime movers” at the top of the organization due to the need for large-scale, immediate action (Weick and Quinn, 1999).

Changing the organizational vision

Leaders play an important role in communicating an attractive new vision that motivates workers to identify with and support change efforts (Brown and May, 2012; Paulsen et al., 2013). Changing the vision requires changes to employee mindsets or collective identities which can occur through two approaches; raising awareness of the need for change, or reframing of individuals perceptions of the organizational change (Porras and Silvers, 1991). In particular, dissatisfaction with the status quo can raise awareness and encourage positive perceptions of organizational change as the benefits of change for individuals and the organization are clear (Choi and Ruona, 2011). These cognitive changes create a readiness for change, increasing commitment and self-efficacy prior to the change intervention which increases chances of success (Armenakis et al., 1993; Choi and Ruona, 2011).

Changing work settings

Work settings that can be targeted by transformation initiatives include; (1) organizational setting – goals, structures, policies, reward systems etc., (2) social factors - culture, interaction processes, social networks, management styles (3) technology and (4) physical settings - size, location, etc. (Porras and Silvers, 1991). Reports of unsuccessful changes typically involve hierarchical leaders altering the organizational setting creating a “iron cage” forcing conformity and in some cases leading to resistance to the new system (Kärreman and Alvesson, 2004; Nag et al., 2007). These failures are particularly apparent in knowledge organizations, where employees value autonomy and freedom and may resist change efforts (Carmeli et al., 2011; Choi and Ruona, 2011; Haslam et al., 2010; Nag et al., 2007).

Instead, interventions that target “deeper” cognitive changes to beliefs, value systems, norms, and social factors can encourage commitment to the change effort, particularly if staff are participants in this process (Choi and Ruona, 2011; Nag et al., 2007). However, this is what critics argue is contradictory to the characterization of knowledge organizations as it represents a form of socio-ideological control or creation of a “mental cage” which encourage the corporatization of professionals (Kärreman and Alvesson, 2004). Nonetheless, participative change leadership has been shown to increase individual efforts as it provides greater autonomy and the self-efficacy to proactively contribute to change where possible (Hornung and Rousseau, 2007).

The role of individuals in organizational change

Despite the initiation of change by hierarchical leaders, individual cognitive and behavioural change is placed at the centre of the model (Porras and Silvers, 1991). As described above, the organization’s change efforts may benefit from enhanced individual and organizational performance if this individual alignment occurs.

Organizational change results in a cognitive, affective (emotional) and behavioural response by employees (Kark Smollan, 2006). Whilst these may be positive or negative, organizations ideally seek positive reactions which have been shown to increase engagement with change efforts (Avey et al., 2008; Oreg et al., 2011). At the centre of these reactions is a cognitive assessment of the benefits of change for individuals and the organization (Choi and Ruona, 2011; Kark Smollan, 2006). As discussed above where organizations are able to raise awareness of the need for change and convince staff of its benefits, cognitive commitment may occur. Cognitive and emotional reactions are then reflected in ones behavioural responses to change (Kark Smollan, 2006). Again these may be negative efforts to undermine or oppose change or supportive behaviours including helping others identify with change, and a willingness to exert personal effort towards implementation of change (Herold et al., 2007; Herscovitch and Meyer, 2002; Oreg et al., 2011). It is suggested that when enough individuals change their consciousness, organizational change is carried out from the bottom up which is reflected in the outcome of enhanced individual development (Conger, 1996; Porras and Silvers, 1991). Therefore, organizational

leaders who work towards a critical mass of positive individuals with positive cognitions, attitudes and behaviours are likely to be more successful in their attempts at change.

Summary

In a similar vein to the recommendations for knowledge organizations to be less controlling and hierarchical, organizational change research also promotes “softer” social changes and employee participation to sequester commitment to change (By et al., 2011; Choi and Ruona, 2011; Porras and Silvers, 1991). However, whilst it is argued that change efforts are best driven from the bottom up, leaders are still required to initiate change and provide a new, inspiring vision for the organization (Carmeli et al., 2011; Choi and Ruona, 2011; Porras and Silvers, 1991).

Leadership

It is argued that the increased uncertainty and wealth of knowledge in the current environment presents makes it more difficult for a single leader to address all the situations an organization may encounter (Day and Harrison, 2007). Knowledge organizations may therefore benefit from sharing influence which allows more individuals to contribute to the leadership of these complex situations (Pearce and Conger, 2003). This has led to an emergence of leadership theories focussing on the dynamic roles of a leader or follower rather than centralized hierarchies (Day et al., 2004; Gronn, 2002; Hogg, 2001; Pearce and Conger, 2003). The following sections will review the evolution of leadership from the hierarchical approach to shared forms of leadership and how these can be established in organizations.

Theories of leadership

The topic of leadership is extensively developed with numerous books and papers dedicated to the subject (Day, 2001). Although, it has long been criticized as being “unscientific” for due to a lack of a general definition of leadership (Rost, 1991), it has also been argued that these criticisms do not address the multidimensional nature of leadership which is still undergoing conceptual evolution (Day and Harrison, 2007).

Evolution of leadership

Early conceptions of leadership focussed on “great man theory” which sought to identify the traits that heroic leaders, kings or saviours possessed that enabled them to achieve great outcomes (Gill, 2011; Rost, 1991). Whilst research failed to identify a conclusive set of traits, the theory contributed to an implicit, romantic notion of leadership that is still reflected in the glorified presentation of modern leaders such as Nelson Mandela or Steve Jobs (Haslam et al., 2010).

Following the failings to identity a consistent set of traits, researchers began to investigate how leadership behaviours contributed to these great outcomes. This led to classifications of leadership types which described behaviours that a leader could use to achieve different outcomes (Gill, 2011). This surpassed the idea of leadership as something a hero implicitly possesses, to leadership as an action that can be taught and performed by anyone (Gill, 2011; Horner, 1997; Northouse, 2012). Although, contextual or situational theories later gained prominence as it became clear that prescribed behaviours were not effective across different environments. Instead, different situations or contexts require leaders to vary their approach based on the needs of followers, or the requirements of a task or project (Gill, 2011; Northouse, 2012).

Many of these previous theories are “leader-centric” focussing on the actions of distinguished individuals, and therefore newer theories began to explore leadership as a mutual relationship between leaders and followers (Haslam et al., 2010). This relational approach is exemplified in the work of Burns (1978) and Bass (1985) who established the theories of transactional and transformational leadership.

Transactional leadership focuses on the negotiation of reciprocal and contingent exchanges between leaders and followers (Avolio et al., 2009; Bass, 1999). In this negotiation, follower self-interest largely dictates the value of contingent rewards (or punishment) required to motivate and determine the nature of their behaviour (Avolio, 2004; Bass, 1999). This theory gives agency to followers, therefore acknowledging the role of follower choice (Haslam et al., 2010; Northouse, 2012).

In contrast to this contractual exchange, transformational theory acknowledged leadership as more personal process where leaders seek to understand followers needs and aspirations and motivate them towards success of an inspiring vision (Avolio, 2004; Avolio et al., 2009; Bass, 1999). Based on this theory transformational leaders motivate followers through the “four I’s”; idealized influence, intellectual stimulation, individualized attention and inspirational motivation (Avolio et al., 1991; Bass, 1999). Although it is widely argued this is a more sophisticated leadership theory, critics argue that; it is overly collectivist, assumes all individuals willingly accept and are motivated by the leaders vision, and continues to romanticize visionary leaders (Gill, 2011).

Identity leadership

More recent models of leadership focus on the emergence of leaders and the dynamic interplay between the roles of leader *and* followers rather than a leader-follower dyad (Haslam et al., 2010). Critics of transformational leadership argue it does not suggest a mechanism that leads to mutual identification between leaders and followers, and suggest social identity may explain this (van Knippenberg and Hogg, 2003; Lord and Brown, 2001). These social identity models of leadership (SIMOL) suggest that individuals classify themselves as members of social categories or groups defined by the collective attributes of group members, which then inform behaviour and attitudes (Hogg, 2001; Van Knippenberg and Hogg, 2003). These identities create meaning for individuals and can concurrently exist at the level of the individual, relational or collective level with the context dictating which identity is salient at any one time (Brewer and Gardner, 1996; Day and Harrison, 2007; Van Knippenberg et al., 2004). The individual level focuses on how one defines themselves, whilst the relational is defined by relationships with significant others

(Brewer and Gardner, 1996). At the collective level, an individual's identity becomes merged with that of a group, so that the individual internalizes and reflects the attributes of the group also known as the group prototype (Hogg and Knippenberg, 2003).

It is this collective level that proponents of SIMOL suggest as a mechanism for mutual influence. Leadership is dependent on the position of a leader as a prototypical member of the group they are attempting to influence – i.e. they reflect the identity of the group (Hogg, 2001; Hogg and van Knippenberg, 2003). The mechanism for mutual identification lies in this collective-concept whereby leaders with complementary identities to followers may influence others to exert themselves on behalf of the collective (Lord et al., 1999). The role of a leader therefore involves the dynamic interplay between an identity as a leader responsible for collective motivation, but also as a representative of their followers.

Shared leadership

Moreover, the “increasing disillusionment” in heroic, individualist models of leadership led to the concept of leadership that is shared throughout the organization (Bolden, 2011; Day and Harrison, 2007; Horner, 1997). Although the idea of sharing influence is not new, it has recently gained prominence leading to an explosion of theories including; shared leadership (Pearce and Conger, 2003), distributed leadership (Gronn, 2002), collective leadership (Denis et al., 2001). Whilst there may be nuanced differences between these theories due to their evolution from different fields, and the level at which leadership is shared (team, senior executive, or organizational), they have a common view of leadership that is the antithesis to hierarchical, individualistic models, proposing that followers can themselves be leaders in an organization (Day and Harrison, 2007). Shared leadership is chosen here as it describes shared influence at any level in the organization, and has become the most established definition from this field (Bolden, 2011). This will be discussed in more detail below.

Shared Leadership

Definitions of shared leadership emerged strongly in the 90's, forming around group theories which saw leadership as a relationship between group members who collectively achieve shared goals, with leadership performed by one or many members of a group (Rost, 1991). Leadership was seen as the process of co-ordinating efforts, with everyone playing an active role to move the group forward (Horner, 1997). The model of shared leadership is investigated in this study, defined as:

"a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals...this influence process often involves peer, or lateral influence and at other times involves upward or downward hierarchical influence"
(Pearce and Conger, 2003, p.1).

This section discusses this theory including its apparent value in knowledge organizations, and the conditions required for its establishment.

Shared leadership in knowledge organizations

The nature of knowledge itself necessitates shared leadership. As there are limits to an individual's capacity to acquire and store knowledge, individuals often acquire specialized knowledge in a narrow field (i.e. chemistry or biology) which can create knowledge boundaries in a firm (Grant, 1996; Roth, 2003). Therefore, where one leader may have a depth of technical knowledge, they are at a knowledge disadvantage compared to the breadth of knowledge in the organization as a whole (Carson et al., 2007; Pearce and Conger, 2003). Shared leadership therefore allows organizations to gain a holistic understanding of a complex situation by drawing from multiple sources, thereby increasing the efficacy of leadership (Denis et al., 2001; Pearce and Conger, 2003).

This approach may also benefit knowledge workers who typically value autonomy and may respond negatively to non-technical managers (Bailyn, 1985; Jain et al., 2009; Wilensky, 1964). Shared leadership may reduce negative perceptions of “lay” managers if technical workers and organizational leaders can combine their knowledge and gain a broader understanding of the each other’s field and the organization (Bilhuber Galli and Müller-Stewens, 2012; Carson et al., 2007). Moreover, SIMOL’s appear to support this view. Where leaders are more prototypical (i.e. reflect the identities of their followers) they are likely to gain mutual identification and support from their followers (Day and Harrison, 2007; Van Knippenberg et al., 2004; Lord et al., 1999). Therefore where shared leadership allows for the contributions of prototypical professionals, their colleagues may be more supportive of them over non-technical leaders with different value systems (Hogg, 2001; Von Nordenflycht, 2010).

Conditions for shared leadership

A number of conditions can facilitate the shift from hierarchical structures and leadership models to shared leadership (Carson et al., 2007; Fletcher and Kaufer, 2003; Locke, 2003). These conditions include establishing; a shared purpose, a mindset for shared leadership, voice, and the development of leadership skills. Paradoxically however, formal implementation of shared leadership requires the input of a vertical leader(s) to establish many of these conditions (Fletcher and Kaufer, 2003; Locke, 2003; Pearce, 2004). These conditions and the roles that vertical can leaders play are discussed below.

Establishing shared purpose

Shared leadership requires a group to have a collective orientation, where all individuals understand and strive towards a shared purpose (Carson et al., 2007). A shared purpose can unite a group and members may be more trusting and willing to share leadership responsibilities, integrate ideas, and support each other’s contributions (Burke et al., 2003; Carson et al., 2007). Whilst a group itself can develop a shared purpose, it may be ineffective within a wider setting if this purpose contradicts greater goals (Cox et al., 2003). A vertical leader therefore needs to

communicating an overall purpose for groups to identify with (Locke, 2003; Pearce, 2004; Pearce and Sims, 2002). However, communicating a unifying vision does not mean it will be widely accepted, as it the case in knowledge organizations where professional goals may clash with organizational objectives.

A mindset for shared leadership

Due to implicit conceptions of great leaders taking charge and directing outcomes, shared leadership can be seen as soft and indecisive which is an obstacle that needs to be overcome by leaders and followers (Houghton et al., 2003; Seers et al., 2003). On the one hand, followers need to understand that they can take charge in shared leadership instead of looking upwards for direction whereas leaders need to recognize the value of seeking input from their group rather than make decisions in isolation (Jackson, 2000). Vertical leaders can help alter this mindset by educating staff on the concept, encouraging staff to share leadership and visibly supporting its outcomes (Jackson, 2000; Pearce, 2004; Pearce and Conger, 2003). Greater encouragement and support can help individuals feel comfortable sharing leadership and provide a sense of collective efficacy in achievement of the shared purpose (Burke et al., 2003; Carson et al., 2007).

Voice

Establishing voice or allowing individuals to have input into the group's purpose also supports a mindset for shared leadership (Carson et al., 2007). Voice helps establish norms for shared leadership where the exchange of ideas and influence is respected and encouraged (Burke et al., 2003; Carson et al., 2007). This process also allows for constructive debate and challenging of leading one another to higher achievement under shared leadership (Carson et al., 2007). In regards to vertical leaders, actively seeking opinions and feedback from groups, and ensuring that their ideas do not "fall on deaf ears" maintains this perception of voice (Cox et al., 2003; Locke, 2003).

The development of leadership skills

Shared leadership relies on the activities of people who may not have been exposed to leadership roles before and therefore may have no desire to shared leadership due to fear of failure (Pearce, 2004). Alternatively, where novice leaders attempt shared leadership, their efforts may be clumsy or inadequately coordinated leading to poor teamwork and a loss of confidence in this process (Houghton et al., 2003; Pearce and Conger, 2003). Vertical leaders may therefore need to provide recommendations or guidance to groups on self-management, effective team-work and means of sharing leadership (Carson et al., 2007). However, it is recommended that this external leadership occur on a “gap-filling” basis, so as not to be overly dictatorial and undermine the groups responsibility for shared leadership (Pearce, 2004).

Summary

A range of different leadership theories has emerged over time, with the ideas of heroic, transformational, and contextual leadership contributing to modern views of leaders. However, as Avolio et al., (2009) comment “the time for examining shared leadership may be upon us to the extent that organizations are moving into a knowledge driven era” (Avolio et al., 2009, p. 432). The challenges of this era are beyond the capabilities of a single leader and leadership that is shared amongst members may increase resilience in this environment (Lord et al., 2001). However, organizations seeking to transition from hierarchical leadership will need to establish a number of conditions to support shared leadership starting with the development of basic leadership skills.

Leadership Development

Within the new environment, organizations are focussed on their human capital as a source of competitive advantage and are investing more resources into the development individuals capable of leading in a complex environment (Day, 2001; PWC, 2010). However much like leadership, there is a wealth of different theories regarding how leadership is developed and many argue that programs are less effective than organizations and practitioners make out (DeRue et al., 2011; Ready and Conger, 2003). This section reviews some of these approaches and how this could be applied to shared leadership.

Leadership development methods

Unsurprisingly the field of leadership development has evolved in line with the that of leadership with practitioners initially focussing on developing the traits or behaviours make great leaders (Day, 2001). The development of these individual leader capabilities was then build upon with approaches to develop social capital and interpersonal skills needed for more relational forms of leadership (Day and Harrison, 2007). However, there is still little consensus as to what competencies leaders should develop and a myriad of different methods to develop them (DeRue et al., 2011). Although, it is suggested that a program that focuses on both individual *leader* development – self-awareness, self-regulation and self-motivation- and development of interpersonal *leadership* skills – social awareness, interpersonal skills and service orientation is effective for relational forms of leadership (Day, 2001). Some of the popular methods to do so are discussed below.

Classroom learning

The development of leader capabilities can be achieved through classroom based lectures, exercises or case studies which aim to develop a sense of awareness and understanding of basic leadership skills (Day, 2004). This classroom teaching style can also contribute to leadership development if it allows participants to network and form relationships within the learning environment (Bilhuber Galli and Müller-Stewens, 2012; Gold et al., 2010). However, these methods can also suffer from a

lack of training transfer and are criticized for their lack of situated learning (Conger, 1996; Day, 2001).

360 degree feedback

360 degree feedback is also commonly used in leader development and involves gathering feedback from multiple stakeholders on the performance of a leader in the workplace (Day, 2004). This method can have its weaknesses in rater bias, and is ineffective if individuals choose to disregard negative feedback (Conger and Toegel, 2002). However, when used effectively it provides contextually relevant feedback and can be used to form an all-round development program of evaluation and support to develop self-awareness and self-regulation of individual behaviours (Day, 2001; Gold et al., 2010).

Coaching and mentoring

The use of coaching (performed by an external consultant) or mentoring (performed by a senior member of the organization) can develop leader and leadership capabilities. Typically an experienced leader observes and analyses a developing leaders interactions, and then works on developing specific skills by pushing leaders outside of their normal boundaries, providing feedback and support along the way (Gold et al., 2010). The advantage of this is that it allows a coach or a mentor to evaluate and give meaningful feedback on a leaders performance within their work environment (Bilhuber Galli and Müller-Stewens, 2012; Day, 2001). Additionally, the experienced leaders can provide access to professional networks or contacts, increasing the potential for social capital development (Bilhuber Galli and Müller-Stewens, 2012; Day, 2001). Moreover, forming a relationship with senior leaders provides a higher level strategy perspective to developing leaders, tying their learning to higher objectives which helps to develop a common purpose (Carmeli et al., 2011; Day, 2001; Day and Harrison, 2007).

Action learning & Job assignments

Researchers suggest that methods of development providing hands on experience and shared work experiences are the most effective form of leadership development (Day, 2001; Day and Harrison, 2007). One method for this is action learning “a

structured, continuous process of learning and reflection with a corresponding emphasis on addressing a problem of strategic importance to the organization” (Day, 2004) Whilst most action learning is on-the-job it can also take place off-the-job as simulations of work experiences (Day, 2001; Marsick and O’Neil, 1999). The key to these action learning experiences is that leaders can apply their skills within a social context, which allows for the development of interpersonal skills and social capital (Day and Harrison, 2007; Raelin, 2006). In addition, where these experiences are tied to organizational goals, they facilitate the development of a common purpose, which is essential to collaborative forms of leadership (Day and Harrison, 2007). However, action learning has also been criticized as it can be expensive, and is less effective if the experiences is not followed up by reflection and further learning experiences (Conger and Toegel, 2002; Day, 2001).

Developing shared leadership

Despite recommendations to develop basic capabilities for shared leadership (Carson et al., 2007; Pearce, 2004), little research exists on the most effective methods to do so. In regards to shared leadership, Day and Harrison (2007) suggest taking a multi-level identity approach to leadership development focussing on instilling a leader identity across the individual, relational and collective self-concepts (Day and Harrison, 2007). The methods that could be used to develop shared leadership across these levels are discussed below.

Developing individual leader identities

Developing individual leader capabilities is important in knowledge organizations as these technical workers often progress through an organization without formal leadership training (Elkins and Keller, 2003; Pearce, 2004). This lack of skills is also a barrier to shared leadership. The development of *leader* capabilities is therefore essential to provide self-efficacy and confidence in oneself as a leader (Bligh et al., 2006; Day, 2001). This can reduce reliance on vertical leaders and also establishes ones individual identity as a leader (Day and Harrison, 2007; Pearce, 2004). Developing this self-identity also raises ones personal standards and confidence motivating individuals to act and develop as a leader (Day and Harrison, 2007; Van

Knippenberg and Hogg, 2003). Moreover, self-awareness and the ability to self-regulate allows individuals to adapt to their behaviour as either a leader or a follower which allows them to share influence effectively (Jackson, 2000).

Developing these individual capabilities requires an awareness of ones behaviour, and how one engages in work. This awareness involves; self-observation, corrective feedback and practice to identify and strengthen behaviours and improve performance (Houghton et al., 2003). Researchers have specifically referred to the use of 360 feedback and coaching or mentoring to develop self-awareness (Bilhuber Galli and Müller-Stewens, 2012; Day, 2001). Together these two methods can be used to form an all-round development program of observation, evaluation, corrective feedback and supportive coaching to raise self-awareness and regulate leader behaviour (Day, 2001; Gold et al., 2010).

Developing relational identities

Pearce (2004) suggests that shared leadership development should focus on different types of influences, reactions to these and teamwork skills (Pearce, 2004). This fits with Day's suggestion to develop *leadership* capabilities to gain commitment, trust and respect from followers and stakeholders (Day, 2001). Helping leaders understand and interact with others more effectively can also help them gain the support of followers (Day and Harrison, 2007; Van Knippenberg and Hogg, 2003). This therefore develops a relational identity by encouraging individuals think of themselves in relation to others, as well as increase social networks to expand ones relational identity and enable shared influence (Day and Harrison, 2007).

These interpersonal skills can be developed through most forms of collaborative learning including mentoring, coaching and action learning (Bilhuber Galli and Müller-Stewens, 2012; Day, 2001; Day and Harrison, 2007; Gold et al., 2010). Mentoring or coaching can be used to target interpersonal skills and can build social capital where the mentor/coach provides access to networks (Bilhuber Galli and Müller-Stewens, 2012; Day, 2001; Day and Harrison, 2007). Moreover, as these learning experiences occur in a social context an environment exists where individuals can test and strengthen their individual leader identities (DeRue and

Ashford, 2010; Van Knippenberg and Hogg, 2003). Additionally, collaborative experiences require individuals to take on different roles which opens up the idea of leadership as something that is dynamic, with fluctuations between roles as followers or leaders (Raelin, 2006).

Developing a collective identity

As leaders gain confidence they may begin to operate at a higher level driven by collective goals and values (Hogg and Knippenberg, 2003; Van Knippenberg et al., 2004; Lord et al., 1999, 2001). At the collective level, leadership is about collaborative experiences that unite individuals in shared thoughts and actions. It is developed through critical reflection enabling leaders to think about who the group is, what they represent and how to lead together rather than as individuals (Day and Harrison, 2007). This process is important in the development of a shared purpose which is essential for shared leadership (Carson et al., 2007).

Collaborative, on-the-job learning experiences such as action learning or mentoring, can provide a shared learning experience, shared sense-making and allows for the collective enactment of leadership tasks which can facilitate the development of a collective identity (Day and Harrison, 2007; Gold et al., 2010). Moreover, where learning groups are cross functional participants gain a better understanding of other areas of the organizations which facilitates collaboration and a shared understanding (Bilhuber Galli and Müller-Stewens, 2012). Furthermore, where these learning experiences are specifically tied to organizational goals, one's collective identity is tied to the company facilitating the development a shared purpose (Day and Harrison, 2007). However, this may be used as a socio-ideological control as the strategic focus promotes an organization-specific world view which is socialized through mentoring by existing managers (Conger, 1993; Kärreman and Alvesson, 2004).

Summary

While there is a vast collection of approaches to developing leadership, programs should focus on the development of individual leader capabilities and also the development of interpersonal leadership skills and social capital necessary for

shared leadership (Day, 2001). In particular, developing leader identities across the individual, relational and collective levels is proposed as the most effective way to integrate these two components of leader development (Day and Harrison, 2007). The development of effective leaders is seen to be essential to organizations seeking to motivating a knowledge workforce (Day, 2001; Nadler and Tushman, 1994).

Employee Engagement

Within knowledge organizations the means of production are internal to workers who value autonomy, freedom and influence (Blackler, 1995; Burke and Cooper, 2006). It is suggested that these organizations may no longer benefit from hierarchical commands to control behaviour, and should consider “softer” means to motivate knowledge workers to utilize their tacit knowledge in their role performance (Burke and Cooper, 2006; Haslam et al., 2010). One approach that is gaining popularity is employee engagement, which has been linked to important organizational outcomes including adaptive behaviours to initiate positive change, productivity and profit (Harter et al., 2002; Hornung and Rousseau, 2007; Kim et al., 2012). This section therefore begins with an exploration of the concept of employee engagement, its antecedents and outcomes.

The concept of employee engagement

Differentiating engagement

Employee engagement is a fairly new concept in the academic literature, having first gained popularity amongst practitioners who claimed it would improve a number of organizational outcomes including turnover, motivation productivity and profitability (Shuck and Wollard, 2010). However, academics criticized the concept as “faddish,” rebranding “old wines in a new bottle” due to conceptual similarities with existing constructs such as satisfaction, commitment or job involvement (Macey and Schneider, 2008; Shuck et al., 2012). However, these concepts do not reflect engagement in its entirety with theorists arguing that engagement goes

beyond a state of satiation (satisfaction), attachment (commitment), or a positive attitude (involvement). Engagement may involve these feelings and attitudes but differentiates itself as a broader, all-encompassing construct which involves an initial emotional (commitment or involvement) connection, followed by investments of one's physical and cognitive energies in work and the organization (Christian et al., 2011; Saks, 2006; Shuck et al., 2012). Therefore, engagement is "a new blend of old wines with distinct characteristics and feel" (Macey and Schneider, 2008, p.10) and is established as a unique construct.

Models of employee engagement

In response to the increasing popularity of engagement in the workplace, academics sought to provide an empirical account of the concept and validate its claims (Shuck and Wollard, 2010). A number of different theoretical models and definitions have since been developed, which contributes to criticisms of engagement (Shuck, 2011). A number of these theories can be seen in Table One.

The theories presented in this table have laid the foundations for a majority recent works in engagement. Kahn's work has subsequently been tested and extended by a number of researchers focussing on the three components of cognitive, emotional and physical energies in engagement (Rich et al., 2010; Shuck et al., 2012). Moreover, the three psychological conditions have been extensively studied, particularly the condition of psychological meaningfulness (Rich et al., 2010; Saks, 2006; Shuck and Rose, 2013). The burnout-antithesis approach has also given rise to a popular model of engagement known as the Job-Demands Resources (JDR) model which posits jobs have physical, social or organizational demands that require an investment of job resources as well as one's physiological and psychological energies (Schaufeli and Bakker, 2004). Engagement results where individuals possess the resources to buffer the demands of the job, although an excess of job demands or challenges can contribute to burnout (Bakker and Demerouti, 2008). This model has been widely used in studies to identify job resources that can contribute to engagement including; supervisory support, autonomy, feedback and learning and development opportunities (Bakker and Demerouti, 2007; Bakker et al., 2003; Schaufeli and Bakker, 2004; Xanthopoulou et al., 2007).

However, the burnout-antithesis model has been criticised for over-emphasizing physical and mental-wellbeing over the components of engagement and ignores why an individual chooses to engage (Rich et al., 2010; Saks, 2006; Shuck, 2011). Saks (2006) however provided an integrated definition of engagement (Shuck & Wollard, 2010) and also showed that social exchange theory explains why personal resources lead to engagement. Saks showed where employees received valued investments from the organization (job characteristics, perceived organizational support, rewards and recognition), they would reciprocate by contributing their cognition, emotional and physical and emotional resources to their role performance (Saks, 2006). Moreover, where previous theories had only referred to work engagement, Saks recognized that employees had two roles; their work role, and their role as a member of the organization. He was able to differentiate between work and organizational engagement, providing a measure of each and showing that antecedents and outcomes differed between them (Saks, 2006).

Manifestations of engagement

This study utilizes Saks' definition of engagement (Table 1) as it presents an integrated definition of engagement and differentiates between work and organizational engagement. This fits with the concepts explored in this study including the differentiation between professional and organizational identities, the development of leadership across individual and collective levels, and the cognitive, affective and behavioural responses organizational change. In regards to the components of engagement; cognitive engagement represents one's cognitive vigilance, focus and attention in one's role, emotional engagement is the emotional connection to a role, while behavioural represents the physical manifestations of emotional and cognitive components (Kahn, 1990; Rich et al., 2010). It has more recently been proposed that each component builds upon the other resulting in the holistic state of engagement (Macey and Schneider, 2008; Shuck and Rose, 2013; Shuck and Wollard, 2010). In a similar process to responses in organizational change, it is suggested that employees undergo a cognitive evaluation of their work environment which in turn affects their levels of emotional and physical investment (Shuck and Rose, 2013).

Article	Contributions	Definition of Engagement
Kahn (1990)	<p>Kahn's seminal work on engagement drew on identity theory suggesting that individuals simultaneously invest their physical, cognitive and emotional energies in work, and in doing so become harness to ones role. This three-component theory and its definition of engagement laid the foundations for further development of the concept.</p> <p>Also identified three antecedents to engagement: (1) psychological meaningfulness – the degree to which investments of energies provides a meaningful return, (2) psychological safety – feeling safe and confident in investing ones full self in work and (3) psychological availability – the possession of cognitive and physical resources to invest in ones role.</p>	<p>"Engagement is the simultaneous employment and expression of a persons 'preferred self' in task behaviours that promote connections to work and to others, personal presence and active full role performance." (Kahn, 1990, p.700)</p>
Maslach & Leiter (1997)	<p>Conceptual article furthering Kahn's work presenting engagement as the anti-thesis to burnout. The Maslach Burnout Inventory (MBI) was used to measure engagement as the opposite score of burnout providing the first quantification of engagement.</p>	<p>Engagement positive measures of the MBI (Maslach & Leiter, 1997)</p>
Maslach, Schaufeli Leiter, (2001)	<p>Furthered the burnout antithesis approach but instead argued engagement was a separate construct instead of being the opposite end of a burnout continuum. Definition of engagement laid grounds for a popular Job-Demands-Resources theory of engagement and the identification of more antecedents to engagement.</p>	<p>Engagement as a "positive affective-motivational state of fulfillment in employees that is characterized by vigor, dedication, and absorption" (Maslach, Schaufeli & Leiter, 2001, p. 417)</p>
Saks (2006)	<p>Unified definition of Kahn's three-component model and burnout-antithesis approach. Drew on social exchange theory to explain the link between antecedents and engagement and differentiated between work and organizational engagement.</p>	<p>"A unique construct consisting of cognitive, emotional and behavioural components associated with individual role performance" (Saks, 2006, p.602)</p>

Table 1 - Table displaying seminal works in engagement theory, the definitions of engagement and their contributions.

Antecedents to engagement

Following the establishment of engagement as a positive, unique construct, attempts to identify antecedents leading to engagement increased drastically. A recent review identified 42 antecedents at the individual and organizational level (Wollard and Shuck, 2011). A number of these antecedents are of particular relevance in this study as they may offer some explanation of how shared leadership development can contribute to engagement as discussed below.

Opportunities for learning and development

Firstly, an opportunity for learning and development has been linked to greater levels of employee engagement the development of skills and knowledge provides individuals greater personal resources or psychological availability to engage (Kahn, 1990; Shuck et al., 2013; Xanthopoulou et al., 2007). Moreover, this can present new challenges and provide greater skills variety – a job characteristic which has been shown to makes roles more meaningful and increase ones willingness to engage in work (Kahn, 1990; Saks, 2006). This may be particularly important for scientists who enjoy challenging work, and task complexity (Bailyn, 1985; Lounsbury et al., 2012).

Autonomy

Autonomy is also a job characteristic or job-resource that allows individuals to freely express oneself, which can contributes to greater psychological meaningfulness and subsequent role engagement (Bakker et al., 2008; Kahn, 1990; Saks, 2006). Furthermore, forms of shared or empowering leadership that provide greater autonomy to workers has been shown to increase work engagement in the same manner (Hooker and Csikszentmihalyi, 2003; Tuckey et al., 2012). Autonomy also increases feelings of responsibility and accountability, and is associated with proactive behaviour which is important in organizational change (Hornung and Rousseau, 2007; Macey and Schneider, 2008). As previously discussed, knowledge workers value this autonomy (Bailyn, 1985; Lounsbury et al., 2012) and it may increase engagement in an R&D organization.

Job crafting

Recent research has looked at how individual alterations to one's roles beyond standard job descriptions can increase the job characteristic of role identification and meaningfulness which contributes to greater engagement (Tims et al., 2012; Wrzesniewski and Dutton, 2001). This is referred to as job crafting the physical or cognitive changes an individual makes to task or relational boundaries of work (Wrzesniewski and Dutton, 2001). Researchers have linked job crafting to engagement via crafting of ones personal resources or job demands to create a role that is more suited to one's preferences, skills and abilities (Bakker et al., 2012; Petrou et al., 2012). Additionally, job crafting increases identification with ones role, as it reflects their preferred self at work, thus increasing the meaningfulness of ones work which is linked to greater engagement (Kahn, 1990; Wrzesniewski and Dutton, 2001). This process is voluntarily initiated by the individual and occurs only where individuals feel they have the opportunity to craft (Wrzesniewski and Dutton, 2001). Developing shared leadership may encourage job crafting by providing individuals with the resources and autonomy to alter their roles and become more engaged.

Perceived organizational or supervisory support

Leaders (as agents of the organization) can alter the working conditions and provide the above antecedents to create a supportive environment to promote greater engagement (Bakker et al., 2011). Evidence has shown that where leaders are supportive, optimistic, provide autonomy, recognition, and feedback to follower they are likely to reciprocate by increasing their engagement (Bakker and Demerouti, 2007; Christian et al., 2011; Kahn, 1990; Rich et al., 2010; Saks, 2006; Tims et al., 2011). In particular, transformational leadership has been shown to increase follower engagement through the provision of a meaningful vision, providing greater job resources and challenges (Tims et al., 2011). Developing such leaders may therefore increase the engagement of those around them, particularly where employees feel more supported which leads to reciprocal engagement with work and the organization (Saks, 2006).

Outcomes of engagement

The outcomes and consequences of engagement make the concept attractive to organizations. Engaged employees are said to be more creative, display discretionary effort, engage in extra-role and proactive behaviours, expand their roles (Agarwal et al., 2012; Christian et al., 2011; Hakanen et al., 2006; Tims et al., 2011). Moreover these individuals show greater commitment to the organization, engage in organizational citizenship behaviours, and can lift the engagement of others through emotional contagion (Bakker et al., 2006; Rich et al., 2010; Saks, 2006).

These outcomes are particularly relevant to this study as it may explain how engaged individuals impact organizational change. Firstly, the extra-role behaviours and displays of initiative can free up others in the organization and creates a positive environment which is conducive to the engagement of others (Christian et al., 2011). Proactive behaviour also contributes to organizational change, as employees instinctively take up roles required during the change and display organizational citizenship behaviours (e.g. conscientiousness, helping behaviours, civic virtue and sportsmanship; Avey et al., 2008; Podsakoff et al., 2000).

Moreover, the process of emotional contagion (Westman, 2001) or the transfer of positive experiences from one person to another has been shown to increase engagement (Bakker and Demerouti, 2008). Highly engaged staff communicate their positive feelings and behaviours to others which creates widespread feelings of enthusiasm and engagement - although burnout can also crossover in the same manner (Bakker et al., 2006). This may be important in organizational change, as positive or negative emotional responses to change may spread throughout the company and affect its success.

Lastly, these outcomes have been linked to increased organizational profitability, productivity, innovation and customer satisfaction (Hakanen et al., 2006; Harter et al., 2002; Kim et al., 2012). This provides support for the contributions of engaged employees to organizational performance which is required for organizational transformation (Porras and Silvers, 1991).

Summary

Employee engagement is slowly gaining empirical support as a distinct construct with significant individual and organizational outcomes (Harter et al., 2002; Macey and Schneider, 2008; Saks, 2006). Researchers have identified a number of antecedents to engagement that stem from the distribution of organizational influence including; opportunities for development, autonomy, and opportunities to job craft. This is particularly significant for knowledge organizations, as these are also the key values of their professional knowledge workers (Bailyn, 1985). By developing shared leadership organizations may benefit from a group of positively engaged employees who invest their cognitive, emotional and physical resources in pursuit of the organizations goals which can increase performance and in times of organizational change (Avey et al., 2008; Harter et al., 2002).

Theoretical Model and Research Questions

Research questions

This study presents a theoretical model based the proposition that developing shared leadership in knowledge organizations may build engagement and better position an organization for change. Whilst some organizations need to respond to change in a top-down manner to coordinate and plan initiatives (Weick and Quinn, 1999) shared leadership can also allow for wider input from knowledge workers which can increase resilience in an unpredictable environment (Day and Harrison, 2007; Pearce, 2004). However, the suggested benefits of shared leadership have only been verified through a handful of empirical studies, leaving organizations with no evidence based recommendation as to how to develop and implement such a model (Day and Harrison, 2007). What is clear that organizations firstly need to develop individuals skills to effectively share leadership (Cox et al., 2003; Pearce, 2004). Thus, the overall research question this thesis seeks to investigate is;

How can a shared leadership development program contribute to organizational change?

Secondly, researchers are advocating the importance of participation and the “humanization” of work through softer approaches to leadership and change (Armenakis et al., 1993; By et al., 2011; Haslam et al., 2010; Rost, 1991; Shuck and Rose, 2013). These approaches focus on “softer” social rather than structural controls to gain cognitive, emotional and physical engagement with a new vision (Porrás and Silvers, 1991; Shuck and Rose, 2013). It is proposed that developing shared leadership may increase cognitive, emotional and physical investments in line with change efforts and thus the second research question is;

How does a shared leadership development program impact on employee engagement?

Answering these questions will help to better understand shared leadership, organizational change and employee engagement. Firstly, as shared leadership is still evolving (Day and Harrison, 2007) researchers are seeking to identify how this approach can be facilitated, maintained and its limitations (Pearce and Conger, 2003). Therefore studying an organization that has adopted a shared leadership approach can identify; means to develop a shared model, the conditions required to maintain it and what the outcomes may be.

Secondly, whilst a number of studies indicate the importance of leadership and learning and development in engagement (Tims et al., 2011; Xanthopoulou et al., 2007), few studies have looked specifically into the relationship between *leadership development* and engagement (Shuck and Herd, 2012). This is a particularly interesting avenue to identify how interventions may be designed to foster engagement in the workplace (Bakker et al., 2008; Shuck and Herd, 2012). Lastly, employee engagement has been implicated in positive change through OCB, although the researchers requested further research into the cause of this impact (Avey et al., 2008). The development of shared leadership may explain this as it has been shown to increase proactive behaviour and job expansion (forms of physical engagement) which contributes to change efforts (Hornung and Rousseau, 2007). This study therefore investigates whether shared leadership development plays a role in change by increasing employee engagement.

Theoretical model

The conceptual design proposed in this study is shown in Figure Two. This model incorporates the three concepts of this study into the Porras and Silver (1999) model of organizational transformation. A shared leadership development program can target both the organizational vision – by communicating a new vision to participants of the program, and the work setting – most notably the leadership structure and leadership styles. This may change participant's cognitive, emotional and behavioural engagement with work and the organization. This study posits organizational engagement as a proxy for Porras and Silvers enhanced individual development which represents a cognitive acceptance of the new vision and behavioural efforts to support this (Porras and Silvers, 1991). Organizational

engagement is also said to involve a cognitive acceptance process that results in an emotional connection to the organization and physical behaviour to support this (Shuck and Rose, 2013). These future leaders may therefore contribute to organization wide engagement with the new paradigm by followers which can lead to greater organizational performance (Porras and Silvers, 1991).

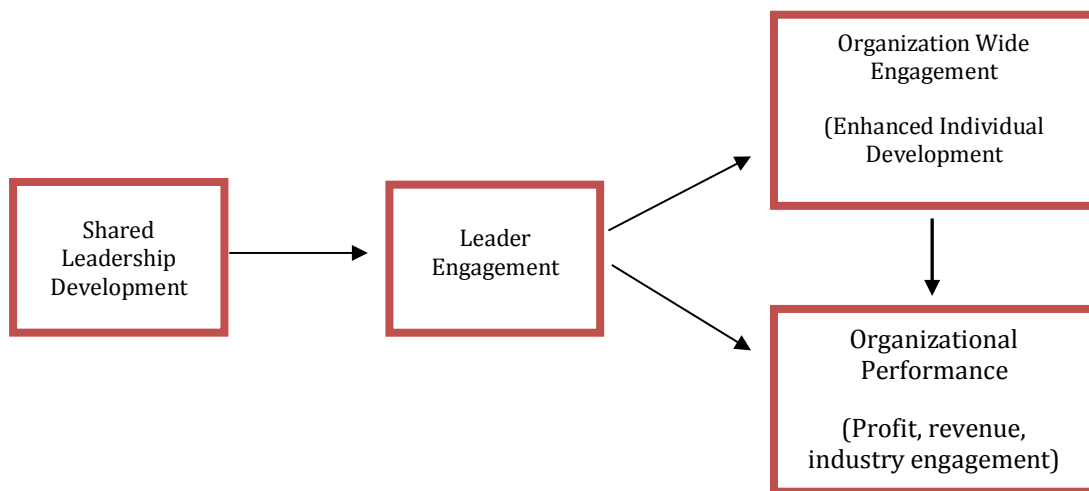


Figure 2 - Illustration of the basic theoretical model proposed in this study. Shared leadership development should increase engagement in the future leaders who go on to spread this engagement and improve the organizations performance.

Propositions

The first section of the theoretical model refers to the leadership development program itself. Existing research advocates the development of both individual leader and leadership capabilities to establish leader identities across individual, relational and collective (organizational) levels (Bilhuber Galli and Müller-Stewens, 2012; Day and Harrison, 2007; Gold et al., 2010; Pearce, 2004). This literature is the basis for proposition one:

Proposition one: A leadership development program that establishes individual, relational and collaborative leader identities may enable the development of shared leadership.

The second part of the model concerns the impact of leadership development on employee engagement. This study follows the theory of Sak's (2006) that employee engagement exists on two levels based on the existence of multiple in an organization (Saks, 2006) and therefore:

Proposition two: A shared leadership development program should lead to greater levels of both work and organizational engagement.

Leadership development should impact on employee engagement in two ways. Firstly, it should establish a number of antecedents to engagement including; a learning and development opportunity and thus greater personal resources (Bakker and Demerouti, 2008; Kahn, 1990), greater autonomy from their position as leaders in the future (Saks, 2006; Xu and Thomas, 2011), and an opportunity to craft ones job increasing task identity and meaningfulness (Tims and Bakker, 2010; Wrzesniewski and Dutton, 2001). This is the basis for proposition three:

Proposition three: A leadership development program may lift levels of engagement in participants of the program providing an opportunity for learning and development, greater autonomy and an opportunity to craft ones job.

Secondly, the opportunity for development as well as support from organizational leaders, should lead to reciprocal investments of cognitive, emotional and physical engagement from employees as per social exchange theory (Saks, 2006). Therefore:

Proposition four: Organizations investing in shared leadership development may gain reciprocal investments from participants of the program in the form of employee engagement.

Organizational engagement is used as a proxy for Porras and Silvers enhanced individual development would indicate adoption of the new vision. It is proposed in this study that developing a cohort of engaged leaders could raise the levels of organizational engagement through the rest of the organization. As discussed in the previous section, leaders can create the conditions necessary for follower engagement by; providing antecedents, displaying transformational leadership

behaviours and emotional contagion (Pearce and Sims, 2002; Tims et al., 2011; Tuckey et al., 2012). These ideas are summarized in proposition five:

Proposition five: Participants of the leadership development program could lift engagement levels throughout the organization by altering the working conditions of their peers, transformational leadership behaviours, and emotional contagion.

Furthermore, as shared leadership enables leaders to emerge from within the ranks of the organization, it is likely that they represent the identities of the groups from which they emerged. Under the SIMOL the effects of leaders on followers may be more likely to occur as followers support, trust and identify with leaders who are prototypical representatives of themselves (Hogg, 2001; Van Knippenberg and Hogg, 2003) as described in proposition six:

Proposition six: Shared leadership may facilitate the spread of employee engagement, as the leaders are prototypical of the groups they represent, and are more likely to gain follower identification and support.

Lastly, it has been suggested that the outcomes of engagement including; discretionary effort, citizenship behaviours and proactive behaviours contribute to positive change (Avey et al., 2008; Christian et al., 2011; Hornung and Rousseau, 2007). Therefore, implementing a shared leadership program which lifts the engagement of its participants, who in turn help to engage others with the change effort should drive the organizations transformation from the bottom up (By et al., 2011; Choi and Ruona, 2011; Nadler and Tushman, 1994; Porras and Silvers, 1991). Higher levels of employee engagement have been shown contribute to productivity, task and role performance, and financial performance (Christian et al., 2011; Harter et al., 2002; Kim et al., 2012) which should contribute to the overall outcome of organizational transformation. Therefore proposition seven suggests:

Proposition seven: Organization-wide engagement will contribute to organizational transformations by lifting organizational performance.

Research design

This research investigates the theoretical framework using Kirkpatrick's 4 level model of evaluation (Kirkpatrick, 1998). The four levels presented in Kirkpatrick's model are; step one – reactions, step two – learning, step three – behaviour and step four – results. Step one refers to the participant's reactions to the learning on the program and can include descriptions of program satisfaction and utility of the program. Step two refers to the skills, knowledge and abilities that one learns from the program whilst step three refers to the behavioural changes that occur as a result of this learning. Finally, step four refers to the impact that the training has had on the wider organization itself in terms of contributing to organizational goals and objectives (Bates, 2004; Kirkpatrick, 1998). These four levels can be incorporated into the framework in Figure Two to analyse the relationship proposed in the study as shown in Figure Three.

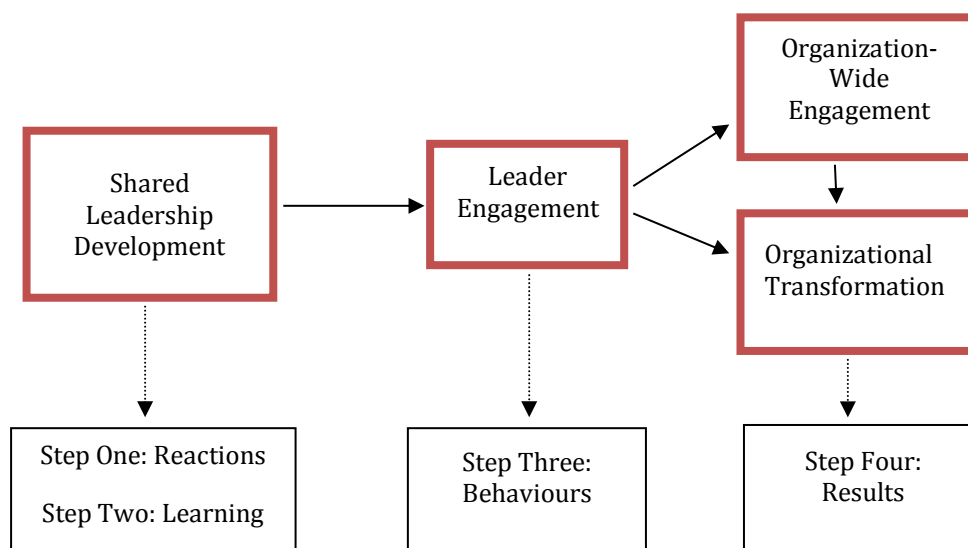


Figure 3 - Illustration of the research design, incorporating Kirkpatrick's four levels of evaluation to guide the study

Analysis of reactions and learning should be identified as a result of participation in the program. Step three; behaviour incorporates the changes that would result if employees experience higher engagement from participation in the development program. In addition, they should use their leadership skills to engage others in the workplace resulting in individual development or cognition changes throughout the organization and an overall increase in organizational performance. It is this design that is used as a framework to guide the research and design the methodology as will be described in the next chapter.

CHAPTER TWO: METHODS

Guided by a post-positivist approach, this research utilizes a single case study of an R&D organization to explore the propositions. Multiple data sources were used including document analysis, observations and interviews in order to increase the reliability of this study. Explanation building, a form of pattern matching was used to analyse the data. This methodological approach will be detailed in the following sections.

Post-Positivism and Qualitative Research

This research is guided by a post-positivist approach. The theory of post-positivism (not to be confused with the general term for paradigm that contrasts positivism e.g. constructivism or postmodernism) is said to be the “natural heir” of positivism, holding many of its beliefs about a true reality and objectivism but in modified forms (Denzin and Lincoln, 2011; Guba and Lincoln, 1994). Post-positivism argues for a single, true reality although in contrast to positivism, this reality is complex and multidimensional limiting our understanding of it to probable accounts and approximations. Moreover this reality, its subjects and the people in it are independent and objective. Therefore, as with positivism, researchers should be independent and objective of their subjects although complete objectivity is unlikely as the research process itself can influence a study’s outcomes (Denzin and Lincoln, 2011; Guba and Lincoln, 1994). In contrast to the scientific, quantitative data typical of positivist research the post-positivist approach utilizes both quantitative and qualitative methods in the process of “critical multiplism” or triangulation to get as close to the true reality as possible (Guba and Lincoln, 1994). Theoretical advances are made by testing propositions to identify/reject *probable* facts about reality. These are presented as generalizations in the form of cause and effect laws (Guba and Lincoln, 1994; Walliman, 2006).

Positivist methodology has been criticized for limiting findings to a simple quantitative correlation between two variables, and “riding roughshod” over contextual variables (Bryman, 1984; Guba and Lincoln, 1994). The former is one of the limitations with previous research into the topics of shared leadership development, engagement and organizational change (Avery et al., 2007; Shuck and Herd, 2012). Whilst correlations between these constructs have been empirically proven, the casual explanations behind these have not been investigated. Additionally, as shown in the introduction section, these concepts have a number of antecedents and conditions which moderate their effectiveness e.g. engagement with 42 identified antecedents (Wollard and Shuck, 2011). It has been suggested that where this is the case, a qualitative research phase can identify unexpected variables which is not the case in a standardized, quantitative approach (Bakker and Demerouti, 2007). Therefore, a post-positivist methodology applies to this research as it seeks to make theoretical advances by understanding the relationships between shared leadership development, employee engagement and organizational change. Moreover, a number of theoretical propositions were developed, and qualitative and quantitative data sources are to be collected to test these propositions and gain a more holistic understanding of these relationships.

Case Study Method

This study uses a single case study method defined as an empirical inquiry that: investigates a contemporary phenomenon within its real-life context, with boundaries between phenomenon and context that are not clearly evident and in which multiple sources of evidence are used (Yin, 2008). Case studies are used across multiple paradigms including the positivist, idealist and constructivist approaches depending on the position of the researcher (Flyvbjerg, 2006; May and Perry, 2011). Whilst case studies are often criticized for introducing researcher bias and a lack of rigour, a case study can be designed to be rigorous and systematic, including controls to increase validity and reliability which allows researchers to objectively test theoretical propositions, and produce facts that can be generalized to larger units of reality in similar contexts (Eisenhardt, 1989; Flyvbjerg, 2006; Shanks, 2007; Yin, 2008). In line with the epistemology of post-positivism, case

studies are allow for the contextual investigation of phenomena, acknowledging the complexity of our view of reality (Shanks, 2007). Moreover, case studies draw from quantitative and qualitative sources, often triangulating from multiple sources to increase validity (Yin, 2008). This reflects the concept of critical multiplism in post-positivism.

The use of a single case is appropriate to this research as it is recommended for research on contemporary events in their natural setting, for research lacking a strong theoretical base or, where the researcher has no control over its subjects (Benbasat et al., 2002; Yin, 2008). This research was conducted in a contemporary setting, studying an organization attempting to implement a shared model of leadership whilst undergoing an organizational transformation. It could not be controlled or manipulated and there is little empirical research investigating the relationships between these variables. Moreover, case studies are particularly effective in describing and explaining causal, contemporary phenomena by answering “*what*” “*how*” and “*why*” questions (Benbasat et al., 2002; Woodside, 2010; Yin, 2008). It is therefore suited to research questions here of *how* a leadership development program will impact on engagement, and *how* this impacts organizational change.

Credibility in case study research

As described, case studies are often criticized for their subjectivity, lack of reliability and validity. Under the positivist or post-positivist case study method, a number of recommendations are described to increase the objectivity of the research, beginning with an explication of the researchers biases so that they can be managed throughout the research process (Guthrie, 2010; May and Perry, 2011; O’Leary, 2009). The first source of bias is the researcher’s previous background in science, which could lead to greater identification with the study’s participants. Secondly, the researcher was a student at the University facilitating part of the leadership development program in this study. The organization requested that the University evaluate the program and thus the organization had a vested interest in the research. Neither the organization of study nor the facilitators of the program

funded this research. A number of steps were taken to manage these biases under the recommendations of prior research and are described below.

Construct validity

In order to maintain internal validity this research utilizes member checking, peer review, external audits, triangulation of data, and distance from the case (Creswell and Miller, 2000; May and Perry, 2011; Shanks, 2007; Yin, 2008). In order to prevent personal bias or assumptions about the data, member checking was used following interviews to clarify or confirm interpretations of relationships between constructs. Additionally, research supervisors reviewed the findings, providing external perspectives on the data and ensuring accurate presentation of constructs. Moreover, an external individual carried out a coding audit. Ten pages of interview transcripts were randomly chosen and coded by the external individual, following which any inconsistencies were discussed and alterations made where appropriate (Miles and Huberman, 1994). Multiple sources of data (document analysis, observations and interviews) were also collected and triangulated where possible to provide greater support for a construct or relationship (O'Leary, 2009). Lastly, in order to reduce stakeholder bias, the researcher maintained distance from the organization for the majority of the research only making contact on an as needed basis and analysing data away from the research site (May and Perry, 2011).

Internal validity

Pattern matching formed the basis for internal validity (Yin, 2008). Pattern matching increases the internal validity by using pre-defined theories and constructs, and comparing these to the data to confirm or deny these theoretical beliefs (Hak and Dul, 2010). This requires clearly defined theoretical constructs and propositions as a basis for comparison (Shanks, 2007). The theoretical propositions have been described previously, and a list of the major concepts and their definitions from previous research can be found in Supplementary Appendix One. Moreover, as described above, the process of member checking helped to clarify interpretations of causal relationships. This process of pattern matching will be discussed in further detail in the data analysis section.

External validity

External validity of case studies - particularly single cases - is often contested by positivists who seek statistical generalization from large scale sampling (Flyvbjerg, 2006; May and Perry, 2011). Instead of statistical generalization, case studies utilize theoretical or analytical generalization where the conditions or contexts that the research occurs in dictates the generalization of findings to similar units (May and Perry, 2011; Yin, 2008). In this particular case, the organizational context involves the shift in the organization's strategy from internal commercialization of science, to one focussed on engagement and partnerships with industry. This is a change that many R&D organizations are being forced to make in light of larger institutional changes (Jordan, 2010; Nag et al., 2007; OECD, 2012) which may allow for the generalization of findings to similar organizations.

Reliability

The reliability of the research process can be improved if the research design is well documented, logical and systematic (Creswell and Miller, 2000; Shanks, 2007; Yin, 2008). This chapter provides full documentation of the methods used and acts as a case study protocol for increased reliability (Yin, 2008). Furthermore, all data was entered into a case study database that was set up as a project using QSR International's NVivo10 software, documenting all sources of evidence (Yin, 2008; Gibbert, Ruigrok, & Wicki, 2008). Member checking, peer review, and external auditing, also increases the reliability of the study by providing external checks to prevent researcher bias (Creswell and Miller, 2000). In addition, this study follows the 5-step case study design presented by Yin (1990). This design offers a logical, systematic process for case study research, with the formation of testable propositions to guide data collection and analysis.

This design is often used in positivist case studies (May and Perry, 2011; Shanks, 2007; Yin, 2008) and involves the following steps:

1. Define the study's questions
2. Identify its propositions
3. Define the unit of analysis
4. Identify the logic linking the data to the propositions and
5. The criteria for interpreting the findings (Yin, 2008).

The first two steps are the most important to empirically ground the study and establish construct, internal and external validity (Hak and Dul, 2010; Shanks, 2007; Yin, 2008). The research questions and study propositions have been thoroughly detailed in the previous chapter whilst the remaining 3 steps are described below.

Unit of Analysis

Fully defining the unit of analysis defines the boundaries of the case and the conditions under which the model applies and may be generalized to (Eisenhardt, 1989; Shanks, 2007; Yin, 2008). The case in this research is an R&D knowledge organization, which implemented a shared model of leadership to enable an organizational transformation. Below is a description of the organization's history, the LDP, the organization's measure of employee engagement and its current state.

Case study description

Case history

As eluded to earlier, the unit of analysis is a Crown-owned R&D Institute operating with the purpose of undertaking research for the public good, whilst remaining financially viable (Ministry of Science and Innovation, 2012). Initially, the organization focussed on a spin-off commercialization strategy to get their products closer to markets, and to increase their internal revenue due to competitive government funding and low private sector investments (Davenport and Bibby, 2007; OECD, 2012). However, following reports of low labour productivity and

criticisms that the CRI's research activities only benefitted their own financial standing, the Government sought to encourage technology transfer between CRI's and businesses (Gluckman, 2009; OECD, 2007). The government increased expenditure on R&D, introduced R&D tax credits and altered funding criteria to align with the industry engagement objective as a means to improve innovation and economic performance (OECD, 2012). This external shift, combined with poor performance of its subsidiaries resulted in a state of organizational crisis in 2006 with a \$5.7m net deficit, and reports of disheartened staff. A new CEO entered the CRI tasked with implementing the industry engagement strategy. However, he felt that the organizations high calibre scientists were less competent in areas of business/commercial management, strategic thinking, financial analysis, staff development, project execution and resource management. A Leadership Development Program (LDP) was therefore introduced to equip them with the skills necessary to execute the new strategy.

Program description

The LDP was built on the CEO's definition of shared leadership as an "activity, action or a principle that operates at all times, at all levels through the organization." Whilst the program was aimed specifically at scientists and engineers, it was open to all staff. Individuals could either volunteer to participate or could be nominated by their managers. The program comprised of three inter-related components; a personal assessment performed by an organizational psychologist, a 3 and a half day development centre focussing on personal development with an organizational focus, and a 5 day academic program to develop business leadership capabilities specific to the organization. Participants took part in all three components over a year, and upon completion became part of the "LDP alumni." Following this, the organization offered additional development courses, secondments, open strategy discussions, seminars or conferences that were open to all staff.

Part One: Personal Assessment

The personal assessment began with an external organizational psychologist performing two psychometric tests at the beginning of the LDP - the Jung Type Indicator and the Fifteen Factor Questionnaire to identify personality type, and

personal style respectively (McCrae and Costa, 1989; Psytech International, 2013). The results of these personality assessments were discussed with the psychologist at the development centre in a 90-minute workshop. The workshop used collaborative, action-learning simulations designed to draw on these personality traits and help understand how they influence group behaviour. Following the LDP, participants had a one-on-one coaching session with the psychologist where they gave feedback on the program, reflected on their personality profiles and developed a personal development program to strengthen specific traits.

Part Two: Development Centre

The development centre was a 3.5 day residential program which took place in the first half of the calendar year. Two separate cohorts of 8 participants stayed with one another at a residential location, along with a coach and four observers from the organization. The development centre aimed to develop personal awareness, as well as skills and knowledge relevant to leadership within the organization as seen in Table Two. It utilized collaborative action learning exercises tailored to the context of an R&D organization, with periods of open discussion and feedback to reflect on each activities learning's. Whilst participants took part in these exercises one of four trained observers (senior members of the organization or individuals who had been through the program previously) took notes on their behaviour. Concluding the development centre, participants received a personalized behavioural report from observers. In addition to the formal learning, the CEO and senior executives attended a dinner and the CEO attended an afternoon session with the participants to meet with them personally, and provide a forum for open discussion.

Skill or attribute	Description
Client Service	The ability to create a client-focussed culture and environment.
Communication and Relationship Management	Clear two way communication and understanding the needs of stakeholders and how they can be met
Coaching and Development	The capacity to coach and develop staff effectively by understanding staff needs and diagnosing performance problems
Teamwork and Leadership	The capacity to provide direction, vision, support and encouragement to fellow team members as well as provide direction and leadership at a team and corporate level
Organizing for Results	Managing others and resources to achieve medium-term business objectives in line with the organization's strategic direction
Problem Solving and Analysis	The ability to tackle strategic/highly complex problems with few precedents where the organization/business impact is significant for a range of stakeholders
Innovation and Strategic Capability	The ability to apply a broad perspective to issues incorporating both short and long term objectives within and outside the immediate work area. Competencies include; diagnostic ability, strategy formation, strategic business perspective, external sensitivity or awareness.

Table 2 - Table of competencies and their definitions that were developed at the residential section.

Part Three: Academic program

The academic program was a 5 day, classroom based program run by a University in the second half of the year. It brought together all 16 participants from the two development centre cohorts. The program focussed specifically on providing frameworks and tools to develop organizational leadership skills. The topics that the academic program covered can be seen in Table Three and were explored through lectures, group discussions, case studies and practical examples. Whilst the organization chose to focus on essential topics of leadership, strategy and project management, others varied in response to particular organizational challenges. The CEO and senior executives also attended a social function during this section of the program.

Concept	Cohort
Organizational Leadership, Identity and Values	2007-2012
Organizational strategy	2007-2012
Project management	2007-2012
Strategy and Commercialization	2007-2008
Marketing	2007-2008
Managing Strategic Change	2009-2012

Table 3 - Table of concepts taught on the academic program for each cohort

Additionally, the CEO played a major role in the central exercise of the academic program - the Dragons Den (DD). On the first day, the CEO discussed a current organizational challenge with participants. Following this they were asked to develop a project proposal (in groups of 3-4) to address this challenge. Over the week, participants applied the concepts to their ideas developing a final proposal that they presented to a panel of “dragons” on the final day. These dragons – organizational executives, business and scientific representatives - would select a

winning team who would implement their proposal upon returning to the organization.

Organizational measures of employee engagement

The organization began measuring employee engagement in 2006 using the John Roberts & Associates (JRA) employee engagement and work climate survey. The JRA defines engagement as “the level of personal connectedness an employee feels towards an organization” (JRA (NZ) Limited, 2013a). Engagement is operationalized as cognitive, emotional and physical engagement, which matches the definition used in this research. The survey consists of 60 statements measured on a 5-point Likert scale with each statement corresponding to 10 sections; culture and values, common purpose, communication and cooperation, the person I report to, my team, my job, learning and development, performance and feedback, rewards and recognition, and overall perceptions which specifically measures cognitive, emotional and physical engagement (JRA (NZ) Limited, 2013b). Overall scores are used to characterize employees as; engaged – highly connected to the organization, ambivalent – scoring averagely across the three components or disengaged – unsatisfied and lacking commitment to the organization (JRA (NZ) Limited, 2013a). The organization used these surveys from 2006-2010 and stopped in 2011 due to uncertainty regarding the its future as described below.

Description of current organizational state

When this research began in 2012, the organization had over 300 employees, with a main centre of operations, and two smaller centres distributed throughout New Zealand. Approximately 200 staff were scientists or engineers and the remainder were industry engagement or operational staff. A third of the staff had graduated from the LDP. However, during the study the company underwent a restructuring and rebranding to form a larger Government organization. The LDP was postponed during this time, due to uncertainty surrounding the new identity, goals and values of this larger organization. The case was therefore limited to the effects the LDP had on the employees and the organization from the initial change process in 2006 until the programs end in 2012.

Sources of Data

This case study draws on multiple sources including document analysis, observations and interviews to allow for triangulation (May and Perry, 2011; 2011; Yin, 2008). All data was collected in accordance with the Pipitea Human Ethic's policy, with approval granted prior to collection. These data sources and subjects are described in detail below.

Documents

Documents including announcements, reports, articles, survey data, and organizational records are used in this research. Whilst documents can provide an external validation of researcher interpretations they can also introduce bias as they are written for a different purpose (O'Leary, 2009). Thus their sources and purposes must be noted to indicate their potential bias (May, 2011; Yin, 2008). Below is a table of the documents collected in this study including their origins and their purpose in this study. All of the documents were loaded into a case-study database in NVivo 10.

Document Type	Origin	Purpose
Project Proposals and Evaluations	Project proposals and process documents developed by LDP staff. Evaluations developed by project groups to provide an assessment of project outcomes. Produced for internal organizational use.	Provides evidence of physical engagement and their contributions to organizational performance.
Engagement Surveys	Employee Engagement surveys from 2006-2010 obtained using the John Robertson & Associates (JRA) employee engagement survey. Produced for the purpose of measuring employee engagement in the organization. Produced for use internally.	Provides a quantitative measure of employee engagement. Simple descriptive statistics will be used to assess changes in employee engagement levels.
Public Articles and Press Releases	Newspaper, magazine or journal articles relating to the organization, including press releases from the organization itself. Produced for the general public.	Provides general information about the organizations history, performance, the program and other activities.
Annual Reports	Annual reports released by the organization from 2004-2013. Reporting on the activities and financial performance throughout the year including; staff numbers, development activities, financial statements and key achievements. Produced for the organization, its stakeholders and the general public	Provides descriptions of outcomes of the LDP projects, learning and development activities, measures of industry engagement and organizational performance. Simple descriptive statistics will be used to quantify performance changes.

Table 4 - Table indicating the documents collected in this study, their biases and uses.

Observations

Non-participant observation was conducted in this study to observe the “real life context” of the leadership development program (O’Leary, 2009). Due to the timing of this study, observations only took place during the academic component of the LDP in 2012. The program facilitators and organizational administrators permitted access to this group, and informed consent was gained from all of the subjects prior to observation as per the University Ethics policy (see Appendices One & Two for information and consent forms).

A semi-structured approach was used to organize observations whilst allowing for any unplanned or unexpected observations (O’Leary, 2009). An observation schedule was developed based on Kirkpatrick’s first two levels of evaluation;

reactions - personal reactions to a learning experience including levels of enjoyment, practicality and relevance, level of participation, and program design features, and learning (Kirkpatrick, 1998). The researcher was situated at the back of the room to remain separate from participants and recorded literal and behavioural observations on four categories; program design features, reactions to concepts, application of concepts taught and displays of leadership (Appendix Three). Observations were recorded on these schedules and field notes were taken at the end of each day to summarize initial interpretations (Miles and Huberman, 1994). All of the schedules and field notes were loaded into the case study database. These observations shed light on participant's reactions to the program and which provided data on proposition one.

Interviews

Interviews comprise the majority of data collected in this study, and were conducted as one-on-one, semi-structured, in-depth interviews. The interview schedule was developed based on the theoretical propositions to enable theoretical abstraction later in data analysis (Yin, 2008), and was structured around Kirkpatrick's four levels of evaluation to match the conceptual model. The schedule specified questions but was not strictly followed in order to develop fluid conversations and allow for clarification and elaboration of topics as well as exploration of unexpected themes (May, 2011; O'Leary, 2009; Yin, 2008). Two schedules were developed for the two groups of participants in this study as discussed below.

Participant selection

Two groups of participants were interviewed for this study; (1) participants of the LDP and (2) staff from the organization who had not taken part in the LDP but worked with alumni. Both groups consisted of current employees from a range of levels and groups within the organization.

Three sampling methods were used to ensure representative sampling of the first group of LDP participants. Firstly, an email - including information and consent forms (Appendices One and Two) - was sent to LDP "alumni" asking for volunteers to take part in an interview. Of the 115 alumni, 13 volunteered and took part in an interview as scheduled in Appendix Four. In these initial interviews, participants

indicated that there were three different personal outcomes of the LDP; (1) participants who changed their jobs or outlook following the program, (2) people who showed minor changes and (3) individuals who appeared not to have benefitted from the program at all. Consequently, sampling was increased using a key informant who suggested individuals who fell into the above groups and secondly, a snowball sampling method was used with original participants referring colleagues in these categories. These methods generated 10 additional interviewees. Whilst this does not fit with the statistical sampling methods of positivism, the replication sampling method used here chooses additional cases to replicate initial findings and identify negative cases to gain a holistic view of the case (Yin, 2008).

The second group of participants acted as a control sample to get an “outsider’s” view of the programs effects and increase the studies validity (May and Perry, 2011). Sampling occurred in the same manner as described above. First a general email (including information and consent forms Appendix 1&2) was sent to staff asking for volunteers to take part in an interview. No volunteers responded to this request and therefore the key informant and snowball sampling methods described above generating 11 interviewees for this second group. A separate interview schedule was developed for this group of participants with the reactions component removed, and the remaining questions re-worded to fit the external perspective of these participants (Appendix Five).

Implementation

Interviews took place in offices at the organization’s main centre, or over the phone if necessary. Following a preliminary introduction, demographic data were collected and the interview conducted as per the appropriate schedule. Each participant gave their permission for audio recording and field notes were taken straight after each interview of salient points and initial impressions of the data (Eisenhardt, 1989). Following the completion of the interviews, each one was listened to as a whole to with the researcher noting down initial interpretations in a memo (Miles and Huberman, 1994). Interviews were fully transcribed and added along with the field notes and memos into the case study database.

Linking Data to Propositions and Criteria for Interpretation of Findings

Yin (2008) suggests choosing an analytic strategy to guide data analysis and then selecting an analytic technique to link data to propositions (Yin, 2008). This case study utilizes the theoretical propositions to guide the study and explanation building (a form of pattern matching) to analyse the data and draw conclusions regarding these propositions (Hak and Dul, 2010; Yin, 2008). Prior to analysis, data was coded using template analysis and organized into causal networks (May and Perry, 2011; Mayan, 2001; Miles and Huberman, 1994). These methods are discussed below.

Step One: Template analysis

Once all the data had been entered into the case study database in NVivo10, it was systematically coded using template analysis (King et al., 2004). Template analysis firstly involves the creation of a coding template of *a priori* themes based on the conceptual framework and theoretical propositions to increase internal validity (King et al., 2004; Miles and Huberman, 1994). This initial list was based on the list of construct definitions developed for the theoretical model in Supplementary Appendix One. Additional codes were added where data could not rationally be coded for using the pre-identified themes, or if a particular code became too broad and needed to be broken down into sub-codes (King et al., 2004; Miles and Huberman, 1994). Co-coding was used when two concepts occurred together in the data to enable pattern formation. Following full coding of the complete data set an external coding audit was performed by an individual separate from this study and any inconsistencies were resolved (Creswell and Miller, 2000; Miles and Huberman, 1994; Shanks, 2007).

Step Two: Causal network formation

Following coding, interconnections between the themes or major codes were identified by developing causal networks (Miles and Huberman, 1994; O’Leary, 2009). NVivo10 was used to identify interconnections using matrix queries to visualize which nodes were commonly co-coded. Each co-code was studied for the directional influence between the two variables and these were then mapped onto a causal network to visualize causal patterns in the data (Miles and Huberman, 1994). An example of this can be seen in Figure Four. The mapping process was guided by the theoretical model with co-variables and processes being mapped to the original model to test its propositions (Miles and Huberman, 1994; Yin, 2008). Following this process, the researcher clarified interpretations of relationships between variables with individual participants to increase the validity.

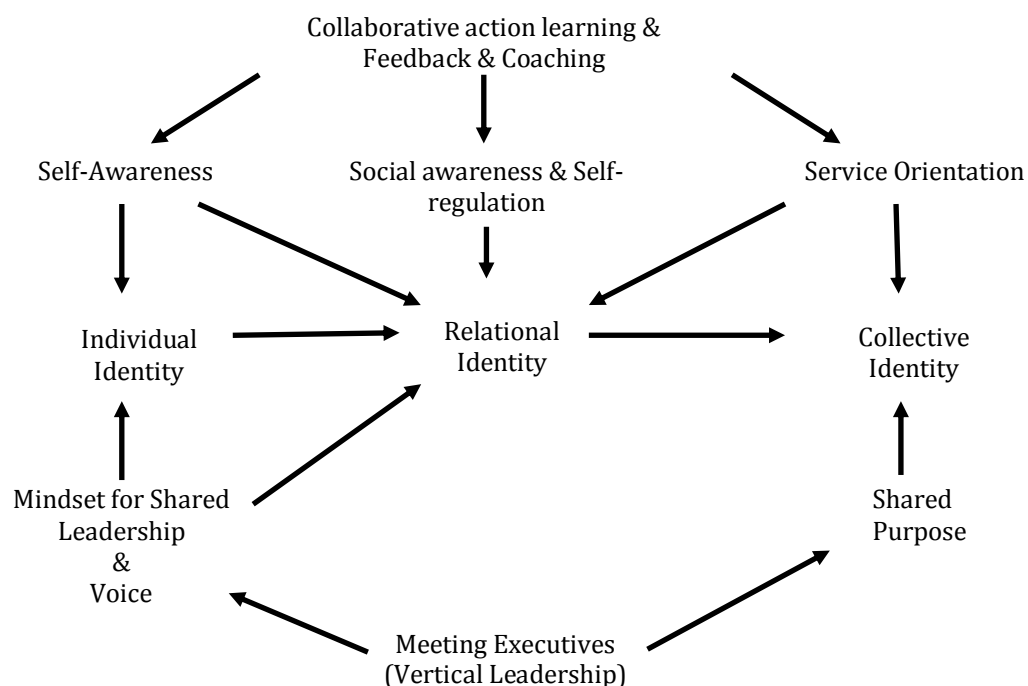


Figure 4 - Example of causal network formation indicating how leadership development methods, and shared leadership conditions contributed to the development of leader identities (explained in detail in Chapter Two).

Step Three: Explanation building (pattern matching)

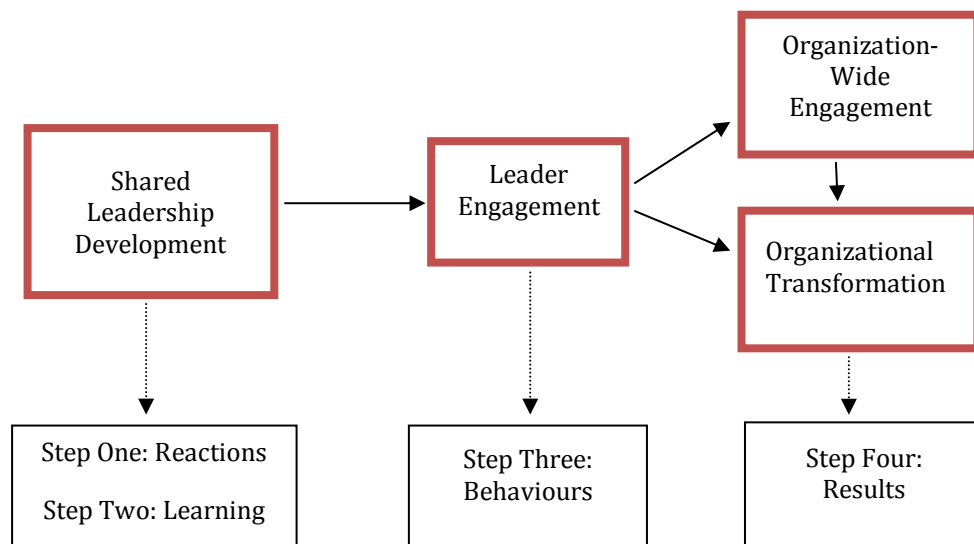
Following the development of the causal maps, explanation building – a form of pattern matching – was used to draw causal conclusions from the data about “how” or “why” one variable was linked to another (Gibbert et al., 2008; Yin, 2008). In this process, the theoretical propositions were tested by comparing them to the causal map, to either confirmation or revise the propositions (Hak and Dul, 2010; Yin, 2008). This process was used to develop a final, revised theoretical model that accurately represented the data, and is described in the following chapters.

Summary

This chapter describes the post-positivist methodology that guided the researchers single case study. The single case of an R&D organization was used to test the theoretical model and explore the relationship between the development of shared leadership, employee engagement and organizational change. Data was collected from documents, non-participant observations and semi-structured interviews and then triangulated to gain a holistic understanding of the case. Analysis was based on the theoretical propositions utilizing template analysis, causal network mapping and explanation building (pattern matching) to test and validate the original propositions. The results of this method are illustrated in the following chapter.

CHAPTER THREE: RESULTS

This chapter presents the aggregated findings for this case study, obtained using the methods described in the previous chapter. The theoretical model presented in Chapter One (and below) was explored using Kirkpatrick's four levels of evaluation to guide the research. However, during data analysis it became apparent that the networks were more complex than this 4-level framework and this approach was discontinued. The findings presented here are based on the research propositions concerning how a shared leadership development program impacts engagement and what outcomes this has for organizational change.



Participant Descriptions

A total of 33 interviews were conducted, 11 with individuals who had not taken part in the LDP and 22 who graduated the LDP. For the remainder of this thesis, the reader should note that quotes from an interviewee who did not take part in the program are preceded by (external) to indicate their perspective, whilst quotes from LDP participants are presented as is.

A majority of the participants were male and many were over 40. Most of the participants had worked in the organization prior to 2007 and worked in a range of roles. There was a bias towards science and engineering staff over those who worked in business roles. Tables 5-7 summarize these results.

Age Group	Number of participants
20-29	2
30-39	6
40-49	11
50-59	8
60-69	6

Table 5 - Table indicating the range of age groups represented by interviewees

Years in Employment	Number of participants
2 Years	3
3-5 Years	6
6-10 Years	8
11-15 Years	7
16-20 Years	3
20 + Years	6

Table 6 - Indicating the number of years in employment of interviewees

- Business	- Science
Business development manager (BDM)	Group Manager (science)
Communications specialist	Science Team Leader (STL)
General Manager	Senior Research Scientist (SRS)
Human Resources	Research Scientist (RS)
Personal Assistant	Scientist
Project Manager	Science Support Coordinator (SSC)
Commercialization manager	Engineering technologist
Senior Executive	Operations manager
Planning Manager	Student

Table 7 - Indicating the roles performed by interview subjects

Participant Motivations

Of the LDP participants, 15 volunteered to attend the program with the remainder attending upon recommendations from their manager. Colleagues who “came back speaking highly of it” was the most common motivation for attending, followed by opportunities for learning and development. Some participants also admitted their roles were starting to feel “stagnant” and thus the LDP was seen as an “opportunity for advancement.”

Reasons for not attending the LDP included having participated in a previous management development program, a lack of time to attend the program, and comfort with current leadership skills.

Pre-LDP context

Descriptions of the organization pre-LDP mirrored the reports of financial crisis and disengagement identified in the research background. Engagement surveys from 2006 showed that over 50% of staff were disengaged and the items: “there is a sense of common purpose in the organization” and “I have confidence in the leadership of this organization” were the lowest ranked items. The organization was “gloomy” and staff felt “an incredible amount of frustration” with the previous business model. As one STL described, staff had fallen into “a state of learned helplessness.” During this “brutal period” the organization was run in a “very top down” manner that “clashed with the natural way scientists worked.”

However, despite the cynicism with the organizations strategy and leadership, satisfaction with one’s job and team were the two highest rated categories in engagement surveys. Although, technical specialization of the science groups created a “silo mentality” in the organization and the relationship between business and science groups was also “not the best.” Business staff thought “scientists are hard to deal with and stubborn” whilst the scientists felt business staff were “getting in the way of science.” Moreover, the industry engagement strategy emphasized the role of business engagement staff, leaving scientists feeling “discarded” as “it wasn’t about what they could do in the lab anymore.”

Reactions to the LDP

Introducing the LDP whilst the organization was financially struggling “elicited a standard, incredibly negative reaction to resources going to where they shouldn’t.” The LDP was, and continued to be seen as a “big investment” with staff away for two weeks in a year at a “huge cost” to the organization. Furthermore, science staff were frustrated that there was no consultation between the “earners and burners” as to how management spent the money. Most viewed the LDP as a program to “harvest ideas” from staff or leaderships attempt at paying “lip-service” to staff engagement. Additionally, the leadership emphasis “turned people off” as “there’s no immediate prospect of me managing people.”

However, some individuals reacted positively to the program as they understood the organization's need to "adjust and change." As one STL described *"it was essentially an organization where science was the main focus. Whereas for [the organization] to be successful it needed to be much more connected with the industry, and that requires a broader skillset outside of science."* For these individuals, participating in the LDP was a chance to fulfil their personal motivations described above and for the organization to "reinvent itself."

Developing Shared Leadership

Program design

As described previously, the LDP utilized collaborative action learning, coaching and feedback from observations and an organizational psychologist. Additionally, meeting the senior executives, and conditions for shared leadership were identified as significant aspects of the program. Overall the reactions to this design were positive, although negative descriptions included conflict with observers, and time pressure on the academic program.

Action learning

The development centre's action learning activities were often described as the most memorable part of the program. As they were simulations of work experiences, participants felt comfortable challenging themselves "in a way where if you failed it wasn't going to be too serious." The most enjoyable learning experiences were negotiation, decision-making and customer service exercises.

The Dragons Den (DD) was also regarded as a "worthwhile micro-project." Observations supported recollections of the enjoyment of developing an idea with "strategic relevance" and presenting it to "pretty important people." However, experiences of the DD were not always positive. For some participants, the "terrible time pressure" to "come up with the next killer idea" created an "intense

competition” which “took away from the important concepts” that were taught during the day.

Nonetheless, implementation of successful DD projects further developed project management, commercialization and customer service skills. This was “a huge learning curve” but participants enjoyed “having the opportunity to actually manage a project as well and see it come through to its success.” This was supported by (external) managers of participants as it was a “heck of a learning” experience, providing them with “an awful lot of personal development and exposure.”

Collaborative learning

Collaborative learning was also “a big strength” of the program as it “opened up peoples eyes as to how difficult it is to work with other people.” In particular, the psychologists’ workshop allowed participants to identify “different working styles” and understand that “everybody kind of works in a different way.”

Additionally, “it threw you in with a bunch of people you wouldn’t normally work with” allowing participants to network and understand “what different sections of [the organization] do.” For (external) managers this “ability to engage with a wider spectrum of people” and have “a better appreciation for their skill sets” was a valuable outcome for their staff. This diversity was also good for creativity as more ideas were generated when teams had “a different mix of people.” This was observed in the DD exercise where one group found value in combining a commercialization manager’s knowledge of customers with unidentified R&D needs, and scientist’s idea of forming technical think tanks to identify their requirements.

Feedback

The psychological profiling was good for understanding one’s “personal style” and the strengths and weaknesses associated with it. However, for older staff or those who had done the tests before, the profiling identified “nothing I didn’t already know.” Observer feedback was “more relevant than standardized the personality tests.” It provided feedback that was “relevant to your job” and particularly appealed to scientists as the observers were “really impartial, writing down facts.” Additionally, attending the program as an observer provided further learning. As

one SSC noted, you *“learn just as much from observing than participating...because you’re taking what you’ve learnt and you can kind of see it being displayed by other people.”*

However, some interviewees discussed how being observed discouraged participation. As the observers are “people you work with and have a history with” staff worried that “they might be people you don’t trust or respect.” Indeed, one participant described how previous “issues” with their observer resulted in the observer making “unsolicited comments about behaviour that wasn’t on the course.” The objectivity of the observation process was therefore compromised in this case.

Meeting Senior Executives

Meeting the senior executives and the CEO on the course made them more accessible to staff, particularly as staff had “never had those opportunities before.” This interaction was seen to be “completely open,” in an environment deficient in the “trappings of positional power” allowing “honest and frank exchanges” to take place. From this interaction individuals gained; “a better understanding of how the organization operates,” what its “challenges and stresses are” as well as an “understanding of what drives” the executives.

Coaching

Participants referred to their experiences of coaching the least in their recollections of the LDP. Although, staff enjoyed the coach from the development centre due to “stories” of his work experiences and facilitation of group reflections following learning exercises. Additionally, after meeting the CEO and executives on the program, some participant’s developed mentoring relationships with them. As one scientist leading their DD project team described, *“[the CEO] gave me a book...about management in an R&D environment and it had a few notes on committees and how they were hopeless unless you had a strong leadership presence... also if you have sub-committees you can delegate to and we did that in the end.”*

Job assignments

The various job assignments following the LDP were also valuable opportunities for continuing one's learning. Implementing a DD project is included here, along with; "workshops" to develop organizational strategy, attendance at conferences, industry networking events on behalf of the company, additional personal development courses, secondments to other groups or businesses, and presentations of annual group performance to the executive team.

Providing the conditions for shared leadership

A number of conditions were important for establishing shared leadership including a shared purpose, creating a mindset for shared leadership, and instilling a sense of voice (Carson et al., 2007). Whilst these were not originally included in the main propositions, it became apparent that these were essential to the program. These conditions were introduced through the LDP with the CEO and executives playing a significant role in this.

Shared purpose

The organizations vision "to do good science as well as delivering good solutions that the industry can take advantage of" played an important role in this program. The program provided an opportunity for the CEO to communicate this vision personally and whilst staff did not develop this vision they valued the opportunity to discuss it. As one scientist described this helped them identify with this vision as "his motivations for what he did were so obvious...and very contagious."

Moreover, the customer service exercises developed a service-orientation and raised awareness of the need for industry engagement. Furthermore, as the groups were diverse, this purpose provided a sense of commonality. As one SRS described: *"The good thing about having all the different disciplines there, scientific and non-scientific is that you have to come back to the lowest common denominator which had to be enhancing wealth for New Zealand."*

Mindset for shared leadership

As described earlier, the organization was previously run in a hierarchical manner and therefore staff had a “tendency to think of leadership as always being top down.” However, the CEO’s communication of “leadership from within” instilled a mindset that leadership could be “devolved” and directed towards the “middle, upwards and down.” This helped participants overcome their views of leadership as formal, positional power, and instead participants described shared leadership as “everybody stepping forward and thinking about things that could change and actually acting on that.” As the program was open to all staff, this was a “powerful symbolism” of this message. Additionally, the executives provided guidance and resources to staff attempting to share leadership, which showed that “they really believed in what they said.”

This shared approach was seen as “an appropriate thing for a science organization,” as scientists “don’t like being told what to do.” The opportunity to lead from within “resonated” with the scientists who are “driven by thinking and implementing and being challenged.” Sharing the organizational leadership provided an opportunity for staff to “enrich the organization from the ground up rather than hierarchy down” and “bring a wider range of ideas to the table as opposed to any one single person.”

Voice

Participants perceived the CEO’s dragons den challenge of “what are you going to do about it” as a “mandate” to “put forward their ideas and to try and implement them” in the wider organization. Participants therefore felt “empowered” to be proactive and “just do it.” The opportunity to attend strategy discussions also encouraged staff to voice their ideas for the organization’s future. This signalled to staff that the executives “recognize that we can actually play a part in what the organization does,” However, this influence was limited by hierarchy as participants came to “realize that you’re not actually part of the leadership team so you don’t actually have any authority to do anything.” Nonetheless, whilst staff were “not able to authorize change” they valued the opportunity to “comment on it” and “say what’s possible.”

Vertical leadership

As described above, the CEO and senior executives were highly involved in the program and establishing conditions for shared leadership. One (external) STL noted, this was the “critical difference” in this program compared to “previous versions.” Instead of “just being a name you hear bandied about” participants were “able to see [the CEO] and hear him talk and get a feel of what he was about” which was “very powerful.” The CEO was also seen to have “a strong science background” which was “in his favour” when it came to interacting with science staff. The CEO was therefore displaying transformational leadership, by interacting with staff in a personal, individualized setting, providing a vision for staff and leading by example in his strong motives and encouragement of this purpose which participants found “contagious.”

Developing leader identities

As proposed in this thesis, developing shared leadership involves building both individual leader and leadership capabilities across the three levels of identity; individual, relational and collective (Day and Harrison, 2007). The design of the program helped to develop these identities by developing self-awareness and self-confidence (individual identity), social skills and a service orientation (relational identity) and establishing a shared purpose (collective identity).

Individual identity

Whilst a small number of participants “always thought” of themselves as leaders, most developed greater self-awareness and self-confidence that helped establish an individual leader identity. The personal feedback raised self-awareness and helped participants realize they had “strengths” in certain “leadership qualities” that helped them realize this identity. This was particularly important for a scientist as “knowing yourself” was “not natural” and the LDP them to identify strengths outside of their technical roles. This can be seen in the excerpt from a scientist; *“The feedback is honest and reflects the strong points that you have but also provides a good idea of what you need to work on... I think for someone like me it reinforced that I*

would be suited to a leadership role in the future and research wasn't necessarily the one thing that I was good at."

The new mindset that individuals could be leaders without formal authority also contributed to the development of this identity. Participants had "the confidence to put their hand up and lead" without positional power. As one science support coordinator described; *"I've realized that I can be a leader and have a lot of influence without necessarily be a line manager, which is important for me because I don't really have that many people reporting to me."*

The activities and job assignments also provided opportunities take on leadership roles, and promote oneself as a leader. Where the program feedback or individuals in the organization recognized this role through praise or in some cases a promotion, it reinforced this identity. This was particularly important for those who already felt they were leaders, as the LDP *"allowed other people to see that I had that potential."*

Relational Identity

In regards to the relational self, participants developed greater social awareness and an "understanding the personality of the person you're interacting with". The shared leadership approach enabled this as leaders from within "understood what its like to follow" and they were therefore "conscious of how we get buy in from ourselves." The LDP built on these pre-existing self-concepts as participants learned "what a leader is and what is expected of a leader." Additionally through the LDP participants commonly learned to self-regulate a tendency to "cut people off" when they were "spouting nonsense" and were "more conscious of letting people have their say." One researcher summarized this learning; *"I feel like I became more sensitive to the way different people operate, and I accept now that people in communications think differently to the way that we do. But that's ok and I like bringing all that together."*

Scientists also described how identifying with the shared purpose meant relationships with industry engagement staff and customers became more salient. Participants described how they placed *“more importance on the client’s needs”* whereas they previously *“paid lip service to that idea.”* Additionally, the collaborative learning exercises helped scientists and business staff understand the need for “co-dependency.” As one assistant noted that instead of scientists viewing industry engagement staff as an external “threat” in the relationship with customers, they instead “learnt that it can be a joint venture together.”

Collective Identity

Whilst most business staff already accepted the industry engagement vision, the scientists broadened their professional identities to incorporate the higher-level organizational identity. These individuals described a change in orientation from an “insular” team focus to “having a bigger perspective in terms of looking at the company.” This identity was tied to the development of a shared purpose that was initiated by the CEO, developed in the various customer service activities, and were socially reinforced through networking and interactions with colleagues. As one SRS commented;

“every course I’ve been on, the sense was this was a great organization struggling to get out and I was the only person who sees it. It was a tremendous sense of oh you see it that way, oh you see it that way....And it wasn’t just about the technical people vs. the administrative people. Everyone was on common ground about what the potential could be and should be.”

This identity came across in a variety of comments including; “understanding more about the organization that *I’m part of,*” “I paid more attention to the needs of *my* company” and the collective sense that “we are all driving in the same direction.” This collective identity had strong implications for those who did not agree as “people who don’t have that attitude normally wouldn’t stay with us for very long, they move on.”

Summary

The design of the LDP played a major role in the development of shared leadership, and the development of a leader identity across multiple levels. The collaborative, action learning experiences and feedback developed individual leader capabilities (self-awareness, self-regulation) as well as social leadership skills (social awareness and customer service orientation). Self-awareness was instrumental in developing as an individual leader, whilst social awareness and a service orientation helped broaden ones relational identity and improve relationships with other staff and customers. These were also essential to the organizations vision of industry engagement, which also served as the basis for the collective identity. This provides evidence in support of proposition one. Additionally, the involvement of the CEO and senior executives on the program was instrumental in providing the conditions for shared leadership, which also contributed to these identities.

Evidence of Shared Leadership

Participants described instances of shared leadership that was classified as upward, downward, or lateral influence as described in the original definition from Pearce and Conger (2003). Examples of these influence types are presented in Table Eight. Overall, LDP participants recognized the value of sharing influence and using “all the intellectual grunt” in a group. Upward influence involved providing greater input to managers whilst those in leadership roles sought greater input from followers and encouraged them to lead themselves. Non-management staff sought to share leadership with others as well as encourage their colleagues to be more proactive. External staff confirmed these actions describing how the interactions with LDP members became more “positive,” “more respectful” and managers were “less dictatorial.”

Behaviour	Example
Upward influence - Pressuring managers - Providing input to leaders	<p>I went and talked to three different people and one of them basically said well you've got to talk to my boss so I went up and I just kept going and visiting him once a week until something was done." (Engineer)</p> <p>You definitely see the leader, like one of the guys in our group he was one of the more outgoing guys and it would be like ok you can take the lead on that...But also we don't want to sit there being told, we want to be able to have a complete input so that person goes away with those ideas and that input. (HR assistant)</p>
Downward influence - Seeking input from followers - Supporting less experienced staff	<p>One way of getting respect is to have an open policy where you have transparency and regular conversation, getting their feedback and ideas and to articulate your thoughts and your vision really effectively so that they will understand where you are coming from...its not a dictatorial approach. (Science Team Leader)</p> <p>I was sort of wanting [LDP participants] to manage the [Dragons Den] project. So I wanted to avoid not doing that for them. Just provide some of the things in the background that they probably hadn't thought of. (Project Manager)</p>
Lateral influence - Collaborating with other staff - Encouraging colleagues	<p>So bringing people from different groups together who work on roughly the same technologies, and um try to initiate stronger cooperation and find things we can work on together...That's what I try to do now but that's a slow process. (Senior Researcher)</p> <p>There were a couple of instances where I got people to do things because they had been whining about them and it's like well you know you could do this and so then they've gone and done it (Scientist)</p>
Collective Influence - Utilizing individual strengths - Sharing influence - Collective input	<p>The more that we talk, we are not necessarily aligning in everyone's viewpoint but everyone certainly has a better understanding of the different viewpoints and strengths and weaknesses and that's only ever a good thing so the more we can play to peoples strengths and avoid their weaknesses the better in terms of project delivery and output. (Operations Manager)</p> <p>We had this quite communistic approach where we were very sharing and caring in that if someone was too dominant in the first exercise, the group moderated its behaviour so they were shared around. (Planning Manager)</p> <p>I sat in on a couple of interviews for a position we had and we went back in and discussed the application...It was very thorough and it was very diplomatic...So it would be like ok let's look at this application, it was not suitable its not a good fit, ok so let's go through why it's not a good fit. So it was about really going around and saying ok were all on the same view point here with that one, move on to the next one (HR staff)</p>

Table 8 - Table displaying examples of shared leadership categorized as upward, downward, lateral and collective influence

LDP alumni

One of the intended outcomes of the LDP was to develop a future leadership cohort who represent the identity of the organization and establish standards and aspirations related to this. Most interviewees felt the alumni were “a reasonable bunch of future leaders” with one external manager describing that his staff “have stood up and led stuff.” Moreover, most external staff felt that “a majority of [alumni] reflect” the organizations new goal. However, there were some negative responses to the LDP cohort including a lack of collective influence amongst the alumni, and perceptions of “favouritism” as described below.

Lack of collective influence

Whilst the alumni was a “good set of contacts” throughout the organization that made “doing things with people outside of your group much easier,” the influence of the alumni as a collective whole was limited. Despite forming “really strong ties” with individuals from the same program, staff felt that the goal to “create this mass who would all interact and move the organization forward...didn’t really happen.” Instead of the collective efforts by the alumni, individual efforts in pursuit of the shared purpose were more common. As one SRS described; “I see the individuals as important but I guess I see the links between them as being relatively weak.” The reasons for these weak ties included the extensive size of the group, technical specialization that limited scientific collaboration and distance from the main centre.

Negative opinions of LDP alumni

Within the organization there was also the perception that there was “an element of elitism” associated with the LDP. The “alumni” became an email group, was present on the organization’s Facebook page, and contrary to program descriptions staff noted there were “general discussions that only LDP people were invited to.” However, the staff in the alumni did not have this elitist attitude. It was also acknowledged that as participation was voluntary those who chose not to participate understood that they were “an instrument of my own destiny” and this decision was the reason they were not part of this elite group.

Shared leadership and Employee Engagement

As indicated in earlier sections of this chapter, prior to the LDP staff were more engaged with their work and their teams than with the organization. However, interviewees indicated that both work and organizational engagement increased following the LDP although the increase in organizational engagement was more notable for scientists. A number of antecedents were discussed in relation to this as presented below.

Increase in work engagement

When participants were asked if the LDP increased their work engagement, most reported no initial change. Scientists in particular “typically had a huge emotional engagement in their work anyway” due to the length of time it takes to build a career, and enjoyment of the technical work. This also matched the survey data with categories for “my job” and “my team” rated highest. However, when asked “what did you do differently following the program?” participants described making a number of cognitive, emotional and physical changes to their roles. The overall increase in engagement appeared to arise from the sequential development of each component over time rather than instant, simultaneous expression. As one scientist described it was “more of a smouldering thing rather than a fire.”

Cognitive engagement

In general, cognitive engagement (attentiveness in ones role) was identified as a more proactive mindset and the increased capacity to draw on knowledge developed on the program. The proactive mindset meant participants spent more time thinking “outside the square,” and “coming up with ideas” to improve their work. A number of staff also described how they drew on the skills and concepts from the LDP in their daily work, particularly the awareness that that “everybody works in different ways,” thinking more about industry engagement and “the needs of clients.”

However, for some this increase in cognitive resources meant some participants started “looking for an opportunity to apply these things,” with some realizing that these opportunities existed outside of their current role. These individuals began to

disengage with their current work as one scientist described; the LDP “made me want to look for the opportunities in the business side of things a bit more.” These were often the same individuals who were “seeking more” from their roles prior to the LDP.

Emotional engagement

Despite scientists describing high emotional engagement with work, they also indicated an increased emotional connection or comfort with their roles following the LDP. This was partly due to an increase in skills and knowledge that helped them feel more confident and comfortable in leadership positions as one STL described; *previously I would not be able to handle certain situations or did not know how to do it and that was the downside of the job.*”

Additionally, increased self-awareness meant participants were able to “utilize experiences and skills that aren’t being utilized at the moment” and therefore individuals felt more “passionate” about their roles. As one STL described, they recognized their passion for mentoring in their home-life was applicable to “my workplace” and this resulted in a greater emotional connection to their role as “this is what I love doing and this is me.”

Physical engagement

Participants expressed their cognitive and emotional engagement in their physical behaviour by; being more proactive in their roles, voicing their ideas, and taking on additional tasks. They often spoke about their experiences and ideas with colleagues and were “more proactive” in their relationships with customers. They described how they made more frequent contact with customers, asked more questions to understand their needs, set up industry engagement initiatives and encouraged their colleagues to follow suit. External staff confirmed the increase in industry engagement. As one student described, he saw observed physical and cognitive changes in his colleague; *“whenever we end up talking about research that’s relevant to his field you can see that he’s immediately trying to link it to the contacts that he’s made with industry...immediately as he went on the program he’s also gone out and visited a lot more companies...”*

Moreover, the identification of personal strengths and new interests were physically pursued by: taking more specific courses, establishing mentoring relationships, joining professional organizations, taking on project management roles, secondments, and in some cases formally changing roles. The opportunity to change one's role was important for those who were seeking more as one scientist turned commercialization manager told; "the fact that I'm working in the commercial space that is linked to technology, suits me perfectly. I actually find my tech background invaluable."

Increased organizational engagement

Participants responses to an increase in organizational engagement indicated a clear difference between engagement with work and the organization. As one scientist commented, the LDP did not alter their engagement work but "*invested in the whole company as a whole, and the fact that there was stuff that I could do and that it was worth doing – yes.*" However, differentiating between work and organizational engagement was a difficult process in other cases, as some roles necessitated organizational engagement, and others chose to express their organizational engagement by increasing work engagement. As one STL described they focussed on their role performance as they felt that "*for this organization to be successful we have to have a quality of science outputs at a certain level...so my realization was that really I should just focus on those.*" As a result, differentiating organizational engagement was based on two criteria; (1) cognitive, emotional and physical investments had to relate specifically to the organization and (2) were not a part of one's typical role.

Cognitive engagement

Also mirroring cognitive work engagement, participants described being "more willing to engage" with the organization and proactively thinking about their roles as organizational members. Participants had a broader perspective "than what is relevant in your day-to-day role" and were "thinking more about the strategy," the "needs of the organization" and the "context that the organization has to survive in." This was common for scientists who previously "[didn't] really care as long as I could keep on doing what I was doing." Additionally, participants were more aware of the

needs of other groups in the organization as a result of their broader relational identities. As one STL described *"we are on the lookout for work that relates to other sections of the company."* External managers also described how their staff had a greater "perspective of where and how their technical work fits within the larger organization," and had generally had a "greater willingness to contribute and maybe a little less cynicism."

Emotional engagement

Following the LDP participants described increased feelings of ownership, loyalty, and identification with the organization. Participants commonly described feeling "a sense of empowerment" and "ownership" in the organization as they had greater input in the organization. In addition, the LDP symbolized the organization's commitment to staff development, therefore staff "were more passionate about the organization" and "through that became more loyal." The adoption of the collective purpose also contributed to this attachment and is reflected in the comment of one SRS: *"That's one of the things that I identified with on the LDP, is that's an organization I want to work for. If I wanted to do fundamental research I would apply to universities."*

Physical engagement

A number of participants followed up on their strategic interests by participating in the various organizational strategy meetings and committees. Participants also invested a lot of physical resources into implementing DD projects, or contributing "man hours" to support them. The most common physical contribution was again encouraging their colleagues to be more proactive within the organization, especially to take part in the LDP with external interviewees confirming alumni "certainly talked" more about the organization and the program. External interviewees also noted the alumni were "organizing seminars," "asking more questions in "public meetings," and "leading some of these company wide initiatives." As one engineering technologist described; *"they were more involved outside of their current job...more involved politically, more involved even outside of [the organization] with industry, trying to promote [the organization] and what it meant."*

Summary

In regards to proposition two, interview data indicates participation in the LDP appeared to increase the levels of work and organizational engagement - although as the next section will describe, these feelings were not always enduring. Nonetheless, the distinction between the two concepts was clear for scientists who described a more significant increase in organizational engagement. In general, the LDP encouraged participants to have a broader, proactive mindset in thinking about their work and the organization, which led to a number of physical investments and emotional satisfaction. The cognitive mindset, and ability to make physical changes to ones role and position in the organization were related to a greater emotional connection to ones work and the organization. This indicates the three components may be interlinked in a process of engagement.

Factors Contributing to Work and Organizational Engagement

Multiple variables contributed to the levels of employee engagement described above. These variables included the opportunities for learning and development, perceived organizational support, the provision of a number of job characteristics, and job crafting. These factors were often overlapping, and simultaneously contributed to feelings of engagement. However, a number of barriers were also identified which either decreased or prevented further engagement.

Opportunities for learning and development

In the first instance, the LDP - and the various assignments arising from it - was an opportunity for learning and development that participants enjoyed and gained from. As one HR staff member commented it *“provided people with information and an opportunity to go in and learn a little bit about themselves.”* Moreover, participants also gained self-awareness, confidence, social-awareness and “tools” to apply in their roles. This provided cognitive resources they could draw from and physically apply in their roles, thus increasing their emotional engagement.

Additionally, the LDP provided scientists in particular with an opportunity to “try something different” and this allowed those in pure research positions “do science and management at the same time” which was a “nice change.” As one senior researcher who implemented their dragons den idea described, this task variety contributed to their engagement; *“[the LDP] gave me a lot of energy to do the ordinary things. Not just the ordinary things, there was a challenge in terms of going from this big global company promotion thing to the nitty gritty of what I did...So that was kind of fun but it didn’t make the details less, um I didn’t do them less well...I probably did them better.”*

Perceived organizational support

The LDP was also seen as an expression of organizational support as it represented a significant monetary investment in personal development, provided an opportunity to contribute and recognition of staff contributions. As one PM described, the organization provided an “opportunity to learn and to reflect” which was something that “most organizations don’t do.” The ability to partake in the LDP was seen to be recognition of one’s value as it showed participants that “you’re an important person, you are worth developing.” Moreover, the LDP provided staff with opportunities to contribute to the greater organization which was recognized via the support and encouragement from senior executives. As one commercialization manager described, this provided the opportunity to engage as they previously “felt like they weren’t allowed to engage but it sort of empowered people to if they had ideas, to bring them to the table one way or another.” As described earlier, this showed that the organization “realized the value” of the “knowledge down at the level of those who are doing the work.” This investment in staff development and the opportunity to contribute to “significant business decisions” therefore increased emotional engagement with the organization as described below.

Reciprocal investment

Engagement that resulted from a desire to reciprocate the organizations investment was a minor theme. Some participants described how the organization “invested time and money in me” which led to an “obligation to go further with that.” As one SSC described the “investment into personal training” and “the amount of work [the executives] did in the course probably did increase my commitment to the organization.” Additionally, the ability to “play a part in what the organization does” also led to reciprocal engagement as participants described: “you’ve been told we want people to talk, [so] you feel entitled to.” This contributed to greater engagement as one SLT described; *“we recognize now that we can actually play a part in what the organization does. So in that regard, when one sees this view that they are valued in that sense, everyone lifts their performance and feels better.”*

Autonomy

In the same manner described above, the mindset of shared leadership to “just do it” regardless of formal position provided staff with a sense of autonomy. As one scientist came to realize, “you don’t need some title, you do have some autonomy” and this gave staff the freedom to “pursue something that you think is interesting and will have value.” This was “inspirational” for staff as it “allowed them to work on things they had come up with themselves.” This feeling of autonomy contributed to the positive, proactive attitude towards work and the organization and enabled the physical expression of this.

Task identity

Additionally, participants came to identify with certain aspects of their roles (including their roles as leaders), or new roles entirely. This can be seen in the examples described above of STL who found that mentoring was “where my heart is” and the scientist turned commercialization manager whose new role “suited me perfectly.”

A greater sense of engagement also ensued where participants felt their tasks or roles were more significant, which was also related to the development of a collective leader identity. As one researcher described “commercializing research for the betterment of NZ industry” became something they “really feel passionate about” making their work more significant than the fundamental research role that they thought they had. These characteristics were developed mostly as a result of job crafting as described below.

Job crafting

Job crafting, or physical and cognitive changes to task or relational components of the job had the most significant impact on participant engagement as it helped individuals identify with their roles and made their work more meaningful. This was associated with the development of new identities and the autonomy to craft one’s role to emphasize these. Physical and cognitive crafting were the most common behaviours with relational crafting described in relation the frequency of interactions with others and also the nature of relationships as seen in Table Nine.

Physical task crafting

As discussed above, the self-awareness and skills gained through the LDP highlighted strengths or more desirable tasks. This led participants to physically craft their jobs to utilize these new capabilities and roles with greater skills variety, task identity and meaningfulness. The more meaningful work therefore increased engagement. In general the LDP allowed participants to “work out what was important to me” and provided them with the autonomy and opportunities to follow up on this as can be seen in the case of a second scientist turned commercialization manager in row one of Table Nine.

Form	Example
Physical task crafting - Identification of strengths - Physically altering tasks - Emotional engagement	“Coming from being a chemist, and going in there and doing all the exercises, being observed and having feedback on how the observers saw my interactions...So I sort of learnt a lot about myself and the business acumen that I didn’t realize I had and I guess it empowered me to think that I was a scientists that was interested in the business side of things, and I should pursue that because you know it’s not the norm that scientists are interested in that [laughs] they usually shy away from that. Now I’m finally actually taking advantage of that and moving into a business role...So now, it feels like, you know, the skies the limit. ” (Scientist – Commercialization manager)
Cognitive crafting - Collective identification - Emotional connection - Physical and cognitive engagement	“Previously I didn’t think too far out of the little box that I was in which was just a research...So just a much broader outlook on what it is that as a researcher I do and that’s what I’m really interested in doing is commercializing research for the betterment of NZ companies and I think that’s something that really drives me and I feel really passionate about...and that’s something that I hated previously, not being able to get excited about what I do....So I certainly started investing a lot more time into understanding the bigger picture and looking at ways that I can contribute more. Like what’s the best way that I can apply myself to serve the interests of the company.” (Scientist)
Relational crafting - Additional relationships - Nature of relationships	“Work wise I certainly put my hand up for things coming through for example [another group] wanted to talk and I think oh yeah no worries. Yeah so that’s probably the biggest change is my interaction with my colleagues.” (Research scientist) “I was probably the only person on that course at the time that was in the business facing or industry engagement team so I discovered that a lot of my science based colleagues saw people doing my role through a set of perceptions that weren’t necessarily accurate and so I discovered that there was a leadership role that I could play in terms of helping some of those people learn about what businesses really think and how businesses like to interact with us.” (Business development manager)

Table 9 - Examples of physical, cognitive and relational crafting by LDP participants

Cognitive task crafting

The development of individual and collective leader identities changed the way they some participants viewed their role (e.g. cognitive crafting) and participants physically altered their roles as a result. This includes the previous examples of leaders who gained greater skills and capabilities that helped them feel more comfortable in their roles as well as staff who identified with the new industry engagement purpose and invested more energy into relationships with customers as a result. The organization therefore provided the skills, motivation and opportunities for crafting as one researcher describes in row two.

Barriers to engagement & shared leadership

Whilst most of the comments regarding employee engagement were positive, there were also a number of factors that limited engagement – some of which were related to the conditions for shared leadership. These barriers included: burnout as a result of over-engagement, cynicism from non-LDP members, a lack of rewards, and conflicting goals.

Burnout

Whilst participants enjoyed the opportunity to partake in the LDP and job assignments that followed, this contributed to burnout in some cases. Participants described how it was easy to become “over-projected” following the LDP and work then became “a play on time and how that time gets managed” which decreased engagement. One HR staff member describes this below.

“When I was going through the project it kind of had positives and negatives. Once you’re doing it, you’re engaged...but then you feel like oh this is too much and I have all my day-to-day work...and then you go there and everyone’s worked on this piece of positive thing and you’re like ‘oh this is great and I’m a part of it.’ So I think you’re still engaged but you’re a bit burnt-out and then you’ll be positive again.”

Cynical mindset

Whilst most staff were supportive of the alumni, cynical staff within the organization also presented a barrier to engagement. In particular, some participants “suffered from cynical manager syndrome” where managers were “more anxious to accept [ideas] that were proposed to them.” This was “quite frustrating” and made some staff hesitant to be more proactive as one scientist described; *“if I come forward with a lot of ideas [my manager] might be like oh don’t bother pitching that because nobody’s listened to that in the past.”* Additionally, participants also described how some colleagues were sceptical of the LDP and “like to make fun of [the LDP]” and which “brought you back down.”

Lack of rewards & career development

Some participants also described how their initial feelings of engagement decreased when they realized their physical efforts were not rewarded equally. As one SSC described, the reward they received for extra-role tasks was “just a pat on the head.” The coordinator described how this diminished their feelings for the organization as they had seen others being offered new roles but there weren’t “any opportunities [coming] my way.” Some external managers also felt the LDP created “expectations that there would be great opportunities for [LDP participants] down the track.” External managers described how these expectations made “the management of peoples careers much more challenging” as “there’s just not that much responsibility to give.”

Conflicting objectives

Some scientists also struggled with the conflict between the organization’s purpose to work with NZ businesses and the previous strategy, which allowed them to pursue their professional goals. Whilst all LDP interviewees did “buy into” that “high-level philosophy”, scientists felt conflicted as “that’s not the only thing we should do.” This was a source of frustration for some scientists and may have reduced engagement.

Summary

A number of factors were found to contribute to work and organizational engagement including the opportunity for learning and development provided by the LDP, fair rewards as well as the perception of organizational support that led to a reciprocal investment by staff. Moreover, job crafting provided staff with greater skills variety and a task identity that enhanced the meaning of work and made engagement more likely. Additionally, task identity was shown to be a contributor to cognitive crafting, not only an outcome of physical crafting. This therefore supports proposition Three and Four. However, a number of factors were shown reduce engagement indicating that initial feelings of engagement were not always enduring.

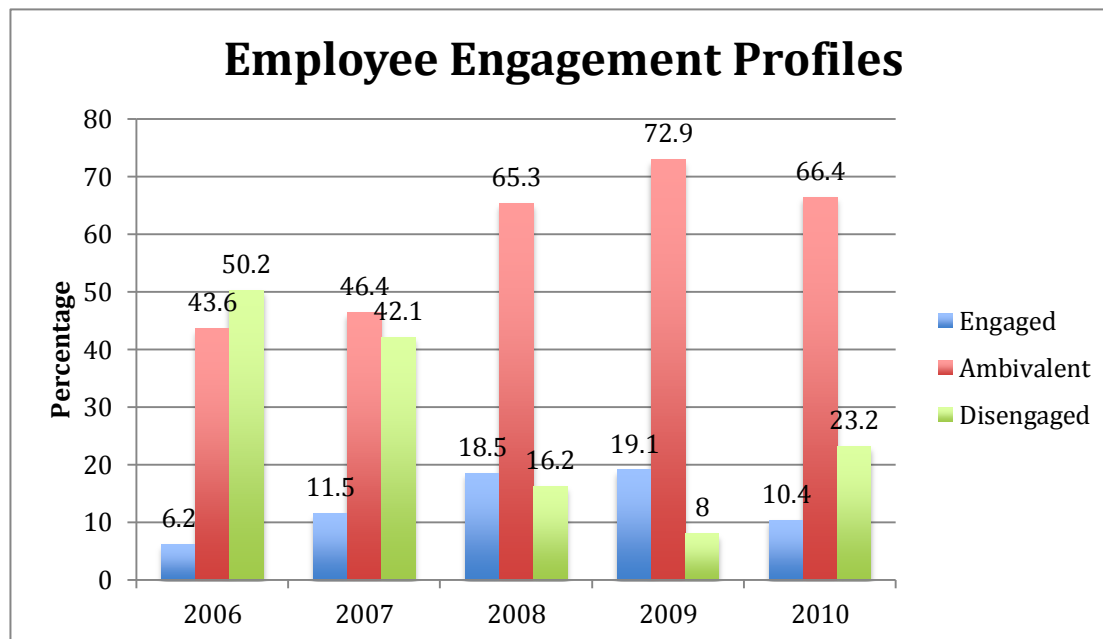
Enhanced Individual Outcomes

Organization-wide levels of organizational engagement were used as an indicator of enhanced individual outcomes as it represents cognitive, emotional and behavioural reactions to the transformation. Data from interviewees were variable with some staff sceptical of the LDP's measurable impact on organization-wide engagement, whilst others fully promoted its impact in this manner. However, whilst some interviewees were sceptical of the impact on organization-wide engagement, surveys showed evidence of increased organizational engagement as can be seen below.

Increased organization-wide engagement

In comparison to the “abysmal” results of the 2006 survey, the most recent 2010 survey showed a shift in the distribution of engagement profiles with the number of disengaged staff decreasing by 27% (Graph One). However, the percentage of engaged staff (10%) contradicts interviewee descriptions of increased engagement following the LDP as one would expect this figure to be closer to 20% - the percentage of alumni in 2010. The increase in ambivalent staff may explain this as it indicates greater engagement in some components but not all three simultaneously and reflects comments that engagement developed slowly rather than a “burning fire.” Alternatively, the conflict between professional and organizational objectives (described above) could explain the lower than expected levels of engaged staff.

Nonetheless a senior executive noted that *“the trend was very much upward”* although the 2010 levels of engagement indicated a potential downturn. This may have been a result of plans to restructure the organization, with uncertainty regarding the organization's future objectives given as the reason for discontinuing the surveys. This may also explain the lower than expected levels of engagement as levels in 2009 exceed the percentage of staff who would have graduated the LDP at this point. However, it was also acknowledged that some staff “just generally want to do their jobs and don't want to think beyond their narrow bounds” and were “never going to engage” with the organization. Additionally, “older people” were likely to remain “cynical” because “they've seen changes over the years that haven't worked.”

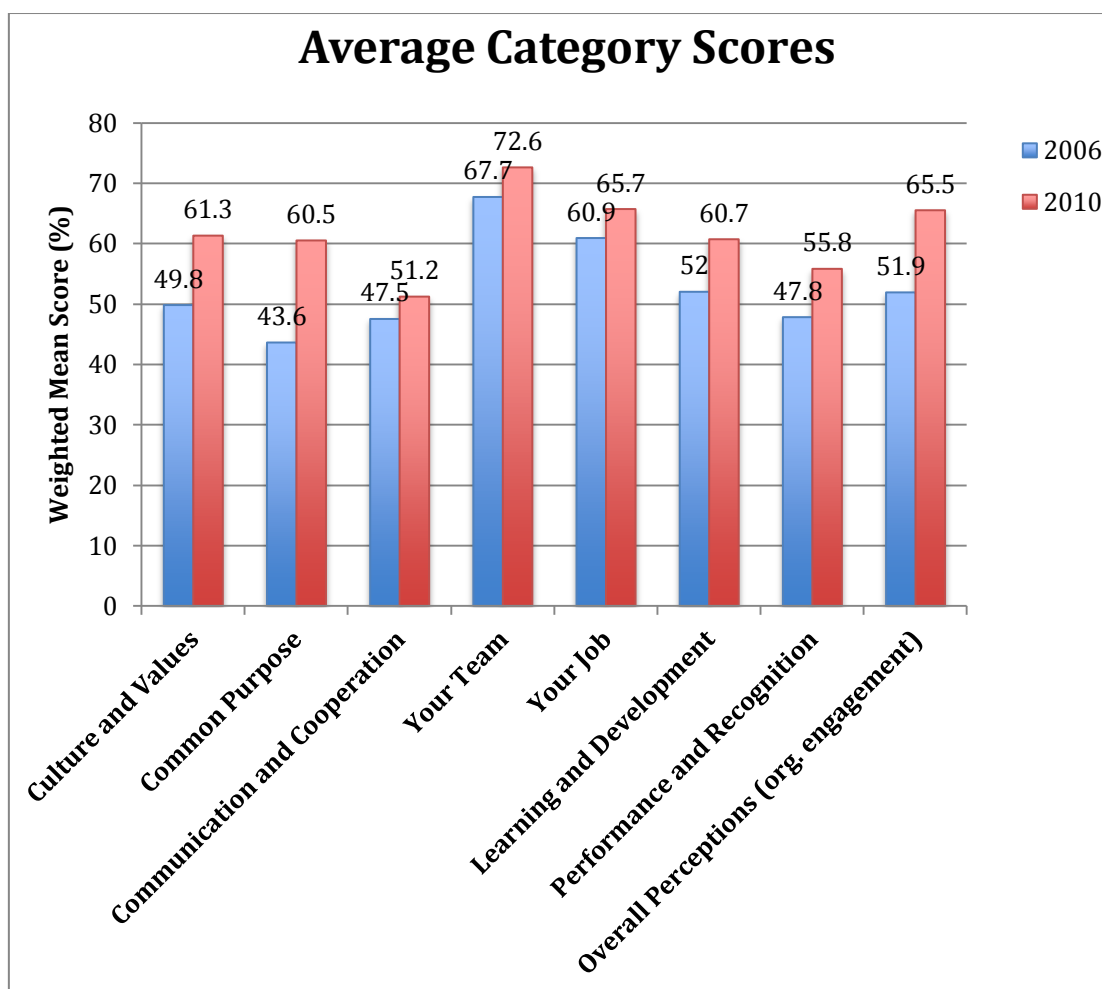


Graph 1 - Employee engagement profiles from 2006-2010 indicating the percentages of engaged, ambivalent or disengaged staff

Cognitive & Emotional Change

Graph Two indicates that emotional engagement with the organization’s new purpose was more common with category scores for culture and values and common purpose showing the biggest increase between 2006 and 2010 (11.5% and 16.9% respectively). Overall perceptions also rose 13.6% providing support for an increase in organizational engagement whilst ratings of confidence in the organizations leadership increased by 38.8%. These ratings correspond with an 8.7% increase in ratings for learning and development indicating that the LDP may be associated with greater organizational engagement.

Interviewees supported this idea, describing how the LDP created a “great deal of self- belief that this is who we are, this is what we’re good at and this is what we can do for NZ.” Some staff felt that commitment to the organization’s goal was common across the organization “whether you’re on the science team or the dark side of the organization;” although as described above, others staff didn’t fully commit to this purpose. Additionally, staff also described how “changes in requirements to funding and grant proposals” made the focus on industry engagement “more obvious.” Therefore, external changes forced to “funnel” their ideas to meet the new requirements.



Graph 2 - Graph showing the average category scores from 2006 engagement surveys compared to 2010.

Behavioural Change

Some interviewees felt that staff were “engaging with industry more” as a result of the LDP. As one project manager commented; *“when I first joined it was like this is my science, this is what I do but now there are a lot more people saying well we’ve got customers out there and this is what they want done and then they bring their expertise to help.”* However, not all interviewees supported this view. Some were “not sure” whether the industry engagement improved in line with the organization’s vision but most participants felt the organization-wide industry engagement projects arising from the LDP “certainly contributed to that.” Again however, external influences

played a role in behavioural support for this vision. Participants described how the organization's "client base" was "the biggest constraint" on physical engagement with the new strategy as businesses appeared to be "less willing because of the sheer cost" of R&D activities.

Factors contributing to organization-wide engagement

The LDP was said to develop a critical mass of positive, engaged leaders who went on to influence the engagement of others in the organization and were accredited with creating a more "positive vibe" in the organization. In particular, emotional contagion, the implementation of organization-wide projects and transformational leadership behaviours by alumni who were seen to be prototypical of followers helped build organization-wide engagement. However, the actions of the alumni also had negative outcomes including increasing the workload of others and blurring role boundaries.

Critical Mass – LDP cohort

The LDP participants were described as "the evangelists" for the LDP and "the fresh identity of [the organization]." Upon returning to the organization, staff spread this identity by talking about their experiences, and encouraging others to go. Over two-thirds of interviewees recommended it to their colleagues or staff. The impact of this was evident in the fact that this was a major motivation to attend the program, particularly as "you trust the people who have told you about it."

As more and more people attended the program this created a "critical mass" of staff from "different parts of the organization" that "had a greater understanding and appreciation of what was going on." It was this critical mass who were seen to be responsible for driving the organizational change and "making an impact" either independently or as a collective as previously described. As one scientist described, *"everyone I spoke to about the course, I highly recommended that they go on it and the reason I did was about connecting with the wider organization...and I think the more people went on that the more benefit the organization as a whole is going to get."*

Crossover of leader engagement

In addition to encouraging others to attend the program, alumni spread engagement “like a disease” through the organization. Interviewees described how participants would “come back incredibly excited and enthusiastic and fired up and in many instances they will fire up the people around them.” External staff also described how the engagement of their colleagues “rubbed off” on them and made them feel “more positive.” As one (external) assistant described, this was an observable outcome; *“if they’re all happy and you’re the one that’s miserable you’re going to end up having to be happy because they will say bugger off or change your attitude. I think it’s quite infectious really.”*

Staff also described how this positive critical mass “outnumbered” the cynics and LDP staff didn’t “get as much criticism now.” It was therefore seen that having a critical mass was crucial to reducing the cynical mindset that disheartened LDP staff. As one researcher commented they had seen this positive spread in other groups but “there was not much uptake in our group so I guess there just wasn’t a critical mass” and therefore people “weren’t very supportive of [the LDP].”

Organization-wide projects

A number of the LDP projects were credited with “transforming the thinking in the organization.” These projects were a “role model” for the LDP and the proactive attitude it espoused where staff could “have some real impact” in the organization. Additionally, these projects provided an opportunity for non-LDP staff to engage with the new direction as one external manager described: *“a lot of people got involved because they thought oh that’s quite interesting, I’ll help or I’ll be on the panel...That was a really practical, fantastic idea.”* Furthermore, as the LDP staff “had no hold over people” as informal leaders the participation of other staff was as “real volunteers” as opposed to being “forced” by senior managers. By participating in these “high-profile” projects non-LDP staff were “recognized for what they’ve achieved as well,” reinforcing this behaviour.

Leadership Behaviours

The alumni displayed some transformational leadership behaviours that encouraged their colleagues to engage with the organization. Displays of idealized influence by alumni not identified and were only associated with the CEO's who developed "believers in [the organization]" via this behaviour. LDP alumni then transferred this belief to other staff through inspirational motivation, intellectual stimulation and individualized consideration. The alumni provided inspirational motivation by promoting the program and through the successful implementation of organization-wide projects as described above.

Moreover, the alumni provided intellectual stimulation by encouraging colleagues to be more proactive, engage with industry and to think about their roles differently. For example, one STL recalled how alumni challenged their colleagues; "*if someone says well I can't do that then they will say 'well why not? What's stopping you?' Or 'have you thought of doing it a different way.'*" One (external) student also described how discussions of industry engagement with LDP staff "makes me consider my research in a more commercial way." Additionally, LDP participants in management positions provided intellectual stimulation by providing them with greater responsibilities. As one (external) engineer discussed, their manager became less "dictatorial" and "stepped away" from the workshop floor, which "allowed people to manage their roles."

To a lesser extent, participants showed individualized consideration. This was associated with the development of a relational identity, and showed in their attempts to be more socially aware and develop positive relationships with colleagues. As one STL described they invested time into developing a staff member who "got caught up in restructuring and came out quite bitter...It took a long time for us to be able to work effectively together...but its about affirming him for what he's good at...and not being too directive."

Prototypicality

The influence of LDP members on others appears to have been enhanced by their status as “professional colleagues” and not hierarchical leaders. External staff described how they “respect their colleagues” and were therefore more likely to “listen to what they have to say.” They also had more “trust” in these leaders as they had “come through the ranks” and had the “interests of the company at heart.” This support was related to the professional identities of scientists and was not limited to LDP participants but to leaders in general. Whilst most staff described how they would accept a leader who proved themselves to be effective, it was also acknowledged by the scientists that “we value people who really manage sciencey technical things.” The LDP was therefore a good way of “growing people from within” with an established scientific background but also had “the softer skills” to effectively lead.

Negative impact of LDP cohort

Whilst these leaders had mostly positive effects on their co-workers, their proactive behaviour and higher aspirations also had some negative outcomes for others. Some external interviewees felt the extra-role behaviour was “disruptive.” As one engineering technologist described, their manager “would spend less time there because they were doing other things” which had a negative effect as staff “did not know what was going on.” One (external) group manager also complained about staff who’s higher aspirations took away from their science roles; *“it can get very frustrating for somebody when you increase their appetite for other tasks and I say well actually your job doesn’t involve that... you can’t take my money and not work at the bench.”*

Additionally extra-role behaviours blurred role boundaries, particularly between science and business staff. One senior researcher implementing an industry engagement project from the DD described how business engagement *“were challenged...because all their B.A.U. was put to one side, and they were given this extra load to do.”* In addition, some of the projects overlapped with the role of industry engagement staff.

This created confusion as one (external) student described: *“It’s difficult to draw the line because you’re trying to expand skills across different groups without merging the groups together and I think that can get quite confusing.”*

Summary

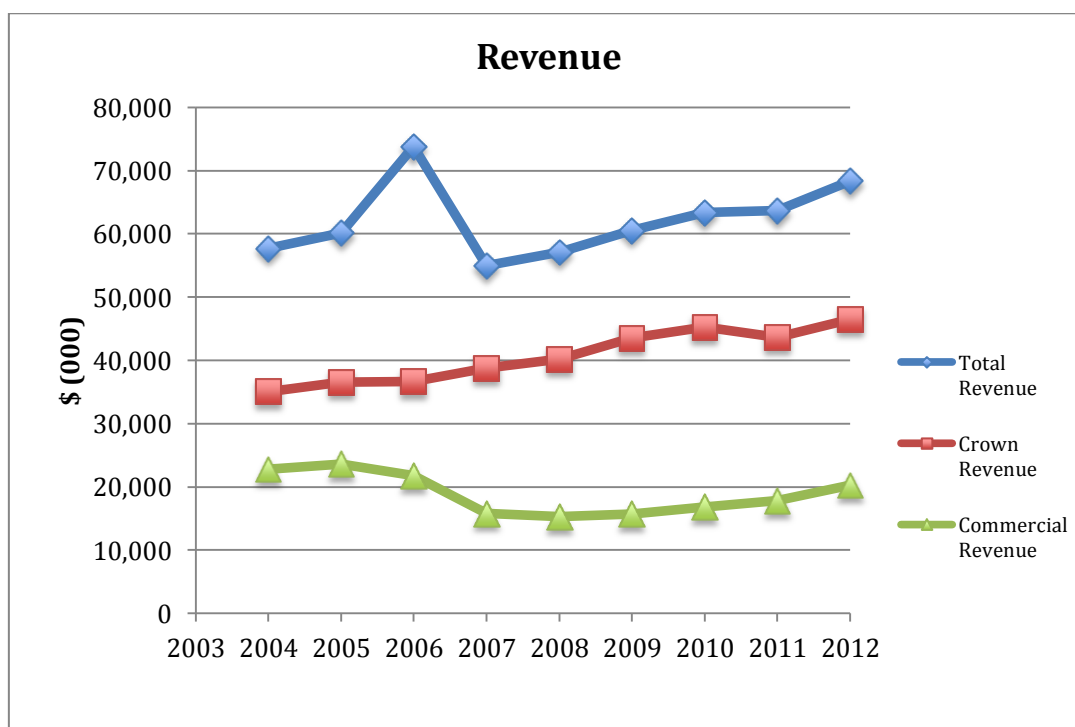
Whilst survey data showed lower than expected levels of organizational engagement, interviewees described how the alumni played a significant part in increasing the engagement of others by: increasing the critical mass, the contagious spread of engagement, displays of transformational leadership, and through organization-wide projects. This spread was also aided by the prototypicality of the LDP participants as trusted and respected members of the science groups. However, external changes to funding systems also necessitated the investment of cognitive and behavioural resources to industry engagement. Thus propositions five and six were supported by the findings but external factors contributed to increased cognitive and behavioural transformation, and the extent of this increase was not clear due to lower than expected levels of engagement in surveys.

Organizational performance

Responses to questions regarding the impact of the LDP within the organization were also varied. Some interviewees felt that the LDP helped the organization perform under the new industry focussed strategy whilst others felt that it was “part of the puzzle” but did not contribute to the organization in a “measurable way.” An overall improvement in organizational performance as a result of the LDP was not conclusive although the organization-wide projects did provide additional revenue and customer sources as discussed below.

Financial Performance

This study used revenue as a measure of financial performance, as profit presented an inflated measure due to a cash injection from the Government in 2007. As seen in Graph Three, total revenue increased by 24% from 2007 when the program was initiated to 2012. These increases coincide with the introduction of the LDP, however these figures alone do not indicate the LDP's contribution. Whilst some staff were apprehensive about "making that connection" to the LDP, a statement from the Chairman of the board early in 2013 credited the LDP with helping the organization *"transform itself from a cot case to poster child of achieving what it set out to do. Part of the six year turnaround was a \$40 million change in debt from -\$25 million to \$15 million in the bank, an increased science capability and vitality, and much more engagement with business."*



Graph 3 - Graph indicating total organizational revenue between 2004 and 2012, alongside crown and commercial sources.

Organization-wide projects

Whilst a majority of the interviewees were hesitant to attribute the increased financial performance to the LDP alone, interviewees noted the organization-wide projects contributed to the transformation. From data gathered on each of these projects, and correspondence with LDP staff involved with them, it is estimated they contributed a total of \$3.8m dollars in both commercial and crown revenue. A majority of this arose from industry engagement projects, with one in particular project, leading researchers to expand into a new field which attracted close to \$2m in new grants. In response to a request to alumni for documented evidence of projects that arose from their participation in the program, only one STL responded crediting the LDP with enabling collaboration with a commercialization manager they met on the program and together they raised \$1.7m dollars in funding for a new research project. Overall, the revenue generated from the LDP amounts to 1% of the total revenue gained between 2007 and 2012. This modest percentage may explain why participants felt the LDP did not contribute in a “measurable way.” Additionally, participants were critical that the cost of these programs and the LDP was considerable and may have outweighed the benefits. However, data to calculate the overall returns from the LDP and projects was not available.

Industry Engagement

As the organizations new vision was to improve industry engagement, commercial (industry) revenue can be looked at to see whether this may have occurred. As can be seen in Graph Two, this increased by 28% from 2007 to 2012 although this still only contributed to 30% of total revenue. However, a number of DD projects were designed around this goal and were widely promoted to the public. These projects “raised the profile of the organization,” making businesses more aware of the organization’s capabilities and also identified 150 businesses in need of R&D expertise – some of which were from entirely new sectors. This created a database of customers that the organization could “tap into” thereby, “increasing the value of the organization’s potential contracts pipeline.” However, the costs of these programs could not be estimated and some staff felt the effects of these programs were short-lived as businesses still “don’t know who we are.”

Summary

In regards to proposition seven, the data gathered in this study failed to conclusively provide support for the LDP's contribution to organizational performance and thus its transformation. However, whilst interviewees were sceptical of the LDP's contribution to performance, the projects arising from the LDP generated additional revenue and customer bases but the costs of these increases were unable to be calculated. Whilst there were criticisms of the program, overall the results presented in this chapter show that a shared leadership development program largely increased employee engagement – albeit with some negative individual outcomes – in a group of future leaders. This cohort had a mostly positive impact on the engagement of their colleagues, and potentially contributed to the transformation in the wider organization.

CHAPTER FOUR: DISCUSSION

This thesis sought to answer the research questions (1) how does a shared leadership approach contribute to organizational transformation and (2) how does a shared leadership development program impact on employee engagement. Based on previous research, a theoretical model was developed to investigate these research questions with employee engagement mediating the relationship between shared leadership development and organizational transformation. Propositions regarding this relationship were identified based on previous research. These were explored through the case of a public R&D firm seeking to transform itself from an organization struggling with a spin-off commercialization strategy to one focussed on partnerships with NZ businesses. The organization's executive team implemented a shared leadership development program to build the capabilities of their knowledge workers and transform the organization.

Summary of Findings

The findings from this study were compared to the original theoretical model, to test the original propositions. Collaborative, action learning, feedback and to a lesser extent coaching, were found to be effective in developing individual, relational and collective leader identities. Additionally, the executive team played a crucial role in establishing a shared purpose, perceptions of voice, and a mindset for shared leadership which contributed to these leader identities. Secondly, the LDP provided the antecedents to engagement including an opportunity for learning and development, POS, autonomy and new identities. These antecedents motivated participants to reciprocate the organization's investment, and provided opportunities for job crafting which made their roles more meaningful. Together these factors contributed to increased work and organizational engagement.

The increased work and organizational engagement from a critical mass of LDP participants was said to have crossed over to their colleagues. Additionally, the organization-wide projects initiated by LDP staff and displays of transformational leadership helped to lift the engagement of others. Whilst there was inconclusive

evidence of this impact on the organization's performance, the organization-wide projects that were led by LDP staff provided additional revenue and identified potential new customers. This indicates the LDP may have contributed to the transformation, although this proposition was not conclusively proven due to a lack of data.

The theoretical model was therefore updated to include these effects as seen in Figure Five below. The components of this model are discussed in the remainder of this chapter, along with their implications for practice and limitations of this study.

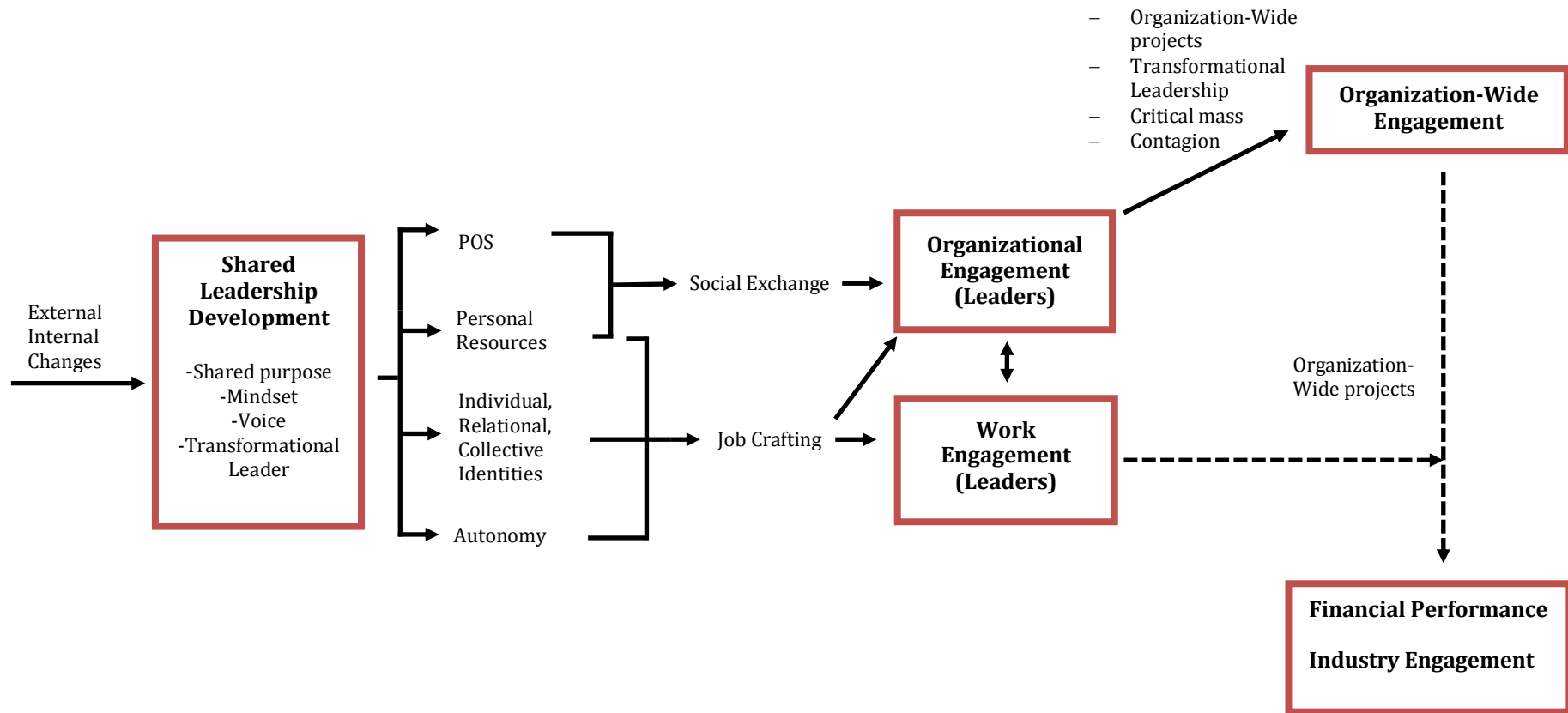


Figure 5 - Figure presenting the findings from this study mapped back to the original theoretical model. Dashed lines indicate a tentative link between concepts.

Developing Shared Leadership

This research contributes to a request for further research into the teaching of leadership in organizations as “there are as many styles and approaches to teaching leadership there are people teaching leadership” (DeRue et al., 2011, p. 370). It shows how one organization implemented a leadership development program that was open to all employees, utilized collaborative action learning, coaching, external feedback and job assignments to develop shared leadership. In addition, conditions that enabled shared leadership were provided by the executive team and helped to develop leaders across multiple levels of identity. Whilst these methods, and approaches to leadership development have been used and described extensively (e.g. Cacioppe, 1998; Dalakoura, 2010; Day, 2004), no studies have investigated their use in the development of shared leadership, despite conceptual recommendations (Day and Harrison, 2007; Lord and Hall, 2005).

Open participation and readiness for change

Making the LDP available to everyone fit with the ideals of shared leadership as a role that can be taken up by anyone (Pearce and Conger, 2003), and reduced feelings of animosity and perceptions of favouritism in the organization. This is particularly important for social identity processes, as leaders can still remain prototypical of their groups, without separating themselves as distinct from followers (Haslam et al., 2010). Voluntary participation has also shown to increase the efficacy of a learning and development program as individuals are more developmentally prepared (Avolio and Hannah, 2008; Tannenbaum and Yukl, 1992). Therefore, the open design was symbolic of the shared approach and also ensured participants were ready to undertake the experience.

Conditions for Shared leadership

This study found that transformational, vertical leaders were important in a shared leadership approach as previous work have identified (Ensley et al., 2006; Pearce and Sims, 2002). The executives acted as transformational leaders by displaying; individualized consideration in their personal interactions with staff, idealized

influence in the contagious spread of their vision, inspirational motivation in their encouragement of shared leadership efforts, and intellectual stimulation by challenging staff to improve the organization (Avolio et al., 1991; Bass, 1999). Furthermore, their presence in an environment devoid of the “trappings of positional power” may have helped participants to see them as “one of us” (Hogg, 2001), which increases identification with the leader and his or her goals (Van Knippenberg and Hogg, 2003). This indicates how important the presence of senior leaders is in a leadership development program, although a number of organizations fail to do this in practice (Conger, 1996; Dalakoura, 2010).

Providing the conditions for shared leadership

As previous research has recommended, vertical leaders played an important role in implementing, supporting and maintaining shared leadership (Cox et al., 2003; Locke, 2003; Pearce, 2004). Firstly, the CEO and executives challenged implicit assumptions of hierarchical, top-down leadership and created a mindset that staff had the autonomy to drive their own ideas, regardless of positional power. This is a critical first step in developing a shared leadership culture (Jackson, 2000; Pearce, 2004). Moreover, the inspiring vision provided a shared purpose to focus these efforts whilst the CEO’s “what are you going to do about it?” challenge provided voice and empowered staff to have input in the way this purpose was carried out. These conditions have been suggested to lead to greater involvement, empowerment and commitment may explain the link to employee engagement (Carson et al., 2007; Macey and Schneider, 2008; Pearce, 2004). Moreover, these conditions resonated with scientists as it fit the professional ideals of knowledge sharing and autonomy (Aryee and Leong, 1991; Bailyn, 1985) indicating that shared leadership may be suited to other R&D organizations.

The CEO and executives also played a key role in supporting this approach through the encouragement, resourcing and promotion of shared leadership (Carson et al., 2007; Pearce, 2004). Moreover, some of the job assignments that were initiated by the executives brought individuals together to share leadership and this helped to maintain the shared approach (Cox et al., 2003; Pearce, 2004). The key to the actions of the executives here was that they were not authoritative, and support was given on

an as-needed basis which did not take away from the shared approach (Carson et al., 2007; Pearce, 2004). Although, some of these conditions were conflicting in the wider organization as discussed below.

Dual models of vertical and shared leadership in organizations

Throughout this study, it became apparent that some of the conditions established by the executives, contrasted with that which occurred in the organization. The condition of voice was one of these as staff were aware that their influence was limited as top leaders had final decision making authority. However the vertical leaders actively sought contributions from staff and therefore, as previous research suggests, their actions supported shared leadership (Cox et al., 2003). Additionally, the mindset in the wider organization varied with sceptical managers discouraging staff ideas, and colleagues making fun of the shared leadership program. This supports previous suggestions that CEOs should ensure those in leadership positions have a disposition toward shared leadership (Conger, 1996; Pearce, 2004). The identification of the practical barriers to shared leadership within organizational hierarchies therefore contributes to requests to identify the limits to this approach (Pearce and Conger, 2003).

Shared, collective leadership or distributed influence

An additional limitation identified in this study was the development of a cohort of leaders with a shared purpose but weak collective influence. Most theoretical definitions of shared leadership are based on influence in all directions, by many individuals (Pearce and Conger, 2003). However, it is commonly operationalized and measured as an interdependent, relational phenomenon in which a group is *collectively* led towards a common goal (Carson et al., 2007; Ensley et al., 2006; Seers et al., 2003). Whilst this occurred in some instances with groups sharing leadership of a project, most cases of shared leadership involved individual alumni members leading themselves or others towards the shared purpose. Thus, within organizations, it appears that variants of shared leadership exist from collective influence to aggregated individual leadership efforts, as has been suggested by proponents of distributed leadership (Gronn, 2002).

The lack of spontaneous collective influence was associated with the large size of the cohort, a lack of interdependence in scientific work, and proximity to the central site, which have all been suggested as limitations to shared leadership (Cox et al., 2003; Ensley et al., 2006). Whilst previous research has shown shared leadership is effective for teams, it may be less effective at the organizational level due to the diverse operations, and an ineffective group size for shared leadership (Carson et al., 2007; Cox et al., 2003). However, previous research has found that external coaches can play an important role in encouraging shared leadership (Carson et al., 2007). Therefore, organizational leaders may need to focus efforts on maintaining shared leadership, possibly through the provision of more collaborative job assignments as discussed above (Pearce, 2004).

Developing leadership across multiple levels

The conditions for shared leadership, combined with collaborative action learning, feedback, coaching and job assignments helped develop individual, relational and collective leader identities.

Individual leader identity

In conjunction with the new mindset of leadership from within, the LDP developed greater self-awareness and provided tools for effective leadership which increased participant's confidence and self-efficacy. The hands-on learning experiences, and personalized feedback were particularly effective here possibly as they generated real life experiences to test and alter these identities in a safe and reflective manner. This is said to make learning more enduring (Cacioppe, 1998; Day, 2001). The development of these leader capabilities therefore provided a baseline level of leadership competence which is essential for shared leadership and the development of a leader identity (Bligh et al., 2006; Day and Harrison, 2007; Lord and Hall, 2005).

Relational leader identity

The LDP also helped to develop one's relational-leader identity by highlighting the value of quality relationships with colleagues and customers. The collaborative learning experiences highlighted the personality types of others, and the value of

integrating these in a group. This developed social awareness, skills to effectively share influence and create a supportive environment which is essential to shared leadership (Bilhuber Galli and Müller-Stewens, 2012; Gold et al., 2010; Lord and Hall, 2005). Furthermore, as many scientists were followers, this existing self-schema helped them understand their followers and the danger of a dictatorial approach to leadership. This fits with previous studies describing how social identity can affect interpretations of learning and the outcomes of such learning (Korte, 2007). Thus shared leadership may benefit from developing those with pre-existing follower self-concepts.

The customer service activities and communication of a shared purpose also emphasized relationships with customers in scientist's relational identity. Specific exercises were designed to develop a service orientation as per the organizations goals. This encouraged staff to think beyond their professional goals of scientific discovery and international recognition to incorporate the needs of businesses in addition to their professional goals of (Jain et al., 2009; Lounsbury et al., 2012). This introverted motivation has been a barrier to the effective commercial transfer of scientific knowledge in universities (Debackere and Veugelers, 2005; Siegel et al., 2003) and therefore enhancing scientists relational-self concept with customers may overcome this barrier.

Collective leader identity

Most staff appeared to have increased the salience of their collective identity as an organizational member, working towards the goal of industry engagement. The action learning exercises, job assignments and perceptions of voice provided staff with the skills, opportunities and autonomy to enact this vision as well as create a sense of ownership of the organization. Thus as research has suggested, tying learning experiences to the organization's strategy and allowing staff to influence this, focuses efforts on this collective purpose, creating a collective identity and giving work greater meaning (Cacioppe, 1998; Dalakoura, 2010; Lord and Hall, 2005). Additionally, the collaborative learning environment highlighted commonalities across diverse business units, increased networks and collaboration across organization. This fits with suggestions that collaborative learning is essential to the

development of shared leadership and a collective identity as it provides a link between one's individual identity of what I can do, what others can do and what we can do as an organization (Day and Harrison, 2007).

However, the collective identity created some tension for some scientists who were driven by their professional goals of technical specialization and international recognition. Although, scientists primarily worked towards the shared purpose with their professional goals secondary to this, indicating that the collective identity was salient over the professional - a feat that most knowledge organizations seek to accomplish (Von Nordenflycht, 2010; Wilensky, 1964). This may be related to previous research which shows that participation in organizational decision making increases organizational and professional commitment (Bogler and Somech, 2005). Whilst this appears to be a coercive form of socio-ideological control (Kärreman and Alvesson, 2004), collective identification was associated with greater meaning and ownership of their roles. Thus the shared leadership model helped establish an organizational identity that appealed to the values of professionals (Alvesson, 2001; Von Nordenflycht, 2010), with membership within this collective satisfying individual needs and desires (Haslam et al., 2010).

Summary

This study provides support for the latest calls to integrate identity approaches into leadership development (Day and Harrison, 2007; Lord and Hall, 2005). It shows that providing a mindset for sharing leadership, voice and purpose helps to develop shared leadership across individual, relational and collective identity levels. The importance of transformational vertical leaders in initiating and maintaining this approach is also validated here (Ensley et al., 2006; Pearce, 2004; Pearce and Sims, 2002). Although, there are conflicts with this dual approach in an organization with hierarchical structures and limitations on collectively influence in large organizational groups. Future research needs to be conducted to clearly define operational variants of shared leadership and its practicality within larger organizational units (Small and Rentsch, 2010). Overall, the methods of collaborative action learning, feedback, coaching and job assignments along with the conditions for shared leadership were effective in developing a multi-level leader identity that

enabled the development of a shared approach. Whilst it is commonly accepted that development programs need to be adapted to each organization (Cacioppe, 1998; Gold et al., 2010; Pinnington, 2011), this approach may be useful for other R&D organizations, particularly as the shared approach aligns with the professional identities of scientists.

Shared Leadership and Employee Engagement

This research makes a number of contributions to the engagement literature. Firstly, it showed how the LDP provided a number of antecedents to engagement, with social exchange and job crafting mediating the corresponding levels of engagement. Additionally, results indicated a distinction between work and organizational engagement, and suggest that engagement is a dynamic process rather than a fixed state. Whilst these findings are certainly not new, they identify an initiative that increased employee engagement which is a recent focus of employee engagement researchers and practitioners alike (Bakker et al., 2008; Shuck and Herd, 2012).

Antecedents to Engagement

The LDP, and the conditions for shared leadership developed personal resources for staff to invest in their work or the organization (Bakker and Demerouti, 2008), developed more meaningful identities (Kahn, 1990), provided them with greater autonomy (Kahn, 1990; Saks, 2006) and was also a display of organizational support (Rich et al., 2010; Saks, 2006). These antecedents have been documented in previous literature but will be discussed below in relation to the LDP.

Personal Resources

As previously described the LDP provided participants with: greater self-awareness, self-confidence and social-awareness, as well as additional skills for effective leadership and industry engagement. Personal resources such as these have been shown to increase the ability to tackle job demands which leads to higher levels of job engagement (Bakker and Demerouti, 2008; Xanthopoulou et al., 2007). Alternatively,

they have also been suggested to contribute to greater psychological availability, providing the emotional energy and confidence to invest ones full self in roles (Kahn, 1990; Rich et al., 2010). This research supports these ideas as these capabilities were linked to work and organizational engagement as staff thought about how to apply their new skills and knowledge of the organization, or make use of their personal strengths and then physically applied these in their roles. This provided greater skills variety and task identification which, in turn, contributed to emotional engagement as previously shown (Kahn, 1990; Saks, 2006). The ability to gain leadership skills was particularly important for scientists in leadership positions as they had no prior training this area - as is the case in many R&D organizations (Elkins and Keller, 2003). This therefore helped them feel more comfortable, and confident in investing cognitive and physical energies in their leadership roles.

Identity

The LDP also highlighted strengths or tasks that individuals were more passionate about in their roles and established individual and relational leader identities, as well as a collective identification with the organization. This task identification has been shown to be an important antecedent to engagement as it presents a greater fit with the individual's needs, motivating individuals to invest their "preferred selves" in their role (Burke and Reitzes, 1981; Kahn, 1990). Moreover, the shared purpose helped establish a collective identity that motivated staff and made their roles more meaningful. This collective identification results in a fusion of one's self- and organizational identities, and thus the goals and successes of the organization are pursued as if they are one's own (Haslam et al., 2010; Van Knippenberg and Hogg, 2003). Rich et al., (2010) define this as value congruence, which gives one's work a greater meaning, and thus increasing engagement (Rich et al., 2010). Although, conflicting professional and organizational goals prevented full identification, as scientists in particular identified with the shared purpose but couldn't "buy into" this completely.

Autonomy

The shared approach provided staff with the autonomy to make significant contributions in carrying out the organization's mission, motivated them to engage with it. This is particularly important for the scientists who value professional autonomy and scientific freedom (Bailyn, 1985; Lounsbury et al., 2012). Giving employees greater autonomy and more significant tasks increases feelings of ownership and meaningfulness in ones work, resulting in greater involvement and proactive behaviour (Hackman and Oldham, 1976; Kahn, 1990; Saks, 2006). These feelings of ownership and meaningfulness lead to a sense of responsibility and motivation towards work (Hackman and Oldham, 1976) which contributed to an emotional connection to ones role. Moreover, the provision of voice is suggested to link to greater feelings of engagement and involvement in work (Carson et al., 2007) and thus the results presented here support the link between shared leadership and engagement.

Perceived Organizational Support

The investments made in the LDP, support for shared leadership and voice contributed to perceptions of organizational support as it acknowledged the value of the workers within the organization. Encouragement and support for this behaviour was also important, especially as a cynical staff and a lack of recognition for proactive behaviour reduced engagement. These results support the importance of perceived organizational and supervisory support which has been well documented as instilling a greater willingness to engage (Bakker and Demerouti, 2008; Kahn, 1990; Rich et al., 2010; Saks, 2006). This is related to the concept of psychological safety as staff who feel supported feel comfortable engaging their full selves in their roles. These individuals are also more willing to try new things without a fear of the negative consequences of failure and they therefore are more willing to engage (Kahn, 1990).

Mediators of employee engagement

Whilst a number of the conditions described above have been discussed and researched as antecedents to engagement, this research also finds support for the work of Sak's (2006) that other mechanisms exist to explain how these antecedents lead to engagement (Saks, 2006). This study finds that social exchange theory, and job crafting mediated the relationship between the antecedents and engagement.

Social Exchange

The opportunity to gain personal resources, autonomy and the perception of organizational support was symbolic of the organization's commitment to staff. This commitment partly contributed to a willingness to reciprocate the organization's investment and engage with the organization. Although this was not the most common explanation for increasing engagement, it provides support for models which draw on social exchange theory to explain why individuals choose to engage, and to what extent (Saks, 2006; Shuck and Rose, 2013). Shuck and Rose argue that this is the cognitive component of engagement, as individuals weigh up the benefits/costs of engaging which dictates emotional and physical investments (Shuck and Rose, 2013). Moreover, as these conditions were not present under the previous leadership, this may have increased the value of the organization's investments as they were not obliged to provide them (Rhoades and Eisenberger, 2002). In this regard, the LDP was perceived as an authentic investment in personal development, providing benefits to staff in the form of personal resources, autonomy and opportunities to achieve greater meaningfulness from work. However as described above, some staff felt their increased physical engagement was not reciprocated which diminished their feelings for the organization. Thus greater engagement was only sustained where the perceived benefits of this behaviour outweighed the cost (Cropanzano and Mitchell, 2005; Shuck and Rose, 2013).

Job Crafting

Job crafting was a more significant mediator of engagement with the LDP providing staff with personal resources, autonomy, support and opportunities to craft. This supports previous research into job crafting and engagement which suggests that individuals increase their personal resources and craft more challenging job demands which increases engagement (Tims et al., 2012). Moreover, in discovering new identities staff cognitively reframed their roles leading to task or relational crafting to fulfil these identities. This was important for staff whose new identities led them to disengage with their current work. Where they were able to craft roles or take on new jobs, this made their work more meaningful and helped restore engagement. This supports the original research into job crafting which is suggested to alter ones identity and the meaning of work (Berg et al.; Wrzesniewski and Dutton, 2001). Where individuals are able to craft a greater person-job fit, their roles are more meaningful and thus one is more likely to engage (Bakker, 2011; Kahn, 1990; Saks, 2006; Tims et al., 2012). The results here thus present greater support for the relationship between job crafting and engagement and indicates that organizations may play a key role in enabling crafting - contrary to initial descriptions of this as an individual process, independent of management (Bakker and Demerouti, 2008; Berg et al., 2010; Kahn, 1990; Tims et al., 2012; Wrzesniewski and Dutton, 2001).

Increasing work and organizational engagement

The results from this study confirmed that a shared leadership development program provided the antecedents to mediate levels of work and organizational engagement. Whilst a general increase in engagement was clear from interviews, a number of interesting details regarding the concept were identified that may explain why engagement survey data did not support these comments. These details included; the culmination of components contributing to a holistic state of engagement, the dynamic nature of this state, and the differentiation between work and organizational engagement. Additionally, this work identified some negative outcomes associated with job crafting, and the behavioural consequences of physical engagement.

Engagement as a process

Firstly, the personal changes staff described following the LDP indicated a progressive investment of cognitive, emotional and physical components of engagement as can be seen in Figure Six. This idea of engagement as a process involving the build-up of each component has been discussed previously (Christian et al., 2011; Macey and Schneider, 2008; Shuck and Wollard, 2010). Some have questioned whether cognitive absorption is an outcome of emotional and physical connections (Bakker et al., 2011), whilst others suggest it is a catalyst for further engagement (Shuck and Wollard, 2010). Alternatively, others suggest emotional commitment precedes the others as it creates a willingness to invest further resources (Macey and Schneider, 2008). Conceptually there appears to be confusion surrounding the relationship between these components, although it is commonly accepted that holistic, simultaneous expression is required for full engagement (Christian et al., 2011; Kahn, 1990; Saks, 2006; Shuck and Wollard, 2010). The evidence presented here of engagement as an interactive process may therefore alleviate this confusion as the pathway to full engagement can be multidirectional.

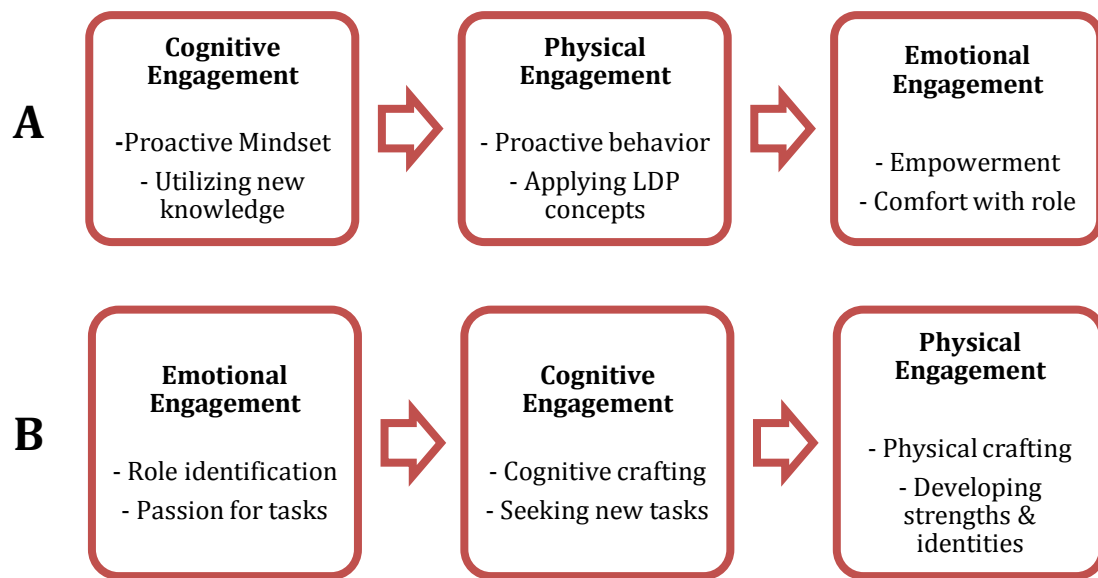


Figure 6 - Figure indicating the process of cognitive-physical-emotional engagement.

(A) Participants left the LDP with a proactive mindset, and greater knowledge of leadership which they then physically applied to their roles. This led to feelings of empowerment, and comfort or confidence in ones role. (B) An emotional identification, or passion for a particular task, led staff to reframe their roles or think about how to alter them to maintain this positive state. This leads to physical crafting of ones roles, or personal development to cement these identities.

Engagement as a dynamic state

This research also shows that this holistic state of engagement is dynamic and can fluctuate over time. This was evident in descriptions of staff who became physically or cognitively burnt-out while working on difficult aspects of a project, or staff who disengaged with their current roles following the LDP. However, in both cases, staff regained their engagement following a change to the working environment either through success in project implementation, or finding new job challenges. The JDR model may explain this as the imbalance between personal resources and challenging job demands is reflected in a state of engagement or burnout (Bakker and Demerouti, 2008). This provides support for research that temporal variations in work engagement affect overall engagement which is typically measured and presented as an enduring state (Bakker et al., 2011; Christian et al., 2011; Sonnentag, 2003).

In addition to temporal fluctuations this research identified varying degrees of overall engagement. A number of participants were already engaged prior to the LDP, particularly scientists as their work is intrinsically motivating (Lounsbury et al., 2012; Von Nordenflycht, 2010). However, job crafting enabled staff to engage with facets of their role in ways they had not anticipated (e.g. science leaders finding passion in mentoring or scientists finding greater enthusiasm for commercialization) providing evidence for a variations of engagement. This fits with recent research suggesting that job crafting allows individuals to experience a job in a different way, crafting a completely different meaning which can lead to a positive gains spiral of continuous change and benefit (Tims and Bakker, 2010).

Work and organizational engagement

In support of previous work (Saks, 2006), this study differentiates between work and organizational engagement as the LDP impacted each level independently, and had different antecedents. Personal resources and job crafting were antecedents to both, although the provision of autonomy and individual identity contributed to work engagement whilst POS, SET and organizational identity explained organizational engagement. These findings mirror those of Saks who differentiated work and organizational engagement based on the contributions of different antecedents (Saks, 2006).

Moreover, scientists were initially engaged with work but had little regard for the organization. Following the LDP they unwittingly increased their work engagement, but intentionally increased their organizational engagement. They identified with the organization, paid more attention to its strategy, implemented their ideas to help improve the organization, and motivated others to do the same. Whilst other researchers have depicted this as organizational commitment or citizenship behaviours and thus an outcome of work engagement (Christian et al., 2011; Rich et al., 2010; Shuck and Wollard, 2010) this researcher is more inclined to agree with the work of Macey & Schneider (2008) who define this as behavioural engagement. They argue that behavioural engagement supports organizational effectiveness and is “strategically focussed, bounded by purpose and organizational relevance” (Macey

and Schneider, 2008, p.18) which supports the inclusion of these as facets of organizational engagement.

Negative outcomes

In addition to physical burnout and a lack of reciprocal investment discussed above, engagement could have other negative outcomes. The newfound enthusiasm for interests outside of one's role led some staff to disengage with their daily work and invest their resources in extra-role tasks. Their absence increased the job demands of colleagues and managers, which may have reduced their engagement (Bakker et al., 2006; Schaufeli and Bakker, 2004). Additionally, extra-role behaviour blurred the boundaries between science and industry engagement roles creating confusion and frustration if this increased the others workload. This encroaching of work on others has been identified previously as a challenge to individual job crafting (Berg et al., 2010) but the negative effect on others was not acknowledged.

This reflects a shift in the wider field of positive organizational behaviour (POB) with researchers highlighting negative outcomes of OCB's performed at the expense of individual role performance (Bolino and Turnley, 2005; Podsakoff et al., 2000) or high work engagement disrupting work-life balance (Hakanen et al., 2006). However, these negative cases were not common and in most cases worked out to be positive for the individuals and the organization (e.g. scientists turned commercialization managers were more engaged, and facilitated collaboration between the two groups). As per suggestions for other forms of POB, the negative effects are outweighed by positive outcomes, although actions should be taken to guide such behaviours towards positive outcomes (Podsakoff et al., 2000; Wrzesniewski and Dutton, 2001).

Summary

Participation in a leadership development program appears to have a significant impact on work and organizational engagement. The LDP contributed personal resources, autonomy, new identities and POS, which led staff to engage in their roles following an obligation to reciprocate the organizations investments, or via job crafting. Furthermore, it contributes to the idea that engagement is “a moving and varied target” (Shuck and Rose, 2013) as each component develops sequentially, with overall levels of engagement fluctuating over time, and even increasing relative to a baseline level. What’s more, this research provides evidence that work and organizational engagement are separate constructs which has been a source of discussion in the field since Sak’s initial conceptualization. We operationalized organizational engagement as cognitive, emotional and physical components targeting the organization, which were not within one’s typical role. Perhaps the definition of engagement provided by Shuck and Wollard (2010) as “an individual employees cognitive, emotional and behavioural state directed toward desired organizational outcomes” (Shuck and Wollard, 2010, p.103) would best define organizational engagement. Although, further work to further differentiate the two constructs conceptually and operationally is needed to confirm these findings.

Organizational Transformation

In an environment characterized by rapid change, organizational transformations are more common, and winning the “hearts and minds” of sceptical knowledge workers is critical to successful change (Brown and May, 2012; Cropanzano and Mitchell, 2005; Porras and Silvers, 1991). The results from the study showed that a shared leadership development program helped to win the hearts and minds of core group of staff, who spread positive change throughout the organization and increased engagement with the new direction. However, the findings could not conclusively support the LDP making a significant contribution to financial performance.

Readiness for organizational change

The externally initiated reforms and changes to the Government funding system meant that the organization had to emphasize industry engagement to meet these new requirements. Whilst staff were cynical of the organization's leadership, those who endured its financial downturn understood the need to change. The organization's crisis therefore created dissatisfaction with the status quo, and the external environmental changes raised awareness of the threat to the future of the organization (Johnson, 1992; Porras and Silvers, 1991). Staff who were supportive of the change were then able to contribute to the change by volunteering for the LDP. This awareness and dissatisfaction therefore contributed to a readiness for change which has been shown to increase the success of change efforts (Armenakis et al., 1993; Choi and Ruona, 2011).

Organizational target variables

The leadership team targeted a change in the organization's vision, followed by a change in the work setting via the LDP. This altered; the leadership style, influence patterns, social networks and individual attitudes, beliefs, and behaviours. These changes signal to employees the cognitive and behavioural changes required for the new organizational paradigm (Porras and Silvers, 1991). Whilst these changes were initiated from the top down, the key was that they were not bureaucratic or authoritative. Through the LDP staff saw the genuine commitment of senior executives, were included in the change process and personally benefited from the LDP, making them more committed to the organizations new direction. In contrast, changes to the funding system required compliance with this direction with staff funnelling their work to fit the system. Therefore whilst technocratic changes can also engender change, sociotechnical approaches that allow for employee participation may be more affective in positive change (Hornung and Rousseau, 2007; Kärreman and Alvesson, 2004). This has been shown in the case of another R&D organization attempting a similar strategic transformation through hierarchical changes to work practices and funding policies. These were undermined by scientists who sought to maintain the organization's previous identity (Nag et al., 2007). Therefore, as prior research has shown softer more participatory approaches can help with acceptance

of change, and the realization of the benefits of change which develops commitment rather than compliance or resistance (Choi and Ruona, 2011; Haslam et al., 2010).

Enhanced Individual Development

The LDP developed a critical mass of staff who were engaged with the organization and its industry engagement strategy. These staff contributed to the spread of this engagement through emotional contagion, organization-wide industry engagement projects and transformational behaviours. As with previous research, positive cognitive, affective and behavioural responses to the change in strategy contributed to successful organizational change (Kark Smollan, 2006; Oreg et al., 2011; Porras and Silvers, 1991). Whilst the impact of positive employees is commonly accepted, researchers are still investigating the mechanisms by which positive employees contribute to change (Avey et al., 2008) therefore this research highlights potential areas for future research.

Critical mass & Commitment to change

The LDP developed a critical mass of staff whose consciousness was aligned with the organization's vision, and returned to their working groups with the skills and knowledge to initiate and lead this change from within. In this manner, change was initiated hierarchically, but was carried out from the bottom through the LDP and shared leadership. This positive mass outnumbered, and silenced the cynics creating a more positive working environment which has been linked to greater engagement (Bakker et al., 2011). Therefore, as previous research has shown, developing a critical mass of formal and informal leaders who are committed sponsors of change, is essential to gaining widespread support for change (Conger, 1996; Mento et al., 2002). Moreover, the inclusion of informal leaders was important as they are prototypical and trusted members of the groups that they are trying to influence, and were therefore able to gain the support for their efforts (Haslam et al., 2010; Van Knippenberg and Hogg, 2003). Thus having professionalism extend through the organization (Wilensky, 1964) appears to be conducive to change efforts as the critical mass of prototypical leaders went on to influence the remainder of the organization to engage with the change.

Contagion, organization-wide projects and transformational leadership

The critical mass may have increased engagement in the remaining two thirds of the organization via a contagious spread of their engagement, the implementation of organization-wide projects and transformational leadership behaviours. Firstly, LDP staff had a flow on effect as they spread their engagement to their colleagues and communicated the value of the LDP and the new organizational vision. Therefore, as previous research has shown, emotional contagion of engagement and commitment occurred (Bakker et al., 2006; Bull Schaefer et al., 2013), leading to a positive reaction to change in others which is tied to successful change (Oreg et al., 2011).

Secondly, LDP participants implemented organization-wide industry engagement projects allowing non-LDP staff to contribute to the new direction. These projects were supported by the executives and publically promoted which led their successes to become organizational “stories” with the LDP participants as celebrated “heroes” (Mento et al., 2002). This symbolized to others the behaviours that were valued under the new direction and motivated others to join in, particularly as membership with this in-group was associated with greater influence and recognition (Avey et al., 2008; Hogg and Terry, 2000; Johnson, 1990; Mento et al., 2002). This, combined with the increasing support for prototypical leaders from within, strengthened the in-group prototype (Hogg and Terry, 2000) and may have had contributed to a loss of staff whose ideals did not support this new direction.

In addition to motivating other staff, these leaders displayed intellectual stimulation and individualized consideration indicative of transformational leadership (Avolio et al., 1991; Bass, 1999). Idealized influence was not apparent here although this may be due to the fact that transformational leadership was not specifically developed with visionary influence being a more complex and time-consuming component to establish (Avolio et al., 1991; Conger, 1996). Intellectual stimulation however played a significant role in encouraging follower engagement contrary to the work of others who suggest instilling optimism or daily coaching by transformational leaders is associated with greater engagement (Tims et al., 2011; Xanthopoulou et al., 2009). This may be due to the nature of scientists who are driven by critical thinking and autonomy (Lounsbury et al., 2012) and were therefore more receptive to the

challenges of the LDP staff to be proactive and participate in the discussions they initiated on industry engagement and the organizational strategy. This may be supported by other studies which show that empowering leadership is linked to employee engagement and organizational change as employees have greater freedom and autonomy in their roles (Hornung and Rousseau, 2007; Pearce and Sims, 2002; Tuckey et al., 2012)

Organizational Performance

Overall the results from this study showed modest contributions to revenue increases and industry engagement as a result of the LDP. Moreover, these contributions were not able to be compared to costs therefore overall contributions to performance are unclear. However, the projects arising from the LDP generated additional revenue and attracted additional industry partners. Thus, whilst many HR initiatives are unable to indicate a clear causal link to objective outcomes (Aguinis and Kraiger, 2009) the inclusion of the Dragon's Den in the program design enabled the exploration of these direct outcomes.

However, increased levels of employee engagement have been correlated to increased levels of profit (Harter et al., 2002; Kim et al., 2012), and therefore the LDP may have had an indirect impact on financial performance that was not identified. For example, the LDP developed more effective industry engagement skills and made relationships with customers more salient. LDP staff then invested more energy into seeking out new customers and working to meet their needs. This aligns with previous research which has shown that greater personal resources and employee engagement can assist in the development of a service climate that in turn is associated with performance ratings, customer loyalty and therefore higher profits (Salanova et al., 2005). Thus, whilst this research was unable to validate financial outcomes from the LDP, future research to investigate these specific links to performance may indicate the benefit of shared leadership development and employee engagement in organizational change outcomes.

Summary

This research provides insight into the use of a shared leadership development program to enable organizational transformation. As described above, transformation requires individual cognition and behavioural changes as well as improved organizational performance to be deemed successful. This program contributed the individual level changes through the development of a critical mass of positive, prototypical, transformational leaders who were able to motivate, encourage and challenge their professional colleagues to identify with the new direction. However, contributions to organizational performance were not proven here. Although the need to manage social identities during transformational change is not new (Nag et al., 2007), nor is the contributions of positive employees to organizational change (Avey et al., 2008), this study provided an exploration how an organizational intervention developed a cohort of engaged organizational citizens who partly contributed to organizational change.

Implications for Practice

The implications from this study are clear for organizations and human resource professionals who are looking for effective leadership development programs or initiatives to increase employee engagement and successful organizational change processes.

This research indicates a number of features of a shared leadership development program that effectively developed individual and relational leader identities that were tied to the organization's mission. Firstly, it supports the design of a program that is open to all staff, utilizes collaborative action learning and feedback, and continues development through job assignments. Secondly, vertical leaders should increase their involvement with leadership development programs and can use these as a vehicle to establishing essential conditions for shared leadership including; a mindset for shared leadership, perceptions of voice and a shared purpose. This design could be a useful model of leadership development, particularly for those

organizations wishing to implement shared leadership. The empirical support of this is particularly important for organizations faced with the challenge of choosing from a variety of best practices, or off-the-shelf programs offered by consultants who guarantee results (Day, 2001; Gold et al., 2010).

Furthermore, a recent global workforce survey indicated that 62% of the New Zealand workforce is not engaged, costing businesses an estimated \$7.5 billion dollars annually (Gallup, Inc., 2013). Organizations are therefore being made more aware of the contributions of employee engagement to improve competitiveness and performance. Engagement is presented here as a dynamic process, which fluctuates on a daily basis, and varies in regards to work and the organization. HR staff may need to focus on engaging across all three components and levels simultaneously with no guarantee that engagement will endure over time. Given this variability, it is proposed that practitioners and researchers should follow the advice of Tims et al., (2011) to measure engagement over time rather than in one-off surveys, to gain a more reliable representation of engagement levels. Furthermore, as engagement appears to be a multi-directional process, it may be more effective for practitioners and researchers to look at cognitive, emotional and physical components separately (e.g. Christian et al., 2011) to identify if there are barriers to a particular component and therefore full engagement.

Nonetheless, organizations seeking to address the engagement issue, may find that implementing a shared leadership development program that provides greater personal resources, autonomy, and a meaningful identity can lift employee engagement. Furthermore, allowing individuals to craft their jobs to gain greater meaning from work may boost this engagement further. Although, practitioners should be aware that allowing individuals to have free reign in altering their jobs and exerting influence throughout the organization can have negative implications if not properly directed, and monitored. Managers and leaders will therefore play a key role in ensuring that job crafting and shared leadership is beneficial to the individual and the organization (Pearce, 2004; Wrzesniewski and Dutton, 2001).

Organizations will constantly face a need for change in the current, uncertain environment (Weick and Quinn, 1999). This research therefore provides a framework for organizations that can promote positive organizational change, by instilling a need for change in employees and allowing them to enact change processes through shared leadership. In practice, it appears that organizations attempting strategic transformation would benefit from “softer” methods of influence which altering the social context of the organization rather than introducing hard, managerial control systems that force compliance with change (Nag et al., 2007). In particular, initiating these changes in a critical mass of individuals who can drive change from within by as trusted and respected leaders contributes to organization-wide engagement with change.

Limitations and Future Directions

Several design features limited this study including use of a single case which limits the strength and generalizability of these findings (Yin, 2008). Further research would using a multi-case approach to provide stronger evidence for, or against these causal relationships and indicate their generalizability to other organizations (Gibbert et al., 2008).

Additionally, whilst the qualitative research here allowed for the open identification of a range conditions necessary for effective shared leadership, engagement and change, further quantitative studies could provide greater empirical support for the links between these concepts (Bakker et al., 2008). Moreover, this was a cross-sectional study that involved data collection at only one point in the organization’s transformation. Additional quantitative studies would allow for a more accurate representation of the relationship between leadership development, engagement and change. A time-lapse study measuring shared leadership and engagement prior to, during and following the LDP would be useful here, particularly if comparisons can be made between LDP and non-LDP staff. Alternatively diary studies would help understand the fluctuations in engagement over time as well as allow for the

identification of the variety of antecedents that contributed to engagement (Bakker et al., 2011). This may also be valuable in identifying how different antecedents contribute to a particular component over time.

Moreover, the bulk of this research relied on qualitative self-reports of the LDP and its outcomes which introduces respondent bias (Podsakoff and Organ, 1986). Whilst this was mitigated to an extent by the inclusion of non-LDP staff, this group was small and they often had trouble recalling information on their colleagues. However, where external participants could comment on the changes that they observed in LDP colleagues who had already been interviewed, this provided a more holistic view of the individual's change. Future research that seeks to gain input from a greater range of the colleagues, managers or staff of LDP respondents would provide a more rounded view of the changes.

Lastly, whilst the recruitment measures used in this study aimed to gain a representative, unbiased sample, the final group only represents one fifth of the total LDP cohort. Respondent bias could have played a role here, especially as attempts to gain a representative sample using more targeted recruitment methods were less successful than the initial call for volunteers. In addition, no individuals volunteered initially as part of the external group. Participants noted this might have been due the proactive nature of LDP staff who mostly had a positive view of the organization, and of the program. Additional research would therefore benefit from more widespread, targeted sampling or a more confidential survey in an attempt to capture negative opinions.

CONCLUSIONS

This study presents the case of an R&D institute in need of an organizational transformation away from a 'tech push' strategy to ensure its future survival. One of the means by which the organization tackled this transformation was through a shared leadership development program that sought to provide staff with the capabilities to lead from within, and represent the organization's new identity. This program lifted the levels of work and organizational engagement in the LDP participants. This positive engagement was contagious in the organization as the future leaders encouraged others to follow suit, and identify with the new vision. The shared model of leadership enabled this transformation as it produced a critical mass of positive individuals who embodied the identities of their colleagues as well as the organization, which enabled a cognitive transformation in others. This research showed support for a theoretical framework that shows how participation in a shared leadership development program, led to greater levels of employee engagement in participants, which then spread throughout the organization and contributed to the organizations positive transformation as a market-led R&D organization. Whether or not this resulted in an overall increase in organizational performance remains unclear.

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Appendix One - Participation Information

Study of Leadership Development in Research and Development Organizations
Researcher: Katie Zeier, School of Management, Victoria University of Wellington

Dear Participant

I am a Masters student in the Victoria Management School at Victoria University of Wellington. I am researching the use of leadership development in research and development organizations. The purpose of the study is to identify how leadership development impacts on R&D organizations. Your participation will provide valuable information about the leadership development program that you are taking part in. The University requires that ethics approval be obtained for research involving human participants, and that you are informed of the details of the study prior to your participation.

I am inviting individuals who are taking part in the 2012-13 the leadership development programs to take part in this study. During the course, I will be observing and taking notes on; your reactions to the program, the leadership behavior taught, perceptions about program effectiveness and plans to apply the leadership concepts. I would also like to speak with you over the duration of the courses in a recorded interview about your experience of the IRL leadership development program regarding; how you have developed as a leader, the application of leadership concepts from the course, the impact the course has had on IRL and the science industry and an evaluation of the program.

(alternative paragraph for participation by staff who have taken part in the program prior to 2012)

I am inviting individuals who have previously taken part in the leadership development programs to take part in this study. I would like to speak with you at a time and place that is convenient to discuss your experience of the leadership development program including; how you have developed as a leader, the application of leadership concepts from the course, the impact the course has had on the organization, and the science industry and an evaluation of the program.

(alternative paragraph for participation by staff who have not taken part in the leadership development program)

I am inviting individuals from your organization who have not been on the leadership development program to take part in this study. I would like to speak with you at a time and place that is convenient to discuss how you view the leadership development program and what impact it has had on the organization including; whether the culture or climate of the organization has changed, whether R&D processes have changed, and whether you have noted changes in the leadership behaviors in others.

Your participation is completely voluntary. You may choose not to participate in the study and you may withdraw from this study at any time before the data analysis stage (30th June 2013) without reason. Please do let me know if you wish to do so. Your choice to participate in this study will have no bearing on your current work.

Only I the researcher, and my supervisors Professor Stephen Cummings and Doctor Geoff Plimmer will have access to the notes and recordings collected from the observations and interviews. These materials will be stored securely in locked electronic and/or paper files and we will destroy completion of my degree (no later than December 2016). It is intended the data collected will be used in a thesis as part of the requirements for my degree. In addition, a report will be produced for further publication



All participant information we obtain in this research will be kept strictly confidential. In my final research no identifying details will be given. You will be provided with a summary of the final results of the study if desired.

If you have any questions or would like to receive further information about the project, please contact me at katie.zeier@vuw.ac.nz, or on 0211345251. Or my supervisors Professor Stephen Cummings or Doctor Geoff Plimmer at Victoria University, P O Box 600, Wellington, phone: (04) 463 6931 – Stephen or, (04) 463 5700 – Geoff.

Thanks,
Katie Zeier

Appendix Two - Consent Form

Study of Leadership Development in Research and Development Organizations
Researcher: Katie Zeier, School of Management, Victoria University of Wellington

This consent form is a research agreement between the researcher and participants that indicates that the participants have been sufficiently informed about the research and the conditions of their participation. Consent to participate covers the following:

- Participation in the study which aims to understand how leadership development impacts on engagement in research and development organizations
- The taking of notes from observations from the leadership and development program
- The recording of an interview regarding your experience of the leadership development program
- Secure storage of the data, with access restricted to only the principle researcher and supervisors
- The opportunity to withdraw from the study at any time during data collection prior to June 30th 2013.
- Confidential reporting of the data in an aggregated, non-attributable form
- The use of the data collected in a Masters thesis and a report to be published.
- Destruction of the data no later than December 2016

By signing this consent form, you are indicating that you fully understand the above information; you have been given an opportunity to ask questions which have been answered satisfactorily and that you agree to be involved in the study.

Participant's name: _____

Participant's signature _____

Date: _____

I would like to receive a copy of the final report: Y/N

Researcher's name: _____

Researcher's signature _____

Date: _____

If you have any questions or would like to receive further information about the project, please contact me at katie.zeier@vuw.ac.nz, or on 0211345251. Or my supervisors Professor Stephen Cummings or Doctor Geoff Plimmer at Victoria University, P O Box 600, Wellington, phone: (04) 463 6931 – Stephen or, (04) 463 5700 – Geoff

Appendix Three - Observation recording sheet

Reactions (spoken)	Leadership behaviours
Program design	Receptiveness and application of concepts

Appendix Four – Interview Schedule (LDP participants)

Level One - Reactions

1. Why did you decide to take part in the leadership development program?

Prompts

- What was your attitude towards your role before you took part in the leadership development program?
- What was your attitude towards the organization?

2. What were your reactions to the leadership development program itself?

Prompts

- Was the content of the program interesting?
- Was the content applicable to your role?
- Was the design of the program effective?
- Do you think the shared leadership approach was effective?
- What was the most memorable part of the program?
- Do you think the program could have been improved?

Level Two - Learning

3. What did you learn from the leadership development program?

Prompts

- What were the key concepts that you took from the leadership development program?
- What did you learn about shared leadership?
- Do you feel that you were equipped with more knowledge or skills to draw from?
- Did you learn how to contribute to the organization in a different way?

4. What did you learn about your identity in the organization?

Prompts

- Do you think the program changed how you viewed yourself (at work, in general)?
- Did the meaning of your work change?

- Do you think the program helped you identify with your role as a leader?
 - Did it change how you identified with others in the organization?
 - Do you think the program helped you identify with the organization?
5. What did you learn about relating to others from the leadership development program?

Prompts

- What did you learn about relating to other employees?
- What did you learn about relating to other leaders?
- What did you learn about relating to customers or industry?

Level Three - Behaviours

6. If engagement is physical, emotional and cognitive investment in work, did you feel more engaged after taking part in the leadership development program? Why?

Prompts

- Did you feel more engaged with your work?
- Did you feel more engaged with the organization?
- Were you eager to change your behaviour after taking part in the leadership development program?

7. What did you start doing differently after you participated in the leadership development program?

Prompts

- Did you start getting involved in the organization more?
- Did you start taking on more tasks?
- Were there any specific tasks or activities that you proactively changed?
- Did you start taking an interest in things that were happening at the organization (inside and outside)?
- Were these changes voluntary?

8. Was there anything that presented a barrier to making changes at work after the leadership development program?

Prompts

- Did you have the opportunity to make changes?
- Did you have the necessary knowledge to make changes?

- Were you encouraged to make changes?
- Did you enjoy making changes?

9. How did your relationships with others change following the program?

Prompts

- Were those around you supportive of your role as a leader?
- Do you think that the leadership development program changed how people saw you at work?
- Do you think that you had an impact on those working around you?
- Do you think the quality of your relationships changed?
- Did you change who you interacted with?

Level Four - Results

10. Do you think the leadership development program succeeded in creating a cohort of future leaders?

Prompts

- Do you feel like you are part of the leadership cohort? (are you a leader)
- Is it effective having a cohort of leaders throughout the organization?
- Do you think the shared leadership approach is effective?
- Do you think that the LDP cohort represents the identity of the organization?
- Do you have faith in the ability of the cohort to lead the organization?

11. What impact do you think the leadership development program has had on the organization?

Prompts

- What has the leadership cohort changed in the organization?
- Has the LDP contributed to the organizations overall performance?
- Do you think the leadership development program has helped lift engagement throughout the organization?
- Do you think the leadership development program has made the organization a better place to work at?
- Do you think the leadership development program has helped the organization become more industry focussed?

Appendix Five – Interview Schedule for Non-LDP staff

Level One - Reactions

1. What are your reactions to the leadership development program itself?

Prompts

- What is your opinion of the leadership development program?
- Does the leadership development program interest you?
- Is the leadership development program something that you would like to take part in?
- Do you think the leadership development program is appropriate in your organization?

Level Three - Behaviours

2. Think about those you know who have been on the leadership development program, what have they done differently since?

Prompts

- Did they start getting involved in the organization more?
 - Did they start taking on more tasks?
 - Were there any specific tasks or activities that they proactively changed?
 - Did they start taking an interest in things that were happening at the organization (inside and outside)?
 - If engagement is cognitive, emotional and physical investment at work, do you think working with the leaders helped change this at all?
 - Were these changes voluntary?
3. How did your relationships with the individuals who took part in the leadership development change following the program?

Prompts

- Do you think that the leadership development program changed your viewed them?
- Did you view them as a leader?
- Were you supportive of their role as a leader?
- Did their behaviours impact on you personally?
 - Did their change in mood affect you at all?

- Do you think you changed with the individuals who were on the course?
- Do you think the quality of your relationships changed?
- Did it change who they interacted with?
 - Interacting more with leaders?
 - Interacting with people from different departments?

Level Four - Results

4. Do you think the leadership development program succeeded in creating a cohort of future leaders?

Prompts

- What is your opinion of the leadership cohort?
 - Is it effective having a cohort of leaders throughout the organization?
 - Do you think that the LDP cohort represents the identity of the organization?
 - Do you feel like the leaders are representatives for you in the organization?
 - Do you have faith in the ability of the cohort to lead the organization?
5. What impact do you think the leadership development program has had on the organization?

Prompts

- What has the leadership cohort changed in the organization?
- Has the LDP contributed to the organizations overall performance?
- Do you think the leadership development program has helped lift engagement throughout the organization?
- Do you think the leadership development program has made the organization a better place to work at?
- Do you think the leadership development program has helped the organization become more industry focussed?

Supplementary Table One – Concept Definitions

Concept	Definition	Reference
Shared Leadership & Conditions	<p>“A dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals...this influence process often involves peer, or lateral influence and at other times involves upward or downward hierarchical influence”</p> <p>Vertical Leadership Vertical leaders provide the conditions to establish support and maintain shared leadership</p> <p>Shared Purpose Members have similar understandings of team objectives and take steps to ensure a focus on collective goals</p> <p>Voice The degree of input members of a group feel they have into how the shared purpose is carried out.</p> <p>Mindset for shared leadership A foregoing of deeply entrenched preconceptions of heroic single leadership and the acceptance of shared leadership as an affective alternative</p>	<p>(Pearce & Conger, 2003, p.1).</p> <p>(Carson et al., 2007, Pearce, 2004)</p> <p>(Carson et al., 2007)</p> <p>(Carson et al., 2007)</p> <p>(Cox et al., 2003)</p>
Social Identity Leadership	<p>“Leadership as a group process generated by social categorization and prototype based depersonalization processes associated with social identity”</p> <p>Social categorization Cognitive segmentation of social groupings into in-groups and out-groups, represented as prototypes</p> <p>Prototype Context specific sets of attributes that define attitudes, behaviours and feelings that characterize one group from another</p> <p>Depersonalization The representation of an oneself as an embodiment of their prototype rather than as an individual</p>	<p>(Hogg, 2001)</p> <p>(Turner, 1985)</p> <p>(Tajfel, 1972)</p> <p>(Hogg, 2001)</p>

Social Identity Levels	<p>An individual's knowledge that they belong to a certain social group which carries some emotional and value significance.</p> <p>Individual level A persons unique sense of oneself, as differentiated from others.</p> <p>Relational level Aspects of oneself that reflect ones interpersonal relationships and interdependencies with others.</p> <p>Collective level A self concept that derives from common identification with a symbolic group or social category</p>	<p>(Hogg, 2001)</p> <p>(Brewer & Gardner, 1996)</p>
Leadership Development	<p>Expanding the collective capacity of organizational members to engage effectively in leadership roles and processes</p> <p>Leader development The development of individual knowledge, skills and abilities associated with formal leadership roles including; self-awareness, self-regulation & self-motivation</p> <p>Leadership development The development of interpersonal confidence including social awareness and social skills, to enhance co-operation and resource exchange</p>	<p>(McCauley et al., 1998, in Day, 2001)</p> <p>(Day, 2001)</p>

Approaches to Leadership Development	<p>Classroom learning Formal classroom learning activities usually covering basic theories and principles of leadership through lectures, exercises or case studies</p> <p>360° feedback Systematically collecting perceptions of an individuals performance from a number of relevant viewpoints e.g. peers, direct reports, supervisors, customers.</p> <p>Coaching Practical, goal-focussed forms of one-on-one learning and behavioural change focussed on improving individual performance and personal satisfaction</p> <p>Mentoring Formal or informal developmental relationships for on-the-job developmental experiences</p> <p>Job assignments Development through short on-the-job experiences</p> <p>Action learning A structured, continuous process of learning and reflection with a corresponding emphasis on addressing a problem of strategic importance to the organization</p>	(Day 2001, 2002)
Employee Engagement	<p>A construct consisting of cognitive, emotional and behavioural components that are associated with individual role performance (work or organizational roles)</p> <p>Cognitive components Cognitive vigilance, focus and attention on ones role</p> <p>Emotional components Emotional connections to ones work or others in relation to their role</p> <p>Physical components Physical involvement in ones role</p>	<p>(Saks, 2006)</p> <p>(Kahn, 19990)</p>

Antecedents to Engagement	<p>Meaningfulness A sense of return on ones investments of personal engagement including, feelings of worth, usefulness and value</p> <p>Job characteristics Characteristics that provide individuals with the opportunity and incentive to engage in their roles including: skills variety, task identity, task significance, autonomy and feedback</p> <p>Opportunities for learning and development The development of ones skills and knowledge on the job which provides greater personal resources to invest in ones role</p> <p>Perceived organizational/supervisory support The amount of care and support employees perceive that their organizations (and supervisors as representatives of the org.) are providing which contributes to a willingness to engage in ones role</p> <p>Job crafting Physical, cognitive or relational changes one makes to the task boundaries of their role w which can lead to more meaningful work and a greater desire to engage with ones role</p> <p>Leadership Provision of the above antecedents to followers to created the conditions for others to engage OR, transformational leadership to motivate and inspire followers to engage OR, emotional contagion of engagement from leaders to followers</p>	<p>(Kahn, 1990)</p> <p>(Hackman & Oldham, 1976, Saks, 2006)</p> <p>(Bakker & Demerouti, 2008)</p> <p>(Saks, 2006)</p> <p>(Wrzesniewski & Dutton, 2001)</p> <p>(Bakker & Demerouti, 2008)</p> <p>(Tims et al., 2011)</p> <p>(Bakker et al., 2006)</p>
Organizational transformation	<p>A set of strategies and techniques aimed at the planned change of organizational vision and work setting with the intention of generating cognition and behavioural changes in organizational members, thus promoting a paradigmatic change that helps the organization better fit the environment</p> <p>Target variables Organizational vision, work settings, technology and physical settings</p> <p>Organizational outcomes Improved organizational performance e.g. profitability, productivity, efficiency. Enhanced individual development stemming from cognition and subsequent behavioural changes to meet the needs of the new organization</p>	<p>(Porras & Silvers, 1999)</p>