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Reducing turnover in volunteer organisations: A leadership intervention based on self-determination theory

Vivien Forner
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UNIVERSITY
OF WOLLONGONG
AUSTRALIA

**REDUCING TURNOVER IN VOLUNTEER
ORGANISATIONS: A LEADERSHIP INTERVENTION
BASED ON SELF-DETERMINATION THEORY**

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This thesis is submitted in fulfilment of the requirements for the degree of
Doctor of Philosophy

The University of Wollongong
Faculty of Business
School of Management, Operations and Marketing

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Keywords

Autonomy, autonomy support, basic psychological needs, competence, dyads, emergency management, emergency services, field experiment, interpersonal skills, intervention, job satisfaction, leaders, leadership, leadership development, leadership intervention, leadership training, management, manager, managerial autonomy support, motivation, motivation theory, organisational development, organisations, relatedness, self-determination theory, structural equation modelling, supervisors, turnover intention, volunteer, volunteer leadership, volunteer retention, volunteer satisfaction, volunteer turnover, workplace

Abstract

Background: Increasingly high turnover rates in volunteer organisations have reached critical levels. Australian volunteer emergency service organisations are struggling to maintain adequate volunteer numbers to continue to deliver vital services to the community. The experience volunteers have with their leader is one of the strongest predictors of future volunteering. Despite industry, government and academics calling for increased focus on the training and development of volunteer leaders, there is currently limited theoretical and/or empirical guidance to support this endeavour. Little is known about what leadership approaches are effective or suitable with volunteers. Furthermore, it is unknown how volunteers' experiences with their leader comes to influence their decision to stay with or leave the organisation. This thesis seeks to address these issues and formulates an evidence-based approach for improving leadership to help retain volunteer workers in Australian emergency service organisations.

Aim: The aim of this thesis is to examine the application of managerial autonomy support, an interpersonal style proposed by Self Determination Theory (SDT), as an approach to volunteer leadership, focusing on its potential to retain volunteers. In order to achieve this, the thesis addresses three objectives. First, the hypothesized conceptual model that delineates the relations between perceived managerial autonomy support, followers' basic psychological need satisfaction, job satisfaction and turnover intention is tested in the volunteer organisations. The second objective is to determine whether, through an SDT-based leadership development intervention, leaders can change and/or develop their managerial orientation towards autonomy support. The final objective is to ascertain whether followers of these leaders perceive changes in their socio-contextual climate during the intervention period.

Method: A total sample of 363 participants was obtained for this study, comprising 167 leaders and 196 followers across four volunteer emergency service organisations in Australia. A quasi-experimental design tested the impact of an SDT-based leadership intervention on leaders (n=65) and their followers, compared to a control group of leaders (n=102) who received no training. Leaders' self-reported managerial orientation was assessed at pre-test, post-test and one year after the intervention.

Followers' perceived managerial autonomy support from the leader, basic psychological needs satisfaction, job satisfaction and turnover intention were measured before and after their leader completed the intervention.

Results: A test of the hypothesised model via structural equation modelling indicate that emergency service workers' perceptions of leaders' managerial orientation influenced their job satisfaction and subsequent turnover intention through basic psychological needs satisfaction. Testing the impact of the SDT leadership development intervention, leaders in the experimental condition changed their interpersonal orientation towards autonomy support after completing the intervention and these reflected enduring changes that remained evident one year later. The intervention was most effective for leaders with relatively little prior experience leading volunteers, who showed greater propensity for developing their managerial orientation. Followers did not report any significant changes in the provision of autonomy support from their leader, basic psychological need satisfaction, job satisfaction or turnover intention over the nine weeks their leader was participating in the SDT-based leadership development intervention.

Contribution/Implications: This thesis provides one of the most in-depth empirical explorations to date, of the malleability of managerial autonomy support amongst organisational leaders. A contribution is made to the scholarly study of volunteer leadership more broadly, by offering a validated theoretical model of leadership and its influence on followers in the volunteer context. This research provides support for Self-Determination Theory in the volunteer organisations.

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Matt, thank you for supporting me through this huge journey and gifting me the opportunity and time to follow my dream. You do it all for us. Thank you for giving me paradise. To my little Hildie, may you be inspired to follow your heart and open your mind. Thank you for the strength you give me.

I dedicate this PhD to my Dad

Certification

I, Vivien Forner, declare that this thesis submitted in fulfilment of the requirements for the conferral of the degree Doctor of Philosophy, from the University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. This document has not been submitted for qualifications at any other academic institution.

Vivien Forner

Date: 20th August, 2019

List of Abbreviations

AVE	Average variance explained
CFI	Comparative fit index
HA	Highly autonomy supportive, subscale of Problems at Work
HC	Highly controlling, subscale of Problems at Work
L&D	Learning and development
MC	Moderately controlling, subscale of Problems at Work
MC	Moderately autonomy supportive, subscale of Problems at Work
NPO	Non-profit organisations
PAW	Problems at Work questionnaire
RFS	Rural Fire Services
RMSEA	Root mean square error of approximation
SDT	Self-Determination Theory
SEM	Structural equation modelling
SES	State Emergency Services
SRMR	Standardized root mean squared residuals
W-BPNS	Work-Related Basic Psychological Needs Scale
WCQ	Work Climate Questionnaire

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Chapter 1: Introduction

This first chapter provides an introduction and contextualises the thesis. Establishing the foundation for the research, *Section 1.1 Background* provides an overview of the broad field of study and introduces the research problem. Australian volunteer-based emergency service organisations are introduced as the research context, and this initial section illustrates how the research problem is epitomised in this context. Next, *Section 1.2 Significance and Opportunities for Research* serves to introduce the academic landscape within which the research takes place and highlights the critical theoretical and empirical gaps limiting us from being able to address the research problem at present. This leads into details of the current study. *Section 1.3 Aims and Research Objectives* outlines how the study addresses the research problem and the three research objectives are introduced. Five research questions are established and discussed in *Section 1.4 Research Questions*.

This thesis draws on Self-Determination Theory as its theoretical framework and *Section 1.5 Theoretical Framework Justification* outlines the key reasons why this theory was appraised to be the most suited to addressing the research problem. The research paradigm is presented and justified in *Section 1.6 Research Paradigm and Methodology*, and this section further articulates how a positivist perspective guided the methodology of the study. The chapter concludes by outlining the structure of the thesis and the organisation of its six chapters.

1.1 BACKGROUND

1.1.1 Problem

Equipping leaders with the knowledge and tools required to retain volunteer workers is essential to ensure the future sustainability of non-profit organizations (NPO). Despite increased dependence on volunteers, driven by a growing non-profit sector (Curran et al., 2016), there are mounting concerns from researchers, industry and government bodies about declining volunteer numbers (Harp et al., 2016, Hyde et al., 2016, Office of the Auditor General Western Australia, 2015, Pricewaterhouse Coopers Australia, 2016). In Australia, the percentage of the population who volunteered in 2014 (31%) was not only lower than in 2010 (38%) but the lowest rate

recorded since the populace survey was first distributed (Australian Bureau of Statistics, 2014). A similar trend of declining volunteer numbers is also found in other countries across the globe including the United States of America (Bureau of Labor Statistics, 2015) and United Kingdom (Curran et al., 2016). Consequently, non-profit organisations are competing for scarce volunteer resources and face the additional challenge of retaining volunteers in a highly competitive marketplace (Ferreira et al., 2015).

With declining access to new workers, it is critical that volunteer organisations are able to effectively retain their existing workforce and support the ongoing active participation of volunteers. Problematically, high turnover rates are especially prolific in the NPO sector and these organizations incur substantial costs recruiting, training, and replacing volunteers. These add financial pressure to many agencies who rely on charitable donations and external funding to operate (Jamison, 2003, McLennan, 2004). These issues highlight both the importance and urgency of conducting research to identifying how volunteer organisations can satisfy volunteers and sustain them for ongoing, long-term engagements.

Research investigating sources of resignation have highlighted poor leadership as a key reason volunteers quit (Dalglish, 2014, Frost, 2012). Failing to provide strong leadership has been identified as one of the main reasons volunteers do not return to volunteering the following year (Eisner et al., 2009). Despite being initially enthusiastic upon joining, many volunteers soon become demoralised because of negative experiences, such as poor supervision, lack of support and hierarchical management structures, within the organisational setting (Hustinx, 2010). From this it becomes apparent that understanding and addressing the crisis of dwindling volunteers requires consideration of the organisational climate and how a volunteer's experience with their leader, once they join the organisation, affects their willingness to continue participating in volunteering activities.

Improving the quality of leadership provided to volunteers is critical to overcome barriers to ongoing volunteer participation and to ensure future sustainability of the non-profit sector so it is able to continue to deliver vital services to the community.

1.1.2 Context

The severity of the volunteer leadership and turnover problem, summarised in the previous section, is exemplified in the case of the Australian volunteer emergency service sector. Volunteers are the backbone of emergency response service provision in Australia (Australian Emergency Management Volunteer Forum, 2019). Volunteer-based emergency service organisations, such as the State Emergency Services (SES) and Rural Fire Services (RFS), operate in each state and rely on a large, well-trained and stable volunteer workforce to meet their responsibilities to protect the community and provide emergency response (Steering Committee for the Review of Government Service Provision, 2016). Nationally 256,650 fire, ambulance and emergency service volunteers were members of Australian emergency service organisations in 2014-15. Local units, made up almost entirely of volunteers, are involved with all aspect of emergency management, prevention, preparation, response and recovery, in the event of an emergency such as fires, storms and floods particularly in rural and remote areas and often work alongside paid police and fire department workers (Ganewatta and Handmer, 2009).

Australia's volunteer emergency service organisations are experiencing unsustainably high, and worsening, volunteer turnover where the future ability of the sector to meet its obligation to assist Australia with its emergencies is at risk (McLennan and Birch, 2005). The severity of this issue has been highlighted by the findings of several industry and government led enquires (Auditor General NSW, 2014, Office of the Auditor General Western Australia, 2015). In a 2014 report to parliament, the NSW Office of the Auditor General concluded

“[State Emergency Service] cannot be assured that it has sufficient volunteers to respond to future demands. It does not have strategies to establish what volunteers it needs and how to recruit, retain and train them effectively and efficiently. The number of active volunteers has fallen in recent years. Twenty-six per cent of SES volunteers leave each year, many soon after joining. The high turnover imposes extra demands on SES and its volunteers for little benefit. This is a major challenge which SES has not addressed effectively and indicates problems with both recruitment and retention. Leadership, recognition, communication and training are the most important issues that SES needs to address to improve the management of volunteers and reduce turnover.” (p. 2)

In line with broader volunteer research, the results of enquiries into Australia's volunteer emergency service retention crisis highlight poor-leadership to be a substantial problem (Victoria Emergency Service Association, 2016). Issues with management and supervision style, at a) a local unit level from volunteer leaders and b) an organisational level from paid staff, are noted as major sources of dissatisfaction and a key organisational-related reason emergency service volunteers quit (Dalglish, 2014, Frost, 2012, NSW SES Volunteers Association, 2014). In one study, analysis of 396 exit surveys from resigned fire and emergency service volunteers in South Australia identified poor climate and leadership failures as primary sources of dissatisfaction with volunteering leading to resignation (McLennan et al., 2009). In another study of 2,306 emergency service volunteers, the relationship between volunteers and their direct supervisor was found to be the strongest determinant of volunteers' job satisfaction and future volunteering intention (Rice and Fallon, 2011). Overall, the quality of volunteer leadership has been determined to be the most critical of all factors in promoting volunteer retention in emergency service agencies (Aitken, 2010).

Increasing focus on supporting volunteers' preferences means emergency service organisations need to tune their managerial practices in more volunteer-centred ways and prioritise the training and education of those who lead and supervise volunteers (Hustinx, 2010, Mayr, 2017). Numerous researchers have specifically called for a stronger emphasis on training and education of leaders across the volunteer sector in general (Harp et al., 2016) and in the emergency services industry specifically (Mayr, 2017, McLennan et al., 2008). McLennan et al. (2008) suggest that agencies should begin by determining what is required to support good leadership, then implement successful staff development programs to improve effectiveness. Overall, it can be concluded that, to address volunteer turnover problems, effective training programs are required to equip emergency service leaders with the skills and knowledge for better supporting the volunteers they supervise and interact with (McLennan et al., 2009).

1.2 SIGNIFICANCE AND OPPORTUNITY FOR RESEARCH

A critical barrier to addressing the problem outlined above is limited understanding about leadership in the context of volunteerism. Surprisingly, despite an increase in the number of organisations engaging with volunteers (Curran et al.,

2016) and strong historical interest in leadership (Avolio et al., 2009, Barling et al., 2011), theoretical and empirical investigations of volunteer leadership have received limited scholarly attention. A review of the literature [*Chapter 2.1 Leadership of Volunteers*] will show that a distinct theory of volunteer leadership, which is responsive to and reflects the unique volunteer context, has yet to be established. Initial studies have highlighted that there are important differences between leadership of volunteers and paid employees which require leaders to respond in unique ways (Farmer and Fedor, 2001, Posner, 2015). Traditional leadership theories, which unequivocally reflect research with paid workers in a traditional organisational paradigm, have not yet been established to be suitable or even effective with volunteer workers. Similarly, a scarcity of studies examining the relations between leadership and volunteer outcomes means there is limited knowledge about how leaders influence retention of volunteer followers. A number of researches have explicitly drawn attention to this gap in the literature and highlighted the need to further explore leadership and its effects on volunteer workers (Posner, 2015, Jäger et al., 2009, Studer, 2016).

The scarcity of volunteer-leadership literature poses a problem for volunteer organisations because there is little empirical guidance on what effective volunteer leadership looks like or what leaders can say or do to influence ongoing participation in volunteering. Therefore, whilst researchers, industry and government bodies call for increased emphasis on training and development of volunteer leaders (Mayr, 2017, McLennan et al., 2008, Auditor General NSW, 2014), organisations and their learning and development professionals currently lack an evidence-based framework upon which to focus their leadership development interventions. A strong theoretic foundation is a critical component of effective leadership training and development and the impact of experimental and quasi experimental leadership interventions has been shown to differ as a function of the leadership theory used (Avolio et al., 2009). Future work developing leaders in volunteer organisations should therefore consider how the leadership model being learned by participants is linked to specific volunteer participation outcomes, to have the greatest impact.

Self-Determination Theory (SDT; Ryan and Deci, 2017), a macro theory of human motivation, may provide a valuable theoretic lens through which to investigate leadership and volunteer retention. SDT has substantial utility for leadership education

because it provides an empirical-based framework for understanding how the social contextual climate in the organisation, and the interpersonal approach of the leader, influence workers' motivation, wellbeing and behaviour. The review of literature covered in *Chapter 2.2.2 Self-Determination Theory: A theoretical and empirical review in management* shows how, over 30 years of research, SDT developed to delineate an interpersonal style, managerial autonomy support, that provides the contextual condition necessary for facilitating self-regulated, willing and continued participation in activities. Managerial autonomy support refers to a motivationally supportive interpersonal climate initiated by an organisational leader in relating to workers and carrying out organisational tasks. SDT research conducted within paid organisations has shown that the provision of autonomy support from leaders or supervisors promotes high quality motivation towards work activities and positive outcomes such as wellbeing, commitment, performance, work satisfaction and, most importantly, future work intentions (Moreau and Mageau, 2012, Schultz et al., 2015, Chang et al., 2015, Collie et al., 2016, Gillet et al., 2012, Arshadi, 2010, Gillet et al., 2013).

More recently, research has begun applying SDT to study volunteer populations and exploring motivational predictors of volunteering behaviour and attitudes [*Chapter 2.4 Self-Determination Theory and Volunteerism*]. Whilst studies have found initial support for the theory and benefits of managerial autonomy support within volunteer populations (Haivas et al., 2012, Gagne, 2003, Oostlander et al., 2014), this area of research is still relatively small and the findings are far from conclusive. This current thesis recognises the separation between the population of interest, volunteers, and the historical development and testing of SDT as a limitation of the theory in the context of addressing the research problem. Because we know that the experiences and motivation of volunteers differ to that of paid workers (Boezeman and Ellemers, 2009, Catano et al., 2001, Pearce, 1983) further research is required to validate the theory and its assumptions regarding the benefits of managerial autonomy support with volunteers. Furthermore, assuming that managerial autonomy support is found to be a valuable model of leadership in volunteer organisations, and specifically the emergency service context, further research is also needed to establish whether, through training interventions, leaders can learn to adopt autonomy supportive

managerial approaches [*Chapter 2.3 Interventions: Applying autonomy support in the field*].

1.3 AIM AND RESEARCH OBJECTIVES

This thesis has been developed to address the problem of high turnover of volunteers in Australian emergency service organisations. Establishing the foundation for this research [*1.1 Background*], the summation of industry, government and academic enquiries highlights that improvements in the quality of leadership provided to volunteers is essential to overcome barriers to ongoing participation in volunteering and to ensure the future sustainability of Australia's emergency response provision. Despite recognising the need to develop the skills and knowledge of those who lead volunteers, there is currently limited empirical guidance to support organisations with this endeavour.

This thesis aims to provide a solution to this problem by formulating an evidence-based approach for improving leadership to help retain volunteer workers in Australian emergency service organisations. Drawing on Self-Determination Theory, the research examines the application of managerial autonomy support as an approach to volunteer leadership and investigates its influence on job satisfaction and turnover in volunteer emergency service organisations. The thesis adopts a dual approach, formulating and validating a theoretical model and then testing its implementation, in the form of a leadership intervention.

To achieve the aims of the research the dissertation focuses on three main objectives.

Research Objectives

1. Develop and test a hypothesized conceptual model of 'effective volunteer leadership' in emergency service organisations.
2. Test the training malleability of managerial autonomy support amongst leaders.
3. Evaluate flow-on effects of the leader-intervention to followers.

The first objective is to develop and test a hypothesized conceptual model of effective volunteer leadership that delineates how volunteers' interpersonal experience with their leader comes to influence their decisions to continue participating with the

emergency service agency. In this dissertation the term '*effective volunteer leadership*' will be used to refer to a set of leadership behaviours or interpersonal approaches that influence positive attitudes and continuance behaviours amongst volunteer workers. Through a critical review of previous literature, the research will establish a hypothesised conceptual model, detailing the process through which autonomy supportive leadership comes to influence job satisfaction and turnover intention, and test the model amongst emergency service workers. In doing so, the thesis makes its first contribution to addressing the problem by testing the suitability and effectiveness of managerial autonomy support as an approach to leading volunteers and establishing a theoretic framework that can inform the education of emergency service leaders and develop in them the interpersonal skills and knowledge required to retain volunteer workers.

Next the investigation advances to examine the application of the theoretic model as a leadership intervention in emergency service organisations. A leadership development intervention, aimed at enhancing managerial autonomy support from emergency service leaders, is implemented and evaluated. The second research objective is focused on examining the capacity for leaders to develop their interpersonal orientation towards autonomy support and sustain it over time. The flow-on-effects to workers who are led by intervention participants (followers) will also be explored. Accordingly, the third research objective seeks to evaluate whether or not the followers perceive changes in their socio-contextual climate after their leaders have completed the leadership intervention. In doing so the thesis contributes towards addressing the research problem by providing an empirical test of a theoretical-based intervention designed to improve leadership provided to volunteers in emergency service organisations.

Hence, this thesis is comprised of empirical inquiries into the application of managerial autonomy to the leadership of volunteers, its relationship with critical volunteer retention outcomes and its impact as a leadership-development intervention.

1.4 RESEARCH QUESTIONS

This dissertation addresses five important issues relating to managerial autonomy support as a leadership approach and its suitability for addressing the research problem.

Research Questions

1. Does managerial autonomy support promote ongoing participation in emergency services volunteering?
2. To what extent does the relationship between managerial autonomy support and volunteers' turnover intention act through basic psychological needs satisfaction and/or job satisfaction?
3. Can organisational leaders change their interpersonal orientation towards autonomy support in the short-term, and are these changes sustained?
4. Do some leaders change towards autonomy support more readily than others? And if so who?
5. Do followers perceive changes in their socio-contextual climate during the leader-intervention period?

Before we can develop the capabilities of leaders, we must first delineate what constitutes effective volunteer-leadership and how leadership comes to influence turnover intention in emergency service organisations. As outlined in the previous section [1.3 Research Aims and Objectives], the first objective is to formulate and test a hypothesised conceptual model in the volunteer emergency service context. Research question 1 and 2 speak to this initial line of investigation.

1. *Does managerial autonomy support promote ongoing participation in emergency services volunteering?*

Research question 1 focuses on ascertaining whether autonomy support is a suitable leadership approach for addressing the volunteer turnover problem in the emergency service context. *Managerial autonomy support* is an interpersonal style, proposed by SDT, that provides the contextual conditions necessary for high quality motivation (Ryan and Deci, 2017). Previous research has highlighted the important role of managerial autonomy support in predicting future work intentions amongst paid employees (Liu et al., 2011, Otis and Pelletier, 2005, Gillet et al., 2013), but further research is required to establish outcome variables that may be associated with managerial autonomy support amongst volunteer workers. In the context of this research, *ongoing participation* is defined as volunteers choosing to continue to be present at organisational activities and willingly donate their time to deliver the

services and objectives of the volunteer organisation. The alternative term ‘retention’ is commonly used to describe ongoing participation of employees within paid workplaces. However, non-profits volunteers rarely quit or resign formally but, instead, simply stop showing up (Jamison, 2003). Therefore, the term ‘ongoing participation’ was chosen as a more accurate reflection of continuation and retention as a construct within the volunteer organisational context. The literature recognises that participation in voluntary activities is a complex phenomenon that cannot be assessed by a single factor alone (Kelloway and Barling, 1993). Indicators of ongoing participation in prior research have included, for example, intention to continue volunteering, engagement, commitment, satisfaction and frequency of volunteering (Gagné, 2003, Harp et al., 2016, Hyde et al., 2016, Dwyer et al., 2013). In the present research job satisfaction and turnover, both turnover intention and actual behaviour, represent indicators of ongoing participation in volunteering. It is hypothesised that perceived managerial autonomy support from leaders will predict higher job satisfaction and lower turnover intentions amongst workers in emergency service organisations.

2. To what extent does the relationship between managerial autonomy support and volunteers’ turnover intention act through basic psychological needs satisfaction and/or job satisfaction?

The second research question focuses on revealing the inner psychological mechanisms through which leadership influences volunteer participation outcomes. The research will test whether SDT theoretical assumptions, regarding managerial autonomy support as a construct and its relations, transcend across organisational boundaries and are valid within volunteer organisations, specifically the volunteer emergency services context. In line with SDT’s conceptualisation of autonomy support, it is hypothesised that perceived managerial autonomy support will predict basic psychological need satisfaction amongst followers. Furthermore, in accordance with SDT’s process model of motivation, it is hypothesised that basic psychological need satisfaction will mediate the beneficial influence of managerial autonomy support on followers’ job satisfaction and turnover intention.

Next, the thesis progresses its investigation into the effects of the leadership development intervention. To solve the research problem, it is important to know

whether emergency services leaders can change their interpersonal orientation towards autonomy support and therefore the second objective is to test the training malleability of autonomy support amongst leaders. Research questions 3 and 4 focus on illuminating this issue in more detail.

3. *Can organisation leaders change their interpersonal orientation towards autonomy support in the short-term, and are these changes sustained?*

Prior intervention research [2.4 *Interventions: Applying autonomy support in the field*] suggests that people can learn to be more autonomy-supportive toward others. This has been shown true in the domains of healthcare (Murray et al., 2015, Williams et al., 2002) and education (Cheon et al., 2018, Reeve, 1998) but evidence for the malleability of autonomy support in workplaces is currently limited. Furthermore, until now the literature has focused on short-term change in intervention participants' orientation towards autonomy support (Reeve, 1998, Murray et al., 2015, Cheon et al., 2018, Tessier et al., 2008, Hardré and Reeve, 2009). We do not yet know about the sustainability of such change and whether the initial improvements in interpersonal orientation reflect enduring long-term changes or if, over time, people revert to their initial orientation. This research seeks to address these two limitations in the intervention literature by a) overcoming methodological limitations of previous intervention studies with managers and b) conducting a longer-term test of the effects of the intervention. It is hypothesised that leaders who receive the leadership development intervention will improve their interpersonal orientation towards autonomy support and away from controlling approaches. It is also expected that changes in the managerial orientation of leaders who receive the intervention are enduring and will continue to be evident one year after the intervention.

4. *Do some leaders change towards autonomy support more readily than others? And if so, who?*

The fourth research question is concerned with exploring individual differences in treatment effects of the leadership intervention. Previous literature has simply asked whether people can learn to adopt autonomy supportive orientations. This thesis will unpack this line of enquiry further by asking: do some people change more than others? And if so, who? Considering leaders' individual differences in their development trajectories, the thesis will explore whether certain groups of leaders show greater

propensity for developing their interpersonal orientation towards autonomy support. The research will test a range of variables including the leader's age, their gender, their managerial experience and the extent to which they engaged with and applied SDT during the intervention period.

5. *Do followers perceive changes in their socio-contextual climate during the leader-intervention period?*

The final research question addresses objective 3, which is to evaluate flow-on effects of the leader-intervention to followers. This thesis will investigate whether emergency service workers (i.e. followers), who are led by those participating in the leadership development intervention, experience any immediate changes in their workplace climate after the intervention. The emphasis will be on perceived changes in their leader's interpersonal orientation, with further tests to investigate whether certain groups of followers are more likely to report changes in the provision of autonomy support from the leader. Changes in followers' perceived basic psychological need satisfaction, job satisfaction and turnover intention, over the time their leader was participating in the intervention, will also be examined. It is hypothesised that followers will report higher autonomy support from their leader, higher basic psychological need satisfaction, higher job satisfaction and lower turnover intention after their leaders complete the intervention.

1.5 THEORETICAL FRAMEWORK JUSTIFICATION

This thesis draws on Self-Determination Theory to make the argument that emergency service volunteers will be more satisfied and willing to continue participating in volunteering activities if their leaders adopt interpersonal approaches that are supportive of basic psychological needs. A comprehensive and critical review of theoretical perspectives on motivation, in the context of leadership, is presented in *Section 2.2 Theoretical Review of Motivation*. Through this, key ideologies are identified and appraised on their suitability for leadership in the volunteer context. Self-Determination Theory is distinguished as the theoretic model most suited to addressing the research problem and the key components and assumptions of the theory are outlined in the subsequent section, *2.2.2 Self-Determination Theory: a theoretical and empirical review in management*. This current section in the Introduction chapter is intended to provide a broad justification

for the choice of theoretical framework and argue for its suitability for the research problem and context.

SDT's emphasis on three universal needs has substantial utility for organisational leadership by delineating dimensions of the workplace climate that would be expected to lead to positive versus negative work-related outcomes (Baard et al., 2004). From a learning and development perspective, the focus on only three needs provides a simple framework that is easier for leaders to learn and recall in application, relative to more complex alternative models of leadership and motivation. The assumed universality of the needs as essential nutrients for functioning and growth (Ryan and Deci, 2000, Deci et al., 2001) means the model has application with followers from diverse cultures and backgrounds. This reduces the complexity needed for the leader to customise their motivational support strategies for different followers, proving valuable for learning, particularly amongst inexperienced leaders who may not be so readily able or practiced at adapting and modifying their leadership style. It is of interest to the discussion of leadership that SDT is a social theory concerned with how relational experiences and social interaction shape the qualities and extent of motivation (Weinstein, 2041). SDT research has developed to specifically articulate interpersonal communication and managerial approaches that are motivationally supportive or detrimental (Deci et al., 1989, Ryan, 1981, Ryan, 1982). To this end, Deci and Ryan's conceptualisation of motivationally supportive interpersonal styles is generative for grasping what leaders can say and how they can interact with their followers to improve volunteer experiences. The emphasis away from organisational control and towards autonomy supportive organisational contexts and follower wellbeing aligns with humanistic leadership ideology, which has been argued to be suited to leadership of volunteers [Section 2.2.1 Motivation Theory: A Leadership Perspective]. It is here also that SDT research has shown initial promise in understanding the influence of leadership on volunteer participation (Gagné, 2003, Li et al., 2016) and opened opportunities for future research and theoretic development.

1.6 RESEARCH APPROACH

1.6.1 Positivist paradigm

This thesis adopts a positivist set of guiding assumptions, arguing that such a paradigm aligns with the research problem and is congruent with the research tradition of the body of literature to which the research contributes. Positivism, sometimes referred to as 'scientific method' is based on the rationalistic, empiricist philosophy that originated with Aristotle, Francis Bacon, John Locke, August Comte, and Emmanuel Kant (Mertens, 2005). The positivist approach to research aims to test a theory or describe an experience and make predictions through precise measurement and emphasises the importance of objectivity, systematic and detailed observation, testing hypotheses through experimentation, and verification (O'Leary, 2004)

The choice of adopting positivist assumptions was influenced by the theoretical framework (Ryan and Deci, 2002) and prior leadership impact research (Avolio et al., 2009) which have also tended to adopt positivist guiding assumptions. Self-Determination Theory scholars have been explicit about the research tradition within which the theory has been developed and researched. Ryan and Deci (2000) specify that “*SDT is an approach to human motivation and personality that uses traditional empirical methods*” (p. 68). Furthermore, they emphasise the importance of experimental paradigms in development of the theory and note that “*Much of the SDT research have been in the Baconian tradition, in that social contextual variables have been directly manipulated to examine their effects on both internal processes and behavioural manifestations*”(p. 69). By explicitly referencing Baconian (Jalobeanu, 2013) and empiricist philosophy and methods of enquiry, the theorists stipulate positivist guiding assumptions as the foundation of SDT research. This thesis therefore adopts the same set of guiding assumptions to enable the research to be congruent with this body of knowledge and contribute to expanding it in a systematic way that would be accepted by the existing scholarship.

Providing further justification for the choice of positivist guiding assumptions, it is argued that positivism aligns with the research problem and objectives of the thesis. The present study addresses the theoretical gap in the volunteer leadership literature, where models of leadership have rarely been developed or tested explicitly amongst volunteer workers. This research sets out to develop and test a framework for leadership within the volunteer organisational context and tests its effects on leaders

and volunteers within an organisation. It is argued that a positivist position is suited for explicit theory testing where the research is conducted on the premise of the existence of prior fixed relationships within phenomena (Cooksey and McDonald, 2011). In contrast, constructivists do not generally begin with a theory, rather, they generate a theory or pattern of meanings (Cresswell, 2003). Furthermore, this research is concerned with relationships between variables (e.g. leadership and volunteer participation outcomes), and testing intervention effects, a key focus of positivism rather than a constructivist search for meaning (Grant and Giddings, 2002). Hence, this thesis is embedded within the positivist paradigm and this informs the methodology of the study.

1.6.2 Method of enquiry

This section provides a general overview of the methodological approach of the thesis and serves to highlight the link between the research paradigm and method of enquiry. Detailed information about participants, design and approach to data collection and analysis is presented in *Chapter 3 Methodology*. In line with the guiding assumptions, the methodological stance emphasises objectivity, precision of measurement and data gathering strategies and control over confounding variables.

Data collection methods

This study involves 165 leaders and 190 of their followers across four emergency service organisations in Australia. A quasi-experiment and time-series design tests the leadership intervention and hypothesised conceptual model of effective volunteer leadership. Leaders in the experimental condition, who take part in a nine-week SDT-based training and behaviour change intervention, are compared to leaders in a control group who received no training. A validated self-report scale is used to measure leaders' managerial orientation towards autonomy support prior to and after the intervention, and those in the experimental group are measured again one year later. Data is also collected from followers before and after their leader takes part in the intervention. Established self-report scales are used to measure followers' perceived autonomy support from the leader, basic psychological need satisfaction, job satisfaction and turnover intention. Turnover data, regarding whether the follower is still a member of the organisation, is also provided by the organisation one year after the intervention.

Methods of analysis

Addressing the first objective, *develop and test a hypothesized conceptual model of 'effective volunteer leadership' in the volunteer emergency service context*, the research draws on baseline data collected from followers prior to the intervention. Structural Equation Modelling is used to test both the measurement of the constructs and the hypothesised process through which perceived managerial autonomy support comes to influence turnover intention.

Turning to the second research objective, *test the training malleability of managerial autonomy support amongst leaders*, the study evaluates the impact of the intervention on the managerial orientation of leaders over time. To test whether the intervention changed leaders' self-reported managerial orientations within the nine-week intervention period, general linear modelling techniques compare data obtained from leaders in the experimental and control conditions from pre-test to post-test. The longitudinal data is drawn on to establish if the effects of the intervention endure one year later. The fourth research question is concerned with investigating whether some groups of leaders show greater propensity of developing their managerial orientation. Moderation analysis, via hierarchical multiple regression, is used to test whether characteristic variables moderate the effect of the intervention on change in managerial orientation over time.

Finally, the third research objective is to *evaluate flow-on effects of the leader-intervention to followers*. Drawing on the data collected from followers before and after their leaders take part in the intervention, hypotheses about change in followers' experience of autonomy support, basic psychological need satisfaction and turnover intention are tested via general linear models.

1.7 THESIS STRUCTURE

This dissertation comprises of six chapters organised as a traditional thesis structure. The chapters are: 1 Introduction, 2 Literature Review, 3 Methodology, 4 Results, 5 Discussion and 6 Conclusion. The decision to adopt a traditional research report structure was, in part, driven by the choice of research paradigm and intentionally aligning to standards for presenting and communicating scientific research.

Chapter 2 Literature Review provides the theoretical and empirical basis for the thesis. This chapter commences the journey towards solving the research problem by establishing the current state of the literature across the intersecting topics of leadership, motivation and volunteerism and their implications for improving leadership to reduce turnover amongst volunteers. The literature review is divided into four sections. *2.1 Leadership of Volunteers* reviews previous research that has investigated leadership within volunteer organisations. *2.2 Theoretical Review of Motivation* evaluates theoretic perspectives of motivation through the lenses of organisational leadership. *2.3 Self-Determination Theory and Volunteerism* reviews SDT research conducted with volunteer samples to assess the validity of SDT as a theoretical model of volunteer motivation and synthesizes its contribution to understanding volunteering behaviours and continuance. Section *2.4 Autonomy-Support Interventions* reviews prior research that has made attempts to manipulate autonomy support through interventions and experimental field studies and, in doing so, evaluates current evidence for the effectiveness of interventions focused on increasing autonomy support. The literature review chapter concludes with *2.5 Summary and Conceptual Framework*, where a summary of the key gaps and methodological limitations that were identified from the literature review are outlined followed by a discussion of how they will be addressed in this thesis. The hypothesised conceptual model is proposed, and explicit hypotheses are stated regarding the expected relations among the variables and how they are derived from the literature.

Chapter 3 Methodology describes the research method adopted by the thesis to achieve the research objectives and address the literature gaps and limitations identified from the literature review. The chapter commences with the research design and describes the sampling process and participants in the study. Detailed information about the intervention can also be found in this chapter including the delivery characteristics, content and goals and justification for the intervention methodology. The procedure for collecting the data, including scales and their reliability, and the planned method of analysis are also presented.

Chapter 4 Results details the process of analysis and the findings relating to tests of the hypothesis and research questions of this thesis. The Results chapter is organised into three sections, corresponding to each main objective of the thesis. The results of

analysis are furnished with preliminary analysis reporting assumption testing and a description of the data.

Chapter 5 Discussion aims to provide a summary and interpretation of the research findings and discuss them in relation to the research question and to the results of previous research in the field. The chapter is divided into three sections, corresponding to each of the three research objectives. The discussion centres around each research questions and commences with a summary and interpretation of the findings followed by a comparison and contrast to prior literature and finally delineating what new information the research provides on the issues. A critical evaluation of the findings discusses alternate explanations for the results from the wider literature.

Chapter 6 Conclusion consolidates the main areas covered in the thesis and provides final comments. Returning first to the aims and research problem, the findings of the research are summarised and their significance to addressing the problem are highlighted. Next, the thesis' contribution to our understanding of leadership theory and motivation theory are extrapolated along with methodological and practical implications. Important limitations of the research are highlighted and suggestions for a future research agenda are established.

Chapter 2: Literature Review

This thesis is concerned with addressing the problem of high turnover of emergency service volunteers due to ineffective leadership. The literature review chapter commences this endeavour by identifying and evaluating prior research that can help inform a theoretic framework and research agenda for how this might be achieved.

Chapter 2. Literature Review focuses on prior research into the intersecting topics of motivation, leadership and volunteerism and their implications for improving leadership and retaining volunteers in emergency service organisations.

The purposes of this literature review are to:

1. Critically evaluate previous research that forms our current understanding of the topic to identify research gaps and limitations that need to be addressed
2. Identify and evaluate theories that are of value to solving the research problem and show how the conceptual framework was generated.
3. Critically evaluate previously used methodological approaches to identify limitations, successful strategies and show how the methodology was developed.

The literature review chapter is divided into four sections.

Section 1. Leadership of volunteers

The chapter commences by reviewing previous research that has investigated leadership within volunteer organisations. The focus is on identifying and evaluating theories and empirical research into what constitutes effective leadership of volunteers and how leaders influence volunteer turnover and participation. From reviewing this body of literature, motivation theory is identified as the most suitable theoretic perspective for investigating the research problem and contributing toward theoretical development in this area of study.

Section 2. Theoretical review of motivation

This next section of the literature review evaluates theoretic perspectives of motivation through the lenses of organisational leadership. The first part, *2.2.1 Motivation Theory: A leadership perspective*, examines the historical development of motivation. The review synthesises the key ideologies and themes that emerged over time to shape the way we theorise about motivation and how these ideas and assumptions are reflected in leadership theory and practice. The theoretic perspectives are appraised on their suitability for leadership in the volunteer context and Self-Determination Theory is distinguished as the theoretic model adopted for the thesis. The subsequent part, *2.2.2 Self-Determination Theory: a theoretical and empirical review in management*, details key elements and assumptions of Self-Determination Theory and how empirical research has contributed towards understanding the influence of leadership in organisations.

Section 3 Self-Determination Theory in volunteerism

This next section of the literature review evaluates SDT research conducted with volunteer samples to assess the validity of SDT as a theoretical model of volunteer motivation and synthesise its contribution to understanding volunteering behaviours and continuance. The review commences with an evaluation of empirical support for the key theoretical assumptions of SDT within volunteer populations. Next, the review explores how SDT has contributed towards our understanding of motivational processes that influence participation of volunteers and their attitudes towards volunteering activities.

Section 4. Interventions: Applying autonomy support in the field

Section 4 is concerned with evaluating and synthesising research that has made attempts to manipulate autonomy support through interventions and experimental field studies. The review seeks to evaluate current evidence relating to the effectiveness of interventions focused on increasing autonomy support. Through a critical evaluation of the prior intervention research the section concludes with identifying critical methodological limitations and research gaps that need to be addressed.

Summary and conceptual framework

The chapter concludes by summarising the key gaps and methodological limitations that were identified from the literature review and how they will be

addressed in this thesis. Drawing on Self-Determination Theory, a conceptual framework is proposed, describing how leaders' interpersonal approach initiates motivational processes that in turn increase satisfaction and reduce turnover intention amongst volunteer workers. Explicit hypotheses are stated regarding the expected relations among the variables and how they are derived from the literature.

2.1 SECTION 1. LEADERSHIP OF VOLUNTEERS

Leadership has been the subject of theoretical and empirical research for much of the past 100 years and remains one of the most researched topics in organisational behaviour today (Barling et al., 2011). Defining leadership, this thesis adopts the conception of organisational leadership as the way in which one (the 'leader') influences, motivates, and enables others ('followers') to contribute toward the effectiveness and success of a working group or an organization of which they are members (Brodbeck, 2001). Scholarly interest in the nature and effects of leadership have led to the wide range of leadership theories and empirical research that form the foundation of current thinking about leadership (Avolio et al., 2009, Zaccaro, 2007, Gardner et al., 2011, Gerstner and Day, 1997). Unequivocally, most of this research was conducted in the traditional organisational paradigm where a contractual agreement and/or financial exchange exists between workers and the organisation. Leadership in volunteer organisations does not fit this paradigm. Volunteers are members of the community who willingly give their time for the common good without being remunerated for this work (Australian Bureau of Statistics, 2018, Cnaan et al., 1996, Volunteering Australia, 2015). Like traditional workers, volunteers provide their services within a formal structure, such as volunteering in a charity or non-profit organisation, although they are free of obligations to do so (Bidee et al., 2013). Volunteer organisations therefore provide a novel context to study leadership and its influence on the attitudes and behaviours of followers.

There is a small body of literature that has begun to consider the implications of leadership in volunteer organisational contexts. Despite receiving only minimal empirical attention, the evolution of volunteer leadership research is essential to understanding the nature and effects of leadership in present day organisations. This is because there has been growth in the NPO sector globally and organisations are increasingly relying on volunteer workers (Curran et al., 2016). This first section of the chapter reviews research that has investigated leadership within volunteer

organisations. Much of the early studies were interested in what makes volunteer workers and organisations unique (Pearce, 1983) and subsequently expanded to explore how leadership styles and behaviours influence volunteer outcomes (Dwyer et al., 2013, Catano et al., 2001). The literature review follows these two primary lines of enquiry to identify some key factors that underlie effective leadership of volunteer workers. This section concludes by considering the implications of recent developments in volunteer leadership for establishing a theoretic model upon which training and development of volunteer leaders can be based.

2.1.1 The unique nature of volunteer leadership

Much scholarly discussion concerning leadership in the volunteer context has centred on exploring how volunteer workers and organisations are different to paid employees and the traditional organisational paradigm. This analysis has considered characteristics of the follower (Pearce, 1983, Pearce, 1982), characteristics of the organisation (Farmer and Fedor, 2001) and the interpersonal approach of the leader (Posner, 2015, Catano et al., 2001). In general, the findings have established volunteer leadership to be a unique construct that is conceptually distinct from general leadership (Posner, 2015). The following reviews this body of literature to identify the key factors that make leadership of volunteers unique.

Researchers agree that followers who are volunteers are fundamentally different to followers who are paid workers (Pearce, 1993, Pearce, 1982). Studies comparing volunteers to paid workers in similar roles have revealed substantial differences between the groups on facets of personality (Liao-troth, 2001, Elshaug and Metzger, 2001), continuation commitment to the organisation (Liao-troth, 2001), motivation and work-related attitudes (Pearce, 1983, Boezeman and Ellemers, 2009). Perhaps the most widely cited of these comparison studies was Pearce (1983), who compared matched pairs of volunteers and employees jobs from newspaper, poverty relief, fire department and family planning organisations. Compared to paid workers, volunteers in her study reported greater social and service motivation whereby they were more likely to contribute their time for purposes of social interaction and service to others. Volunteers also reported greater job satisfaction, less intention to leave and believed their activities were more praiseworthy than the paid workers. Overall, the literature suggests that volunteers experience their role in a way that is different to paid workers

in terms of underlying motivation and attitudes towards their work (Boezeman and Ellemers, 2009).

Leaders in volunteer organisations also face a unique organisational context where they are less able to leverage authority or reward structures to influence worker behaviour. Leaders of volunteers must accomplish their work without carrots and sticks that have characterised traditional employment (Pearce, 1982). The leadership context in traditional paid organisations is characterised by clear organisational authority and reward structures. Paid workers have organisationally specified roles and performance standards and their participation and compliance relies, to some degree, on providing financial incentives, such as remuneration, or withdrawal of these rewards, such as employment termination (Farmer and Fedor, 2001). Subsequently, leadership theories, research, and recommended practices, have implicitly reflected the effects of these organisational structures (McLennan et al., 2008). In contrast, authority and rewards structures are less clear in volunteer organisations, including emergency service agencies (McLennan et al., 2008), and traditional control systems that rely on rewards and punishments are simply not relevant nor available to leaders of volunteer workers (Farmer and Fedor, 2001). In the absence of performance appraisals and reward systems, it is more difficult to hold volunteers to organisational performance standards or to terminate poor performers meaning that leaders relying on volunteer workers face high variability in volunteer contribution levels and performance (Farmer and Fedor, 2001). Without the traditional forms of authority inherent in paid positions, volunteer leaders must connect with their followers in other ways in order to successfully influence and motivate them (Posner, 2015). Boezeman and Ellemers (2014) suggest that volunteer leaders must engage in leadership practices that are responsive to the unique volunteering context and focus on non-coercive and non-instrumental approaches.

Several authors have proposed that leadership may play a greater role in sustaining workers' continued participation within the volunteer context (Catano et al., 2001, Dwyer et al., 2013). Unlike paid workers, volunteers are not contractually bound to their organisation and can withhold their services more readily. Because volunteers do not rely on their role as a source of financial security, it is easier for volunteers to move between organisations and roles more freely, not to show up for their services or to quit (Alfes and Langner, 2017). This key difference, whereby volunteers can more

readily walk away, highlights why retention and turnover are more pertinent issues facing leaders in volunteer organisations. Having the leadership skills and capabilities to support volunteer involvement and facilitate ongoing participation is, therefore, especially important within the volunteering context.

Recognising the unique context of volunteerism, it is no surprise that early research indicates leaders in volunteer organisations practice leadership differently to those in paid roles (Pearce, 1982). A comparison of 212 Lions International volunteers with 77 labour union employees reveals significant differences in perceived leadership style between the two groups (Catano et al., 2001). Members and leaders in the volunteer organisation perceived the volunteer leaders to exhibit transformational leadership more extensively than their union leader counterparts, who were perceived to rely on a more transactional leadership style. Posner (2015) also found that, compared to leaders in paid organisations, leaders of volunteers reported that they engaged in more of the exemplary leadership behaviours under investigation in their study (i.e. modelling, inspiring, challenging, enabling and encouraging). Whilst these studies provide early indication that leaders in volunteer organisations espouse different leadership behaviours and approaches, comparisons are typically made between participants from very different organisations and industries doing diverse types of work. The observed variation in leadership practices may therefore reflect organisational differences rather than leadership differences in volunteering versus paid contexts. To better understand if and how leadership is practiced differently in a volunteering context, future researchers should endeavour to sample comparable organisations.

In summary, leadership of volunteers is a unique phenomenon and those tasked with influencing and coordinating volunteers face a distinct set of leadership challenges. Previous studies have revealed that, in contrast to the traditional organisational paradigm, volunteer workers, volunteer organisational contexts and leadership practices are fundamentally different within volunteer-based organisational settings. This early research has established the foundation for recognising the importance of explicitly studying leadership in volunteer populations, rather than generalising findings from studies of paid employees. Because volunteer leadership is shown to be distinct from general leadership, it cannot be assumed that leadership styles and approaches suitable for managing employees are appropriate or even

effective for managing volunteers (Posner, 2015, Boezeman and Ellemers, 2014, Ferreira et al., 2015). This raises the question of how leaders can respond to the unique needs of volunteers and meet the challenge of leading those who can freely choose whether or not to follow (Studer, 2016).

2.1.2 The influence of leadership on volunteer outcomes

Studying the effects of leadership within volunteer populations is critical to understanding what leadership practices are appropriate or effective with volunteer followers. Surprisingly, despite a strong historic interest in leadership, theoretic and empirical investigations of volunteer leadership have received limited scholarly attention. Regarding theoretic development of the field, researchers are yet to propose or develop a theory addressing the phenomenon or process of volunteer leadership. Although new theories have been developed to describe volunteering behaviour and motivation (Clary et al., 1998) a comprehensive review of the literature failed to find a theory of leadership specifically developed for the volunteer context. Rather than pursuing theoretic development, leadership research in volunteer organisations, so far, has tended to apply traditional theoretic frameworks of leadership (e.g. leader-member exchange theory LMX; Bang, 2011) and organisational behaviour (e.g. Job Demands-Resources model; Tuckey et al., 2012).

Regarding empirical development of the field, studies of volunteer leadership have mostly adopted a follower-oriented perspective, investigating the effect of leadership on volunteer follower outcomes. This small but important body of research has revealed the important influence that leaders have on the motivation and attitudes of volunteers as well as ongoing participation in volunteering activities (Zievinger and Swint, 2018, Oostlander et al., 2014, Catano et al., 2001). The following section reviews this research to evaluate current evidence regarding the influence of leadership on volunteers and distinguish leadership styles or behaviours that have been linked to ongoing participation amongst volunteer workers.

Interpersonal approach of the leader

The interpersonal approach of the leader, and their relationship with volunteers, was found to be important for fostering positive volunteer outcomes such as satisfaction and retention (Bang, 2015). For example, Boezeman and Ellemers (2014) investigated how specific leadership behaviours fostered identification with the

organisation and satisfaction with leadership amongst volunteers via a cross-sectional study of 109 cross-industry volunteers. They concluded that it was important for volunteer leaders to support volunteers during volunteer work and to encourage volunteers to express their ideas within the organization. By doing this, leaders instilled respect among volunteers which was a precursor to satisfaction with leadership. Similarly, Waikayi et al. (2012) attributed retention of British Red Cross volunteers to a supportive manager who created a favourable work environment. When volunteers were interviewed about their reasons for volunteering and why they stayed, participants claimed that the style and approach of the manager enabled them to continue service and made comments about the importance of the managers' caring manner and friendly/appreciative attitude.

Transformational leadership and volunteers

In the absence of an established volunteer-leadership theory, leadership studies within the volunteer context have commonly drawn upon on transformational leadership (Burns, 1978) as their theoretic framework. Transformational leaders are attentive to the individual needs and differences of their followers and engage others through intellectual stimulation and sharing their visions for the future (Bass, 1985). In doing so transformational leaders are expected to raise followers to a higher level of motivation where the aspirations of the collective group transcend the individual and promote the achievement of work outcomes and improved effectiveness (Lowe et al., 1996, Burns, 1978). Transformational leadership is contrasted with transactional leadership whereby leaders engage their subordinates through exchanging rewards contingent upon a display of desired behaviours (Burns, 1978).

Initial research applying the transformational/transactional paradigm to study volunteer leadership have reported relations between transformational leadership and positive outcomes amongst volunteer workers (Rowold and Rohmann, 2008). Volunteers who perceived their leaders to adopt transformational leadership approaches were more satisfied with their volunteer experience, more engaged, and reported higher levels of psychological commitment to their organisation (Dwyer et al., 2013, Catano et al., 2001, Mayr, 2017). Transformational leadership was also linked to higher engagement and lower turnover intention amongst the 213 volunteer firefighters surveyed in Germany (Mayr, 2017). Testing the underlying mediation process, the authors found transformational leadership promoted volunteers'

engagement though strengthening the organisational ties of volunteers and connecting them with the prosocial impact of their work. Thus, initial research supports transformational leadership as a beneficial approach to leading volunteer workers.

However, pertinent to addressing the research problem within the present research, having a transformational leader has not appeared to influence participation in volunteering activities. Researchers have so far failed to find an association between transformational leadership and volunteer participation, as measured via a multidimensional approach (Catano et al., 2001) or by number of hours volunteers contributed (Dwyer et al., 2013). So, despite being beneficial for volunteers to feel satisfied and engaged with their organisation, transformational leadership does not appear to be a contributing factor in volunteers' willingness to continue their participation. Interestingly, the lack of association between transformational leadership and participation appears to be unique to the volunteering context. In their study comparing volunteers and employees Catano et al. (2001) found that transformational leadership promoted higher participation amongst employees but was unrelated to participation amongst volunteers. Furthermore, transactional leadership predicted lower participation amongst volunteers but was unrelated to participation amongst the employees. Although transformational leadership is considered to be universally effective across different contexts (Bass, 1997), the application of the theory to the volunteerism suggests that the effect of transformational leadership on volunteer followers may differ from those in non-volunteer contexts (Dwyer et al., 2013). The negative relationship between transactional leadership and participation, found for the volunteer sample only, suggests that in volunteer organisations, where participation is not compulsory or based on financial contingencies, people may have different expectations of leadership and be less tolerant of leaders employing controlling and contingent leadership approaches.

Leadership and volunteer motivation

In their study of 302 US volunteers, Dwyer et al. (2013) revealed that it was not transformational leadership but rather sources of volunteer motivation that predicted the number of hours volunteers contributed. Specifically, volunteers whose personal motives for volunteering were to gain an understanding and learn more about the cause spent more hours volunteering. Volunteers also contributed significantly less hours if they were motivated by esteem enhancement and social concerns. These findings point

to the importance of motivational mechanisms in understanding ongoing participation in volunteering. Indeed, motivation has been a frequently studied construct in the volunteer literature, with the main line of enquiry being to unravel reasons that drive people to volunteer (Stukas et al., 2016, Grano et al., 2008).

An emerging body of work has begun to explore volunteer leadership through a motivational lens. Recognising that aspects of the organisational environment are important in sustaining volunteer motivation past initial drives for joining, a few studies have investigated the socio contextual climate created by leaders. Testing a model derived from Self-Determination Theory, researchers have demonstrated that the social climate created by the leader in their interactions with volunteers plays a key role in the volunteers' motivation. In one such study, Haivas et al. (2012) examined the social context of over three hundred volunteers in Romania. The authors concluded that having supervisors provide an autonomy-supportive volunteering climate, not the size of the volunteer's social network, had a positive impact on volunteers' motivation for performing volunteering activities. Subsequent research has continued to show that an autonomy supportive volunteering climate, initiated by the supervisor, positively impacts volunteer motivation and satisfaction (Oostlander et al., 2014a, Oostlander et al., 2014b). Without traditional extrinsic financial incentives inherent in paid positions, the interpersonal approach of the supervisor is an important contextual factor for motivating volunteers. A comprehensive review of Self-Determination Theory and its application to the study of volunteerism will be presented in *Section 2.2 [Self-Determination Theory: A theoretical and empirical review in management]* and *Section 3 [Self-Determination Theory and volunteerism]* of this chapter. Overall the findings from the initial review highlight the important role that leaders play in motivating volunteers.

In summary, leaders in volunteer organisations act as the crucial link between the organisation and their volunteers and thus represent an influential factor for volunteer motivation and satisfaction (Oostlander et al., 2014). Research examining the influence of leadership on volunteer outcomes has highlighted the importance of a leader's interpersonal style in predicting positive volunteer outcomes such as engagement (Mayr, 2017), satisfaction (Bang, 2015, Boezeman and Ellemers, 2014), commitment (Catano et al., 2001) and retention (Waikayi et al., 2012). The findings of this review also serve to highlight how little research attention volunteer leadership

has received. Further research is required to more fully understand the impact of a leader's interpersonal style and behaviours on followers who are volunteers.

2.1.3 Critique and implications for developing leadership in volunteer organisations

Reviewing the current state of literature, it becomes apparent that theoretical and empirical examination of volunteer leadership is still in its infancy. This poses an issue for organisations, such as those in the Australian Emergency Management sector, looking to improve the quality of leadership provided to volunteers because there are limited evidence-based frameworks upon which training and development of leaders can be based. There is currently very little understanding of which leadership styles or behaviours are effective and suited to volunteer workers. Similarly, a scarcity of studies examining the relations between leadership and volunteer outcomes means there is limited empirical guidance on what leaders can say or do to influence turnover intentions and satisfaction amongst their volunteer followers.

What is currently known about leadership in volunteer organisations is that those tasked with managing and supervising volunteers face a unique set of leadership challenges, organisational contexts and workers where leadership practices used with paid workers may not always be appropriate or effective (Ferreira et al., 2015, Posner, 2015). There has been early support for the idea that the volunteers' experience with their leader is important in supporting volunteer contribution and participation in volunteering activities (Mayr, 2017, Boezeman and Ellemers, 2014). Transformational leadership theory (Burns, 1978) and motivation theory, specifically Self-Determination Theory (Deci and Ryan, 1985), were identified in the review as two theoretic perspectives that showed promise for understanding the influence of leadership on volunteer outcomes such as participation and satisfaction. Early application of transformational leadership theory to the study of volunteers suggested that, like paid contexts, transformational leadership was beneficial for volunteer workers (Dwyer et al., 2013, Mayr, 2017). However, unique to the volunteer context, transformational leadership did not influence volunteer participation (Catano et al., 2001) and, therefore, may not provide a viable model of leadership for addressing volunteer retention issues. Researchers examining effective volunteer leadership through a motivational lens reveal that autonomy supportive social contexts, initiated by the supervisor, have a beneficial effect on the motivation and satisfaction of

volunteer workers (Haivas et al., 2012, Oostlander et al., 2014). Further application of these theories to the study of volunteer leadership would be a valuable research endeavour to help advance this area of knowledge.

This review has revealed a major theoretical gap in the study of volunteer leadership. Volunteer leadership is recognised as a unique leadership construct (Posner, 2015) but, despite its differentiation from general leadership, volunteer leadership has thus far not received distinct theoretical attention. The review of literature found no research on a leadership theory that specifically addresses the unique needs of volunteer workers and challenges faced by leaders in volunteer organisations. Because traditional theories implicitly reflect paid organisational contexts they may therefore be limited in their capacity to effectively address volunteer issues (McLennan et al., 2009). Initial research, highlighting the unique nature of volunteer leadership (Farmer and Fedor, 2001, Pearce, 1982) and differences in paid vs volunteer responses to transformational leadership (Catano et al., 2001), have served to further highlight the importance of explicitly studying leadership in volunteer populations, rather than generalising findings from studies of paid employees. More research is therefore required to commence theoretic development of volunteer leadership as well as establish the validity of established theoretic frameworks within volunteer populations.

The knowledge gap has subsequently limited empirical development in the field. In the absence of volunteer-specific leadership theories, researchers have employed disparate theoretical frameworks to study how leader behaviour impacts volunteers. This has resulted in fragmentation of an already small body of literature that is predominantly descriptive in nature. To move this important research area forward and begin to better understand how leaders influence volunteer workers, future studies would benefit from theoretic consistency. Specifically, it is suggested that researchers identify and focus on theoretic models that have already been shown to predict beneficial volunteer outcomes and further extend and build on this existing research in a systematic way. In doing so, researchers would address the limitations of the volunteer leadership literature by building a larger, more coherent, and connected body of research that allows for replication and refinement of findings and ideas. Although there is value in exploring the topic from various theoretical lenses, it is argued that the current state of literature, at this given point in time, would benefit more from

theoretical consistency and empirical extension rather than the introduction of further novelty and thus continuing the theoretic disparity. There are substantial research opportunities for developing theories of volunteer-leadership and furthering our understanding of the uniqueness of leadership in volunteer organisations and its influence on the behaviour and attitudes of unpaid workers.

2.2 SECTION 2. THEORETICAL REVIEW OF MOTIVATION

Motivation theory will provide the theoretical framework for this thesis to investigate leadership in volunteer organisations and how leaders influence volunteers' job satisfaction and intention to continue contributing their time to volunteering activities. The review of volunteer leadership literature in *Section 1. Leadership of volunteers* has thus far revealed that motivation theory offers a valuable theoretic perspective for examining the influence of leadership on volunteer attitudes and behaviour. This next section of the literature review, *Section 2. Theoretical review of motivation* progresses this idea further to evaluate theoretic perspectives of motivation in the context of leadership and management in organisations. The first part, *2.2.1 Motivation theory: A leadership perspective*, reviews the historical development of motivation theory. It is not intended to be an exhaustive chronology of all motivation theories but instead seeks to synthesise the key ideologies and themes that emerged over time to shape the way we think about motivation and how these ideas and assumptions are reflected in leadership theory and practice. The key ideologies are appraised on their suitability for leadership in the volunteer context and Self-Determination Theory is distinguished as the theoretic model adopted for the thesis. The subsequent part, *2.2.2 Self-Determination Theory: a theoretical and empirical review in management*, details key components and assumptions of the theory and how it has contributed towards understanding the influence of leadership in organisations.

2.2.1 Motivation theory: A leadership perspective

Understanding how to motivate organisational members is a critical component of leadership and management. Motivational processes are responsible for initiating human activity and are used to explain variability of behaviour (Katzell and Thompson, 1990, Ford, 1992, Deci and Ryan, 2000). Most definitions recognise motivation as responsible for energising human action, directing actions towards

certain goals and initiating and sustaining task engagement over time (Steers et al., 2004). Leadership and motivation have long been considered interrelated constructs (Evans, 1970, Miljus, 1970). Motivation is recognised as being inextricably linked with relational experiences and shaped by influential interactions with important relationship figures, such as leaders (Weinstein and De Haan, 2014). Contemporary perspectives of leadership regularly include motivation within their leadership definitions (e.g. Bass, 1997, Winston and Patterson, 2006) and both researchers and practitioners alike recognise that the behaviour of leaders influences the motivational states of followers (Randall, 1968, Bass, 1997).

However, whilst leadership theories acknowledge that leaders shape, inspire and influence follower behaviour, the models mostly remain silent about the inner psychological mechanisms through which this is achieved. Motivation theories address this limitation and contribute to the study and practice of leadership by offering a framework for understanding how factors and processes within individual workers and in their external environmental contexts influence motivation. In doing so, theories of motivation explain an integral part of the leadership process – the mechanisms through which leaders influence follower behaviours.

The historical development of motivation theory has been influenced over time by ancient philosophers (e.g. Epicurus), behavioural scientists (e.g. Skinner, 1953, McDougall, 1908), management scholars (e.g. Taylor, 1911) and human relationists (e.g. Mayo, 1966, McGregor, 1960), all adding their unique perspective to explaining drivers of human behaviour. The emergence of key scientific and social movements, particularly over the past 150 years, provided different lenses through which motivation was investigated and led to the development of the diverse and numerous theories we have today (Latham and Pinder, 2005, Steers et al., 2004). Given that motivation is interrelated with leadership, it was natural that key assumptions and ideologies that emerged within motivation discourse were also reflected in models of management.

Philosophers initiated the scholarly exploration into drivers of behaviour. Psychological hedonism, found in the writing of Aristippus and Epicurus, formed perhaps the earliest model of human motivation (Young, 1936). According to hedonistic assumptions, people engaged in activities that were expected to have desirable or pleasurable outcomes and avoided those that were expected to have

aversive outcomes (Troland, 1928). The hedonistic interpretation of volunteerism would have assumed that individuals participated in volunteering because it was perceived as a pleasurable experience and, in turn, resignations would indicate volunteers were seeking to avoid unpleasant experiences or choosing to spend this time in more enjoyable activities. The early philosophic view, that human actions are ultimately motivated by endeavours for pleasure, continued as the dominant perspective of motivation for centuries (e.g. Betham, 1789) and continues to underpin numerous contemporary theories about human functioning (Skinner, 1953, Diener et al., 2006).

With the emergence of the psychological sciences movement in the 19th and 20th centuries, behavioural scientists, for the first time, applied a scientific lens to the study of human behaviour and initiated the origins of contemporary motivation theories (Steers et al., 2004). Instinct theories, which proposed unconscious and innate sources of motivation called instincts, represented one of the earliest psychological perspectives (Beck, 2004). The work of many prominent psychologists (e.g. McDougall, 1908, Thorndike, 1901, Freud, 1910) emphasised the role of instincts in human behaviour but adopted different viewpoints about which instincts were of primary importance. During the 1920s instinct theories started receiving criticism due to the extensive list of instincts being proposed and began to be replaced by alternate psychological perspectives such as drive theories and reinforcement theories (Graffam, 1965). Drive theories (e.g. Hull, 1943) assume that human actions are motivated by internal tensions resulting from unmet needs. In contrast, reinforcement theories (Skinner, 1953) focus on external sources of motivation and posit that behaviour is influenced by learned relationships between actions and their consequences in one's environment. Despite their continued use and popularity, reinforcement theories were limited by being overly simplistic and downplaying the role of cognition in human behaviour. Evaluating the development of psychological perspectives on motivation over time, one may observe that as each new theory developed there was a higher level of consciousness attributed to motivational mechanisms (Beck, 2004). From an unconscious level, as was the focus of instinct theory, to some slight awareness within drive theories, to a conscious attention to incentives and learning within the reinforcement theories. Whilst these perspectives

were emerging from the behavioural sciences, motivation was also being explored by researchers in other fields.

Management scholars joined the motivation discussion during the early 20th century and carried investigation of motivation into the work domain (Steers et al., 2004). Management scholars' interest in motivational constructs stemmed from their pursuit towards increasing work effort and worker productivity (Kaplan et al., 1972). The pioneering scientific management model (Taylor, 1911) held that organisations could improve worker efficiencies through the introduction of organisational processes, rules and financial incentives. For example, organisational systems were established where workers received a specified wage for every time the individual completed a task to organisation-set standards. The motivational standpoint of scientific management was thus comparable to the reinforcement theory perspective of rewarding desired behaviours. Taylor's (1911) scientific management principles also redefined the relationship between worker and manager. Whereas previously workers had autonomy to decide how to best do their jobs, under scientific management principles managers would now decide details of the task including what tools workers should use, how workers should do the job and how long it should take. Whilst Taylor's methods produced efficiency benefits for organisations, the approaches were criticised for dehumanising workers, overemphasising the physical engineering whilst neglecting the human engineering aspect and giving managers disproportionate control and power (Teard and Metcalf, 1920, Bruere, 1929, Waring, 1991).

The emergence of the human relations movement in the 1930s challenged the view of workers as part of an organisational process to be controlled by managers (Kaufman, 2001). Human relationists focused on improving employee morale and treating workers as complex human beings with various sources of motivations, interests, and needs (Kaplan et al., 1972, Wright, 2006, McGregor, 1960). From the human relationist perspective, managers could increase productivity of workers by enriching their jobs and providing workers with stimulating and socially supportive work environments. Human relations theory postulated a link between participation and productivity and held the assumption that a happy worker is a good worker (Kaplan et al., 1972) – a notion still reflected within much of the contemporary humanistic and positive psychology perspectives on organisational management (Seligman and Csikszentmihalyi, 2000, Cropanzano and Wright, 2001). The

heightened popularity of human relations was stimulated by the results of the Hawthorn Studies field experiments (Hart, 1943, Landsberger, 1958, Mayo, 1966) where the beneficial effects of social and psychological working conditions were being revealed. For example, worker productivity was found to increase when workers had a role in making decisions about their work, felt part of a group and had a manager who paid attention to them. The idea that workers would improve their effectiveness if managers provided them with social support and empowerment opportunities stood in direct contrast to scientific management principles where managerial control was dominant and power for decision making resided in managers alone (Kaplan et al., 1972).

The scientific management and human relationist schools of thought represented the first explicit leadership/management perspectives on motivation. During this same period of the 20th century, the first leadership theories, which focused on a leader's unique propensities and traits, began to emerge (Barling et al., 2011, Zaccaro, 2007). Consequently, the scientific management and human relations perspectives set the foundations for later theorizing about leadership and workplace motivation. Their ideologies and assumptions continued to dominate as an important stream of thought in contemporary motivation and leadership theory. For instance, McGregor's (1960) theory Y, which assumes that workers are self-initiating and work towards the greater good of the organisations, represents a formulation of human relations and humanistic conceptions of motivation (Kaplan and Tausky, 1977). Leaders operating under these assumptions facilitate worker motivation through empowerment and psychological support (McGregor, 1960). In contrast theory X, which assumes that employees dislike and attempt to avoid work and therefore need direction and control, aligns with the economic exchange approach underlying scientific management (Carson, 2005). The later model relies more heavily on managerial intervention and controls to facilitate worker participation. Both perspectives hold out the promise of increased work effort among organisational participants (Kaplan et al., 1972) but they diverge on their assumptions and ideologies about the nature of motivation and role of the manager in motivating workers.

The period between the 1950s and 1970s represents the theoretic peak of motivation discourse where continued psychological enquiry coupled with growing interest from applied domains incited an explosion of new motivation theories. Two

distinct approaches to theorising about motivation emerged during this period: content and process theories. Content or needs based theories (Hierarchy of Needs; Maslow, 1954, ERG Theory; Alderfer, 1972, Three Needs Theory; McClelland, 1953, Herzberg's Two-Factor Theory; Herzberg et al., 1959) posited the psychological and contextual factors associated with motivation. The basic premise of such models was that the presence or absence of factors in the individual's context influenced motivation. Content theories differed regarding the needs proposed, the number of needs, sequencing and consequences of fulfilment and/or frustration (Katzell and Thompson, 1990). McClelland (1953), for example, proposed a workplace-specific needs theory of motivation. His model focused on three needs: achievement- drive to excel and succeed, power- to have influence, and affiliation – desire for close interpersonal relationships. From a leadership perspective, content theories stipulate ingredients for motivation and offer a simple framework guiding managers on where to focus their efforts. To motivate work-related behaviour, leaders need to simply understand and satisfy the needs of their followers and provide need-supportive contextual conditions (Deci and Ryan, 2014). It is evident that such a position also reflects a continuation of humanistic and human relations management ideologies that assumes workers will be more productive in the workplace, have more positive attitudes, and show increased cooperation when their individual needs (social, psychological, environmental etc.) are considered (Reece and Reece, 2016).

Process theories sought to understand motivation from an active viewpoint and this perspective stood in contrast to focusing on static factors that characterised needs theories (Beck, 2004). Motivation, considered through a process theory perspective, was an outcome of a dynamic sequence of cause and effect relationships among the organisational context, psychological processes and interpersonal interactions. Process theories such as expectancy theory (Vroom, 1964), goal setting theory (Locke, 1968), equity theory (Adams, 1966) and theory of planned behaviour (Ajzen, 1985), for example, detailed cognitive processes that individuals went through when determining which activities to engage in. According to expectancy theory (Vroom, 1964), worker behaviour depended on the expectation that an action would be followed by an outcome and on the attractiveness of that outcome to the individual. In line with hedonistic assumptions, expectancy theory posits a conscious choice amongst

alternatives with the purpose being to maximise pleasurable or beneficial outcomes for the individual.

The ideas that arose from process theories of motivation also influenced leadership theories that emerged during the same period. For instance, expectancy theory provided the foundation for the formulation of path-goal theory of leadership. Path-goal theory (House, 1971) holds that the major motivational functions of the leader is to enhance (1) valency, via personally relevant payoffs to workers and positive associations for work-goal attainment, (2) instrumentality, by clarifying paths to these payoffs, and (3) expectancy, by reducing roadblocks that impede goal attainment (Wofford, 1993). Unlike needs theories, which propose universal sets of needs, process theories emphasise relative differences in individual's experiences, preferences and perceptions. This places a greater responsibility on the leader to understand and adapt to the unique circumstances and preferences of their individual followers, an idea which is also reflected in situational leadership ideologies (Hersey and Blanchard, 1977).

The emergence of Self-Determination Theory (Deci and Ryan, 1985) in the later part of the 20th Century incited a shift in our understanding of human behaviour and emerged as the contemporary theory of motivation. Following the explosion of motivation theories between the 1950s to 1970s, theoretic development declined as research attention turned to theoretic testing, extension and application (Steers et al., 2004). Up until this point in time there was general consensus across theoretic perspectives that provisions of rewards and incentives had a beneficial impact on motivation. However, whilst investigating the motivational effects of rewards, Deci (1975) found that rewarding people for doing an activity they were already willing to do without a reward reduced their motivation and enjoyment of the activity. These highly controversial findings challenged existing ideas and assumptions about extrinsic rewards as motivators, they challenged traditional organisational systems for managing and motivating workers and became the basis on which Self-Determination Theory was founded.

Self-Determination Theory has developed over 40 years to become an influential theory of human motivation that is centrally concerned with the social conditions that facilitate motivation, psychological growth, and wellbeing (Ryan and Deci, 2017). According to SDT, all human beings require satisfaction of basic psychological needs

for autonomy, competence and relatedness. Satisfaction of these basic psychological needs promotes full functioning of the individual and is expected to confer benefits for intrinsic motivation, sustained behavioural engagement and self-regulation (Deci and Ryan, 2000). SDT recognises the central importance of interpersonal relationships and considers social dynamics and interpersonal interactions with significant relationship figures (e.g. leaders) as the means through which need satisfaction is derived (Deci et al., 1994). Looking at the theory from a leadership perspective, SDT's three basic psychological needs offer leaders a simple framework outlining conditions they need to provide to improve the motivation of their followers (Slemp et al., 2018, Deci et al., 2017). Furthermore, as a social theory, SDT specifies the interpersonal experiences and interactions between a leader and their followers that facilitate or hinder the followers' motivation, as well as the mechanisms through which this occurs (Deci et al., 1989).

Evaluating SDT in the context of historical developments of motivation and leadership theory, humanistic principals are evident in the theory's underlying assumptions of human's active, growth-oriented tendencies (Ryan and Deci, 2002). The theory maintains that human nature and wellbeing is not best captured by hedonic conceptions alone, but instead SDT focuses on the concept of eudaimonia which emphasises a fully functioning and fulfilled being (Ryan and Deci, 2001). There are several ways SDT's assumptions and theoretic position differs to those of other theories and these are discussed in more detail later in the chapter [*Section 2.2 Self-Determination Theory: A Theoretical and Empirical review in Management*]. One major way the theory differentiates itself from previous perspectives discussed thus far is its explicit, empirical-based, rejection of extrinsic rewards as a positive managerial mechanism. Specifically, SDT views extrinsic rewards, and other factors such as deadlines, imposed goals, surveillance, competition and evaluation, as detrimental to intrinsic motivation, sustained behavioural engagement and self-regulation (Deci et al., 2017). This is because they shift the perceived locus of causality of the behaviour from internally oriented to externally controlled by diminishing people's sense of agency and autonomy (Ryan and Deci, 2017). The SDT perspective therefore challenges many traditional notions of organisational management such as Frederickson's top-down managerial power and control perspectives.

In synthesising the historic theoretic development of motivation, two primary ideologies can be seen to emerge. These key ideas shaped the way we think about and understand motivation and are also reflected in leadership theory and organisational management perspectives that developed in parallel. The first perspective assumes that motivation can be most effectively facilitated externally, through leveraging the human orientation towards behaviours that satisfy a personal pursuit for maximising pleasurable experiences and minimising unpleasurable experiences (Skinner, 1953). In accordance with this idea, leaders might direct follower behaviour by offering desirable outcomes or rewards that are contingent on followers acting in accordance with the leaders' request (Vroom, 1964, Taylor, 1911). The relationship between leader and follower is one of behavioural exchange with centralised power residing with the leader, who controls reward distribution and sets the expected behavioural parameters. Within this ideology there is a requirement for managerial intervention, monitoring and controls, as there is an inherent assumption that in the absence of extrinsic rewards and managerial control, the behaviour and ongoing participation is not sustained (McGregor, 1960, Skinner, 1953). Top-down managerial structures, management by objectives and authoritarian/autocratic managerial styles align with such a view and is also reflected in transactional leaders (Barling et al., 2011, Harms et al., 2018). Organisational rules, structures and processes create an overall organisational system or machine that workers become part of.

The alternative perspective views workers as self-motivated individuals expressing their own inherent propensities towards growth and achievement (Maslow, 1954, Alderfer, 1972, Deci and Ryan, 1985). Strongly influenced by humanistic beliefs, the assumption of a self-motivated worker sees the role of the manager change from controller to an enabler. Rather than setting tasks and administering rewards, the emphasis is on psychological support and ensuring the work conditions meet the needs of workers. There is a strong emphasis placed on empowerment and employee involvement in decision making which are reflected in participative, bottom-up and collegial managerial practices (Kaufman, 2001). Servant leadership (Greenleaf, 1977), which sees leaders place the needs of followers before their own, and shared leadership (Bennett et al., 2003, Woods et al., 2004) where leadership is distributed across a team, are extrapolations of this ideology within contemporary leadership theory.

Evaluating motivation theories as a framework for volunteer leadership

With the aim of sustaining volunteer involvement and participation, it is argued that a motivation theory based on supportive relationships and psychological satisfaction is more suited to addressing the research problem than a motivation model based on extrinsic rewards and controls. The literature reviewed in *Section 2.1 Leadership of Volunteers* revealed volunteer organisations to be unique leadership contexts. Traditional control systems and structures based on rewards and recognition and performance management processes are rare and financial incentives are neither relevant to volunteers nor available for managers to use as motivational tools. The authoritarian or top down managerial approaches that are synonymous with control-based models of shaping behaviour are also not well suited for volunteer populations because leaders in volunteer organisations have less coercive or positional power than leaders in paid organisations. Theories that emphasise extrinsic incentives as motivators therefore have limited application and relevance with volunteer organisations. Rather than adopting control-based approaches to directing and sustaining follower behaviour, leaders of volunteers must instead leverage other sources of motivation and influence if they are to be successful.

It is proposed that humanistic and human relationist approaches to leading and motivating followers offer an alternative, and more suitable, framework for the volunteer context. Volunteering behaviour, where members of the community willingly choose to participate in volunteer activities without financial incentives, aligns with humanistic assumptions of the self-motivated and growth-oriented being who is concerned with the greater good. Furthermore, managerial practices within this ideology promote participation, empowerment and choice, which resonates with volunteering as a concept. An introduction to the research problem and associated literature [*Chapter 1.1 Background*] indicated that dissatisfaction with the volunteering leader was a driver of volunteer turnover. As such, motivational models that align with human relationist goals of increasing satisfaction are arguably most suited to addressing the research problem. In turn, motivation models that highlight the importance of favourable work environment and supportive leadership in terms of positive relational experiences are pertinent.

2.2.2 Self-Determination Theory: A theoretical and empirical review in management

Self-Determination Theory (SDT) is a macro-theory of human motivation explaining how socio-contextual conditions facilitate high quality motivation, sustained volitional engagement and wellbeing (Ryan and Deci, 2002). SDT has been successfully applied across a range of domains such as education (Niemi and Ryan, 2009), health behaviour (Ryan et al., 2008), parenting (Joussemet et al., 2008), coaching (Amorose and Anderson-Butcher, 2007) and organisations (Deci et al., 2017). When applied to the field of management, and more specifically volunteer leadership, SDT provides a framework for understanding how social conditions in organisations and the interpersonal approach of the leader facilitate workers' motivation, engagement and continued participation in organisational activities. The following section offers a theoretical and empirical overview of SDT and its application to the management of workers in organisations.

Conceptualisation of motivation

This thesis adopts SDT's conceptualisation of motivation. Traditionally, theories have modelled motivation as a unitary construct differing in amount (Vroom, 1964). A volunteer's motivation for participating in volunteering activities would be considered to increase or decrease as a function of contextual factors and motivational processes. SDT offers an alternative to this additive perspective by arguing it is not the amount of motivation that is important but rather its *quality* (Deci et al., 1994). Central to motivation quality is whether the individual personally endorses their behaviour out of their own interests and values, or does it for reasons external to the self (Ryan and Deci, 2000). The theory's multidimensional conceptualisation proposes several distinct types of motivation which differ on the extent which the behaviour is self-determined, that is; self-endorsed and emanating from the self (Gagné et al., 2014, Ryan and Deci, 2000). Each type of motivation on the self-determination continuum has unique characteristics, in terms of the underlying reason for the behaviour, and are differentially associated with wellbeing, effective functioning, self-regulation and sustained participation in the behaviour (Deci and Ryan, 2000).

Intrinsic motivation

Intrinsic motivation represents the highest quality motivation and human beings' natural inclination towards spontaneous interest and exploration (Deci, 1975, Ryan

and Deci, 2000). Intrinsic motivation is reflected in behaviours that volunteers experience as enjoyable, interesting and inherently satisfying (Ryan and Deci, 2000, Ryan and Deci, 2000). Furthermore, intrinsic motivation is accompanied by positive subjective experiences, such as happiness and vitality, and predicts sustained behavioural engagement (Deci and Ryan, 2008, Deci and Ryan, 2000, Deci and Ryan, 1985). In line with its organismic dialectic assumptions, SDT proposes that people have an organismic-growth tendency toward intrinsic motivation but this natural propensity can be forestalled by socio-contextual conditions (Deci, 1975). Cognitive Evaluation Theory (CET; Deci, 1975), one of the six mini-theories of SDT, is concerned with environmental effects on intrinsic motivation and, historically, represents the first developments of SDT as a theory of motivation.

Extrinsic motivation and the self-determination continuum

Although intrinsic motivation is an important aspect of volunteering behaviour, much of what volunteers do in their roles, such as maintaining equipment for example, are important but may not otherwise be considered intrinsically enjoyable. Thus, the central question from a leadership perspective is: what motivates workers to engage in non-intrinsically motivated activities and what role does the leader play in this process? SDT assumes that through socialisation people actively seek to engage in practices and take on the values of their groups, society and important relationship figures, such as their leader (Niemic et al., 2006). Internalisation refers to our “natural tendency towards taking in practices and regulations from our social group, and transforming them into self-regulations where they are executed independently and volitionally.” (Ryan and Deci, 2017, p. 99) When this natural process functions effectively, extrinsically motivated behaviours become to be experienced as self-determined and emanating from the sense of self (Ryan and Deci, 2000). Furthermore, with successful internalisation the behaviour becomes self-regulated and the individual goes on to carry out the activity and sustain behavioural engagement on their own (Deci et al., 1994).

However, the natural process of internalisation can function less effectively, resulting in different degrees of internalisation. SDT differentiates four types of extrinsic motivation along a continuum of autonomous experience and self-regulation (Ryan and Deci, 2017). Each type of motivation, or regulation, along this continuum also varies on the extent to which the behaviour has been internalised and integrated.

At the low extreme of the self-determination continuum, and representing the least internalised motivation, *external regulation* involves volunteers partaking in an activity to comply with a demand, obtain external reward or avoid punishment. For example, a volunteer may participate in an activity to avoid getting in trouble from their team leader. Whilst rewards and punishments are powerful and quick tools for managers to mobilise and direct volunteer behaviour, long-term sustainability of the behaviour is limited as participation deteriorates once the contingency is removed (Ryan and Deci, 2017). Further to poor behavioural continuance, external regulations tend to be accompanied by poorer wellbeing, negative subjective experiences and unfavourable attitudes towards the leader and the organisation (Gagne et al., 2010, Deci and Ryan, 2008, Deci and Ryan, 2000).

A slightly more internalised type of extrinsic motivation along the continuum is *introjected regulation*. When an activity is regulated by introjection, people buttress their behaviour with internally administered rewards and punishments, so the behaviour becomes regulated by contingent feelings of worth, ego involvement, guilt and a personal concern with status (Deci et al., 2017, Van den Broeck et al., 2008). For example, a volunteer may turn up to a job because they would feel guilty or ashamed if they did not attend. With introjection, the value of the behaviour has only been partially internalised, and one experiences an internal controlling force acting on the self. Both external regulation and introjection, characterised by an external perceived locus of causality (De Charms, 1968), are classified as controlled motivation.

Still more internalised is *identified regulation*, in which volunteers identify with the value and importance of the behaviour. For example, a volunteer may help maintain the equipment because they recognise the important role that this activity plays in being able to deliver important services to the community. With identification, behaviours are personally endorsed and characterised by experiences of greater volition (Deci et al., 1994).

Finally, integrated regulation represents the fullest type of internalisation where the value of the behaviour is assimilated to the self and brought into congruence with other values and beliefs (Ryan and Deci, 2000). For example, a volunteer may put effort into their role because what they do is in line with their values of helping others. Both identified and integrated regulations are characterised by an internal perceived locus of causality and accompanied by subjective experiences of volition, and

perceived as emanating from one's sense of self (Ryan and Deci, 2000, Ryan and Deci, 2002, Ryan and Deci, 2000b). These two regulations are thus classified as autonomous motivation. SDT proposes that more autonomous forms of motivation will predict greater persistence, engagement and wellbeing than controlled forms of motivation and that these forms of motivation will be systematically related to workplace conditions and the managerial approach of the leader (Deci et al., 2017).

In summary, SDT's continuum conceptualisation of extrinsic motivation offers leaders a framework for understanding differences in volunteer motivation for participating in volunteering activities. Each regulation along the continuum varies on the degree to which internalisation has functioned effectively and partaking in the behaviour has become volitional, self-endorsed and self-regulated by the volunteer. Previous leadership and motivation theories, other than SDT, have only focused on intrinsic vs extrinsic motivation and therefore fail to recognise that an extrinsic motivation that has been well internalised produces outcomes more like intrinsic motivation than controlled motivation (Deci and Ryan, 2014). From the perspective of leaders seeking to stimulate sustained volunteer participation, it is evident that autonomous motivation amongst volunteers would be advantageous. Autonomously motivated people personally connect with and understand the value and importance of the activity and engage in the activity with a full sense of willingness (Deci et al., 2017). Compared to controlled motivation, autonomous motivation not only yields better behavioural outcomes (e.g. sustained willing participation) but also positive subjective experiences, less job stress and higher satisfaction in the workplace (Gagne et al., 2010, Fernet and Austin, 2014). The critical issue for leaders therefore becomes understanding how they can support their followers to successfully internalise the value and importance of the volunteering tasks and foster autonomous motivation.

Basic psychological needs: Ingredients for self-determined motivation

Leaders can facilitate successful internalisation and autonomous motivation through satisfying volunteers' basic psychological needs. SDT posits that all human beings have three basic psychological needs - autonomy, competence and relatedness (Deci and Ryan, 2014). From the perspective of SDT's organismic-dialectic meta-theory, basic psychological needs are those critical conditions that enable the expression of our natural inclinations towards psychological growth, internalization, and well-being (Ryan and Deci, 2017). Basic psychological needs have substantial

utility for leaders of volunteers because they delineate aspects of the organisational climate that are expected to facilitate or thwart autonomous motivation (Baard et al., 2004). Furthermore, and central to the discussion of leaders as facilitators of motivation, SDT considers relational experiences and interpersonal interactions with significant others (e.g. leaders) as the primary means through which basic psychological needs are supported or thwarted (Deci and Ryan, 2014).

Looking in more detail at basic psychological needs, the first, *autonomy*, is the basic need to self-regulate one's own actions and experience volition (Deci and Ryan, 2000). The hallmark of autonomy is an internal locus of causality (De Charms, 1968), whereby people experience ownership of their behaviours and perceive them as being self-initiated. In this sense autonomy does not refer to independence or selfishness but rather to the feeling of volition or voluntariness that can accompany a behaviour (Ryan and Deci, 2000). The second basic psychological need is competence. *Competence* is the need to experience mastery over the environment and to develop new skills (Van den Broeck et al., 2016). The need for competence is considered inherent to our natural tendency to explore, manipulate the environment and pursue desired outcomes. When one experiences competence we feel efficacious, thus the need for competence is reflective, in part, of social cognitive theory's concept of self-efficacy (Bandura, 1977). Competence is thwarted when challenges are too difficult, negative feedback is pervasive or by negative interpersonal experiences of personal criticism or social comparison (Ryan and Deci, 2017). The third basic psychological need, *Relatedness*, refers to the need for belonging and to have close, caring relationships with others (Deci and Ryan, 2014). Relatedness is reflected in social and emotional connections with others that are built on trusting and satisfying relationships (Weinstein and DeHaan, 2014). Humans are social beings and the need for relatedness reflects our innate need for human connection. Employees who feel understood, valued and part of the team are more likely to have their need for belonging met compared to employees who feel lonely and alienated from their colleagues (Van den Broeck et al., 2008).

Empirical evidence from studies in organisations, particularly over the past 15 years, supports the central assumption of SDT that workers experience autonomous motivation to the extent that their basic psychological needs for autonomy, competence and relatedness are satisfied within the workplace (Van den Broeck et al., 2016). In

their research within Belgian service organisations, De Cooman et al. (2013) found that employees who felt greater satisfaction of autonomy, competence and relatedness in their role also experienced greater autonomous motivation and work effort. Workplace studies have found that satisfaction of basic psychological needs also predicts a variety of beneficial work-related outcomes such as wellbeing, positive job attitudes, higher affective commitment, reduced emotional exhaustion and increased job performance (Baard et al., 2004, Arshadi, 2010, Gillet et al., 2012, Van den Broeck et al., 2016, Van Den Broeck et al., 2008). Central to the Thesis research problem, studies have consistently found that paid employees who perceive greater basic psychological need satisfaction at work are less likely to want to leave their organisation (Schultz et al., 2015, Trépanier, 2015, Vansteenkiste et al., 2007). Summarising the results of their meta-analysis of 99 studies examining basic psychological needs at work, Van den Broeck et al. (2016) concluded that autonomy, competence and relatedness incrementally predict psychological growth, internalisation and wellbeing in organisations.

Differences between SDT conceptualisation of needs and other motivation theories

Human needs have been represented across several motivation theories. Some include physiological needs that satisfy basic biological processes (Maslow, 1954, Murray, 1938) and others are concerned with psychological needs where the focus is emotional or mental satisfaction and their role in human behaviour (Alderfer, 1972). SDT falls within this latter category and defines needs as *nutrients that are essential for people's growth, integrity and wellbeing* (Deci et al., 2001). The conceptualisation of needs within SDT renders it unique in comparison to other motivation theories. McClelland (1953), who also posits a three needs framework, holds that needs for achievement, power, and affiliation are acquired through socialisation and the strength of employees' needs will therefore vary to reflect differences in their individual experiences and history. SDT's first point of departure from McClelland's perspective is that needs are not considered to be acquired or learned but rather innate and universal propensities. Secondly, whereas McClelland focuses on differences in need strength, SDT is not concerned with need strength but rather the extent to which one experiences satisfaction of basic psychological needs in a given context (Van den Broeck et al., 2008). A third distinction between SDT and other needs theories is the non-hierarchical organisation of the three needs. Maslow (1954) organises needs

hierarchically, whereby higher order needs become prominent only with lower order needs are met. In contrast, the needs for autonomy relatedness and competence are regarded by SDT as equally important, with thwarting of any one need causing disruptions to motivation and psychological growth (Ryan and Deci, 2017). Finally SDT's unique conceptualisation of needs maintain that a need is one which promotes psychological growth, internalisation and wellbeing , even amongst those who do not place personal importance on those needs (Vansteenkiste et al., 2010).

Need Support in leader-follower relationships

The interpersonal approach of leaders, the way they communicate and relate to their followers, is considered paramount in creating a need-supportive climate and shaping motivation in an organisation (Deci et al., 1989). Leaders can support their followers' basic psychological needs by adopting an *autonomy supportive* interpersonal approach. *Autonomy support* refers to an interpersonal approach of significant others (e.g. teachers, parents, managers) that provides the contextual conditions necessary for autonomous motivation and internalization of external regulations (Deci et al., 2001). Because autonomy support is theorised to facilitate self-determined motivation, support for all three needs- autonomy, competence and relatedness- is assumed within autonomy supportive contexts (Ryan and Deci, 2017).

Managerial autonomy support concerns autonomy support within an organisational context, and has traditionally focused on a manager's interpersonal approach with their subordinate (Deci et al., 1989). SDT recognises that the language leaders use, and the way they interact with workers, directly affects the degree to which a worker feels autonomous, competent, and related, and the degree to which the individual willingly participates in, values and even comes to enjoy work-related tasks and activities (Gagne, 2003). This thesis expands the conceptualisation of managerial autonomy support to encompass organisational leadership more broadly. Managerial autonomy support, here on in, refers to a motivationally supportive interpersonal climate initiated by an organisational leader in relating to workers and carrying out organisational tasks. By this definition, the thesis recognises that the provision of autonomy support is not limited to leaders in formal positions of power, such as a supervisor or co-ordinator, but that interactions with non-positional leaders within organisations also contribute to the autonomy supportiveness of the organisational climate. Indeed, research has found that autonomy support from peers and colleagues,

not just managers, predict motivational outcomes in organisations (Moreau and Mageau, 2012, Jungert et al., 2018).

Further to autonomy support, SDT differentiates a *controlling* interpersonal style and the two contrasting approaches are conceptualised along a continuum representing the extent to which the interpersonal approach supports or undermines self-determined motivation. Leaders oriented towards high autonomy support relate to workers by taking their perspective, spend time listening to and acknowledging workers' feelings, provide rationales for tasks or the restrictions they impose, encourage initiative and support sense of choice (Deci and Ryan, 2008, Deci et al., 2001). It is assumed when a leader communicates in this way, the recipient perceives themselves to be the regulators of their own actions and fosters an internal locus of causality (De Charms, 1968). In contrast, leaders oriented towards control are prescriptive, rigid, and impose pressure or external constraints on behaviour with the intention of compelling individuals to produce specific outcomes (Ryan and Deci, 2017). Deviations from leader demands are often met with corrective actions intended to restore behaviour back to the leader-desired course (Slemp et al., 2018). The assumption is that these behaviours signal to workers that the leader is the initiator of action, shifting to an external locus of causality (Deci et al., 1989, De Charms, 1968).

What behaviours constitute managerial autonomy support? Conceptual development.

Managerial autonomy support is of significant value to leaders seeking to retain volunteers because it provides an empirical-based model of interpersonal behaviours that facilitates self-regulated, willing and continued participation in activities. Central to SDT's early development, researchers sought to delineate behaviours and interpersonal contextual events that constituted autonomy support and enabled self-determined motivation to be maintained or enhanced in others. Initial studies focused on verbal communication, finding that the language used could affect the perception and salience of an event as either controlling or informational (Pittman et al., 1980, Ryan et al., 1983, Ryan, 1981). In a laboratory experiment Ryan (1982) varied the communication style of the experimenter and examined its impact on intrinsic motivation. Controlling feedback, which conveyed external pressure and used enforcing/controlling language such as "should", undermined intrinsic motivation

relative to informational feedback, which was characterised by provisions of relevant information in the absence of pressure and controlling language.

Deci et al. (1981) expanded the controlling versus informational verbal-communication dichotomy to conceptualise a wider interpersonal orientation measured along a continuum from highly controlling to highly autonomy supportive. Operationalised, people who are oriented towards the controlling end of the continuum take charge of decision making and expect others to comply with their demands. To get followers to implement prescribed solutions, controlling leaders invoke feelings of guilt and utilize sanctions, such as pressure, social comparisons, and offers of rewards or threats of punishment, to coerce or induce a desired behaviour (Deci et al., 1989). In contrast leaders oriented towards autonomy support relate to followers by seeking their perspective and support a sense of choice by encouraging workers to arrive at a solution themselves. The first validation study was conducted in elementary schools and, in line with SDT assumptions, showed that children whose teachers were oriented towards controlling interpersonal approaches were less intrinsically motivated and had lower self-esteem than children whose teachers were oriented towards autonomy support (Deci et al., 1981). Subsequent field tests with managers (Deci et al., 1989) teachers (Green and Foster, 1986), parents (Grolnick and Ryan, 1989) and health professionals (Williams et al., 1996) provided support of there being distinct types of interpersonal orientations (autonomy supportive and controlling) that have different motivational effects on recipients of the interpersonal interactions.

Through predominately laboratory experiments, scholars further refined autonomy support by narrowing down three specific interpersonal conditions or behaviours critical for promoting self-determined motivation. These were a) providing a meaningful rationale, b) acknowledging and accepting the person's perspective (Koestner, 1984) and c) communication that conveys choice rather than control (Ryan, 1982). Deci et al. (1994) tested the motivational effects of these three interpersonal conditions by varying their presence in a laboratory procedure. The results showed that that the presence of three or two of these conditions led to greater internalisation than when these conditions were absent.

One of the main strengths of managerial autonomy support over alternate leadership models is that the behaviours it advocates are evidence-based and have been developed through systematic empirical methods. The limitation of this, however, is

that managerial autonomy support is currently restricted to a very narrow set of behaviours. It is unequivocal that leaders provide support for followers' basic psychological needs in many other ways in which we do not yet know. Further research is required to expand our understanding of other need-supportive leadership behaviours within interpersonal interactions (Deci et al., 2017).

Application of managerial autonomy support in organisations

Research, the majority of which has been conducted in paid organisations, has been supportive of SDT predictions, suggesting that the provision of autonomy support may be a practical leadership approach to foster basic need satisfaction, the internalization of work motivation and positive work outcomes in individual employees (Slemp et al., 2018). Leaders who practice autonomy supportive behaviours during interactions with their followers have been found to facilitate, in the experiences of the recipient, autonomous motivation towards work activities (Chan and Hagger, 2012, Otis and Pelletier, 2005). Also in line with theoretical assumptions, the more employees perceived their organisational leaders to be autonomy supportive the higher their basic psychological need satisfaction (Baard et al., 2004, Deci et al., 2001, Roca and Gagné, 2008).

Further to facilitating motivational process, autonomy support has also been linked to a wide range of positive work outcomes in individual employees. Autonomy supportive contexts initiated by the supervisor have also been found to promote positive outcomes such as wellbeing, commitment, performance and work satisfaction (Moreau and Mageau, 2012, Schultz et al., 2015, Chang et al., 2015, Collie et al., 2016, Gillet et al., 2012, Arshadi, 2010). Of importance to the discussion of worker turnover, having an autonomy supportive leader has also been linked to future work intentions and employee retention amongst paid employees. For example, in a study of 735 workers across organisations in France, Gillet et al. (2013) found that perceived autonomy support from the supervisor had a negative effect on turnover intention both directly and indirectly, through autonomous motivation. This indicated that autonomy supportive leadership played a dual role in promoting ongoing participation in organisations, directly reducing workers' intention to leave, and also facilitating autonomous motivation which in turn made workers less likely to want to resign. A negative relation between autonomy support and turnover intention has been replicated in studies across other organisations and has served to highlight the important role of

autonomy support in reducing the likelihood of turnover amongst paid employees (Liu et al., 2011, Otis and Pelletier, 2005). Overall, there is consistent evidence that autonomy supportive interpersonal approaches yield a viable solution for leaders and organisations looking to retain workers.

Whilst research has not yet explicitly tested the effects of managerial autonomy support on workers in Australian emergency service agencies, evidence from organisations that share similar qualities, such as emergency response for example, support the idea that autonomy support from emergency service leaders can be expected to have beneficial effects on followers. In a study of Occupational Health and Safety compliance officers, Burstyn et al. (2010) found that autonomy supportive approaches from OHS inspectors contribute to achieving better compliance with OHS regulations. The researchers looked at the inspectors' preferences for resolving workplace conflicts (coercive vs autonomy supportive) and showed that inspectors with more autonomy supportive approaches achieved compliance after fewer work site visits and issued fewer severe compliance orders, relative to coercive inspectors. Otis and Pelletier (2005) used self-determination theory framework to examine motivation of police officers. Police who perceived their manager as supportive of autonomy reported higher self-determined motivation. Additionally, intention to stay and less reported daily hassles were found to be related to higher self-determined motivation.

A recent meta-analysis synthesized findings across 83 samples to evaluate the effect of managerial autonomy support in organisations (Slemp et al., 2018). Regarding motivational effects, results were in line with SDT assumptions in that the provision of autonomy supportive practices were positively and progressively more strongly correlated with more internalized forms of motivation on the self-determination continuum. The data also showed positive relations between managerial autonomy support and job satisfaction and organizational commitment and work performance. Comparing findings from collectivist and individualist cultures the meta-analysis found support for a universal beneficial impact of managerial autonomy support that was not culturally bound. The authors concluded that their results confirm that autonomy support may be a critical social-contextual factor for fostering basic psychological needs and autonomous work motivation in employees and encouraged leadership development and training interventions to promote engaged and thriving workers.

Comparing managerial autonomy support to other leadership theories

The autonomy supportive leadership orientation proposed by SDT shares some underlying ideologies with established theories of leadership but differentiates itself as a superior framework for leadership development in the context of this research. The following section reviews managerial autonomy support in relation to other leadership theories and considers its application to addressing the research problem.

Distinguishing two clusters of leadership behaviours

The distinction between autonomy supportive and control-oriented leadership styles is consistent with leadership theorists' gravitation towards contrasting an a) directive, autocratic and task-orientated approach with a b) participatory, democratic, relationship-oriented style (Fiedler, 2006). A variant of this fundamental dichotomy is evident across many leadership theories (McGregor, 1960, Bass, 1997) and also reflects ideological differences between early management perspectives of scientific principals versus social relations (Kaplan et al., 1972) as discussed in *Section 2.1 Motivation Theory: A leadership perspective*. For example, the Ohio State studies, which represent perhaps the most influential early research on leadership, aimed to identify observable leadership behaviours (Stogdill, 1974). They summarised two leadership dimensions: 1) initiating structure, which describes leadership behaviours that facilitates achievement of organisational goals by creating guidelines and procedures, and 2) consideration, which depicts leadership behaviours that are centred on reciprocal trust and concern for the welfare of followers (Zaccaro and Horn, 2003). Similarly the contrast between transformational versus transactional leadership (Bass, 1985), McGregor's (1960) theory Y versus theory X management and, more recently SDT's autonomy supportive vs controlling orientation share this fundamental dichotomy. However, SDT conceptualisation of leadership style considers autonomy support and control as two ends of one continuum, rather than distinct binary classifications. In doing so SDT recognises that some leaders are not controlling or autonomy supportive but rather somewhere in between. Such a conceptualisation is appealing from an applied leadership development perspective because it recognises that leaders don't need to completely change their entire style to be more effective but can do so incrementally.

Universal versus situational leadership

In proposing a leadership style that satisfies universal needs, SDT stands in contrast with situational theories of leadership. The premise that managerial autonomy support provides the social conditions for satisfaction of basic psychological needs assumes a leadership style that is universally effective. In contrast, situational or contingency perspectives on leadership (Hersey and Blanchard, 1977) assume that effective leadership behaviours are situation-specific and dependent on characteristics of the context, including features of the organization, the workplace, and the followers (House and Aditya, 1997). Whilst SDT research recognises that individual personality differences within followers impact their motivation and experience of their context (Liu et al., 2011, Vansteenkiste et al., 2007, Gagne, 2003), the benefits of autonomy support have been shown to transcend across cultures and contexts (Slemp et al., 2018, Milyavskaya and Koestner, 2011, Powers et al., 2008, Reeve et al., 2004). From the perspective of this thesis's focus on developing leaders' capabilities, there are benefits of employing a universal approach over contingent models. Today's leaders work with diverse followers and a universally effective leadership style is expected to be suitable and promote beneficial outcomes across all followers, regardless of their culture, gender and individual differences. This reduces complexity and the need for the leader to customise their motivational support strategies for different followers. This also proves valuable for learning amongst inexperienced leaders who may not be so readily able or practiced at adapting and modifying their leadership style.

Follower-centric

SDT offers a surprisingly rare follower-centric perspective on leadership. Traditionally leadership theories have investigated leadership by focusing on the leader, studying the individual leader's traits, values, behaviours, and the way in which they practice leadership (Avolio et al., 2009, Barling et al., 2011, Zaccaro, 2007). In contrast SDT focuses on the experiences and perception of the recipient, namely the follower, and considers the functional significance or meaning of the environment to be the most important, rather than the environment itself (Ryan et al., 1983). As such, the leadership orientation of a leader is as important as the way in which it is experienced and perceived by the follower. This distinction between adopting a leader-centric versus follower-centric focus can be seen when comparing SDT to Authentic Leadership theory (Avolio and Gardner, 2005, Gardner et al., 2011, Walumbwa et al.,

2008). Both theories share humanistic and positive psychology underpinnings and advocate for the importance of acting in accordance with one's true inner self. Authentic leadership offers a leader-oriented perspective on this idea, focusing on leaders knowing, accepting and remaining true to their self and inner values in the way they lead (Gardner et al., 2011). SDT, in contrast, adopts a follower centred perspective on acting in accordance with one's true self with the theory's focus on autonomy in the context of the follower's motivation and needs, and promotes leaders giving followers opportunities to make decisions and act volitionally.

Follower-centric theories of leadership are surprisingly rare. *Leader* member exchange theory (LMX) represents a relationship-based approach to leadership research where the focus is on the dyadic relationship between the leader and the follower (Graen and Uhl-Bien, 1995). According to the theory, leaders and followers develop distinct relationships with each other over time fostered through leadership behaviours. Both SDT and LMX recognise each leader-follower relationship to be unique. For instance, SDT research recognises that the same leader could be perceived as supporting basic psychological needs to different degrees based on individual differences in followers' causality orientation (Ryan and Deci, 2019). Regarding their point of departure, LMX contends that mutual influence occurs in each dyad whereby SDT research has traditionally considered autonomy support from someone in a position of authority to a 'subordinate', not the other way around.

Mediation mechanisms: an explanation for leader influence

Traditionally, leadership theories propose a model of leader behaviours or styles that are linked to improved employee performance, satisfaction or organisational outcomes, but remain silent about how or why certain leadership styles or management approaches lead to these outcomes. SDT addresses the shortcomings of such leadership models by articulating not only the interpersonal approach of the leader that is expected to lead to positive employee outcomes but also details the inner psychological mechanisms through which these behaviours exert their influence. Managerial autonomy support, with its focus on perspective taking, communicating choice and a meaningful rationale, provides followers with an interpersonal experience that satisfies their basic psychological needs (Slemp et al., 2018). In turn, satisfaction of one's basic psychological needs facilitates the process of internalisation, whereby the follower comes to identify with the importance of their work task, integrate its value into their

sense of self and comes to perform the work task willingly (Deci et al., 1994). Further to its motivational benefits, satisfaction of the workers' basic psychological needs stimulates wellbeing and organismic growth outcomes, contributing to wellbeing and positive affective experiences at work (Ryan & Deci, 2017).

SDT has also contributed to development and refinement of leadership theories by revealing mediating mechanisms within existing theoretic models. SDT-based constructs such as basic psychological needs and autonomous motivation were found to provide mediating mechanisms through which transformational leadership positively impacted performance, job attitudes, behaviours and wellbeing of employees (Kovjanic et al., 2013, Graves et al., 2013, Eyal and Roth, 2011, Fernet et al., 2015). The finding that leadership style positively influences employee outcomes through motivational mechanisms is in line with research integrating SDT with LMX (Graves and Luciano, 2013, Chambel et al., 2015), servant leadership theory (Chiniara and Bentein, 2016) and authentic leadership theory (Leroy et al., 2012, Miniotaité and Bučiūnienė, 2013). Whilst it is acknowledged that SDT is not a leadership theory *per se*, it is argued that SDT provides a relevant theoretical model about the influence of leaders on other members of an organisation.

Contextual complexity: Leading in emergency service organisations

A significant unanswered question concerns the boundaries of Self Determination Theory, and generalisability of the theory's propositions across different leadership contexts. Leadership phenomena take place across various types of organisations (e.g. volunteer, non-profit, government/public sector, publicly listed) structures (e.g. hierarchical, project based), levels of formality and tasks. SDT's core theoretical propositions are so far considered universal. However, such temporal and contextual factors may act as boundaries that limit the theory's generalisability, especially when considering what constitutes effective leadership in that context.

Emergency service organisations, where there are inherent risks to lives and safety, provide an interesting context to study leadership and explore the suitability of managerial autonomy support. Emergency service organisations have a military history and are still led and managed along paramilitary lines. Command and control and incident management models are in widespread use in emergency service organisations and such military models create structures with well-defined chains of command and systems of rules, regulations and standards (Foster, 2013). Volunteer

emergency service workers must be highly skilled, undergo rigorous training requirements, are subject to extensive regulation and must adhere to policies, procedures and organisational rules. From an SDT perspective, the highly regulated workplace climate exemplified in emergency service organisations would be considered ‘controlling’ and detrimental to autonomous motivation. However, the theory may fail to account for leadership approaches and interpersonal support required in the emergency response context. It may be that managerial autonomy support, which is currently considered a universally beneficial interpersonal approach, is not suitable or effective as a leadership style in all situations.

Contingency theories dismiss the idea of a single ‘effective leadership style’ and instead contend that different leadership approaches are necessary and effective for different situations, contexts or followers (Hersey and Blanchard, 1977, Fiedler, 2006). In emergency service organisations, volunteers and their leaders interact in two very different modes of operation: a) in an emergency response/crisis mode and b) in a stand-by mode for preparation and training. A contingency theory perspective would argue that aspects of control may be required in one situation whereas autonomy support may be effective in another. A central tenet of Fiedler’s contingency theory is that the task-oriented leadership approach, which prioritises task completion through defining and directing the work required and monitoring progress within the team, is *“most effective during times of crisis or disaster, which are often chaotic and characterized by little formal structure in terms of the task and authority”* (Barling et al., 2011, p.187). Whereas relation-oriented leadership approaches, where the priority is on consideration of followers’ individual needs, are most effective in other situations such as when tasks are loosely defined, for example. This idea is further supported by recent research showing that transactional leadership, characterised by monitoring deviances from standards and taking corrective action, was motivationally beneficial during times of crisis whereas transformational leadership was not. Gagne and colleagues (2019) concluded that during periods of crisis and organisational instability it may be beneficial for managers to become more directive and create structure/procedures to guide and reassure employees.

Challenging the traditional assumptions of SDT, it may be that there are certain leadership environments where elements of the ‘command and control’ style are essential. In the emergency service context leaders and followers work, in part, in high

risk emergency situations where leaders must co-ordinate actions in crisis. Workers' confidence in their leader's capacity to take charge, direct actions and enforce rules may be critical for their satisfaction by helping them to feel safe. Aspects of the organisation's culture may also influence workers' expectations for control vs autonomy from leaders. Australian emergency services organisations are rooted in a military history and volunteers must operate under strict rules and compliance regulations due to the inherent risk to volunteer lives (Foster, 2013). It would not be surprising that workers in a paramilitary rule-enforcing organisational context may come to value or expect aspects of control in their leaders. In line with contingency based models, effective leadership in emergency service organisation may require adjusting one's leadership behaviours to the situation, adopting more 'controlling' approaches in an emergency response/crisis mode versus being autonomy supportive in stand-by mode during preparation and training.

Rules and behavioural limits are unequivocally part of workplaces and considered favourably by employees in the process of evaluating job satisfaction (Davis, 2013, Wright and Davis, 2003). SDT's current conceptualisation of managerial orientation, as a continuum from highly autonomy supportive (ie. empowering/beneficial) to highly controlling (ie. rule enforcing/detrimental), is somewhat restrictive and limited in a) accounting for practical realities of management and organisational life and b) recognising the important role that rules and boundaries play and their associated benefits (Dehart-Davis et al., 2015). *Structure* involves the communication of clear expectations, setting limits with respect to behaviour, providing competence-relevant feedback and expressing confidence in one's abilities to achieve the outcome- in a non-controlling manner (Sierens et al., 2009). SDT researchers in the education domain have revealed that autonomy support and structure are complementary, rather than antagonistic or curvilinear, aspects of teachers' instructional style that, together, foster engagement and other beneficial student outcomes (Vansteenkiste et al., 2012, Jang, 2010). There is, therefore, an opportunity to expand SDT's previously simplistic view of rule provision as being a 'controlling' interpersonal condition to consider how rules, goals and boundaries can become motivationally supportive. Within the emergency service context, workers may also benefit more from leaders providing structure alongside autonomy support.

2.3 SECTION 3. SELF-DETERMINATION THEORY AND VOLUNTEERISM

The primary purpose of this thesis is to generate empirical enquiry into managerial autonomy support as an approach to leadership in volunteer organisations. The review of Self-Determination Theory in the previous section, *2.2.2 Self-Determination Theory: a theoretical and empirical review in management*, revealed managerial autonomy support to be a valuable leadership construct because it delineates interpersonal behaviours that initiate motivational processes which come to affect the degree to which workers willingly participate in, value and even come to enjoy work related tasks. Unequivocally, most research investigating managerial autonomy support has been conducted in traditional paid organisational contexts. The literature reviewed in *Section 1. Leadership of volunteers* highlighted the need to explicitly study leadership in volunteer populations, rather than generalising findings from studies of paid employees. This next section of the literature review evaluates SDT research conducted with volunteer samples to assess the validity of SDT as a theoretical model of volunteer motivation and synthesise its contribution to understanding volunteering behaviours and continuance. The review commences with an evaluation of the extent to which research support for the key theoretical assumptions of SDT are evident within volunteer populations. Next, the review explores how SDT has contributed towards our understanding of motivational processes that influence participation of volunteers and their attitudes towards volunteering activities.

2.3.1 Testing the Self-Determination Theory (SDT) model in volunteers

Broadly, research with volunteer populations has found support for the SDT model in the volunteer-work domain.

SDT Proposition 1. Autonomy support satisfies basic psychological needs

SDT studies in volunteers have reported results that align with the theoretical assumption that managerial autonomy support provides the social contextual conditions necessary for satisfying basic psychological needs. Studies across different volunteer organisations have consistently reported direct correlations between experiencing autonomy support from the supervisor/volunteer co-ordinator and volunteers' self-reported autonomy, competence and relatedness need satisfaction (Haivas et al., 2012, Gagne, 2003, Oostlander et al., 2014). For example, in a study of

elderly people volunteering in Swiss schools, volunteers' experience of autonomy support from the teacher was related to satisfaction of their basic psychological needs and, in turn, fostered autonomous motivation towards their volunteering work (Oostlander et al., 2014). Finding a positive relationship between autonomy support and basic psychological need satisfaction in volunteers also aligns with research from other domains (Adie et al., 2008, Deci et al., 2001) and offers support for the external validity of managerial autonomy support as a need-supportive social contextual construct that is also relevant within volunteer organisations.

SDT Proposition 2. Autonomy support promotes autonomous motivation

Because managerial autonomy support provides a need-supportive climate, more autonomous motivation and less controlled motivation is assumed under autonomy-supportive leadership (Ryan and Deci, 2017). In line with this theoretical assumption, experiencing an autonomy supportive volunteering climate, initiated by the supervisor, was shown to have a direct positive impact on volunteers' autonomous motivation to perform volunteering activities (Haivas et al., 2012, Hsu et al., 2013). In a study of Chinese volunteers, the beneficial effect of autonomy support was also found to extend beyond volunteers' motivation for volunteering activities, to also influence their motivation towards activities that benefit their volunteering organisation (van Schie et al., 2014). Thus, volunteer research seems to initially provide support for the idea that managerial autonomy support facilitates internalisation and high-quality motivation amongst volunteers.

However, a contentious issue emerging from SDT-volunteer literature concerns findings of an apparent detrimental motivational effect of managerial autonomy support (Oostlander et al., 2014, Haivas et al., 2012). Based on theoretic assumptions, managerial autonomy support is expected to show positive and progressively stronger correlations with the more internalized regulations (Deci et al., 2017, Gagné et al., 2014). Research with paid workers has reflected this expected pattern, showing autonomy support to be negatively correlated with or unrelated to controlled forms of motivation (Slemp et al., 2018). Surprisingly, tests of this central tenet with volunteer populations have produced inconsistent and conflicting results. Some studies found that managerial autonomy exerted a positive effect on controlled motivation as well as autonomous motivation for volunteering activities (Oostlander et al., 2014, Haivas et al., 2012). Thus, managerial autonomy support appeared to have both a beneficial and

detrimental effect on the quality of volunteers' motivation towards their role. In contrast, managerial autonomy support was unrelated to controlled motivation amongst a small sample of 44 sports volunteers in Scotland (Allen and Bartle, 2014). In another study, Oostlander et al. (2014) failed to find any direct correlation between managerial autonomy support and autonomous motivation. Furthermore, the results of a more recent study were in line with SDT, whereby managerial autonomy support had a positive impact on autonomous motivation and a negative effect on controlled motivation (Li et al., 2016). The motivational effects of managerial autonomy support in volunteer organisations therefore warrant further investigation.

Some explanations have been offered for why volunteers with autonomy-supportive managers are experiencing pressure and control to participate in volunteer activities. Firstly, possible issues with the measurement of motivation, specifically the introjected regulation subscale of the Motivation at Work scale (MAW; Gagne et al., 2010), may have contributed to the unexpected result (Oostlander et al., 2014, Haivas et al., 2012). This explanation seems plausible given that the findings of Allen and Bartle (2014) and Li et al. (2016), were in line with SDT predictions, and used different scales for measuring motivation in their volunteer samples. Despite this, the MAW scale is a valid and regularly used measure of motivation and using the scale with paid workers does not appear to produce this unexpected effect (Kanat-Maymon et al., 2018, Güntert, 2015).

Shedding further light on another possible explanation, data from a large sample of almost 2,000 volunteers in Switzerland revealed that individual differences in personality may moderate the deleterious motivational effects of managerial autonomy support (Oostlander et al., 2014). Individuals with control-orientated personalities focus on external contingencies and power structures to guide behaviours and in doing so explicitly look for opportunities to please others or meets someone's expectations (Ryan and Deci, 2019). For volunteers with control-oriented personalities, the study found that autonomy supportive leadership was associated with experiencing pressure and obligation towards their volunteering role. The authors suggested that these volunteers may not want to disappoint a nice supportive manager by reducing the amount of volunteering or making a mistake; thus their participation in volunteering activities is being regulated by controls.

Finally, it may be concluded that the volunteering context is motivationally different to other domains. Contrary to other contexts, volunteers may be more sensitive to even small signs of control and may therefore perceive control from autonomy supportive managers (Oostlander et al., 2014). Further research is required to better understand the motivational effects of managerial autonomy support within volunteers.

SDT Proposition 3. The effect of autonomy support on motivation is mediated by basic psychological needs

Whilst studies have disagreed on the direct motivational effect of managerial autonomy support in volunteers, there has been support for the more complex mediation model proposed by SDT. The more complete SDT process model assumes that managerial autonomy support exerts its influences on autonomous motivation because it provides a social context that satisfies one's basic psychological needs for autonomy, competence and relatedness (Deci et al., 2017). To date, two studies of volunteers have modelled the relationship between all three motivational constructs (autonomy support, basic psychological need and motivation) together (Haivas et al., 2012, Oostlander et al., 2014). Both studies reached the same conclusion, finding that the effect of managerial autonomy support on motivation for volunteering was mediated by basic psychological need satisfaction.

In summary, research in volunteers shows general support for the validity of SDT as a theoretic framework for understanding the motivation of volunteers and the impact of socio-contextual climate within volunteering organisations. In line with theoretic assumptions, an autonomy supportive volunteering climate, initiated by the supervisor, has been found to satisfy volunteers' basic psychological needs and promote internalisation and autonomous regulation of volunteering behaviours. Whilst initial support for the theory in the volunteer context is promising, some studies have reported both beneficial and detrimental motivational effects of managerial support which is both contrary to SDT's theoretical assumptions and in conflict with other studies. Further application of SDT with volunteer populations is therefore necessary to enable additional testing and refinement of SDT as a theoretic model of volunteer motivation.

2.3.2 Motivational processes that influence volunteer outcomes

Understanding how to influence volunteer outcomes such as satisfaction, retention and active contribution to the organisation has been a primary area of enquiry within volunteer literature (Alfes et al., 2017). It is therefore no surprise that SDT research has also pursued this line of investigation. SDT's contribution to the study of volunteerism has revealed inner motivational processes through which the volunteering climate influences volunteering behaviours and continuance.

Volunteer participation and turnover outcomes

SDT research has begun to reveal motivational processes that influence active and ongoing participation in volunteering. Volunteers participate by choosing to be present at organisational activities and willingly donating their personal time to deliver the services and objectives of their personally selected organisation. Studies across various volunteering organisations and cultures have found satisfaction of volunteers' basic psychological needs and the quality of their motivation to be reliable predictors of a volunteer's intention to quit or remain with their volunteer organisation for the future (Millette and Gagne, 2008, Nencini et al., 2016, 2012, Haivas et al., 2013, Haivas et al., 2014, Li et al., 2016, Wu et al., 2016, Boezeman and Ellemers, 2009). For example, Haivas et al. (2014) surveyed 349 volunteers in Romania and asked them about their motivation towards their volunteering work, their experienced basic psychological need satisfaction at the organisation and their intentions to quit. The results revealed that all three needs- autonomy, relatedness and competence- were directly associated with lower turnover intentions. Furthermore, regarding motivation, the more internalised volunteers' regulation of their volunteering behaviours, the lower their turnover intentions were. Overall research with volunteers aligns with studies of paid workers (Schultz et al., 2015, Trépanier, 2015, Vansteenkiste et al., 2007), suggesting that volunteers whose basic psychological needs and autonomous motivation are supported at work are less likely to intend leaving their organisation

As there is still debate over whether turnover intentions provide a reliable proxy for actual turnover (Cohen et al., 2015), research on volunteers' turnover intentions, reviewed thus far, is limited in being able to explore and explain the behaviour of volunteers. Fortunately a few SDT-based studies have included objective behavioural measures of volunteer participation including the number of times volunteers presented for service or the number of hours they contributed to their organisations

during a given time (Grano et al., 2008, Gagne, 2003, Nencini et al., 2016). Such measures also offer more contextually relevant indicators of active and ongoing participation because volunteers may not always formally resign from a position like paid employees, but instead reduce their contribution or stop showing up to activities. So far, data based on behavioural indicators of participation correspond with studies of *intention* and provide support for the premise that basic psychological need satisfaction and autonomous forms of motivation positively predicts the quantity of volunteers' participation with their organisation.

Early evidence suggests provisions of autonomy support from leaders also has a beneficial influence on the active participation and retention of volunteer workers; however, this data is currently limited to only a few studies. In the first exploration of volunteers through the lens of SDT, Gagne (2003) examined the motivational mechanisms involved in participation amongst 81 volunteers at a US animal shelter. Autonomy supportive climate provided by the immediate supervisor, senior managers and the structure of their work environment positively influenced the number of hours volunteers contributed, by satisfying volunteers' basic psychological needs. Furthermore, volunteers who quit during the 4-month research period experienced less managerial autonomy support than volunteers who continued to volunteer at the shelter. Outside of this study, SDT research to-date rarely incorporates actual turnover data from volunteers, opting to relying on self-reported turnover intentions instead. One other study to date has provided a subsequent test of the effect of managerial autonomy support on volunteer continuation (Li et al., 2016). Their findings, that managerial autonomy support predicted turnover intention amongst volunteers in China, align with Gagne's results and research of paid workers (Liu et al., 2011, Otis and Pelletier, 2005, Gillet et al., 2013) to provide initial evidence for the idea that autonomy supportive leadership might improve retention of volunteers.

In summary, SDT research in volunteer populations has begun to reveal motivational processes that influence volunteer turnover intentions and active participation in volunteering activities. Volunteers who perceive satisfaction of their basic psychological needs at work and hold autonomous motivation for their volunteering role have higher rates of participation and intentions to continue volunteering with the organisations. The results are in line with research with paid employees and SDT theoretical assumptions (Deci et al., 2017).

Volunteer job satisfaction, engagement and attitudes outcomes

Previous research with volunteers has also found that satisfaction of basic psychological needs and autonomous motivation stimulates other positive volunteer outcomes including volunteer job satisfaction (Millette and Gagne, 2008, Boezeman and Ellemers, 2009, Nencini et al., 2016, Wu et al., 2016, Oostlander et al., 2014), psychological engagement (van Schie et al., 2014, Gagne, 2003, Allen and Bartle, 2014), and volunteering attitudes and intentions (Grano et al., 2008). Studies testing productivity-related outcomes amongst volunteer workers remain split. Millette and Gagne (2008) did not find any relationship between volunteers' self-reported autonomous motivation and supervisors' ratings of their performance in a study of 124 community service volunteers. However, a subsequent study by Bidee et al. (2013) found that, with more autonomous motivation, volunteers dedicated more work effort to their volunteer work. It is not unusual to find mixed results regarding the effect of motivation on performance in workplaces and researchers have suggested different motivational effects depending on the type of task for which performance is measured (Cerasoli et al., 2014, Deci et al., 2017, Kuvaas, 2009).

Whilst there is general agreement that satisfaction of the three basic psychological needs promotes participation, higher job satisfaction and increased psychological engagement amongst volunteer workers, results across studies vary regarding the importance assigned to each of the needs. For instance, a study of workers in a charity providing leisure activities for the handicapped (Boezeman and Ellemers, 2009) showed that when volunteers experienced satisfaction of autonomy and relatedness needs during their volunteer work they were more satisfied with their volunteer job and that in turn enhanced their intent to remain a volunteer with the volunteer organization. Competence was less important and perceived support for competence was not found to be a contributor in volunteers' intention to continue their involvement. A rare experimental study has provided further support for the importance of satisfaction of the relatedness need in particular for promoting volunteerism (Pavey et al., 2011). In a series of three laboratory experiments, the researchers primed autonomy, relatedness and competence and found that relatedness alone impacted volunteering outcomes. Participants in the relatedness manipulation reported greater intentions to volunteer and greater interest in volunteering than did those in the other three conditions. Neither autonomy nor competence manipulations

impacted volunteering. Furthermore, the relatedness prime had a significant effect on the amount of money participants donated to charity at the end of the experiment, even after mood and empathy were accounted for. The findings of the three experiments provide initial support that eliciting relatedness causes increased volunteering intentions, interest in volunteering and charitable donations. Similar findings, regarding the importance of relatedness compared to autonomy and competence, were also replicated by Oostlander et al. (2014). They found that autonomy supportive leadership provided support for all three needs, but it was only through satisfaction of relatedness that volunteer job satisfaction was increased. Whilst these studies together provide evidence for the importance of relatedness in promoting positive volunteer outcomes, there have also been findings that directly contradict this assertion. Haivas et al. (2012) found that it was through autonomy and competence, not relatedness, that autonomy supportive leadership influenced volunteers' autonomous motivation in a volunteer sample. The authors suggested that this finding indicated that connecting with others is secondary to feeling autonomous and competent in volunteer contexts.

Contextual factors that initiate motivational processes in volunteer workers

Overall evidence supports the benefits of providing volunteering experiences that satisfy basic psychological needs for promoting positive volunteer outcomes. But what situational factors in volunteer organisations can affect motivational variables and increase volunteer satisfaction? In looking to answer this question, SDT studies in volunteers have primarily focused on volunteers' experiences with their leaders (Allen and Bartle, 2014, Oostlander et al., 2014), characteristics of volunteering tasks (Millette and Gagne, 2008) and size of the volunteers' social network (Haivas et al., 2012). Consistent with theoretical assumptions and studies of paid employees, autonomy support from the leader was shown to be a consistent way in which volunteer organisations fostered an optimally motivating work climate and in turn positively impacted satisfaction and engagement of volunteers (Oostlander et al., 2014, van Schie et al., 2014). Haivas et al. (2012) concluded that experiencing an autonomy supportive volunteering climate, as initiated by a coordinator, had a more positive impact on motivation for performing volunteering activities than having a large social network of important others associated with the volunteering activities. In a study on the work experiences of 124 community volunteers, Millette and Gagne (2008) explored how the characteristics of volunteers' jobs (Job Characteristics Model; Hackman and

Oldham, 1976) may contribute to job satisfaction. They predicted that job characteristics would provide a motivating context for volunteers that served to improve job satisfaction and continuance. As expected, autonomous motivation yielded increased job satisfaction and reduced turnover intention amongst their volunteer sample. However, with limited support for their job characteristics hypothesis, the authors suggested that autonomous motivation of volunteer workers might be more strongly influenced by other work-related factors, such as supervisory styles and peer interactions, and they encouraged further research exploring such contextual factors.

2.3.3 Differences between paid and volunteer workers

Comparisons made between volunteers versus paid employees in this review have thus far likened findings from separate studies where data was drawn from either volunteers or paid worker samples. Whilst it has allowed general indications of potential areas of agreement or disagreement regarding motivational processes within volunteer or paid work contexts, variability in organisations, measures and overall study objectives between studies limits comparability and inferences which can be drawn. Providing the strongest contribution so far to our understanding of potential motivational differences between volunteers and paid workers, Boezeman and Ellemers (2009) compared volunteers and paid workers within the same research. In this unique study the authors compared volunteer workers to a matched sample of paid employees, performing identical tasks within the same organization, to explore how satisfaction of basic psychological needs contributed to their job satisfaction and intent to remain. The results revealed key motivational differences between volunteers and paid workers in how they derive job satisfaction. For paid workers, satisfaction of autonomy was found to be the most relevant predictor of job satisfaction and intent to remain. In contrast, volunteers derived their job satisfaction and willingness to remain with the organization primarily from their satisfaction of relatedness on the job. Empirically demonstrating differences between volunteers and paid workers in their sources of motivation has implications for SDT research into volunteerism because it indicates that volunteering contexts may be motivationally unique. Furthermore, the study lends support to the findings from volunteer leadership literature reviewed at the beginning of the chapter to highlight the importance of specifically examining the work

motivation of volunteers instead of relying on what we know from research conducted among paid staff.

2.3.4 Conclusions and future research opportunities

Research application of SDT to the study of volunteerism has shown early support for the validity of the theory in volunteer populations. In line with theoretic assumptions, an autonomy supportive volunteering climate, initiated by the supervisor, has been found to satisfy volunteers' basic psychological needs and promote internalisation and autonomous regulation of volunteering behaviours. However, relatively few studies have tested SDT within volunteer organizational settings and many aspects of the theory remain untested in the volunteer context. There are also inconsistent findings that conflict with core theoretical assumptions, namely the detrimental motivational effects of autonomy support, which warrant further attention. Further application of SDT with volunteer populations is therefore necessary to enable additional testing and refinement of SDT as a theoretic model of volunteer motivation.

Methodological refinement and extension beyond predominantly descriptive studies are also required to further develop this important research area. SDT recognises that motivation is a dynamic process in response to an ever-changing social contextual climate. However, the majority of the studies reviewed above were cross-sectional and relied on data obtained at a single point in time. Such an approach has limited the understanding of changes and fluctuations in volunteers' experiences and dynamic motivational processes over time. There has also been extensive reliance on self-report measures, and previous research has thus far measured managerial autonomy support exclusively via volunteers' self-report of their leader, which represents only perceived managerial support. SDT researchers have explicitly recognised this limitation, calling for future research to obtain data on autonomy support from other sources, such as managers, to provide additional validity to the model (Gagne, 2003). The introduction of more diverse research designs would help address this limitation and progress the area of research.

The research reviewed above provided indications that volunteerism may, in some ways, be a unique motivational context distinct from paid work. Firstly, research comparing volunteers to paid workers found that the motivational processes through which volunteers derive satisfaction and intent to stay differ to those of paid employees doing the same work in the same organisations (Boezeman and Ellemers, 2009). A

second finding specific to volunteerism has been that relatedness, rather than autonomy or competence, is most regularly identified as playing a strong contributing role in volunteering behaviour (Oostlander et al., 2014). The experimental study undertaken supports this proposition and thus provides strong evidence for the importance of relatedness in volunteering contexts (Pavey et al., 2011). Finally, managerial autonomy support has been found by some to have a detrimental as well as a beneficial effect on the motivation of volunteers. This result, whilst not consistently replicated, is unexpected and is in direct contradiction to SDT's theoretic assumptions and research in other domains including paid work, education and coaching. Unfortunately, there have only been a small number of studies investigating SDT-related constructs in volunteer organisations. These initial findings highlight the need to conduct further SDT research in volunteer populations rather than generalising findings from paid work contexts.

Overall, SDT is proving to be a valuable theoretic framework for understanding volunteers' motivation and the impact of the socio-contextual climate within volunteering organisations. Prior research has begun to reveal how motivational processes come to influence volunteer behaviour and attitude. Satisfaction of basic psychological needs and autonomous motivation amongst volunteers has been found to stimulate positive volunteer outcomes including volunteer job satisfaction, participation, engagement and intention to continue volunteering at their organisation. It is evident that this research area has shown promise for understanding how leaders might influence ongoing continuance amongst volunteer followers.

2.4 SECTION 4. INTERVENTIONS: APPLYING AUTONOMY SUPPORT IN THE FIELD

This section of the literature review is concerned with evaluating and synthesising research that has made attempts to manipulate autonomy support through interventions and experimental field studies. The review of SDT in *2.2 Self-Determination Theory: a theoretical and empirical review in management*, showed how the provision of autonomy support is expected to initiate motivational processes that come to influence willing and ongoing participation and positive outcomes in organisations. Section *2.3 Self-Determination Theory and volunteerism* went on to evaluate current support for the validity of the theory in volunteer populations. The

research reviewed thus far has shown significant positive associations between provision of autonomy support and beneficial worker outcomes and highlighted the potential value that could be gained from increasing autonomy support in organisations. This next section of the literature review is a synthesis and evaluation of interventions and experimental investigations of autonomy support. The review seeks to evaluate current evidence relating to the effectiveness of interventions focused on increasing autonomy support and review studies that have provided tests of hypothesised causal relations between managerial autonomy support and employee outcomes.

2.4.1 SDT intervention studies and their significance

Experimentation is at the core of the historical development and refinement of Self-Determination Theory. SDT research originated in laboratories, with researchers experimentally testing and developing the motivation model in a controlled environment (Ryan et al., 1983, Deci, 1971, Deci, 1972). It was through this process that the central tenets of SDT and the earliest mini-theories were first developed. In the decades that would follow, a growing body of research continued investigation of the theory and its nomological network in real world settings, such as organisations (Gagné and Deci, 2005). In contrast with early experimental investigations, the majority of the later research drew on descriptive methodologies to test theorised relations between SDT constructs and outcomes. Relative to the large volume of SDT research in applied settings, field-based interventions represent a miniscule portion of this work. Whilst these studies are small in number, they offer a substantially large contribution to the development of motivation theory by field-testing theorised causal relationships between autonomy support and motivational outcomes.

Intervention research from the field of Self-Determination Theory has tended to cover two primary lines of enquiry. The first has involved exposing participants to manipulated autonomy supportive contexts to delineate the causal effects on motivation and other outcomes of interest. The other adopts a motivator-oriented perspective to explore whether, through interventions, people can change their interpersonal orientation towards autonomy support. The following section reviews and evaluates the findings relating to each line of enquiry.

Recipient focused experimental manipulations

Researchers have experimentally induced SDT-based social climates to delineate their causal impact in real world settings (Edmunds et al., 2008, Williams et al., 2006, Chatzisarantis and Hagger, 2009). Within this line of enquiry, the target of the intervention has been the recipient of autonomy support. The most commonly used paradigm in such field experiments involved exposing participants to experimentally induced autonomy support “treatments” – often contrasted with a neutral comparison group. The focus of this type of intervention research has been to examine the effect of autonomy support on perceptions, motivational states and domain-relevant outcomes. In one study, for example, exercise class participants were assigned either an SDT condition, where the exercise instructor adopted an autonomy supportive teaching style, or neutral condition where the instructor provided a standard exercise environment (Edmunds et al., 2008). Participants’ motivation, basic psychological need satisfaction and cognitive/behavioural outcomes were assessed before, during and at the end of the 10-week term. The results showed the autonomy supportive manipulation was effective as participants and trained observers reported a significant increase in autonomy support. Exercise participants who received the autonomy support intervention showed a significant increase in relatedness and competence need satisfaction over time, higher positive affect and attended more exercise classes than those in the control group.

The first notable finding from this body of intervention work was that participants show sensitivity to manipulations of autonomy support. Significant increases in perceived autonomy support were reported by pupils who received autonomy supportive instruction from a teacher (Chatzisarantis and Hagger, 2009) and participants in a group exercise class who receive autonomy supportive instruction from a coach (Edmunds, Ntoumanis et al. 2008). Compared to a control group, patients who received autonomy supportive counselling from a health provider perceived greater autonomy support (Williams et al., 2006). Together these results suggest that autonomy support can be experientially induced and, most importantly, that people readily perceive changes in the presence of autonomy support in their social contextual climate.

Another contribution from this body of work has been that, through somewhat controlled experimental manipulations, these intervention studies have provided

causal tests of the SDT model in various real-world settings. This is critical for theoretical testing and development of SDT given that the research area has historically been saturated by correlational studies. In support of the theorised motivational effect of autonomy support, intervention studies have found participants exposed to autonomy supportive experimental manipulations showed improvements towards autonomous motivation. In a randomised clinical trial, smokers who received autonomy supportive counselling for 6 months showed increased competence and changes towards greater autonomous motivation for medication use when compared to a group of smokers who received standard materials offered to the community (Williams et al., 2006). Medication use and smoking cessation at the end of the 6 months was higher among those smokers who received autonomy support. Similarly, pupils who received autonomy supportive instruction showed a positive change in their motivation for physical education (Chatzisarantis and Hagger, 2009).

Support for the theorised effect of autonomy support on basic psychological need satisfaction, however, has been less definitive. In the exercise class study, participants receiving autonomy supportive instruction reported increased relatedness and competence need satisfaction (Edmunds et al., 2008). In contrast, no change in perceived basic psychological need satisfaction was reported amongst nurses exposed to autonomy support from their leader (Caspar et al., 2017). As there are only a limited number of experimental studies that have considered responses to autonomy support, further research is required to test the theorised effects of autonomy support.

Motivator-oriented training interventions

The second line of enquiry within SDT-based intervention research has investigated whether an autonomy supportive interpersonal style can be learned. This area of intervention research has been critical for shedding light on the stability versus malleability of the motivational climate within a given context. Whereas the studies reviewed above focused on the recipient of autonomy support, this second group of studies adopts a *motivator-centric* perspective by focusing on the provider of autonomy support. Intervention programs have been designed to teach healthcare professionals, teachers and managers the skills needed to support basic psychological needs and promote self-determined motivation of students, patients and employees (Hardre and Reeve, 2009, Murray et al., 2015, Reeve, 1998). The research has been concerned with exploring the interpersonal orientation of the motivator and whether,

through these training interventions, the motivator could learn to adopt more autonomy supportive approaches in their interactions. The following reviews this area of intervention research from each domain to evaluate the current state of evidence regarding whether autonomy supportive interpersonal orientations can be developed.

Teachers

Historically, field studies of autonomy support as an interpersonal style originated in the education domain (Deci et al., 1981). Similarly, the majority of the intervention studies thus far have been concerned with teaching autonomy support to teachers in school settings (Reeve, 1998, Cheon and Reeve, 2015, Cheon et al., 2018, Reeve et al., 2004, Tessier et al., 2008). The structure and content of the interventions have varied greatly, from a 45 minute session of reading and working in a training booklet (Reeve, 1998) to a year-long intervention comprising of workshops, practical skill sessions and peer-to-peer discussions (Cheon et al., 2018). Both experimental and quasi-experimental design have been employed to test the outcome of the interventions on teachers' autonomy supportiveness, measured via teachers self-reporting autonomy supportive behaviours (Cheon et al., 2018) or raters observing teachers' behaviours during instruction (Reeve et al., 2004). For example, in an intervention aimed at physical education teachers, participants received a short information session about SDT and autonomy support, coaching and feedback (Tessier et al., 2008). Observational video and audio recordings of each individual student/teacher interaction were rated by the experimenters on an observational grid. Teachers in the experimental group were observed to have significantly more autonomy supportive interactions with their students than teachers in a control group, suggesting that the intervention was effective. Overall results from intervention studies in the education domain have found that interventions are effective at enhancing teachers' autonomy supportive behaviours in the short-term.

Healthcare Providers

Like teachers, early evidence indicates healthcare providers may also be able to learn to adopt autonomy supportive interpersonal behaviours. In one study, physicians completed a 3-hour training program where they were taught to implement a smoking cessation counselling program with two different styles: an autonomy supportive style and a controlling style (Williams et al., 2002). Each physician used the two interpersonal styles in administering the counselling program with patients, which

were recorded and rated on the extent to which support for autonomy was evident. The results showed that the trained observers were able to distinguish the physicians as being more autonomy supportive with their patients who had been randomised to the autonomy supportive style than those assigned to the controlling condition. Similarly, Murray et al. (2015) also found that healthcare providers could successfully learn to implement autonomy supportive approaches with patients. They conducted a randomised control trial to test the impact of an SDT-based communication skills program for physiotherapists. Verbal communication between the therapist and their patient was recorded and scored by independent blind raters. Their results showed physiotherapists who completed the intervention were observed to be more autonomy supportive in their communication with clients than physiotherapist in a control group. This paper, with randomisation, blind raters and behavioural measures of real interaction between healthcare professionals and their patients, represents one of the highest quality research designs amongst the intervention studies reviewed. In doing so the research offers robust evidence for the malleability of autonomy support in the health context.

Managers

Research has also begun testing whether it is possible to manipulate managers' interpersonal orientations towards autonomy support with workers in organisations. Two studies, thus far, provide the basis for our current understanding of the malleability of autonomy support amongst managers (Deci et al., 1989, Hardre and Reeve, 2009). These studies report on the outcomes of training interventions aimed at teaching managers to promote self-determined motivation of their direct reports. Given the centrality of this question to the thesis, these works, their methodologies and limitations are analysed and reviewed in detail.

Empirical tests of whether managerial autonomy support is susceptible to change commenced in 1989 with managers and subordinates in a US machine company (Deci et al., 1989). However, the significance of this seminal paper extends beyond being the first managerial autonomy support intervention study. The research provided the first test of self-determination theory in the workplace domain and was the first time that managerial autonomy support, as a construct, was explicitly described and measured.

In the Deci et al. (1989) study, 21 managers participated in a training intervention that focused on teaching them interpersonal approaches to support self-determination, namely providing opportunities for subordinates to take initiative, informational feedback and recognising/accepting subordinates' feelings. The intervention was a 13-day structured program that included a one-day individual session with a change agent, two days formal face-to-face training and three individual on-the-job coaching sessions with the agent. Self-reported managerial orientation of eight managers, before and after they completed the intervention, were compared to that of 13 control managers who were yet to commence the program. The results found that, relative to those in the control group, managers who received the intervention showed significant improvements in their self-reported orientation towards more autonomy supportive and less controlling approaches. This study was the first to demonstrate a change in managers' orientation towards greater autonomy support through workplace training and development.

Although the early findings of Deci and his colleagues (1989) were promising, the research featured several limitations. First, the conclusions were drawn from a very small sample. The results were based on data from only 8 managers who received the intervention, compared with a control group of 13 managers. Second, the experiment did not employ random assignment. Managers were allocated to the control or experimental groups based on their location rather than being randomly allocated. It could therefore be argued that the observed differences may reflect location-based differences rather than being a result of the intervention. A third limitation is the study's assessment of managerial orientation, which relied on self-reports from managers rather than observation of managers' interaction with their followers. Self-reported managerial orientation may or may not actualise in managerial behaviours. It would be another 20 years after Deci et al. (1989)'s pioneering paper that researchers would again return their attention to whether or not managers could develop their interpersonal orientation towards autonomy support.

Hardré and Reeve (2009) reinitiated research into investigating the malleability of autonomy support in managers. Managers from Fortune 500 companies participated in a 6-week training program comprised of two one-hour group training sessions, held one week apart, and individual self-study using a booklet about how to support employee autonomy. In contrast to Deci et al. (1989), managers did not receive

individualised sessions or on-the-job coaching. To measure autonomy support, the researchers asked managers to write about a workplace experience during the week where they had attempted to motivate a disengaged worker. The essays were scored by two expert raters for the extent to which the example given represented aspects of an autonomy supportive style. Results of a t-test comparing the ratings of 10 managers who received the intervention to 10 managers in the control group revealed those who received the intervention showed evidence of more autonomy support in their essays than managers who had not received the training. The authors claim that their findings provide evidence that “managers’ motivating styles toward employees are malleable” (p. 179) and conclude that “managers were able to expand their otherwise entrenched styles toward employees to incorporate a significantly greater use of autonomy supportive strategies... These managers expanded their motivating style overall toward greater autonomy support, and they specifically learned to rely more on noncontrolling language, explanatory rationales and acknowledgements of employees’ negative affectivity” (p. 178).

There are several critical limitations with Hardre and Reeve’s (2009) study. The first, and of greatest concern, is that the method of analysis used did not answer the research question and support the conclusions drawn in the study. The authors stated their objective was to test “*whether or not veteran managers could develop a more constructive motivating style toward employees. That is, we sought to test the malleability of managers’ motivating styles*” (Hardré and Reeve, 2009p. 167). This question concerns change within the managers and development and expansion of the individual. Managers autonomy support was measured once at pre-test and again at post-test and this research design enables a test for changes in the managers over time. Surprisingly, the pre-test data was excluded, and the primary analysis was conducted on post-test measures only.

The first implication of excluding the pre-test data was that there was no test of change conducted in the study. The primary analysis, an independent sample t-test comparing groups at post-test, was not a suitable statistical method for examining within-subjects change. A more appropriate method of analysis would have been to include the pre-test measure and conduct a 2×2 repeated measures ANOVA to compare groups over time. It is possible that the size and distribution of the sample may have limited the authors’ capacity to adopt this method of analysis; however,

sample distribution or the authors' reasons for excluding the pre-test data were not addressed in the publication. A second implication that arose from excluding the pre-test data was that the reader cannot differentiate whether the reported differences were due to the intervention or reflected existing differences between the treatment and control groups. Managers in the intervention group may have been more autonomy supportive than managers in the control group at the beginning of the experiment, resulting in those differences re-appearing in the post-test data. The paper did not report analysis testing group mean differences at pre-test nor present descriptive statistics for managers in the experimental and control groups separately. Consequently, the reader is unable to appraise potential pre-existing differences between groups at the beginning of the research that need to be accounted for in their own interpretation.

The study of managers conducted by Hardre and Reeve (2009) does overcome the random assignment limitation of Deci and his colleagues' (1989) earlier paper, but still shares the same sampling and measurement limitations. The small sample size, of 10 managers per comparison group, is still a major criticism of this body of work and may have limited the choice and sophistication of analysis in Hardré and Reeve (2009). Regarding measurement limitations, self-reports are still the only source of data on managerial autonomy support. Hardre and Reeve (2009) assessed interpersonal orientation through managers' written descriptions of a workplace experience where they tried to motivate a disengaged worker. The limitation of this approach is that it relies heavily on the manager including detailed information in their essay and risks them being scored low on autonomy support, not because they do not employ autonomy supportive approaches with their employees but because they did not include information in their essays that the raters were looking for. The presence of more autonomy-support related information amongst the intervention group could conceivably be linked to awareness of the elements of autonomy support. Individuals who have not had the training do not include the information because they have not had their attention drawn to it. Measuring autonomy support through self-reported narratives does offer a benefit over the self-report questionnaire used by Deci, Connell and colleagues (1989) as it attempts to tap into the individual's own managerial behaviours rather than their perceptions of what is appropriate management. However, use of more objective measures of autonomy support via expert observation or drawing

on perceptions of other people who interact with the manager would help address self-report limitations.

Despite the issues described above, it is important to recognise that there are very few publications within SDT literature that benefit from an experimental design. Earlier evidence suggests that training interventions for developing managers' autonomy orientation have an impact on managers and are consistent with prior intervention studies from health and education domains. Whilst these early results are encouraging, empirical evidence for malleability of autonomy support amongst managers is far from definitive.

Flow-on effects of training interventions

Researchers have also examined whether interventions focused on training people to be autonomy supportive have beneficial flow-on effects beyond that of program participants, to those they interact with and motivate. Training healthcare providers to adopt autonomy supportive approaches was found to have beneficial effects on motivation and behaviour of patients (Williams et al., 2002). When physicians adopted an autonomy supportive counselling approach following training, their patients were more autonomously motivated to quit smoking and were, in turn, more likely to quit smoking. From the education domain, studies have also found improvement in the experiences of students whose teachers participated in interventions that focused on increasing autonomy supportive instruction. In one study, students of PE teachers who took part in a year-long intervention were compared to the students and teachers in a control group (Cheon and Reeve, 2015). Students whose teachers received the intervention reported greater autonomy support, increased competence autonomy and increased classroom engagement. Beneficial flow-on effects to student engagement were also found amongst high school students who participated in an autonomy supportive training intervention (Reeve et al., 2004). The more the high school teachers engaged in autonomy supportive behaviours the more engaged their students were.

Findings regarding flow-on effects of managerial autonomy support training to followers in organisations is mixed. In their seminal workplace study, Deci et al. (1989) conducted a quasi-experimental evaluation where employees' satisfaction with various aspects of their work climate were measured before and one month after their managers participated in an autonomy support training intervention. Despite results

revealing changes in the managers, there was no evidence that the intervention with managers impacted on employee satisfaction and experiences at work within the first month. In a subsequent follow-up, six months after the manager intervention, employees reported increased trust in the corporation and increased perceived advancement opportunities. However, there were no improvements for factors that would be expected to be closer linked to autonomy supportive management, such as perceived personal autonomy, quality supervision, supportive/non-pressured environment and opportunity for input and feedback. Furthermore, in the absence of a control group for the 6-month follow up, the results cannot be directly attributed to the intervention and likely reflect general changes in the work climate. In contrast the only other study to assess the effect of an autonomy supportive managerial training intervention did report short-term flow-on effects of the intervention on employees (Hardré and Reeve, 2009). Relative to employees in a control group, employees supervised by who participated in autonomy supportive training reported greater engagement managers and lower controlled motivation towards their work. However, contrary to their hypothesis the two groups of employees did not differ on autonomous motivation. The motivational and engagement differences were attributed to the intervention and resulting from managers receiving effective training in autonomy support. However, random assignment was not employed, nor was there a pre-test which would allow for baseline comparisons. As such the results may reflect existing differences between groups, rather than an intervention effect.

In summary, the limited studies that have tested the effects that manager interventions designed to enhance autonomy support have on employees are not consistent with one another, or with similar studies conducted in different contexts. The disparate results may reflect differences in the quality of the research methodology or design limitations. An alternative explanation may be that motivational effects of autonomy support in organisations may be different to that in other contexts and settings. The social contextual environment between managers and employees within workplaces are indeed very different to that between teachers and students in schools. For example, complex interplays between extrinsic financial rewards and a focus on organisation outcomes in a workplace context compared to student-oriented focus on development and growth in schools. At this point in time there is not yet enough evidence to draw conclusions regarding malleability of managerial autonomy support

or its causal effects in workplaces. Further applied experimental research would be beneficial to help expand knowledge in this area.

2.4.2 Critical evaluation and implication for future intervention research

Prior research seems to suggest that people can learn to be significantly more autonomy-supportive toward others. The intervention studies reviewed above showed some evidence that autonomy support can be manipulated in the domains of education, healthcare and organisations. Further to research in each unique context, a meta-analysis has also assessed the overall effectiveness of training interventions designed to increase autonomy support (Su and Reeve, 2011). Drawing on data from 19 interventions studies, the results from the meta-analysis revealed that training interventions had an overall effect size of 0.63 and were most effective amongst teachers. Inexperienced trainees and those with autonomy-oriented causality orientation showed greater training effects than did participants who were experienced or those with control-oriented causality orientations. The limited studies in the workplace domain highlighted the need to further peruse research into the effectiveness of interventions designed to increase autonomy support amongst managers.

Strengths and weaknesses of prior intervention research

The intervention studies examining autonomy support have contributed towards strengthening SDT research by drawing on experimental methods and more objective methods of measurement than has been traditionally employed previously. The presence of experimentation, and even randomised control trials (Williams, McGregor et al. 2006), is one of the strengths of this body of literature. Whereas the majority of applied SDT research has relied on cross-sectional survey designs to explore motivation, intervention studies present rare experimental tests of the theoretical model. Another strength of the intervention literature overall is that studies have not relied on self-report data alone. Intervention participants' autonomy support has been assessed via observation of actual interactions between the motivator and recipient of autonomy support, such as teacher and student for example (Tessier et al., 2008). Furthermore, some studies were designed so that the observing raters were blind to the experimental condition, so as to reduce potential rater-bias in the results (Reeve et al., 2004, Murray et al., 2015). Overall, the diversity in measurement methods and use of

experimental designs within intervention studies has helped to expand tests of the central tenets of SDT from laboratories into authentic settings.

In evaluating the intervention literature, a significant diversity in the quality of studies was also evident. The high portion of low-quality studies was also noted by Su and Reeve (2011) in their meta-analysis where only four studies, from 19, fit the narrower inclusion criteria intended to include a set of only relatively well-designed intervention studies. Despite the methodological strengths of some studies, SDT-based intervention studies have suffered from several methodological limitations that need to be addressed for knowledge in this area of study to expand in a substantial and progressive manner.

The first major methodological limitation pertains to wide-spread use of small sample sizes. Samples of 10 or less participants per experimental group were highly prevalent amongst the studies reviewed (Chatzisarantis and Hagger, 2009, Cheon and Reeve, 2015, Deci et al., 1989, Hardre and Reeve, 2009) and is a major criticism of intervention studies with managers in the work domain, as discussed in the review above. Recognising this issue, researchers have explicitly called for future intervention research to use larger samples (Edmunds et al., 2008). Addressing this limitation will not only provide more robust evidence regarding the malleability of autonomy support but would also enable further exploration of this phenomena than has been possible to date. For example, with larger samples researchers would be able to conduct tests of more complete models and begin exploring moderating variables that may influence the capacity for people to change their interpersonal orientation.

Experimental studies are rare in organisational settings and, as with much applied research, it is not always possible to achieve an ideal design (Bickman and Rog, 2009). Design limitations, such as the absence of pre-test baseline measures, were also evident across studies and compounded the problem of small sample sizes. Many of the studies reviewed only assessed autonomy support of participants at a single point in time, immediately after the intervention (Murray et al., 2015, Hardre and Reeve, 2009, Tessier et al., 2008). Including a pre-test observation in future research would allow us to more confidently attribute post-treatment differences to the intervention rather than existing differences between participants in the experimental conditions. In their study of teachers, Cheon and Reeve (2015) noted that “the emergence of these baseline differences [between experimental and control group] also reaffirms

researchers' future need to collect baseline measures to be able to cope with any differences that emerge as statistical controls" (p. 110).

Collecting data from intervention participants over longer time periods would enable future research to more fully investigate the process through which people develop their interpersonal orientation towards autonomy support. Developing interpersonal skills is a complex learning process and changes resulting from leadership development interventions take time to manifest (Avolio et al., 2009). Failing to capture the appropriate time lag in measuring longitudinal interventions effects may lead to inappropriate inferences being made (Dormann, & Griffin, 2015). Whilst some consider a three-month time lag as suitable for the detection of significant effects of leadership development interventions (Kelloway, & Barling, 2010), other research suggests that longer periods of time are required for learning to occur and effects to manifest. In a study of leadership learning, for example, Hirst and colleagues (2005) found a time lag of 8-12 months between leaders learning new leadership skills and translating these skills into leadership behaviours. Interestingly, the SDT intervention research has thus far focused on measuring short-term changes in autonomy supportiveness. We do not yet know if interventions have long-term and/or sustained effects on participants' interpersonal orientation.

The literature recognises the substantial theoretic and practical significant of future intervention research in organisations. Recognising the potential benefits that application of SDT can have for improving health, motivation and outcomes in workplaces, researchers regularly address implications for interventions in their concluding remarks (Thibault-Landry et al., 2018, Gomez-Baya and Lucia-Casademunt, 2018). Other authors call for intervention research to extend their findings through examining whether causal relations exist amongst their study variables (Williams et al., 2014). For now, it can be concluded that there is a need for more Self-Determination Theory-based intervention research, and many opportunities for future intervention studies to expand and further develop our understanding of managerial autonomy support and its application by leaders in organisations.

2.5 SUMMARY AND CONCEPTUAL FRAMEWORK

The literature review chapter critically evaluated theories, prior research and their methodologies to generate the conceptual framework, identify gaps in the literature that need to be addressed and develop the methodology for this current study. The thesis is concerned with the problem of high volunteer turnover in emergency service agencies due to ineffective leaders. Previous research that forms current understanding of volunteer leadership and how leaders influence volunteers' motivation and participation were identified and critically evaluated. The first two sections of the literature review chapter [2.1 *Leadership of volunteers and 2.2 Theoretic review of motivation*] focused on identifying and evaluating theories that are of value to solving the research problem. Self-Determination Theory was discerned as the theoretic framework for the thesis and managerial autonomy support was distinguish as the leadership approach to be investigated for its influence on promoting ongoing participation in volunteering. The subsequent sections [2.3 *Self-Determination Theory in volunteerism and 2.4 Interventions: applying autonomy support in the field*] focused on theoretic application and aimed to appraise current evidence for the validity of SDT in volunteer populations and critically evaluate methodological approaches of previous intervention research which has sought to manipulate autonomy support.

This final section concludes the chapter by summarising the key gaps and methodological limitations that were identified from the literature review and how they will be addressed in this thesis. Drawing on Self-Determination Theory, a conceptual framework is proposed, describing how leaders' interpersonal approach initiates motivational processes that in turn increase satisfaction and reduced turnover intention amongst volunteer workers. Explicit hypotheses are stated regarding the expected relations amongst the variables and how they are derived from the literature.

2.5.1 Literature gaps and limitations to be addressed in this thesis

Leadership of volunteers: need for a theoretic framework

Review of previous literature showed that volunteer leadership is a unique construct but, despite its differentiation from leadership of paid workers (Posner, 2015, Ferreira et al., 2015, Pearce, 1982), it has not received distinct theoretical attention. At present, there is no theory that specifically addresses leadership responses to the

unique needs of volunteer workers. There has also been limited empirical enquiry into which leadership styles or behaviours are effective with volunteer workers as only a small number of studies have examined the relations between leadership and volunteer outcomes (Zievinger and Swint, 2018, Oostlander et al., 2014, Catano et al., 2001, Dwyer et al., 2013). This presents a challenge for organisations seeking to improve the quality of leadership provided to volunteers because there is no empirical guidance on what leaders can say or do to influence turnover intentions and satisfaction amongst their volunteer followers. This thesis will address this theoretical gap in the volunteer leadership literature by applying Self-Determination Theory to the study of volunteer leadership and testing its validity in the volunteer context. The focus will be on evaluating managerial autonomy support as a theoretical framework for effective volunteer leadership that promotes ongoing participation in volunteering.

Managerial autonomy support is of significant value to leaders seeking to retain volunteers because it delineates dimensions of interpersonal communication and socio-contextual events that are expected to facilitate self-regulated, willing and continued participation in activities. According to SDT's theoretical assumptions, managerial autonomy support provides socio-contextual conditions that satisfy workers' basic psychological needs and in turn facilitates internalisation and positive outcomes. Support has been found for the central tenets of SDT in organisations (Deci et al., 2017) where research has confirmed the beneficial influence of managerial autonomy support on satisfaction of workers' basic psychological needs (Baard et al., 2004, Deci et al., 2001, Roca and Gagné, 2008), autonomous motivation (Chan and Hagger, 2012, Otis and Pelletier, 2005) as well as a range of positive outcomes such as wellbeing, commitment, performance and job satisfaction (Moreau and Mageau, 2012, Schultz et al., 2015, Chang et al., 2015, Collie et al., 2016, Gillet et al., 2012, Arshadi, 2010). Furthermore, provision of autonomy support from leaders has also been linked to future work intentions and employee retention amongst paid employees (Otis and Pelletier, 2005, Liu et al., 2011, Gillet et al., 2013).

Self-Determination Theory: validity with volunteers

SDT's theoretical propositions regarding managerial autonomy support need to be empirically verified within volunteer populations. Unequivocally most research investigating managerial autonomy support has been conducted in traditional paid organisational contexts and many aspects of the theory remain untested with volunteer

workers. The volunteer leadership literature, which has revealed the unique nature of volunteer leadership (Farmer and Fedor, 2001, Pearce, 1982) and differences in paid vs volunteer responses to leadership (Catano et al., 2001), has served to highlight the importance of explicitly studying leadership in volunteer populations, rather than generalising findings from studies of paid employees. The need for more research examining managerial autonomy support within the volunteer context is further exemplified by the results of initial studies which have been a) inconsistent, b) in contradiction with SDT theoretical assumptions, namely the detrimental motivational effect of autonomy support and c) provide indications that volunteerism may be a unique motivational context (Oostlander et al., 2014, Haivas et al., 2012). This thesis will address this gap and provide further tests of the effects of managerial autonomy support within volunteer populations. In doing so the research will enable additional testing of Self-Determination Theory and its validity within the volunteer organisation context and extend the literature in three unique ways.

1. *Theoretical test of managerial autonomy support in a new context*

This research will focus on whether or not SDT theoretical assumptions, regarding managerial autonomy support as a construct and its relationships, transcend across organisational boundaries and are valid within volunteer organisations, specifically the volunteer emergency services context. This will be done by a) testing the SDT's conceptual definition of managerial autonomy support as a socio-contextual condition that satisfies basic psychological needs and b) testing the hypothesized mediating role of basic psychological needs in the beneficial influence of managerial autonomy support and worker outcomes. In doing so this thesis will provide a test of the external validity of managerial autonomy support within volunteer emergency service organisations.

2. *Test the relations between managerial autonomy support, job satisfaction and turnover intention in volunteers.*

The initial volunteer literature, so far, has either investigated the effect of managerial autonomy support on volunteers' turnover intention (Gagne, 2003, Li et al., 2016) or the effect of managerial autonomy support on volunteers' job satisfaction (Oostlander et al., 2014). This study will be the first to model all three variables together within the volunteer work context. In doing so this research will help unravel the relations between these variables and shed light on the inner psychological

mechanisms through which managerial autonomy support comes to influence workers' intentions to stay with their volunteering organisations.

3. Improving methodological diversity and sophistication within volunteer SDT research.

Previous studies testing SDT within volunteers have relied extensively on self-report measures and cross-sectional research designs. SDT recognises that motivation is a dynamic process and relying on data obtained at a single point in time has limited researchers from studying volunteer motivation as a dynamic process and understanding changes or fluctuations in volunteers' experiences and dynamic motivational processes over time. Furthermore, previous research has, thus far, only measured managerial autonomy support exclusively via volunteers' self-report of their leader (Gagne, 2003, van Schie et al., 2015, Li et al., 2016, Allen and Shaw, 2009, Oostlander et al., 2014, Oostlander et al., 2014). The thesis will address these methodological gaps by measuring leaders and their followers over multiple points in time and will be the first to measure autonomy support from the perspectives of the both the leader and the follower in the dyad. In doing so this research responds to the call for future research to obtain data on autonomy support from other sources to provide additional validity to the model (Gagne, 2003).

Interventions: Changes towards autonomy support amongst managers

Further to testing the theoretic and external validity of managerial autonomy support as an approach to improving turnover in volunteers, in order to solve the research problem, it is important to know whether or not emergency services leaders can change their interpersonal orientation towards autonomy support. A review of the intervention literature revealed that only two studies have tested whether managerial autonomy support can be taught to leaders in organisations and evidence is far from conclusive (Deci et al., 1989, Hardre and Reeve, 2009). This study seeks to strengthen evidence that, through learning and development interventions, managers in organisations can learn how to become more autonomy supportive towards others. To achieve this, the research overcomes previous methodological limitations of managerial intervention studies by employing a substantially larger sample size and a pre-test. In doing so, the research responds to calls in the autonomy support intervention literature for further studies with larger samples (Slemp et al., 2018,

Murray et al., 2015) and looks to answer the important question that Hardre and Reeves (2009) posed but their paper was unable to answer: what is the malleability of managerial autonomy support? Next the research will extend on our current knowledge and understanding of the stability/malleability of autonomy support in two new ways.

1. Exploring individual differences in treatment effects

Previous literature has simply asked whether or not people can learn to adopt autonomy supportive orientations. This research unpacks this further by asking “Do some people change more readily than others? And, if so, who?”. The research will investigate whether characteristics of the leader affect their capacity to change their managerial orientation over time. This will be the first study to consider leaders’ individual differences in their development trajectories towards autonomy support and to ascertain whether certain groups of leaders show greater propensity for developing their managerial orientation or are more resistant.

2. Longitudinal analysis of intervention effects

Up until now the literature has focused on short-term change in intervention participants’ orientation towards autonomy support (Reeve, 1998, Murray et al., 2015, Cheon et al., 2018, Tessier et al., 2008, Hardré and Reeve, 2009). We do not yet know about the sustainability of this change and whether the initial improvements in interpersonal orientation reflect enduring long-term changes or if, over time, people revert back to their initial orientation. To address this gap, the research will adopt a longitudinal design and revisits leaders one year after the completion of the intervention at the organisation. In doing so the research responds to a call within recent literature for investigation into whether the effects of intervention programs designed to support autonomy endure over time (Murray et al., 2015).

2.5.2 Conceptual model and hypothesis

Figure 2.1 presents the thesis’s conceptual/theoretic framework for how leaders influence volunteers’ ongoing participation in the organisation. Drawing on Self-Determination Theory, the model proposes that managerial autonomy support from emergency service leaders facilitates satisfaction of workers’ basic psychological needs and, in turn, increases their job satisfaction and reduces turnover intention.

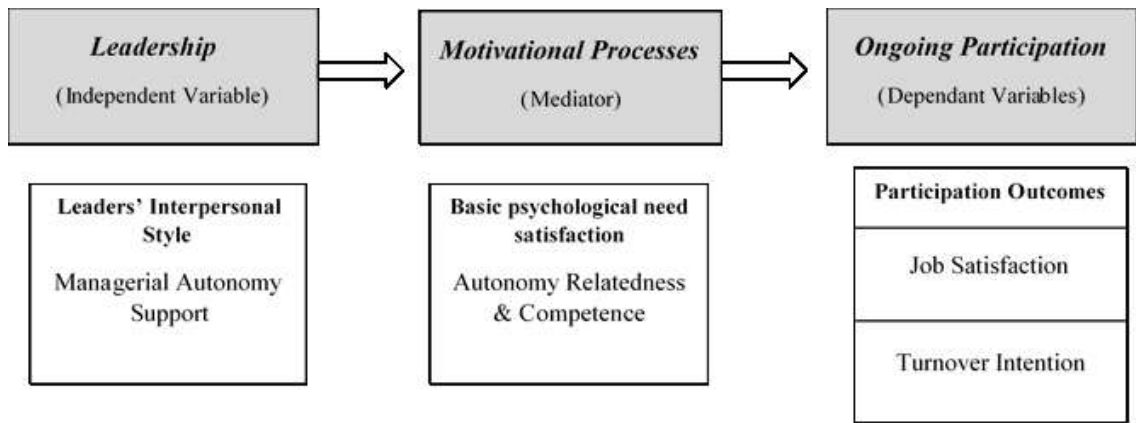


Figure 2.1 Hypothesised conceptual model, derived from Self-Determination Theory (Deci et al., 2017), describing how the interpersonal approach of leaders influences ongoing participation in emergency services volunteer organisations.

Addressing the first objective of the thesis, the hypothesized conceptual model will be tested within the volunteer emergency services context. It is hypothesised that,

- (H1) Perceived managerial autonomy support from leaders predicts higher job satisfaction and lower turnover intentions amongst followers in emergency service organisations.
- (H2) Perceived managerial autonomy support from the leader predicts higher basic psychological need satisfaction amongst followers in emergency service organisations.
- (H3) Basic psychological need satisfaction mediates the beneficial influence of perceived managerial autonomy support on job satisfaction and turnover intention.

The model also provides a theoretical framework upon which training, and development of volunteer emergency service leaders can be based. The second focus of the thesis is to investigate the effects of a leadership development intervention designed to teach volunteer emergency service leaders how to be more autonomy supportive and satisfy their followers' basic psychological needs. It is hypothesised that,

- (H4) Leaders who receive the leadership development intervention will improve their interpersonal orientation towards autonomy support and away from controlling approaches.

- (H5) Changes in the managerial orientation of leaders who receive the intervention are enduring and will continue to be evident one year after the intervention.
- (H6) Followers will report higher autonomy support from their leader, higher basic psychological need satisfaction, higher job satisfaction and lower turnover intention after their leaders complete the intervention.

Chapter 3: Methodology

This chapter describes the methodology adopted by this thesis to achieve the research objectives.

1. Test the hypothesized conceptual model of ‘effective volunteer leadership’ in emergency service organisations.
2. Test the training malleability of managerial autonomy support amongst leaders.
3. Evaluate flow-on effects of the leader-intervention to followers.

The chapter commences [*Section 3.1 Research Design*] by presenting the overall design of the research study and details how aspects of the design are employed to address each of the three research objectives. Next, section 3.2 details the sampling process and participants in the study. Section 3.3 describes the features of the intervention, which focused on training emergency services leaders to be autonomy supportive with their followers, and justification for the intervention methodology. Section 3.4 presents the scales used to measure the variables within this study and their reliability. The procedure for collecting the data and the planned method of analysis is described in Section 3.5 and Section 3.6 respectively.

3.1 RESEARCH DESIGN

An applied quasi-experimental design was employed to assess the impact of the leadership intervention on members of Australian volunteer emergency services organisations. The intervention was delivered to leaders in the organisation and time series data collected from leaders and their followers over a year. The research design for the study is presented in Figure 3.1 and shows the timing of each observation for the leader groups and followers over the research period. In addressing objective 1, develop and test a hypothesised conceptual model of ‘effective volunteer leadership’ in emergency service organisations, managerial autonomy support from organisational leaders was the independent variable and the dependant variables were basic psychological need satisfaction, job satisfaction and turnover intention amongst followers. For objectives 2 and 3, managerial autonomy support was a dependant variable along with basic psychological need satisfaction and turnover intention. The

following details the research design employed to address each of the three research objectives of the thesis.

	Pre-pre (-9 weeks)	Pre-test (week 0)		Post-test (week 9)	Follow-up (1 year)
Treatment Leaders	LeaderT0	LeaderT1	X	LeaderT2	LeaderT3
Control Leaders		LeaderT1		LeaderT2	
Followers		FollowT1	X	FollowT2	FollowT3

Figure 3.1 The study research design testing the impact of the intervention (X) on leaders and their followers over time.

Objective 1. Test the hypothesised conceptual model in the volunteer emergency service context

To address the first research objective, the study drew upon baseline (pre-test) data collected from followers. Followers' perceived autonomy support from the leader, basic psychological needs satisfaction, job satisfaction and turnover intention was measured prior to the intervention (FollowT1) and this data was used to test the hypothesised conceptual model.

Objective 2. Test the training malleability of managerial autonomy support amongst leaders

A non-equivalent control group design (Mitchell and Jolley, 2004) was employed to investigate the effect of the intervention on the managerial orientation of emergency service leaders over time. Comparisons were made between leaders in a treatment group, who received a nine-week leadership development intervention, and control group of leaders from the same organisations. Assignment to groups was non-random, with leaders self-selecting to participate in the development program and research. Managerial orientation of all leaders in the treatment group were measured on three occasions over the research period, before and after the intervention, and one

year after. Some leaders also provided pre-pre-test data nine weeks prior to the intervention commencing. Leaders in the comparisons group were measured on two occasions at the same time as the treatment group, before and after the intervention.

Random assignment was not possible in this study due to constraints from the organisations participating in the study. Recognising this limitation at the onset of the project, the decision was made to include various design elements that would strengthen the design and enable the assessment of potential threats to internal validity. First, including a pre-test and a control group allowed the exploration of the size and direction of possible selection bias. To maximise comparability, participants in the control group were drawn from the same organisations and in similar roles as the treatment group and their pre-test similarities were assessed. Second, adding a double pre-test for the treatment group enabled the assessment of the plausibility of threats to validity, including maturation and instrument effect, that a standard non-equivalent control group design could not do alone. Finally, a within-subjects repeated measures design was used to improve power through reducing random error and increasing the number of observations. Sample sizes forecast at the onset of this study were not large and greater power would serve to improve the quality of the analysis and reduce type II error.

Objective 2. Evaluate flow-on effects of the leader-intervention to followers

A within-subjects pre-test post-test design was employed to test hypotheses about change experienced by followers whose leaders received the intervention. Followers' perceived autonomy support from the leader, basic psychological needs, job satisfaction and turnover intention were measured before and after their leaders were exposed to the intervention. Actual turnover data, indicating whether the follower was still volunteering with the organisation, was obtained one year after the intervention.

It is acknowledged that a more robust design would have included a control group of followers for a quasi-experimental comparison. The simplified strategy for assessing the followers was necessitated by organisational constraints whereby a study of such large scale was not accepted by the organisations. The research questions and focus of the thesis guided the choice to prioritise data collection with leaders.

3.2 PARTICIPANTS

A total sample of 363 participants, comprising of 167 leaders and 196 followers, was obtained for this study.

Sampling process

The population for this research were all members of the Australian volunteer emergency services sector. Four of the seven state-based organisations agreed to be involved in the research. The four organisations, which were Victoria State Emergency Service (VICSES), New South Wales State Emergency Service (NSWSES), New South Wales Rural Fire Service (NSWRFS) and Queensland Fire and Emergency Services (QFES) had 19,544 members, or 80% of all emergency service volunteers in 2016 (Steering Committee for the Review of Government Service Provision, 2016). The sampling frame for this study represented 80% of the population of interest and is therefore argued to be representative of the populations. There is no evidence to suggest that members from the non-represented state-based organisations are different to those who participated or would impact the results of this research had they also taken part. The leader sample for this study intentionally included both volunteers and paid staff. Leadership of volunteers in the emergency services context occurs at both a local unit level, with volunteers leading local teams of volunteers, as well as at an organisational level with predominantly paid staff. These two levels of leadership have been shown to uniquely impact satisfaction and turnover of volunteers (Baxter-Tomkins, 2011). Full-population sampling was employed whereby all leaders in the organisation had the opportunity to participate. For the follower sample, each organisation provided a list of a minimum of four colleagues and/or direct reports supervised by the leaders in the treatment group. Adopting this sampling approach aimed to reduce the likelihood of bias whereby leaders may be more likely to nominate followers whom they believe would report more favourably about them.

Leader Sample

The treatment group began with 88 leaders who had enrolled into the leadership development program, 82% completed the intervention in full and, of those, 90% contributed both pre-test and post test data. The final treatment group comprised of 65 leaders, each of whom received the intervention. Of the 675 control group leaders invited to take part in the study 137 completed the first survey, representing a 20%

response rate. Seventy-six percent of those who initially joined the research completed both pre-test and post-test measures, leaving the final control group with 102 leaders.

Overall the total leader sample were males (65.5%) and females (34.5%) aged between 21 and 81 years ($M = 49.3$, $SD = 13.2$). Eighty-six percent were volunteers and the other 14% were paid staff. They had been members of the organisation between 6 months to 40 years, with an average length of service of 11 years ($SD = 9.1$). Regarding formal managerial experience, leaders had an average of 7.6 years ($SD = 9.8$) experience supervising volunteers and a further 9.1 years ($SD = 10.1$) experience supervising paid staff. Forty-six percent of the leaders were tertiary educated. Table 3.1 presents a summary of demographics.

Table 3.1

Leader demographics: descriptive statistics for overall sample and by experimental group

	Overall		Treatment (n=65)		Control (n=102)	
	M	SD	M	SD	M	SD
Age	49.29	13.16	43.9	9.77	52.57	13.92
Length of service	11.37	9.06	9.93	7.90	12.25	9.63
Management experience	16.70	14.88	13.19	13.71	18.34	15.19
	n	%	n	%	n	%
Gender						
Male	108	65.5	32	50.8	76	74.5
Female	57	34.5	31	49.2	26	25.5
Employment Type						
Volunteer	142	86.1	41	65.1	101	99
Paid	23	13.9	23	34.9	1	1

The characteristics of the achieved sample of leaders are reflective of typical leaders across the emergency service population more generally. A comparison of the experimental groups (the results of t-tests comparing experimental conditions on

demographic variables are reported in 4.2.1 Preliminary analysis) revealed differences in age, gender and employment type at the beginning of the study. Because these variables were unrelated to managerial autonomy support, it was not expected that these differences would have an appreciable impact on the results of the study; however, pre-existing demographic differences between leaders in the treatment group compared to the intervention groups are recognised as a potential sampling limitation.

Follower Sample

Of the 354 followers contacted to join the study, a 54% response rate was achieved. Pre-test data was obtained from 196 followers, representing 144 individual leader-follower dyads. One hundred and thirteen followers completed both pre-test and post-test questionnaires. There were 98 leader-follower dyads where both parties had complete pre-test and post-test data. The full sample of followers comprised of 117 males (62%) and females (38%) aged between 18 years and 73 years ($M = 44.9$, $SD = 12.7$). Eighty-two percent were volunteers and the other 18% were paid staff. They had been members of the organisation for between 4 months to 41 years, with an average length of service of 10 years ($SD = 9.1$).

3.3 INTERVENTION

The leader intervention consisted of a nine-week SDT-based training and behaviour change program. The intervention, *Inspire Retain Engage*, was developed and delivered by an interdisciplinary team of five academics from the University of Wollongong, including the PhD candidate. The following describes the key features of the intervention utilising the taxonomy of Schulz et al. (2010). The taxonomy was offered to address limitations of published intervention studies by specifying dimensions of the intervention that should be provided in detail by researchers to enhance validity and assure accurate replication and extension of published work. The discussion is organized into two broad categories comprising of treatment delivery characteristics and the content and goals of the intervention.

Delivery characteristics

The intervention was a nine-week structured program consisting of three distinct sessions: Learn, Apply and Share. They were delivered via a blended learning (Hilliard, 2015) approach comprising of face-to-face, emailing written material and

individual mentoring via email/phone contact. Figure 3.2 is taken from the training material and depicts the structure of delivery over the intervention period.



Figure 3.2 Structure of the intervention. One day training (*Learn*) followed by nine-week on the job application (*Apply*) and a final day workshop (*Share*).

The intervention commenced with *Learn*, a one day face-to face group training session where leaders were introduced to SDT and developed an individual action plan detailing how they would apply the theory with their followers. This was followed by *Apply*, a nine-week period of supported intentional behaviour change where the knowledge and skills acquired during the intervention were further built on and implemented in real world settings. The participants were assigned a member of the academic team as their mentor during this period with contact via email and phone if requested. Every three weeks participants received application modules via email which comprised of written material and exercises to submit to their mentor, who would then provide feedback. The intervention concluded with *Share*, a one day face-to-face group workshop where participants shared their personal experience and successful strategies of SDT application with each other. The face-to-face sessions were held at venues chosen by the organisations and included a training room at the agency's head office, classrooms of the University of Wollongong and a hotel conference room. During the *apply* session the intentional behaviour change took place at the participant's work site and exercises were completed at a place and time of the participant's choosing. The intervention was facilitated by the PhD candidate and academics from the University of Wollongong, all of whom had disciplinary expertise in leadership and professional experience developing and delivering learning and education. The facilitators were diverse in terms of gender (40% female) and ethnicity

(60% born in countries other than Australia). Interactions between participants and interventionists were guided by a session plan and scripted instructions for activities and exercises were included in the material. Materials used in the delivery of the intervention included PowerPoint slides, YouTube videos and excerpts from peer reviewed literature. Participants received a workbook, action plan templates and laminated information cards. Individual differences in participants' experiences, background and learning preferences (McLoughlin, 1999) were accounted for by including a mixture of group activities, personal reflections and individual exercises. With respect to which aspects of the intervention were adaptable, the group activities drew upon experiences and examples generated by the participating leaders and, as such, debriefs were tailored to the unique needs of the participants in the group.

Content and goals of the intervention

The goal of the intervention was for leaders to apply Self-Determination Theory in their volunteer leadership role by adopting behaviours that support their followers' self-determined motivation. Specifically, increasing autonomy supportive interpersonal interactions, decreasing controlling interactions and creating opportunities for followers to experience autonomy, competence and relatedness in their volunteer role. Each of the three sessions (*learn, apply* and *share*) served a unique purpose in the intervention. The following addresses aims, content and the behaviour change techniques (Abraham and Michie, 2008) used in each session.

Learn (1 day face-to-face)

The aims were for participants to recognise the need to change their behaviour, identify alternative behaviours (informed by Self-Determination Theory), practice these behaviours in the training environment and engage in detailed goal setting in relation to how they will change their behaviour in their volunteer leadership roles. First, to prompt participants to recognise the need to change their behaviour, information was provided about the costs and benefits of action or inaction. Drawing on government and industry reports, the focus was on highlighting what would happen regarding volunteer participation in emergency service organisations if leaders did or did not change their behaviours (Auditor General NSW, 2014, Office of the Auditor General Western Australia, 2015, NSW SES Volunteers Association, 2014). Self-Determination Theory was offered as a framework to inform the identification of alternative behaviours. Information was provided about the behaviour- outcome link

where evidence relating to benefits of autonomous motivation and basic psychological needs support in organisations and volunteer contexts were presented. For example, research evidence supporting the link between basic psychological needs support and wellbeing outcomes, commitment and ongoing participation was discussed (Milyavskaya et al., 2013, Rayburn, 2014, Van Den Broeck et al., 2008, Vansteenkiste et al., 2007, Bidee et al., 2013, Burstyn et al., 2010, Haivas et al., 2013). To support participants' understanding and internalisation of the theory, opportunities were provided for personal reflection (Densten and Gray, 2001, Wood Daudelin, 1996). For example, participants were prompted to consider their own experience in need supportive/thwarting work contexts and accompanying emotional and motivational states. Three strategies were employed to assist participants to translate the theory into behaviours. Firstly, participants were invited to reflect on behaviours they have observed in their own managers. For example, participants were prompted to reflect on a time they were energised and happy in their role and to consider behaviours of their manager during this same time. Secondly, participants identified examples of need-supportive behaviours that they themselves and their peers currently practice. A facilitator-led group brainstorming session generated a large volume of behavioural examples specific to the emergency service leadership context, which were displayed around the training room as environmental prompts. Finally, through instruction, participants were told which behaviours are known to be autonomy supportive; for example, asking for and acknowledging the other person's perspective on the problem.

To prompt practice of the behaviours, leaders participated in two role-plays of typical scenarios between a leader and their follower in the emergency service organisation. The role-plays aimed to enable participants to rehearse the behaviours and provided an opportunity for social learning and peer to peer feedback (Ulrika and Agneta, 2013, Van Ments, 1999).

The session concluded with the formation of individual behavioural intentions, personal goal setting and implementation planning (Benyamini et al., 2013, Locke, 1996, Von Cranach and Tschan, 2001). Each leader created a detailed action plan of how they would apply SDT in interactions with their followers over a three week period. The My Action Plan (MAP) template by Oades et al. (2014) was used by participants to record their action plan. The MAP planning template has been designed for use in positive psychology-based coaching interventions and involves the

respondent defining the behaviour, specifying frequency, intensity, or duration, identifying sources of support, and potential barriers and solutions for implementation. Participants developed three action plans, one for addressing each of the three basic psychological needs of autonomy, relatedness and competence.

Apply (nine weeks on-the-job)

The aim was for participants to engage in intentional behaviour change over a nine-week period by practicing and further refining their behaviours through reflection (Seibert, 1999).

Regarding behavioural practice, participants were prompted to implement their action plan and rehearse and repeat their new behaviours during interactions with followers in the organisation. For example, weekly emails from participants' mentors offered general encouragement and suggestions for how to make time for the behaviour. In line with the reflective practice approach (Densten and Gray, 2001), opportunities were provided for participants to reflect on their behaviours as a source of learning. Firstly, three weeks after the initial change, participants responded to a number of questions about their experiences, barriers and learnings implementing their initial action plan. Questions included, for example, "How might you have done things differently if you had a second chance to do it again?" and "What two things have you learnt from the experience?". Secondly, participants received further instruction about how to perform need supportive behaviours in the form of an article (Stone et al., 2009) and were prompted to reflect on their own leadership practice to identify their strengths and weaknesses in relation to the information provided.

To facilitate ongoing behavioural practice and ensure leaders' new behaviours align with the central tenets of Self-Determination Theory, individual support was provided by mentors. For example, mentors provided participants with feedback on the content of their action plans and written work as well as acting as a source of guidance and support during the implementation phase. Finally, participants were prompted to review and reconsider their previously set intentions in light of their experiential learning and reflections. Each leader was encouraged to create a second action plan detailing what they will do in the final weeks of the application session.

Share (1 day face-to-face)

The aim of the final session was for participants to capture their collective learning and identify successful SDT-based leadership strategies that could be shared

with other leaders in their organisation. The session commenced with facilitators presenting a brief review of SDT in the context of leadership. In line with community of practice approaches (Wenger, 1999) the remainder of the day focused on learning through other leaders' experiences. Participants formed groups within which they each shared examples of leadership actions they had taken to support volunteer motivation in their emergency service organisation. The discussion included barriers to application and what they learnt from the process. Groups nominated their favourite example which was then presented back to the larger group and discussed. Finally, participants were prompted to develop practical examples of SDT application that would be shared with other volunteer leaders. The examples of SDT application were collected through a group-based activity via the free-listing approach (Weller and Romney, 1988). Groups of leaders engaged in 20 minutes of brainstorming to identify a list of strategies and actions for "what leaders ... can do to create an optimally motivating climate and increase retention and satisfaction of volunteers...". Leaders drew upon their own experiences, and that of others, to generate a large volume of examples for SDT-informed actions. After the initial brainstorming, leaders spent a further 40 minutes developing short (one paragraph) case scenarios describing the implementation of two actions. Each group submitted a list of SDT-informed leader actions and two case scenarios.

3.3.1 Justification of intervention methodology

Regarding validity of the intervention, the content was developed to align with SDT's conceptualisation of what constitutes managerial autonomy support and satisfaction of basic psychological needs (Deci et al., 1989, Deci et al., 2017, Deci and Ryan, 2008). The program content included conceptual and operational definitions of key constructs and information within presentations, participant workbooks and activities/application exercises were drawn from published research (e.g. Stone et al., 2009, Deci et al., 1989, Deci et al., 2001, Deci and Ryan, 2008). The instructional design of the intervention drew on evidence-based methods for effective leader development and training transfer (Day, 2000, Densten and Gray, 2001, Sheri-Lynne and Parbudyal, 2007, Riggio, 2008, Avolio et al., 2009). For example, leaders created action plans during the learn session and reflected/reported on the outcomes of their actions (module 1 activity of the *apply* session). Prompting participating leaders to engage in self-management behaviours and use action plans has been shown by

research to support transfer of learning into the workplace (Burke and Hutchins, 2007). Finally, the intervention was implemented consistently from site to site and person to person. Given that the training method, materials and facilitators were consistent across sites, variation in the location is not expected to impact reliability of the treatment.

3.4 INSTRUMENTS

Managerial autonomy support

i. Leader self-reported managerial orientation

The Problems at Work (PAW) questionnaire (Deci et al., 1989) assessed the degree to which the responding leader was autonomy supportive versus controlling in their interpersonal approach to managing workers. Using a vignette format, respondents were presented with eight situations a manager may encounter followed by four different approaches for how the manager may handle the problem. The four approaches varied in the degree to which support for self-determination was present. Leaders responded on a 7-point scale, ranging from ‘very inappropriate’ to ‘very appropriate’, to indicate the extent to which they considered each approach suitable for handling the problem. The PAW produces a score for four subscales: highly controlling (HC), moderately controlling (MC), moderately autonomy supporting (MA) and highly autonomy supportive (HA). A composite score is created by weighting the average for HC with a -2; weighting the MC average with -1 ; weighting the average for the MA with +1; and weighting the average for HA with +2, as described in Deci et al. (1989). The sum reflects the leader’s managerial orientation towards control versus autonomy support, with higher scores reflecting a more autonomy supportive orientation. The PAW has been validated and used previously in organisational research (Deci et al., 1989, Burstyn et al., 2010).

Subscales were deemed reliable with Cronbach’s alphas of $\alpha = .79$ for highly controlling, $\alpha = .79$ for moderately controlling, $\alpha = .80$ for moderately autonomy supportive and $\alpha = .85$ for highly autonomy supportive. To examine conceptual validity of the managerial orientation composite score, the leader data was checked for quasi-simplex patterns. Intercorrelations between the subscale are presented in Table 3.2.

Table 3.2

Intercorrelations for the subscales of the Problems at Work (PAW) questionnaire amongst leaders (N=167)

Measure	HC	MC	MA	HA
Highly controlling (HC)	-			
Moderately controlling (MC)	.78**	-		
Moderately autonomy supportive (MA)	.57**	.62**	-	
Highly autonomy supportive (HA)	-.30**	-.21**	-.04	-

** $p < .01$.

Stronger correlations were evident for subscales closer on the autonomy continuum and intercorrelations become progressively weaker as subscales become further apart. This result aligns with the conceptualisation of managerial autonomy support as a continuum from highly controlling to highly autonomy supportive. If valid the two control subscales (i.e. HC, MC) should have correlated positively with one another and negatively with the autonomy support subscales (i.e. HA and MA). As expected, there was a strong positive relationship between HC and MC ($r = .78$, $p < .001$) and a negative relationship between high autonomy support and the control subscales HC ($r = -.30$, $p < .001$) and MC ($r = -.21$, $p < .01$). Similarly, the autonomy-support subscales should have correlated positively with one another and negatively with the control subscales. Contrary to expectations, no relationship was evident between the two autonomy support subscales. Instead of correlating with HA scores, the MA subscale correlated positively with both controlling subscales, HC ($r = .57$, $p < .001$) and MC ($r = .62$, $p < .001$). This suggests that MA subscale may not reflect autonomy supportive approaches but rather a variation of controlling strategies more accurately termed “slightly controlling”. This finding is not unique to the dataset of this present research as other studies have also reported the MA subscale to be positively correlated with the control orientation (Reeve et al., 1999, Chua et al., 2014). For the purpose of this PhD the decision was made to retain the traditional method of weighting for analysis. Doing so would enable the finding to be compared to previous research and prioritizes the current research’s contribution to knowledge of managerial

autonomy support in volunteer contexts over methodological advances. Further discussion of the measurement issue with the PAW is explored in the discussion chapter.

ii. Follower perceived autonomy support from the leader

The short-form of the Work Climate Questionnaire (WCQ; Baard et al., 2004) measured managerial autonomy support from the perspective of the follower. Six items assessed the degree to which respondents perceived their manager to be autonomy supportive. In this study, where not all followers were subordinates in a direct managerial relationship with the leader, the questions included the name of the individual leader being evaluated by the respondent. Example items include “I feel that (name) provides me with choices and options” and “(name) encouraged me to ask questions”. Respondents rated on a 7 point scale the degree to which they agreed with each statement. Previous research has demonstrated the suitability of the WCQ across a range of managerial contexts including across industries and for both paid and volunteer employees (Oostlander et al., 2014, Liu et al., 2011, Chang et al., 2015). The WCQ was deemed reliable as indicated by an alpha coefficient of $\alpha = .95$ for the six items.

Follower basic psychological needs satisfaction

The Work-related Basic Psychological Needs Scale (W-BPNS; Van den Broeck et al., 2010) measured the extent to which followers perceived their basic psychological needs for autonomy, competence, and relatedness were satisfied within their organisational context. The scale provided a score for each of the three needs and included items such as “I feel free to do my job the way I think it could best be done” and “at work I feel part of a group”. Items for volunteer respondents were modified to replace “job” with “volunteer job” and “work” with the name of the organisation. The usual five-point scale was replaced by a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). This was to align the response scale of this measure with all other items measured in the follower survey and minimise confusion for respondents. Cronbach’s alpha was .69 for autonomy (6 items), .76 for competence (6 items), .78 for relatedness (6 items) and $\alpha = .84$ for the total combined items. The W-BPNS has been validated and used in previous research examining need satisfaction in the workplace (De Cooman et al., 2013, Van den Broeck et al., 2010).

Follower Job Satisfaction

Follower job satisfaction was measured using three items. The wording was customised slightly based on whether the respondent was in a paid or volunteer role. Items were “All in all I am satisfied with my role/volunteer role at [organization name]”, “In general I like my job/volunteer job at [organization name]” and “In general, I like working/working as a volunteer at [organisation name]”. Responses were on a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). Previous research has shown these items to be suitable for measuring job satisfaction of volunteers (Mitchell et al., 2001) and yielded a reliable measure of job satisfaction in this study ($\alpha = .80$)

Follower Turnover

Two questions measured the degree to which followers intended to leave the organisation. These items included “I frequently think about leaving this organisation” and “It's likely I will leave this organisation in the next year”. Responses were on a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). This measure of turnover intention has been used in research previous research with volunteer contexts (Haivas et al., 2013). The reliability of these two items was $\alpha = .79$. The organisation also provided turnover data, reporting whether the follower had resigned or was still a member of the organisation 1 year after the intervention.

Leader SDT application effort

Application effort refers to the leader's engagement with applying SDT and practicing autonomy support during the nine-week implementation period. Application was measured in two ways: 1) leader self-report and 2) number of application modules submitted by the leader during the intervention. First, leaders self-reported their application effort in the post-intervention where they were asked “To what extent did you apply SDT with your followers over the past 9 weeks?” and leaders responded on a five-point Likert scale from 1 (not at all) to 5 (a great deal). Second, leaders had four application tasks to complete and submit to their mentor during the nine-week application period of the intervention. The total number of application modules (out of 4) submitted by the leader was recorded. The two measures were converted to z scores and summed to create the ‘SDT application’ variable.

Demographic measures

Leaders were invited to provide demographic information including their gender (male vs female), age (in years), employment type (paid vs volunteer) and number of years they had been working/volunteering at the organisation. Two items also captured their formal management experience; these were “How many years of experience do you have supervising volunteers?” and “How many years of experience do you have supervising paid staff?”. The two values were summed to create the management experience variable which reflects combined years of experience across both paid and volunteer management contexts.

Followers were asked their gender (male vs female), age (in years), employment type (paid vs volunteer), number of years they had been working/volunteering at the organisation and the nature of their working relationship with the leader (formal supervisor vs colleague).

3.5 PROCEDURE

Information about the intervention, in the form of flyers and information emails, were developed by the researcher and provided to participating organisations for distribution. Initial communication, and subsequent enrolment of the leaders into the program, was facilitated by each individual organisation via their standard process for training enrolment. For example, leaders received notice of the program via an email, flyers posted on notice boards and word of mouth, and enrolled into the program by liaising with their organisational Learning and Development officer and/or direct manager. Those leaders who enrolled in the intervention, and chose to participate in the research, were assigned to the treatment group. The treatment group of leaders was first contacted by the researcher, via email, nine weeks before the intervention and their managerial orientation was measured via an online survey (pre-pre-test). Leaders from the same organisations and in similar roles to those in the treatment group were also invited to take part via an email from the researchers. Those who responded to the recruitment email were assigned to the control group for comparison. Each organisation supplied the researcher with the names and emails of a minimum of four followers, either direct reports or colleagues, for each individual leader who enrolled into the intervention. Followers were contacted by the researcher via email and invited

to provide confidential feedback on their experience at the organisation and their leader. Those who chose to take part were assigned to the follower group.

Nine weeks prior to the intervention, those leaders who had enrolled into the program received first email contact from the research team. They were welcomed, asked about their goals for the program and were invited to complete an online survey. The online survey measured their managerial orientation and constituted the pre-pre-test observation for the research.

In the week leading up to the intervention, pre-test measures were taken from all research participants. Leaders' self-reported managerial orientation was assessed via an online survey received via email. Followers also received an online survey via email. The questions in the follower survey assessed their experienced basic psychological need support, turnover intention and job satisfaction as well as the followers' perception of the managerial approach of the respective leader.

The intervention took place over a nine-week period. Leaders in the treatment group completed a structured development program where they were introduced to Self-Determination Theory and supported in applying the theory in their day-to-day interactions with their followers.

Post-test measures were taken from all participants at the end of the intervention. Leaders in the treatment group completed a paper questionnaire at the end of the final day of the program. The questions measured their managerial orientation and asked them to provide feedback on the program and the extent to which they applied SDT over the past nine weeks. The managerial orientations of leaders in the control group were measured via an online version of the survey that was received via email immediately after the intervention was complete. Followers also received their final survey at that time. The follower questions asked them to consider their experience with their leader over the past nine weeks and provide feedback on the leader's managerial approach and their experienced basic psychological need satisfaction, turnover intention and job satisfaction. They were also asked whether they had noticed differences in the leaders' behaviour over the past nine weeks and whether they knew their leader had been taking part in a leadership development program. Seventy-eight percent of followers were aware the leader was undertaking the training at the time they completed the post-test survey.

One year after the completion of the intervention, the treatment group received their final survey via email. The survey measured their managerial approach and included some further free text questions about their continued application of SDT and organisations barriers that they had encountered. The organisations provided the researcher with follower turnover data, indicating whether the follower has resigned or remained a member of the organisation one year after the intervention.

3.6 ANALYSIS

Structural equation modelling (SEM) was planned to address the first research objective and test the hypothesised conceptual model with volunteer emergency service workers. Covariance based structural equation modelling (CB-SEM), rather than the alternate partial least squares structural equation modelling (PLS-SEM), was chosen as the approach most suited to addressing the objectives of the thesis. Whereas PLS-SEM has advantages when the focus of the research is theory building, CB-SEM is considered the most suitable method of choice when the focus lies on confirming theoretically assumed relationships (Reinartz et al., 2009), as is the emphasis of this study. Analysis was conducted using the structural equation modelling software IBM SPSS AMOS 24.

SEM is statistically an extension of general linear modelling procedures but offers advantages over alternate methods for testing mediation models, such as multiple regression-based approaches (Hoyle, 1995). One advantage of using SEM is that it tests the goodness-of-fit of a full theoretic model which considers chains of association across more than one dependant variable at a time (Streiner, 2006). Another advantage of SEM is that it can be used to study the relationships among *latent constructs* (such as job satisfaction, managerial orientation, basic psychological need satisfaction) which cannot be observed directly but are indicated by multiple measures or observed variables (Lei and Wu, 2007). *Observed variables*, also termed indicator variables, are directly measured, such as a response to a Likert scale item ranging from 1 to 5 (Schreiber et al., 2006). Whilst latent constructs are theoretically important to study, they are not currently measured without substantial measurement error (Bollen and Pearl, 2013). This can become problematic when researchers studying these constructs employ methods of analysis that assume the variable is measured without error. Unlike path analysis or standard regression, SEM does not assume that variables are free from measurement error or that error terms (or residuals) are not

intercorrelated (Schreiber et al., 2006). SEM estimates the unique measurement error for each individual item as well as each item's factor loading onto the latent construct that best describes the data set. Thus, the use of multiple indicators within SEM provides us with more valid and more reliable measurement of latent constructs, and has been claimed as one of SEMs greatest assets (Bullock et al., 1994).

The self-determination theory-based model being tested in this research specifies a mediation process (i.e. basic psychological needs). Mediation analyses in accordance with the guidelines of Holmbeck (1997) were planned to test the hypothesised path from managerial autonomy support through basic psychological need satisfaction to workers' job satisfaction and turnover intention. Holmbeck's recommended strategy for testing mediation involves a sequential process of analysing the data against each key definition criteria for mediation (Barron & Kenny, 1986). Researchers have previously used this approach to test mediation effects in SEM, including testing of Self-Determination Theory-based mediation models (Campbell et al., 2019, Van Den Broeck et al., 2008).

Analysing mediation in SEM provides several advantages over alternative methods for testing mediation, such as the ordinary least squares regression-based path analysis approach of Preacher and Hayes (2004) for example. First, researchers are able to explore more complicated mediation models in SEM, such as those with several mediators linked serially, rather than being limited to simple mediation (Pek and Hoyle, 2016, Preacher and Hayes, 2004). Second, Barron and Kenny's (1986) definition criteria for mediation, which also forms the basis of Preacher and Hays' method, explicitly assumes that the mediating variable is free from measurement error. As previously discussed, SEM models involving latent variables with multiple measured indicators inherently correct for measurement error by estimating common and unique variance separately and can therefore meet this assumption whereas path analysis and the PROCESS macro cannot (Hayes et al., 2017). Finally, SEM in AMOS provides advantages over using macros in SPSS by producing measures of fit for the entire model, thus enabling a test of the full hypothesized model (Hayes et al., 2017, Preacher and Hayes, 2004).

General linear modelling procedures were planned to test the impact of the intervention on leaders and followers in line with the second and third research objectives. The method of analysis selected was guided by the sample, design and

research question. To address research question 3, *Can organisational leaders change their interpersonal orientation towards autonomy support in the short-term*, two-way mixed ANOVAs were planned to compare differences between the leaders in the treatment and control groups before and after the intervention. To further test if the effect of the intervention endured over time, a one-way repeated measures ANOVA was planned to compare intervention leaders' managerial orientation before the intervention, after the intervention and one year later. Moderation analysis (Hayes, 2017), using multiple hierarchical regression, were planned to answer research question 4, *Do some leaders change towards autonomy support more readily than others? And, if so, who?* The final research question pertained to analysis of the follower data and asked, *Do followers perceive changes in their socio-contextual climate during the leader-intervention period?* Comparisons between followers' pre-test and post-test scores were conducted via paired samples t-test, or Wilcoxon signed-rank for variables that did not meet the assumptions of the parametric test. Subsequent analysis of the follower data (via two-way mixed ANOVAs) were also planned to further investigate whether characteristics of the followers or their leader influenced followers' perceived changes over time. Overall general linear modelling techniques were deemed appropriate for answering the research questions and meeting the objectives of the study. Alternatively, SEM, which is also suited to experimental data and comparison of groups, could be used to answer the research questions. However, SEM is a large sample technique and sample size achieved in the present study was not appropriate for the SEM estimation method

Handling missing data

The approach to missing data within the structural equation modelling procedure is detailed in *Section 4.1.1 Data Preparation*. To prepare data for the general linear modelling analysis, Little's MCAR test was conducted and confirmed that missing values within the data set were missing completely at random. Where subscales had more than 20% missing data, the variable was dropped for the respondent. Subscales with 20% or less missing data were rare (1%) and in these cases the subscales scores were calculated using the data available.

Assumption testing

Assumption tests were carried out for all analysis reported in this thesis. Two-way mixed ANOVA are frequently used to analyse data within this thesis. To help

improve readability of results chapter, via reducing excessive duplication and retaining focus on the research questions, the assumption test process carried out for all two-way mixed ANOVAs are detailed below. Violations to assumptions are reported only when they were likely to have a substantial impact on the results and/or the method of analysis. For all other methods of analysis, results of assumption testing are included in *Chapter 4. Results*.

Regarding assumptions testing for two-way mixed ANOVAs, outliers were checked first. Observations with studentized residuals greater than ± 3 were identified and were checked for data entry errors. If established to be genuine data points the two-way mixed ANOVA was run with and without the outliers included in the analysis. If the two results did not differ substantially regarding statistical significance and confidence intervals, the outliers were deemed not to have an appreciable effect on the analysis and were retained. The residuals were checked for normal distribution via a visual inspection of a Normal Q-Q Plot. Homogeneity of variances and covariances were assessed by Levene's test of homogeneity of variance and Box's test of equality of covariance matrices respectively. The analysis conducted had only two levels of the within-subjects factor (pre and post) and thus met the assumption of sphericity.

Chapter 4: Results

Chapter 4 presents results of analysis conducted to test the hypothesis and answer the research questions of this thesis. The chapter is organised into three sections, corresponding to each main objective of the thesis.

Section 1. Test of the theoretical Model

Structural Equation Modelling (SEM) is used to test the hypothesized conceptual model, derived from Self-Determination Theory, in the volunteer emergency services context. The measurement model, describing the relationship between the observed variables (items) and latent variables, is addressed first and a confirmatory factor analysis evaluates how well the questionnaire items combine to measure each of the hypothesised constructs. The process through which the final measurement model is derived is detailed. The full structural model, describing the hypothesized relationships among latent variables, is tested next. Mediation analysis in accordance with the guidelines of Holmbeck (1997) were performed to test the hypothesised mediation specified within the model.

Section 2. Impact of the intervention on leaders' managerial orientation

General Linear Modelling techniques are employed to analyse the impact of the intervention on change in leaders' self-reported managerial orientation over time. The section commences with a preliminary analysis of the leader data to evaluate threats to internal validity that are most pertinent to the study's quasi-experimental design. The primary analysis is concerned with three lines of investigation. First, to evaluate change in leaders' managerial orientation at nine-weeks, a two-way mixed ANOVA compares the mean differences in managerial orientation between treatment and control group over time. Second, moderation analysis is conducted to investigate whether characteristics of the leaders influence their propensity to develop their managerial orientation through the intervention. Finally, to investigate the long-term effects of the intervention, one-way repeated measures ANOVA compared intervention leaders' managerial orientation at pre-test, post-test and one year after completing the intervention.

Section 3. Evaluate flow-on effects of the intervention to followers

Data from the followers is analysed in section 3 using general linear modelling techniques. To evaluate whether followers of those leaders who received the intervention perceived changes in their socio-contextual climate over the nine-week intervention period, within-subjects comparisons are made between pre-test and post-test measures. Next, two-way mixed ANOVAs analyse whether certain groups of followers were more likely to perceive changes in the provision of autonomy support from the leader over the nine-week intervention period.

Section 4. Post Hoc Analysis

Subsequent analysis is performed to compare the data obtained from the leader and follower in each dyad. Correlation analysis assesses the extent to which autonomy support perceived by followers, their basic psychological needs, job satisfaction and turnover intention are associated with their leader's self-reported managerial orientation.

4.1 TEST OF THE THEORETIC MODEL IN VOLUNTEER EMERGENCY SERVICE CONTEXT

The hypothesised model derived from Self-Determination Theory, proposed that perceived managerial autonomy support facilitates satisfaction of basic psychological needs, and in turn increases volunteers' job satisfaction and intention to remain with the organisation. Structural Equation Modelling was used to test the conceptual model, drawing on the baseline data from 196 followers.

4.1.1 Data preparation

Missing data

There was a very low level of missing data present in this data set, with between 0% to 3.1% missing data per item ($M = 1.31\%$). Missing data are said to be ignorable if the data are missing at random (Allison, 2003) and the results of Little's MCAR test, $\chi^2(112, N = 196) = 127.43, p = .151$, indicated that the data in this sample was missing completely at random. The unconditional mean imputation method was used to impute missing data and produce a complete data set required for structural equation modelling in IBM SPSS AMOS 24.

Assessment of normality

A critically important assumption associated with structural equation modelling, and the use of the Maximum Likelihood (ML) method for estimating SEMs, is that the data have a multivariate normal distribution (Byrne, 2016). The data was evaluated for both univariate and multivariate normality in accordance with the thresholds given by Kline (2011) and Byrne (2016) which propose that kurtosis values greater than 7 are indicative of more substantial levels of kurtosis, and skewness values greater than 3 may be considered as extreme levels of skew. Adopting these thresholds, the variables in this data set appeared to exhibit univariate normality. Byrne (2016) suggested that multivariate kurtosis values greater than 5 indicate departure from multivariate normality. With multivariate kurtosis value of 258.35 (critical ratio = 53.33), the data appears to exhibit substantial departure from multivariate normality.

The issue with non-normal data in structural equation modelling is that, as data increasingly departs from normality, the Chi Squared value and standard errors derived from Maximum Likelihood estimates become excessively high (West et al., 1995). Further adding to this problem is that the sample size for this data set is relatively small, and chi squared values are also somewhat inflated with small sample sizes. What this translates into is it becomes easier to reject the model and conclude it is a poor fit, resulting in unnecessary modifications to an otherwise suitable model and increasing the likelihood of rejecting the model (Byrne, 2016).

One recommended approach to handling the presence of multivariate non-normal data is to utilize a bootstrapping procedure (West et al., 1995, Byrne, 2016). In analysing this data, structural equation modelling was performed in accordance with bootstrapping procedure outlined by Byrne (2016). In the subsequent analysis and results bootstrap-adjusted standard errors were used and the Bollen-Stine bootstrap estimated p-value was inspected in place of the common Chi Squared p-value of the Maximum Likelihood estimate (Byrne, 2016).

4.1.2 Measurement model

Structural equation modelling consists of two parts. The measurement model of SEM, the first part, is a form of confirmatory factor analysis to depict the pattern of observed variables for the latent constructs in the hypothesized model. The purpose of the measurement model is to test the reliability of the observed variables, including

estimating factor loadings, unique variances and modification indices within the specific data set, to derive the best indicators of the latent variables prior to testing the structural model (Schreiber et al., 2006). The measurement model in this research comprised of the latent variables: managerial autonomy support, basic psychological needs satisfaction (autonomy, competence and relatedness), job satisfaction and turnover intention. As per the standard operation of covariance-based SEM, individual items were used as indicators of the underlying latent constructs (Matsunaga, 2008). Table 4.1 presents the descriptive statistics for the measures.

Table 4.1

Mean, standard deviation and correlations amongst the observed variable: Follower pre-test data (n = 196)

Variable	M	SD	1	2	3	4	5	6
1 Managerial Autonomy Support	5.81	1.27	-					
2 Autonomy	5.05	0.99	.39**	-				
3 Relatedness	5.63	1.03	.47**	.55**	-			
4 Competence	5.91	0.81	.25**	.33**	.41**	-		
5 Job Satisfaction	6.02	1.02	.38**	.71**	.65**	.40**	-	
6 Turnover Intention	2.36	1.56	-.38**	-.66**	-.61**	-.29**	-.66**	-

** . All correlations significant at $p < .01$

Measurement model 1: Three factor structure for basic psychological needs

In the first measurement model basic psychological need satisfaction was modelled as three separate latent variables: autonomy, competence and relatedness. In the same way the latent constructs managerial autonomy support, turnover intention and job satisfaction were modelled by their items, the latent constructs of autonomy, competence and relatedness were composed of indicators representing their respective items. Separating the needs as three latent variables aligns with SDT's conceptualisation of the three needs as separate, non-interchangeable entities (Ryan and Deci, 2017) and is in accordance with the recommendations of Van den Broeck et

al. (2016), who argued against the practice of combining the items into an overall needs satisfaction scale.

The measurement model was evaluated using several goodness of fit indicators. As per recommendations of West et al. (1995) and Byrne (2016) for handling non-normal data, bootstrapping was performed and the Bollen-Stine Bootstrap estimated p-value was inspected in place of the common Chi Squared p-value of the Maximum Likelihood estimate (Byrne, 2016). Following the guidelines of Kline (2011) and Boomsma (2000), the Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI) and Standardized Root Mean Squared Residuals (SRMR) were used as goodness of fit indicators. These indices have been recommended over other indices as they have been found to be the most insensitive to sample size, model misspecification and parameter estimates (Hooper et al., 2008). Acceptable thresholds for good fit are indicated by a Bollen-Stine p value $> .05$ (Byrne, 2016); RMSEA below $.08$ (MacCallum et al., 1996), SRMR below $.05$ (Byrne, 1998) and CFI greater than or equal to 0.95 (Hu and Bentler, 1999).

Estimation of measurement model 1 using AMOS indicated the model had poor fit, Bollen-Stine Bootstrap $p = .025$; RMSEA = $.07$; CFI = $.90$; SRMR = $.06$.

Re-specification of Measurement Model 1

The potential for respecifying an alternate version of measurement model 1 was explored. Non-significant factor loadings, standardised residual covariances greater than 2.59 and modification indices greater than 10 (Byrne, 2016) provided indicators of potential targets for model re-specification. Systematic examination identified several items to be problematic and these were removed sequentially and the measurement model reassessed. In total 5 items, three pertaining to relatedness and two to autonomy, were removed to achieve acceptable model fit. The respecified model fit statistics were as follows; Bollen-Stine Bootstrap $p = .234$; RMSEA = $.06$; CFI = $.95$; SRMR = $.04$. Despite yielding a fitted model, the average variance explained (AVE) for autonomy ($.33$), competence ($.46$) and relatedness ($.49$) fell below the acceptable threshold of $.50$. Discriminant validity was assessed by comparing the average variance explained (AVE) with the square of correlations between variables. The constructs of autonomy and relatedness showed poor discriminant validity, evidenced by higher squared correlation with other variables than the constructs' own AVEs.

The evaluation of the measurement model suggests that treating the three basic psychological needs as separate unrelated constructs is not a suitable approach for measuring and modelling basic psychological needs within the sample under study. It is evident that substantial re-specification of model 1 was required to achieve model fit. As the W-BPN scale is an established and psychometrically validated measure of need satisfaction, removing the five problematic items is not empirically supported by the literature and would reflect over-specification and inappropriate modifications to an otherwise theoretically adequate measure.

Measurement model 2: Single factor structure for basic psychological needs

An alternate measurement model was assessed. First, factor analysis was conducted to identify the appropriate number of factors representing basic psychological needs. Fabrigar et al. (1999) recommend the use of Principal Factoring extraction, which has no distributional assumptions, as a method of factor analysis for data that deviates from multivariate normality. Principal Factoring revealed three factors with eigen values greater than one. Cattell (1966) argues that the most appropriate number of factors representing the construct underlying the variables is equal to the number of factors that come before the scree, which is the gradual asymptotic trailing-off of eigen values. The scree plot showed a steep drop in eigen values from the first (5.068) to the second (1.872) and third (1.475) factors, providing support for a single factor. This single factor model is also in line with previous research (Van Den Broeck et al., 2008) and empirically justifies the use of a general, single-factor, needs satisfaction measure. The practice of averaging the three need measures into an overall need satisfaction score by using the three need measure scores as indicators of a latent overall need satisfaction factor in a structural equation model has been recognised as a methodologically appropriate practice (Van den Broeck et al., 2016).

A measurement model with single factor structure for basic psychological needs was assessed (see Table 4.2). In this model, basic psychological need satisfaction was represented as a single latent variable composed of three aggregate level indicators, comprising of autonomy, competence and relatedness. The three indicators were parcels, employing the latent-composite method, whereby all items for each subscale (autonomy, relatedness and competence) were aggregated and the three subscale composite scores were used as the indicators of the target construct, basic

psychological need satisfaction (Little et al., 2002, Little et al., 2013, Matsunaga, 2008) All other latent constructs (managerial autonomy support, turnover intention and job satisfaction) were modelled with indicators representing their respective items, as per the original measurement model.

Table 4.2

Scale properties for measurement model 2

Latent Variable	Observed variables	Standardised factor loading	SE	AVE	Cronbach's alpha
Managerial Autonomy Support	WCQ-short 1	.87	.035	.78	.95
	WCQ-short 2	.91	.017		
	WCQ-short 3	.92	.016		
	WCQ-short 4	.85	.039		
	WCQ-short 5	.89	.040		
	WCQ-short 6	.83	.027		
Basic Psychological Needs	Autonomy	.78	.037	.44	.85*
	Competence	.43	.071		
	Relatedness	.74	.053		
Job Satisfaction	Job Sat 1	.77	.058	.60	.80
	Job Sat 2	.87	.038		
	Job Sat 3	.65	.083		
Turnover Intention	Turnover 1	.80	.042	.69	.81
	Turnover 2	.86	.037		

Notes: *calculation based on total 15 items, SE = bootstrap-adjusted standard errors have been provided, AVE = average variance explained.

Estimation of the measurement model treating basic psychological need satisfaction as a single factor yielded a good fit: Bollen-Stine Bootstrap $p = .067$; RMSEA = .07; CFI = .97; SRMR = .04. All observed variables loaded significantly onto their latent factor. Competence (.43) was the only observed variable that has standardised regression weight below .70. As there is no theoretical justification for removing competence from basic psychological need satisfaction, the aggregate indicator was retained for analysis. The AVEs of constructs were acceptable (ranging between .45 and .77). There was indication of possible issues with discriminate validity indicated by the AVE for Basic Psychological Needs (.44) being lower than correlations squared between it and the constructs turnover intention (.84) and job

satisfaction (.97). Model 2 was accepted as the measurement model used in the primary analysis to test the hypothesis.

4.1.3 Structural model

Structural equation modelling, using IBM SPSS AMOS 24, tested the hypothesised conceptual model. Mediation analysis in accordance with the guidelines of Holmbeck (1997) were performed to test the hypothesised path from managerial autonomy support through basic psychological need satisfaction to workers' job satisfaction and turnover intention. In presenting the results, the relationships amongst the latent variables are described as direct effects or indirect (mediated) effects as per the recommendation of Schreiber et al. (2006) and Weston and Gore (2006). It is important to note that, although there is disagreement and confusion regarding whether causal statements from SEM results are appropriate (Bollen and Pearl, 2013, Bullock et al., 1994), the use of the term *effect* in this context does not denote an interpretation of causality.

Direct effect of managerial autonomy support on worker outcomes

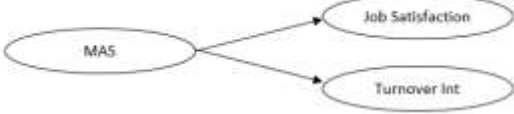
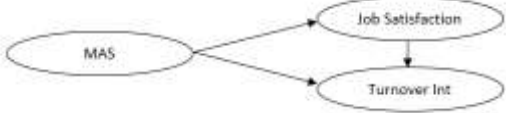

In accordance with Holmbeck (1997), the direct effects of managerial autonomy support on the outcomes variables, job satisfaction and turnover intention, were investigated first. By definition, a significant direct effect of the independent variable (managerial autonomy support) on the dependant variable (job satisfaction and turnover intention) must first be evident for a potential mediation to exist (Baron and Kenny, 1986). To test this direct effect all paths to and from basic psychological needs were constrained to zero for models reported in this current section [4.1.3]. The literature review revealed little prior research regarding the nature of the relationships between leadership, job satisfaction and turnover intention in volunteer populations. Several alternative models describing relationships between the variables were therefore tested, and the model fit statistics are presented in Table 4.3.

Model A, describing a path from managerial orientation to followers' job satisfaction and a path from managerial autonomy support to turnover intention, with no relationship between the dependant variables, yielded a poor fit to the data: Bollen-Stine Bootstrap $p = .005$; RMSEA = .163; CFI = .811 ; SRMR = .256. Because job satisfaction has been shown to predict one's intention to stay or leave the organisation (Bang, 2015, Mahdi et al., 2012), model B included an additional path from job

satisfaction to turnover intention. Model B, describing a path from managerial orientation to job satisfaction, a path from managerial orientation to turnover intention and an additional path from job satisfaction to turnover intention, yielded some improved model fit statistics Bollen-Stine Bootstrap $p = .090$; SRMR = .036; however, RMSEA (.129) and CFI (.919) still fell below the acceptable threshold of $<.08$ and $>.95$ respectively. Inspection of the standardised regression coefficients and their critical ratios showed that, when the path from satisfaction to turnover intention was added to the model, the direct path from leadership to turnover intention ($-.26, p = .160$) did not remain significant. A non-significant parameter suggests that this path may potentially be irrelevant and should be removed.

Table 4.3

Model fit statistics for the three alternate models describing the effect of managerial autonomy support on job satisfaction and turnover intention

Model	Alternate paths being tested	Bollen-Stine p	RMSEA	CFI	SRMR
A		.005	.163	.811	.256
B		.090	.129	.919	.036
C		.085	.076	.972	.044

MAS = managerial autonomy support, Turnover Int = turnover intention

Model C hypothesised that managerial autonomy support has a direct effect on followers' job satisfaction and indirect effect on turnover intention. The model describing a path from managerial orientation to job satisfaction and a path from job satisfaction to turnover intention fit the data: Bollen-Stine Bootstrap $p = .085$; RMSEA = .076; CFI = .972; SRMR = .044. The path diagram and standardized estimates for model C are shown in Figure 4.1. A direct effect was evidenced by a statistically significant path from managerial autonomy support to job satisfaction ($.420, p < .001$).

A statistically significant path from job satisfaction to turnover intention (-.817, $p < .001$) was also evident. The size and direction of the standardised coefficient suggests that job satisfaction relates strongly to workers' intention to remain at the organisation.

In summary, three alternate models were assessed to investigate the relations between managerial autonomy support, job satisfaction and turnover intention in the sample of emergency service workers. The results provide support for model C, revealing that managerial autonomy support has both direct and indirect effects on participation outcomes. Specifically, emergency service workers derive job satisfaction from autonomy supportive managers and this, in turn, predicts lower intention to leave the organisation.

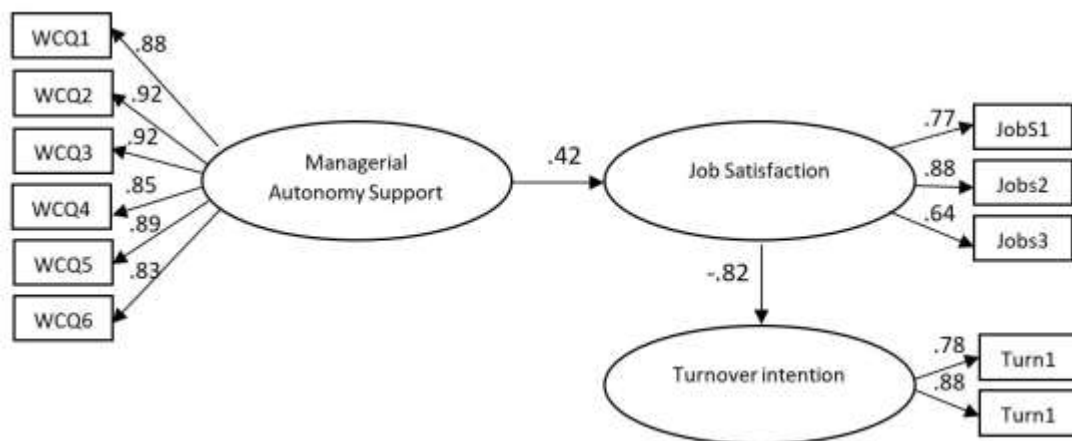


Figure 4.1 Standardised coefficients for model C describing the effect of managerial autonomy support on participation outcomes. Latent constructs are shown in ellipses and observed variables are shown in rectangles. All paths are significant at $p < .01$

Full mediation model

Next the full mediation model was tested. In the full mediation model, basic psychological needs were hypothesized to mediate the effect of managerial autonomy support on the outcome variables, satisfaction and turnover (see Figure 4.2). Estimation of the full mediation model yielded a marginal fit: Bollen-Stine Bootstrap $p = .040$; RMSEA = .075; CFI = .960; SRMR = .048. All paths in the model were significant in the predicted directions. The standardised estimates showed managerial autonomy support exhibited a significant positive effect on basic psychological needs

(.470, $p < .001$), basic psychological need satisfaction exhibited a very large positive effect on job satisfaction (.993, $p < .001$) and job satisfaction exhibited a negative effect on turnover intention (-.856, $p < .001$). The size of the standardised coefficient describing the path from basic psychological needs to job satisfaction (.993) is very close to 1.0 and may be indicative of problems in the model. Further examination of this issue is conducted in *4.1.4 Post Hoc Modelling*.

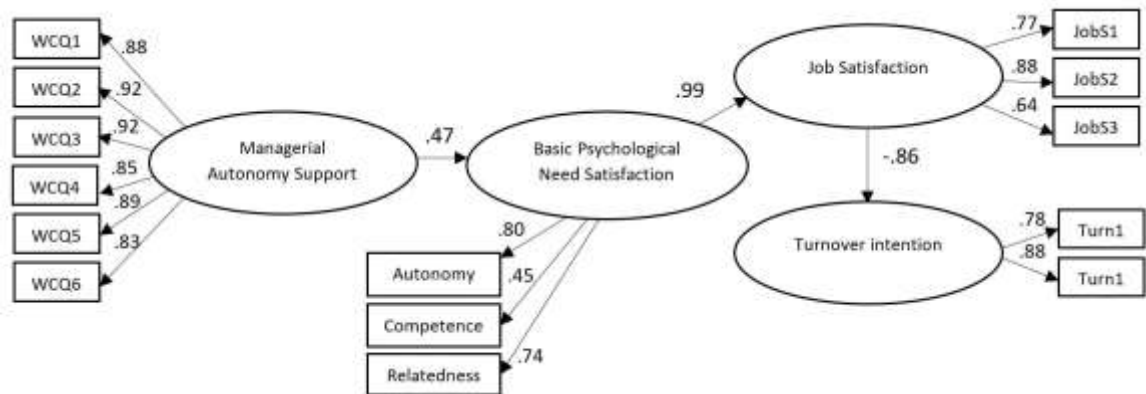


Figure 4.2 Full mediation model standardised coefficients. Latent constructs are shown in ellipses and observed variables are shown in rectangles. All paths are significant at $p < .01$.

Partial mediation model

Finally, a partial mediation model was tested and compared to the full mediation model. In the partial mediation model an additional direct path was added from managerial autonomy support to job satisfaction. If the full mediation model is correct, the addition of these direct paths should not significantly improve the model fit (Holmbeck, 1997). Estimation of the partial mediation model yielded a good fit: Bollen-Stine Bootstrap $p = .060$; RMSEA = .072; CFI = .964; SRMR = .044. A comparison of the partial mediation model to the full mediation model in IBM SPSS AMOS 24, showed that the addition of the direct path from managerial autonomy support to job satisfaction provided a significant improvement in fit over the full mediation model (CMIN = 7.695, $p = .006$). This finding initially indicates that the partial mediation model is the best model to describe the effect of managerial autonomy support on job satisfaction and turnover intention within the emergency services sample. The path model and standardised estimates are presented in Figure 4.3, as expected all paths were significant.

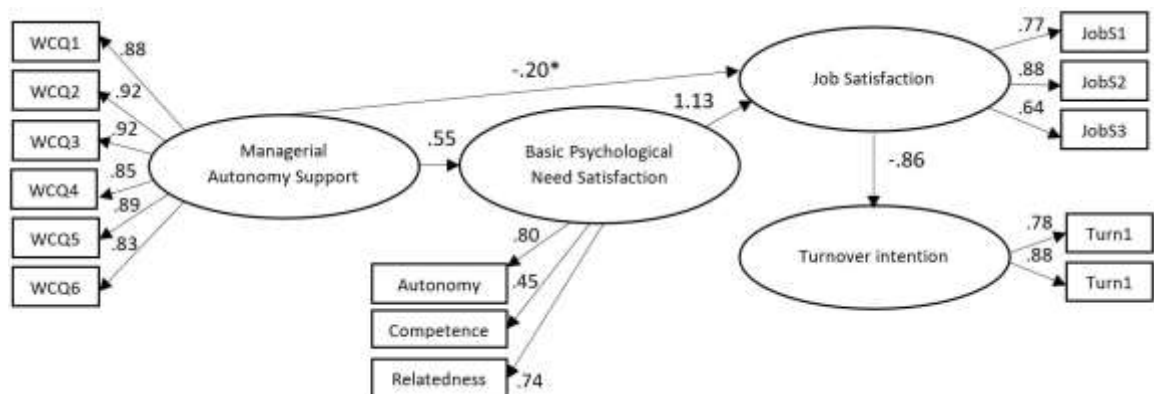


Figure 4.3 Partial mediation model with standardised coefficients. Latent constructs are shown in ellipses and observed variables are shown in rectangles. * $p < .05$, all other paths are significant at $p < .01$.

Turning first to the mediation effect, in line with the hypothesis, managerial autonomy support was predictive of basic psychological needs satisfaction (.553, $p < .001$), basic psychological need satisfaction was predictive of job satisfaction (1.129, $p < .001$) and job satisfaction was related negatively to turnover intention (-.854, $p < .001$). Turning to the additional direct path, managerial autonomy support was related negatively to job satisfaction (-.197, $p = .014$), which was not in the direction predicted. The standardised total effect of managerial autonomy support on job satisfaction, that was due to both direct and indirect effects, was .427. The standardised total effect of managerial autonomy support on turnover intention was -.496.

Limitations and problems with the model solution

There are issues within the partial mediation model solution that warrant further attention and discussion. First, the inverse direct path from managerial autonomy support to job satisfaction appears to indicate a suppression effect between the latent variables. Second, the standardised regression co-efficient describing the path from basic psychological need satisfaction to job satisfaction is above .1, which is unusual for a standardised value. Overall there appears to be a problem with the covariance matrix being used, possibly due to small sample size, poor discriminant validity and/or high correlation between the latent variables in the model. The following addresses

these two issues, namely the suppression effect and standardised regression weight greater than 1, in further detail and the implication for interpreting the results.

The negative direct path in the partial mediation model appears to be due to a suppression effect between managerial autonomy support, basic psychological needs satisfaction and job satisfaction. Suppression occurs when the effects of some variables of interest are blurred by criterion-irrelevant variance (Conger, 1974, Tzelgov & Henik, 1991, Cheung & Lau, 2007). The resulting partial mediation model is indicative of *negative suppression*, where there is a negative regression coefficient (i.e. standardised regression coefficient of -0.197 between managerial autonomy support and turnover intention) although the variables are positively related (Chen & Krause, 2002). The chances of suppression situations occurring are higher with the intercorrelation between the predictors is high (Tzelgov & Henik, 1991), which is apparent in the current model where there are high zero-order correlations between basic psychological need satisfaction and the latent variables turnover intention and job satisfaction (see Table 4.4). Poor discriminant validity between basic psychological needs, highlighted early, may also be contributing to the suppression situation. It would appear that basic psychological needs, the mediator in the model, explained so much of the shared variance between managerial autonomy support and job satisfaction, that it not only pushed the direct effect of zero but to an inverse association. Given the nature of the negative suppression, it is evident that managerial autonomy support does not negatively influence job satisfaction and therefore interpretation of this inverse path is unwarranted.

The standardised co-efficient of the path from basic psychological needs to job satisfaction was also unusually large (1.129). Standardised regression coefficients greater than one can legitimately occur (Deegan, 1978, Jöreskog, 1999) and likelihood of such coefficients legitimately occurring is known to increase as a function of multicollinearity present (Deegan, 1978). The data was therefore examined for the presence of multicollinearity. Procedures for diagnosing multicollinearity include a) examining the correlation matrix of the predictor variables and b) calculation of the variance inflation factors (VIF) (Mason and Perreault, 1991, Kaplan, 1994). First, correlations amongst the latent variables in the model were inspected. The correlations matrix presented in Table 4.4 is drawn from the SEM correlation estimates and therefore considers the unique factor loadings and standard errors established in the

measurement model. Bivariate correlations of .8 and .9 are commonly used cut-offs to indicate strong linear associations (Mason and Perreault, 1991). Adopting this threshold, several of the variables are highly correlated and thus indicative of multicollinearity. Variance inflation factors (VIF) values were examined next. VIF values greater than 5 are commonly used as a threshold for multicollinearity. The VIF values were smaller than or equal to 2.63, below the threshold. Based on the VIF method, multicollinearity was not problematic in this data. However, high bivariate correlations are indicative of strong linear associations between basic psychosocial needs and the latent variables job satisfaction and turnover intention.

Table 4.4

Correlation estimates amongst the latent variables within the SEM partial mediation model

Variable	1	2	3
1 Managerial Autonomy Support	--		
2 Basic Psychological Needs	.552	--	
3 Job Satisfaction	.402	.986	--
4 Turnover Intention	-.414	-.915	-.813

** . All correlations significant at $p < .01$

4.1.4 Post-Hoc Modelling

Additional analysis was undertaken, attempting to stabilise the covariance matrix and deal with the issues in the model. An alternate measurement model was developed using a parcel, single composite score rather than individual items, as indicators of the latent variables (Little et al., 2002). To mitigate problems of measurement error, reliability was controlled for in accordance with the method outlined in the literature (Bollen, 1989, Wang et al., 1995, Matsunaga 2008). For each latent variable the factor loading of the single composite score indicator was fixed at 1.0. The error variance ($\theta\epsilon$) was fixed at $\theta\epsilon = (1 - \alpha) \times s^2$, where α represents the scale reliability coefficient (ie. Cronbach's alpha) and s^2 is the observed variance of the composite score.

Mediation analysis (Holmbeck, 1997) were performed on this parcelled measurement model. The direct effects were tested first. The model, describing a path

from managerial autonomy support to job satisfaction and a path from job satisfaction to turnover intention, yielded a good fit to the data, Bollen-Stine Bootstrap $p = .025$; RMSEA = .07; CFI = .99; SRMR = .023. As expected, managerial autonomy support was predictive of job satisfaction (.445, $p < .001$) and job satisfaction related negatively to turnover intention (-.825, $p < .001$). These results, using the all-items parcelled measurement model, are comparable to the standardised path coefficients obtained in the original direct effects model [4.1.3 *Structural model*], which were .42 and -.82 respectively.

Next, the full mediation model was tested. The full mediation model, describing a path from managerial autonomy support to basic psychological needs satisfaction, a path from basic psychological need satisfaction to job satisfaction and a path from job satisfaction to turnover intention, yielded a good fit to the data, Bollen-Stine Bootstrap $p = .218$; RMSEA = .056; CFI = .994; SRMR = .021. All paths in the model were significant in the predicted directions. The standardised estimates showed managerial autonomy support exhibited a significant positive effect on basic psychological needs satisfaction (.508, $p < .001$), basic psychological need satisfaction exhibited a positive effect on job satisfaction (.916, $p < .001$) and job satisfaction exhibited a negative effect on turnover intention (-.852, $p < .001$). Comparing the standardised estimates to those obtained with the original measurement model, the estimated association between basic psychological need satisfaction on turnover intention has become somewhat smaller, from .992 in the original model to .916 when using the parcelled measurement model. Although this regression value is still high, it does appear to have been reduced to a more acceptable level.

Finally, the partial mediation model was tested. In the partial mediation model an additional direct path was added from managerial autonomy support to job satisfaction. The partial mediation model yielded a good fit to the data, Bollen-Stine Bootstrap $p = .338$; RMSEA = .079; CFI = .993; SRMR = .021. As expected, managerial autonomy support exhibited a significant positive effect on basic psychological needs satisfaction (.051, $p < .001$). Basic psychological need satisfaction exhibited a significant positive effect on job satisfaction (.943, $p < .001$), and the standardised regression coefficient of this path was now less than .1. Job satisfaction exhibited a negative effect on turnover intention (-.851, $p < .001$). The additional direct path from managerial autonomy support to job satisfaction (-.043, $p = .503$) was not

significant. A non-significant parameter suggests that this direct path from managerial autonomy support to job satisfaction may be irrelevant and should be removed. This analysis therefore finds support for the full mediation model, shown in Figure 4.4.

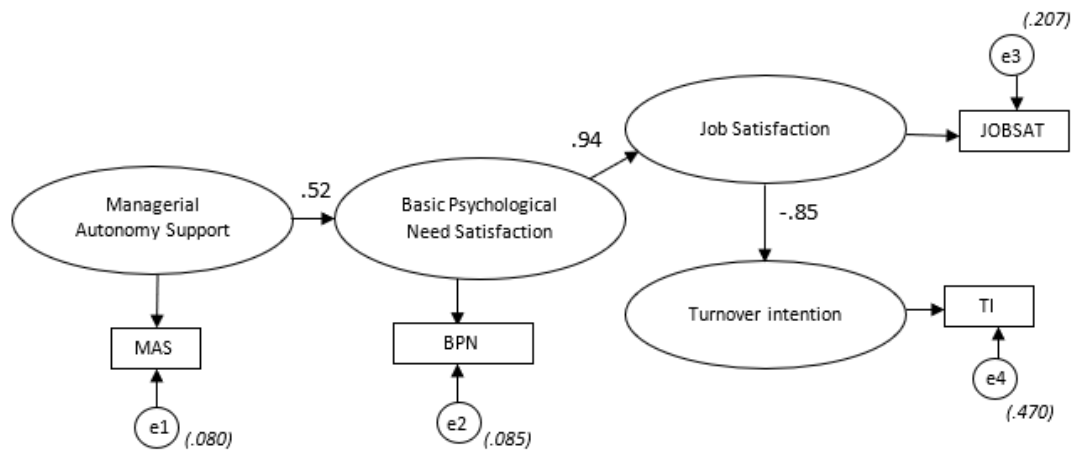


Figure 4.4 Mediation model with standardised path coefficients using the parcelled measurement model. Latent constructs are shown in ellipses, indicators are shown in rectangles, error terms are shown in circles and set error variances shown in brackets. All paths are significant at $p < .01$.

In short, the alternate measurement model has provided a solution for resolving the measurement issues [4.1.3 *Structural Model: Limitations and problems with the model solution*] and fits a full mediation model. The measurement model with single indicator parcels, whilst controlling for measurement error, appears to have stabilised the covariance matrix. Standardised regression weights greater than 1.0 are no longer evident. The suppression effect, which resulted in an inverse path from managerial autonomy support and job satisfaction in the partial mediation model, is no longer significant. The results of mediation analysis with the parcelled measurement model found support for full mediation.

In summary, the findings from structural equation modelling indicate that a full mediation model provides the best fit to describe the effect of managerial autonomy support on job satisfaction and turnover intention within the emergency services sample. In the full mediation model workers' perceptions of their leaders' managerial orientation effects their job satisfaction and subsequent turnover intention through basic psychological needs satisfaction. The standardised total effect of managerial

autonomy on turnover intention in the model is $-.437$, implying that managerial autonomy support is an important predictor of emergency service workers intentions to stay or leave the volunteer organisation.

4.2 IMPACT OF THE INTERVENTION ON LEADERS

The following section presents the analysis and results evaluating the effect of the intervention on leaders in the emergency service organisations. It was hypothesised that participating in the nine-week SDT-based leadership development intervention would change leaders' managerial orientation towards autonomy support and away from controlling approaches to leadership.

4.2.1 Preliminary analysis

The following summarises the leader data and evaluates potential threats to internal validity that are most pertinent to the study research design. Means and standard deviations for leader measures, including demographics and their self-reported managerial orientation score at an overall index and subscale level, are presented in Table 4.5. Leaders in the sample had a mean managerial orientation index of 6.97 ($SD = 2.94$), ranging from -10 to 12.63 . The managerial orientation index score provides an indicator of leaders' overall interpersonal orientation towards autonomy support. The measure (PAW) can produce index scores between -19 and 23 , reflecting extreme ends of controlling and autonomy supportive orientation respectively. The distribution of scores within the sample suggests diversity amongst leaders' interpersonal orientation and indicates that leaders oriented towards control and others oriented towards autonomy support are represented in this sample. Data were normally distributed, as indicated by Kolmogorov-Smirnov test ($.058$, $p = .200$). Visual inspection of histogram plots showed, at baseline, leaders' index scores were oriented more towards the autonomy supportive end of the continuum. This is also evidenced by higher means on autonomy supportive subscales (highly autonomy supportive $M = 6.05$, $SD = .83$ and moderately autonomy supportive $M = 3.55$, $SD = .94$) and lower means on the controlling subscales (highly controlling $M = 2.78$, $SD = .83$ and moderately controlling $M = 3.13$, $SD = .84$).

Table 4.5

Leader variables at baseline: descriptives and comparison of experimental conditions

	Overall		Treatment (n=65)		Control (n=102)		t	p
	M	SD	M	SD	M	SD		
Managerial orientation index	6.97	2.94	6.83	2.69	7.06	3.10	-.50	.617
Highly controlling	2.78	.83	2.83	.81	2.74	.84	.73	.468
Moderately controlling	3.13	.84	3.13	.85	3.13	.84	-.01	.990
Moderately autonomy supp.	3.55	.94	3.54	1.0	3.56	.89	-.119	.906
Highly autonomy supp.	6.05	.83	6.04	.83	6.05	.84	-.102	.919
Age	49.2	13.16	43.9	9.77	52.57	13.92	-4.69**	.000
Length of service	11.3	9.06	9.93	7.90	12.25	9.63	-1.58	.115
Management experience	16.7	14.88	13.19	13.71	18.34	15.19	-1.93	.055
	n	%	n	%	n	%	χ^2	
Gender							9.69*	
Male	108	65.5	32	50.8	76	74.5		
Female	57	34.5	31	49.2	26	25.5		
Employment Type							37.40**	
Volunteer	142	86.1	41	65.1	101	99		
Paid	23	13.9	23	34.9	1	1		

sup. = supportive, **p<.001, *p<.05

Intercorrelations for leader measures are presented in Table 4.6. There were no significant relationships between leaders' baseline managerial orientation index and demographic variables. Leaders' natural managerial orientation was not influenced by their gender, age, length of service, management experience or whether they are volunteers or paid staff. This suggests that practical experience managing others, developed over time, does not lead to formation of more autonomy supportive interpersonal techniques. Furthermore, the lack of association between gender or age and managerial orientation indicates that autonomy supportive leadership seems to present itself consistently across generations and is not more strongly favoured by male

or female leaders. Because demographics were unrelated to managerial orientation, demographic differences were not controlled for in the subsequent data analysis.

Selection bias

Participants self-selected to enrol in the intervention and the research and therefore some degree of selection bias is assumed to be present. To evaluate the extent to which differences in respondent characteristics over conditions could influence the observed effects, existing differences between leaders in the treatment and control group at baseline were tested via independent t-tests and chi-square difference tests. Descriptives for the experimental groups and comparisons of group means are presented in Table 4.5. Prior to the intervention, leaders in the treatment ($M = 6.83$, $SD = 2.69$) and control group ($M = 7.06$, $SD = 2.69$) did not differ on their managerial orientation, $t = -0.50$, $p = .617$. Turning to demographic comparisons, the two groups did not differ on length of service or management experience but did differ on age, gender and employment type. Leaders in the treatment group were significantly younger ($M = 43.9$, $SD = 9.77$) than did those in the control group ($M = 52.57$, $SD = 13.92$), $t(160) = 4.69$, $p < .001$. A significant difference was also found in the portion of males versus females in the two groups, $X^2(1, 165) = 9.69$, $p = .002$ with males representing 50.4% of the intervention group compared to 74.5% of the control group. There was also a higher portion of volunteers in the control group (99%) than in the treatment group (65.1%), $X^2(1, 164) = 37.40$, $p < .001$. In understanding the gender differences, it is important to recognise that there is a higher representation of males working in the emergency services industry. Gender representation in the control group, 25% female and 75% male, is generally reflective of the population from which this study is drawn. The higher portion of female leaders choosing to participate in the intervention may reflect broader social trends towards gender diversity within organisational leadership positions. Another explanation may be that women, who are more likely than men to have breaks in their careers to raise children, are more interested in taking up opportunities to develop their skills, knowledge and employability. As with gender, the ratio of paid (1%) vs volunteer (99%) leaders in the control group more closely reflects the portion of paid vs volunteer workers in Australia's volunteer-based emergency services sector. At the time this study was conducted approximately 2% of workers in State Emergency Service (SES) organisations were paid employees (Victoria State Emergency Service, 2016). The

leadership intervention was targeted and advertised to both volunteers and paid workers since leadership of emergency service volunteers occurs both at the local level (by other volunteers) and an organisation level (by paid staff). One of the participating organisations requested that one instance of the intervention delivered the face to face training component on-site at head office on weekdays. It is expected that improving accessibility to paid workers, for one out of the five instances of the intervention, may be the primary reason for the larger representation of paid leaders in the experimental group.

Table 4.6

Intercorrelations for leaders' baseline managerial orientation and demographics

(N=167)

Measure	1	2	3	4	5	6
1 Managerial orientation index	--					
2 Age	.15	--				
3 Length of service	.01	.30**	--			
4 Management experience	.12	.46**	.41**	--		
5 Gender	.12	-.69*	-.22**	-.19*	--	
6 Employment type	-.01	-.17*	-.04	-.13	--	--

Note: Point-biserial correlations are presented for gender (coded as 1 = male and 2 = female) and employment type (coded as 1 = volunteer and 2 = paid). Pearson product-moment correlations are presented for all other demographic variables. *p<.05. **p<.01.

In summary, differences in age, gender and employment type were found between the experimental conditions. However, as previous correlation analysis found no relationship between these demographic variables and leaders' managerial orientation, demographic differences between the experimental groups are not expected to have an appreciable impact on the observed effect of the intervention on leaders' managerial orientation.

Attrition

Only leaders who contributed both pre-test and post-test data were included in the final sample for analysis. There were different rates of attrition between the experimental conditions, with 13% ($n = 10$) dropping out of the treatment group compared to 31% ($n = 47$) dropping out of the control group. Given that the treatment group are invested in a development program and have direct contact with the researchers, whereas the control group have no psychological contract or social contact, higher rates of attrition would be expected in the control group. Managerial orientation of drop-out leaders in both the treatment ($n = 10$, $M = 6.75$, $SD = 2.63$) and control group ($n = 47$, $M = 6.60$, $SD = 2.15$) appear comparable to managerial orientation of participants who made it through the entire study ($M = 6.97$, $SD = 2.94$). Regarding the longitudinal data, 20 (31%) intervention leaders completed the 1-year follow-up questionnaire. Independent samples t-tests revealed no significant differences between those who completed the T3 measure and those who did not. Leaders in both groups had the same managerial orientation, were of comparable age, managerial experience and organisational tenure. In summary, it is not expected that differences in rates of attrition on participants who left the study would produce artificial effects.

Testing effect

A pre-pre-test observation was added to the design to enable the assessment of the presence of testing effects for the leader survey. Twenty-six intervention leaders completed the pre-pre-test (T0) survey and their managerial orientation scores were compared to their pre-test managerial orientation scores, taken nine weeks later. Descriptives, effect sizes and the results of t-test comparisons between leaders' scores at the two time points are presented in Table 4.7. Paired samples t-test revealed no evidence of change in participants' managerial orientation index from the first to the second time it was measured. There was also no evidence of change in participants' managerial orientation between the two time points at a subscale level. From these findings it can be inferred that there is no evidence for the presence of testing effects that would substantially impact any observed effect of the intervention.

History effect

Potential history effects were examined by comparing changes in the control groups managerial orientation from pre-test to post-test to that of the treatment group

from pre-pre-test to pre-test. Both measures were “untreated” with nine weeks lag between surveys but were taken during different times. We would expect the same amount of change (i.e. none) in the control group’s managerial orientation to that observed for the treatment group during their pre-intervention period. A different amount of change may indicate that environmental factors could be impacting leaders’ survey responses. An independent sample t-test compared mean change in managerial orientation for control group from pre-test to post-test ($n = 102, M = -0.4, SD = 3.57$) to the treatment group from T0 and pre-test ($n = 26, M = -0.05, SD = 1.90$). Mean changes in managerial orientation were not significantly different. In summary, there was no evidence that substantial environmental changes occurred between the pre-test and post-test measures that may artificially impact the findings.

Table 4.7

Testing effects for managerial orientation: descriptives, effect sizes and comparisons from pre-pre-test to pre-test observation

Measure	Pre-Pre <i>M (SD)</i>	Pre <i>M (SD)</i>	<i>t</i>	Cohen’s <i>d</i>	Effect Size <i>r</i> ²
Managerial orientation	7.01 (2.10)	6.97 (2.62)	-.12	-.02	-.01
Highly controlling	2.89 (0.65)	2.95 (0.88)	.53	.07	.04
Moderately controlling	3.27 (1.12)	3.22(1.07)	-.31	-.04	-.02
Moderately autonomy supp.	3.76 (0.98)	3.87 (1.23)	.70	.09	.05
Highly autonomy supp.	6.15 (0.73)	6.12 (0.78)	-.33	-.05	-.03

Note: supp. = supportive, $df=25$

4.2.2 Primary analysis

Effect of the intervention on managerial orientation over nine weeks

Table 4.8 presents descriptives for managerial orientation over time for the two groups. It was hypothesised that after completing the intervention, there would be a change in leaders’ orientation towards autonomy supportive over controlling approaches to management. Managerial orientation index was examined first. A two-way mixed ANOVA compared the mean differences in managerial orientation between treatment and control group over time. There was a statistically significant

interaction between the intervention and time on managerial orientation, $F(1, 165) = 14.663$, $p < .001$, partial $\eta^2 = .082$. A plot of the interaction is presented in Figure 4.5 breaks down the interaction. Simple main effects were tested. The treatment and control group did not differ on managerial orientation before the intervention. There was a significant difference in managerial orientation between treatment and control groups after the intervention, $F(1, 162) = 11.79$, $p = .001$, partial $\eta^2 = .068$. There was a significant effect of time on managerial orientation for leaders in the intervention group, $F(1, 64) = 76.21$, $p < .001$, partial $\eta^2 = .284$. There was no effect of time on managerial orientation for leaders in the control group.

Table 4.8

Means and standard deviations for managerial orientation by experimental conditions over time

Variable	Treatment (n=65)		Control (n=102)	
	Pre-test	Post-test	Pre-test	Post-test
	M (SD)	M (SD)	M (SD)	M (SD)
Managerial orientation	6.83 (2.69)	8.36 (2.64)	7.06 (3.10)	6.66 (3.26)
Highly controlling	2.83 (0.81)	2.21 (0.76)	2.74 (0.84)	2.92 (0.77)
Moderately controlling	3.13 (0.85)	2.72 (0.90)	3.13 (0.84)	3.25 (0.83)
Moderately autonomy supp.	3.54 (1.02)	2.93 (1.11)	3.56 (0.89)	3.61 (0.87)
Highly autonomy supp.	6.04 (0.83)	6.29 (0.78)	6.05 (0.84)	6.07 (0.93)

Note: supp. = supportive.

The findings indicate that leaders in the treatment and control groups commenced the research with the same mean managerial orientation, but at end of the nine-week intervention period the treatment group had significantly higher mean managerial orientation than the control group. In line with the hypothesis, leaders who received the intervention showed a significant change in their managerial orientation towards autonomy support from pre-test to post-test whereas the control group did not change.

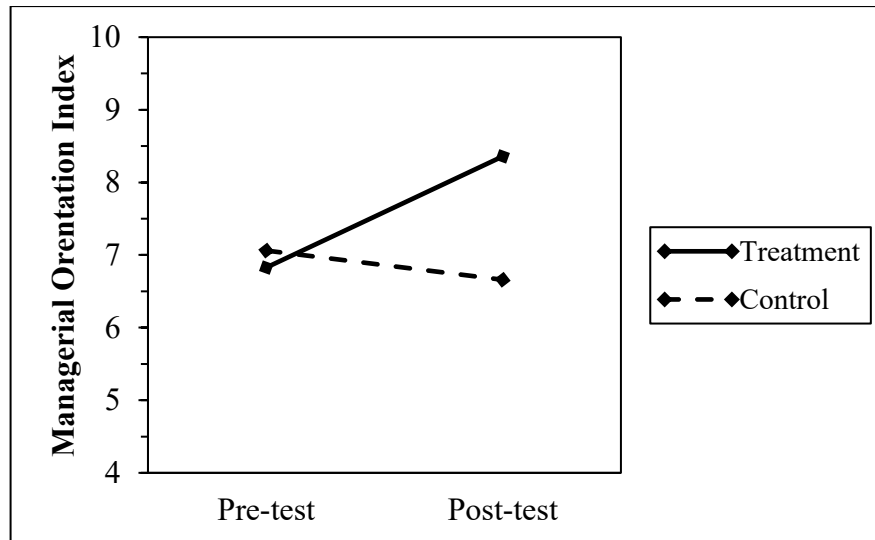


Figure 4.5 Interaction between the intervention and time on leader managerial orientation

The nature and pattern of the change in managerial orientation was examined further at a subscale level. A two-way mixed MANOVA compared the mean differences in managerial orientation between treatment and control group over time for highly controlling, moderately controlling, moderately autonomy supportive and highly autonomy supportive subscales. There was a statistically significant interaction effect between experimental condition and time on the combined dependent variables, $F(4, 162) = 10.61, p < .001, \text{Wilks' } \Lambda = .792, \text{partial } \eta^2 = .208$. Follow up univariate two-way ANOVAs showed a statistically significant interaction effect between experimental condition and time for moderately autonomy supportive subscale $F(1,165) = 19.48, p < .001, \text{partial } \eta^2 = .106$; moderately controlling subscale $F(1,165) = 16.23, p < .001, \text{partial } \eta^2 = .090$ and highly controlling subscale $F(1,165) = 40.31, p < .001, \text{partial } \eta^2 = .196$, but not highly autonomy supportive subscale.

For the highly controlling subscale, those in the intervention group ($M = -.63, SD = .80$) reported significantly greater change from pre-test to post-test scores than change reported by those in the control group ($M = .18, SD = .08$), $t(165) = -6.35, p < .001$. The intervention group significantly decreased their highly controlling scores from before to after the intervention, $t(65) = 6.27, p < .001$. In contrast, those in the treatment group significantly increased their highly controlling scores from pre-test to post-test, $t(101) = -2.30, p < .05$.

For the moderately controlling subscale, the intervention group reported significantly more change from pre-test to post-test than change reported by those in

the control group ($M = .12$, $SD = .77$), $t(165) = -4.03$, $p < .001$. Leaders in the intervention group significantly decreased their moderately controlling scores from pre-test to post-test, $t(64) = 3.68$, $p < .001$. There was no mean change in moderately controlling scores for the control group over time.

Finally, turning to the moderately autonomy supportive subscale, those in the intervention group ($M = -.61$, $SD = 1.13$) reported significantly greater change in their scores from pre-test to post-test than those in the control group ($M = .05$, $SD = .81$), $t(165) = -4.41$, $p < .01$. Leaders in the intervention group significantly decreased their moderately autonomy supportive scores from pre-test to post-test, $t(64) = 4.40$, $p < .001$. There was no mean change in moderately autonomy supportive scores for the control group over time.

The findings from the subscale level analysis indicate that the intervention was especially effective for reducing controlling managerial approaches. Overall, leaders who took part in the intervention decreased their scores for highly controlling, moderately controlling and moderately autonomy supportive subscales from pre-test to post test.

Which leaders benefit most from the intervention?

The research aimed to investigate whether certain groups of leaders receiving the intervention showed greater propensity for developing their managerial orientation. Individual characteristics of interest included gender, age, length of service, formal managerial experience and role type.

Moderation analysis

Moderation analyses (Hayes, 2017) were conducted to test whether age, length of service or managerial experience moderated the effect of the intervention on changes in leader's managerial orientation. Means, standard deviations and intercorrelations for managerial orientation and leader characteristic variables are presented in

Table 4.9. When testing for moderation different authors make different recommendations for whether predictor variables should be centred, standardised or analysed in their raw form (Dawson, 2014, Dalal and Zickar, 2012). The decision to analyse unstandardized raw data for the thesis was based on careful consideration of the ground for which centring is carried out. Dawson (2014) attests it is not appropriate

to centre categorical data. Therefore, since the group variable (treatment vs control) is categorical, only one of the predictor variables could potentially be centred. Except for cases of extreme multicollinearity, the use of centred or raw data does not make any difference to the testing of the interaction term as the p value would be identical whichever way it is done (Dawson, 2014). Adopting the thresholds of Cohen et al., (2003) there was no evidence of multicollinearity in this data as tolerance values were 0.585 and smaller. There was, therefore, no need to centre variables on the grounds of multicollinearity. Finally, recommendations for centring variables are often for interpretation reasons (Dawson, 2014) to make formulas for some probing methods and plots more straightforward to accomplish. In this data set the values of the continuous predictor variables (age, length of service, years-experience) were more meaningful in their raw format and all plots were calculated manually, thus negating the need to centre for ease of interpretation.

Table 4.9

Means, standard deviations and intercorrelations for leaders' managerial orientation and characteristics variables

Variable	M	SD	1	2	3	4	5
1 Managerial orientation pre-test	6.97	2.94	-				
2 Managerial orientation post-test	7.32	3.14	.41**	-			
3 Age	49.26	13.16	.15	.12	-		
4 Length of service	11.37	9.06	.01	-.10	.30**	-	
5 Paid management experience	9.12	10.17	.10	.08	.33**	-.01	-
6 Volunteer management experience	7.55	9.77	.07	-.08	.37**	.63**	.11

**p < .01

Assumption testing was carried out. Linearity was established by visual inspection of a scatterplot and there was no evidence of multicollinearity. There were four outliers with studentized deleted residuals greater than 2, no leverage values greater than 6 and one influential case with a Cook's distance value greater than 1 (Cook and Weisberg, 1982). These unusual cases were established to be genuine data

points and, because their removal/retention did not alter the outcome of significance tests, they were retained in the analysis. There was homoscedasticity, as assessed by visual inspection of the studentized residuals plotted against the predicted values for the treatment group and control group. The studentized residuals were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$).

Moderation by age

Hierarchical multiple regression was used to test whether a leaders' age would moderate the effect of the intervention on change in managerial orientation over time. Pre-test managerial orientation was controlled for at step 1 and the variable age and treatment condition were added at step 2. The model of age and treatment condition, controlling for pre-test managerial orientation, to predict post-tet managerial orientation was statistically significant, $R^2 = .522$, $F(2, 161) = 11.859$, $p < .001$, adjusted $R^2 = .259$. In step 3 the interaction term was added to the equation. Age did not moderate the effect of the intervention on change in managerial orientation, as evidenced by an increase in total variance explained of 0% (R^2 change = .000) which was not statistically significant, $F(1, 160) = .096$, $p = .757$. Therefore, the impact of the intervention on change in managerial orientation did not depend on the age of the leader.

Moderation by length of service

Hierarchical multiple regression was used to test whether a leader's length of service would moderate the effect of the intervention on change in managerial orientation over time. Pre-test managerial orientation was controlled for at step 1 and the variables length of service and treatment condition were added at step 2. The model of age and treatment condition, controlling for pre-managerial orientation, to predict post managerial orientation, was statistically significant, $R^2 = .251$, $F(2, 158) = 9.155$, $p < .001$, adjusted $R^2 = .237$. The interaction between length of service and treatment condition was added at step 3. Length of service did not moderate the effect of the intervention on change in managerial orientation, as evidenced by an increase in total variance explained of 0% (R^2 change = .000), which was not statistically significant, $F(1, 157) = .082$, $p = .774$. Therefore, the impact of the intervention on change in managerial orientation did not depend on the number of years the leader had been a member of the organisation.

Moderation by managerial experience with paid workers

Hierarchical multiple regression was used to test whether a leader's years of experience managing paid workers would moderate the effect of the intervention on change in managerial orientation over time. Pre-test managerial orientation was controlled for at step 1 and the variables paid managerial experience (years) and treatment condition were added at step 2. The model of pre-managerial orientation, paid managerial experience and treatment condition to predict post managerial orientation was statistically significant, $R^2 = .447$, $F(2, 138) = 5.130$, $p < .01$, adjusted $R^2 = .182$. The interaction between paid managerial experience and treatment condition was added to the model at step 3. Paid managerial experience did not moderate the effect of the intervention on change in managerial orientation, as evidenced by an increase in total variance explained of 0.8% (R^2 change = .008), which was not statistically significant, $F(1, 137) = 1.375$, $p = .243$. The effect of the intervention on change in managerial orientation did not depend on leaders' years of experience managing paid workers.

Moderation by managerial experience with volunteer workers

Hierarchical multiple regression was used to test whether a leader's years of experience managing volunteer workers would moderate the effect of the intervention on change in managerial orientation over time. Pre-test managerial orientation was controlled for at step 1 and the variables volunteer managerial experience and treatment condition were added at step 2. The model of volunteer managerial experience and treatment condition, controlling for pre-test managerial orientation, to predict post-test managerial orientation was statistically significant, $R^2 = .502$, $F(2, 137) = 5.558$, $p < .01$, adjusted $R^2 = .235$. In step 3 the interaction between volunteer managerial experience and treatment condition was added. There was a marginal moderator effect of volunteer managerial experience, as evidenced by the addition of the interaction term explaining a further 1.8% (R^2 change = .018) of the total variance in managerial orientation, $F(1, 136) = 3.314$, $p = .071$.

Examining simple slopes, there was a significant negative linear relationship between volunteer managerial experience and changes in managerial orientation in the intervention group ($\beta = -109$, $SE = -.051$, $p < .05$) but no relationship amongst the control group ($\beta = -.006$, $SE = .024$, $p = .821$). Therefore, the extent to which intervention leaders develop their managerial orientation towards autonomy support

varied according to the amount of years experience the leader had managing volunteers. As previous managerial experience was unrelated to managerial orientation amongst leaders who did not receive the intervention, we can infer that we are observing an intervention effect.

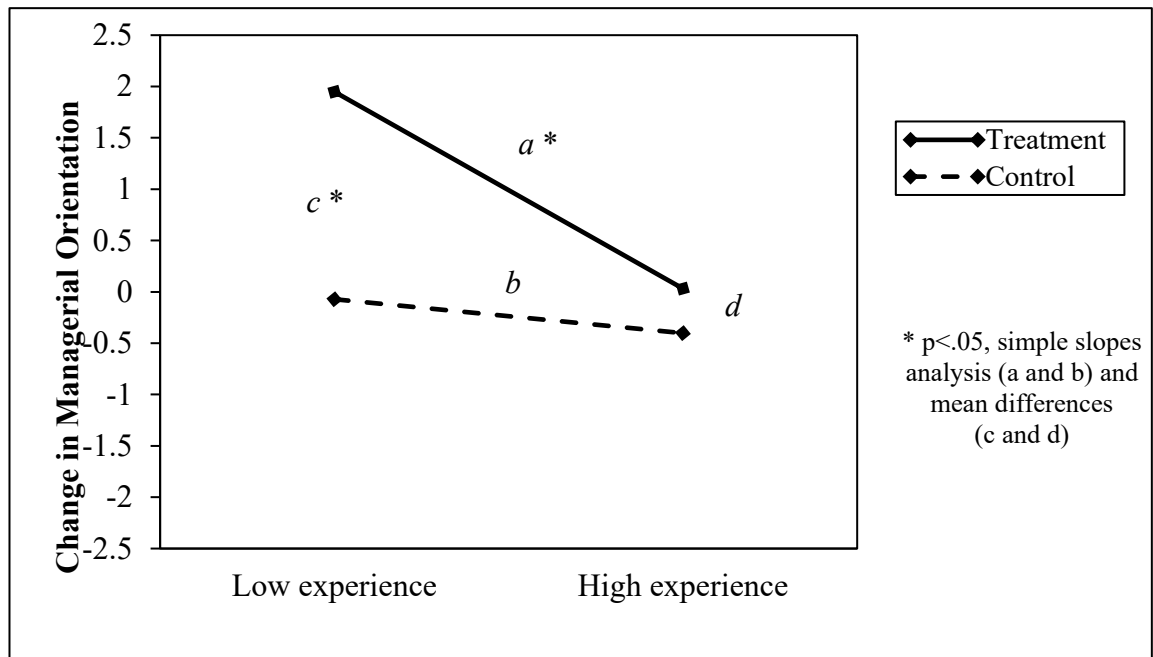


Figure 4.6 A visual representation of the conditional effect of the intervention on change in managerial orientation among those with relatively low (0 years), and relatively high (17 years) experience managing volunteers.

Examining simple effects, at -1 standard deviation of volunteer managerial experience (0 years) there was a significant difference of 2.02, 95% CI [.662, 3.38], $p = .004$, between change in managerial orientation reported by the intervention group ($M = 1.949$, $SD = .560$) and the control group ($M = -.072$, $SD = .398$). At +1 standard deviation (17 years) volunteer management experience there was no significant difference ($p = .542$) in managerial orientation change reported by leaders in the intervention ($M = .04$, $SD = .844$) compared to leaders in the control group ($M = -.402$, $SD = .396$). This result indicates the intervention was effective for improving the managerial orientation of low-experienced volunteer leaders but not for leaders with high-experience managing volunteers. After completing the intervention those leaders who were relatively less experienced showed greater improvement in their managerial orientation than leaders in the control group. In contrast, despite completing the

intervention, the managerial orientation of highly experienced leaders did not change and was no different to that of the control group.

Moderation by gender

Hierarchical multiple regression was used to test whether a leader's gender would moderate the effect of the intervention on change in managerial orientation over time. Pre-test managerial orientation was controlled for at step 1 and the variables gender and treatment condition were added at step 2. The model of pre-managerial orientation, gender and treatment condition to predict post managerial orientation was statistically significant, $R^2 = .255$, $F(2, 161) = 9.602$, $p < .01$, adjusted $R^2 = .241$. The interaction between gender and treatment condition were added to the model at step 3. Gender did not moderate the effect of the intervention on change in managerial orientation, as evidenced by an increase in total variance explained of 0.1% (R^2 change = .001) which was not statistically significant, $F(1, 160) = .109$, $p = .742$. The effect of the intervention on change in managerial orientation did not depend on leaders' gender.

Moderation by employment type

Hierarchical multiple regression was used to test whether a leader's employment type, if they were volunteers or paid workers, would moderate the effect of the intervention on change in managerial orientation over time. Pre-test managerial orientation was controlled for at step 1 and the variables employment type and treatment condition were added at step 2. The model of pre-managerial orientation, employment type and treatment condition to predict post managerial orientation was statistically significant, $R^2 = .248$, $F(2, 161) = 8.74$, $p < .01$, adjusted $R^2 = .234$. The interaction between employment and treatment condition was added to the model at step 3. Employment type did not moderate the effect of the intervention on change in managerial orientation, as evidenced by an increase in total variance explained of 0.5% (R^2 change = .005), which was not statistically significant $F(1, 160) 1.10$, $p = .296$. The effect of the intervention on change in managerial orientation did not depend on leaders' employment type.

Does the effect of the intervention, on leaders' managerial orientation, endure over time?

The research investigated long-term effects of the intervention to test whether the initial improvements in interpersonal orientation reflected enduring long-term

changes or if, over time, leaders reverted to their initial orientation. To determine whether there was a statistically significant improvement in managerial orientation over the course of a year, a one-way repeated measures ANOVA compared intervention leaders' managerial orientation at pre-test ($M = 6.45$, $SD = 3.04$), post-test ($M = 8.25$, $SD = 2.14$) and 1 year after completing the intervention ($M = 7.27$, $SD = 2.42$). The intervention elicited statistically significant changes in managerial orientation over time, $F(2, 38) = 4.52$, $p < .05$, partial $\eta^2 = 0.192$. Pairwise comparisons with a Bonferroni adjustment revealed that leaders' managerial orientation significantly increased from pre-test to post-test ($M = 1.80$, 95% CI [-3.52, -0.09], $p < .05$). There was no significant change from post-test to 1 year ($M = 0.98$, 95% CI [-0.57, 2.52], $p = .338$). However, there was also no significant difference between managerial orientation at pre-test to 1 year after the intervention ($M = 0.82$, 95% CI [-2.27, 0.63], $p = .457$).

In summary, the results suggest that leaders' managerial orientation significantly improved immediately after the intervention. Between post-test and when they are measured again 1 year later, their managerial orientation does not significantly change, suggesting that the initial improvement from the intervention is sustained at 1 year. However, interestingly it appears that after the intervention there is a general trend towards a small drop in means scores, see Figure 4.7. Whilst this drop does not reflect a significant decrease from their improved post-test scores, their managerial orientation at 1 year is no longer significantly better than their baseline score. So, did the intervention participants report an overall improvement from their baseline score? A post-hoc planned contrast was conducted to test whether there was an overall statistically significant improvement in managerial orientation over the course of the year. Results showed that managerial orientation significantly increased from pre-test to the average of post-test and 1 year, with a mean difference of -1.31, 95% CI [-2.42, -0.21], $p < .05$. This result suggests that leaders who completed the intervention showed a significant overall improvement in their managerial orientation 1 year after completing the intervention.

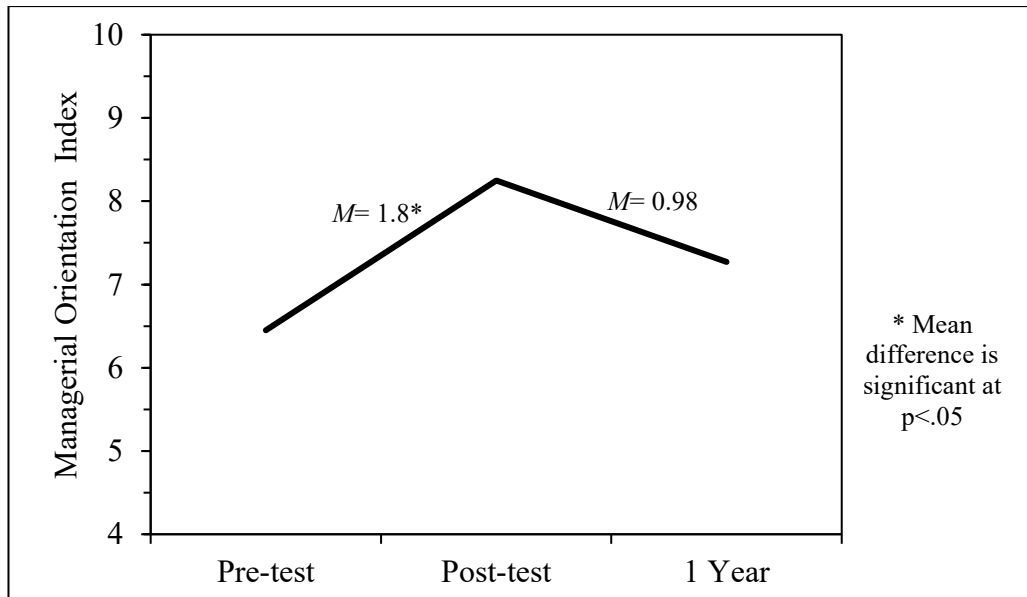


Figure 4.7 A visual representation of changes in managerial orientation amongst leaders who received the intervention at pre-test, post-test and 1 year after the intervention. M = mean difference

4.3 EVALUATE FLOW ON EFFECTS OF THE INTERVENTION TO FOLLOWERS

The final focus of the thesis was to evaluate whether followers of those leaders who received the intervention perceived changes in their socio-contextual climate over the nine-week intervention period. It was hypothesized that followers would report increased autonomy support from the leader, higher basic psychological needs satisfaction, higher job satisfaction and lower turnover intention after their leaders completed the intervention.

4.3.1 Preliminary analysis

To test hypotheses relating to change in followers' reports over time, a subset of the follower sample was used. From the 196 followers who commenced the research, those who did not complete the post-test questionnaire ($n = 85$) and those whose leader did not complete the intervention in full ($n = 8$) were removed from the data set. The final sample for this analysis comprised 103 followers. Descriptive statistics and intercorrelations for pre-test data obtained from this subset of followers are presented in Table 4.10.

Table 4.10

Descriptives and intercorrelations for follower measures and demographics at pre-test (n = 103)

Measure	M	SD	1	2	3	4	5	6
1 Managerial autonomy sup	5.95	1.16	--					
2 Basic psychological needs	5.47	.72	.43**	--				
3. Job satisfaction	6.09	1.05	.37**	.76**	--			
4 Turnover intention	2.20	1.42	-.26**	-.68**	-.63**	--		
5 Age	44.83	12.00	-.17	-.04	-.08	-.08	--	
6 Length of service	9.43	9.11	.04	.12	.13	-.10	.32**	--
	N	%	1	2	3	4	5	6
Employment type			.02	-.20*	-.08	.11	.05	.16
Volunteer	78	75.7						
Paid employee	25	24.3						
Gender			-.02	-.01	.06	.11	.04	-.21*
Male	62	60.2						
Female	41	39.8						

Note. Point-biserial correlations are presented for gender (coded as 1 = male and 2=female) and employment type (coded as 1 =volunteer and 2=paid). Pearson product-moment correlations are presented for all other variables. *p<.05. **p<.01.

At baseline followers' perceived autonomy support from the leader was related positively to their basic psychological needs ($r = .43$) and job satisfaction ($r = .37$) and negatively to turnover intention ($r = -.26$). Basic psychological needs satisfaction was also positively related to job satisfaction ($r = .76$) and negatively to turnover intention ($r = -.68$). All the above-mentioned correlations were significant at $p < .01$. Turning to demographic variables, follower' age and length of service were unrelated to their baseline measure. There was a statistically significant correlation between

employment type and basic psychological needs satisfaction, $r_{pb} = -.20$, with volunteers ($M = 5.50$, $SD = .67$) reporting greater basic psychological need satisfaction than paid employees ($M = 5.13$, $SD = .78$).

Assessing and handling outliers and normal distribution

Pair samples t-tests were employed to test the difference between follower reports at pre-test compared to their post-test scores. In accordance with the assumptions of the paired samples t-test, the data were first assessed for outliers and normal distribution. Outliers of difference scores between pre-test and post-test for autonomy support, basic psychological need satisfaction, job satisfaction and turnover intention were assessed by visual inspection of boxplots for values greater than 1.5 box-lengths from the edge of the box. Each outlier was subsequently confirmed to be a genuine data point and comparative tests were run with and without the outliers included in the analysis. As their inclusion did not change the outcome of the test the decision was made to retain the outliers in the analysis. One single case was identified as an extreme outlier across all the variables and was therefore deemed to be a genuine outlier and removed from the data set. Normality was assessed via visual inspection of the histogram and the Fisher z coefficient for skewness and kurtosis values-calculated by dividing the skewness value with its standard error, and the kurtosis value with the kurtosis standard error respectively (Petty, 2016).

Kim (2013) proposes Fisher z values over 3.29 indicate departure from normality amongst medium sized samples, such as in this present study. Adopting Kim's threshold, the data appeared to deviate from normal with all variables showing evidence of leptokurtic distribution. The most problematic variables were job satisfaction and turnover intention which had kurtosis values of 4.48 ($SE = .46$, $z = 9.78$) and 3.92 ($SE=.47$, $z = 8.43$) respectively. The kurtosis of turnover intention (2.50, $SE = .46$, $z = 5.50$) and basic psychological need satisfaction (1.96, $SE = .06$, $z = 4.28$) were relatively smaller but still exceeded the threshold for normal distribution. Paired samples t-tests are regarded to be robust to violations of normality and considered to still provide valid results when this assumption is not met (Sawilowsky and Blair, 1992). The decision was made to run the paired samples t-test for turnover intention and basic psychological needs satisfaction variables, on the basis that these data were approximately normal. The nonparametric Wilcoxon signed-rank test was run for the extremely kurtotic autonomy support and job satisfaction variables

instead. In accordance with the assumptions of the Wilcoxon signed-rank test the distribution of the differences between the pre-test and post test scores were approximately symmetrically distributed, as assessed by visual inspection of the histogram.

4.3.2 Primary analysis

Paired-samples t-tests were used to determine whether there was a statistically significant mean difference between followers' basic psychological need satisfaction and turnover intention before their leader commenced the intervention compared to after the intervention. There was no significant change in mean basic psychological need satisfaction from pre-test ($M = 5.47$, $SD = 0.72$) to post-test ($M = 5.43$, $SD = .72$), $t(102) = 0.78$, $p = .436$. There was no significant change in turnover intention from pre-test ($M = 2.20$, $SD = 1.42$) to post-test ($M = 2.36$, $SD = 1.45$), $t(102) = -1.19$, $p = .238$.

Related samples Wilcoxon signed-rank tests were used to determine whether there was a median difference in followers' perceived autonomy support or job satisfaction before and after the leader completed the nine-week intervention. Data are medians unless otherwise stated. Regarding autonomy support, of the 99 followers who provided both pre and post-test data, 36 reported some improvement in autonomy support from the leaders at the end of the leader-intervention, 12 followers reported no change and 51 reported a decrease in autonomy support from the leader. There was a median decrease of (.26) in autonomy support from pre-test (6.33) to post-test (6.06), but this difference was not significant, $z = -1.12$, $p = .263$. For job satisfaction, of the 103 follower who provided both pre-test and post-test data, 34 reported an improvement in their job satisfaction after their leaders completed the intervention, 38 experienced no changes and 36 followers reported feeling less satisfied in their role. There was no median change, $z = -.09$, $p = .926$, in followers job satisfaction from pre-test (6.33) to post-test (6.33).

In summary, the results indicate that followers did not report significant changes in provision of autonomy support from their leader, basic psychological need satisfaction, job satisfaction or turnover intention over the nine weeks that their leader was taking part in the SDT-based leadership development intervention.

Investigating changes in autonomy support amongst different groups

Further analysis was conducted to investigate whether certain groups of followers were more likely to perceive changes in the provision of autonomy support from the leader over the nine-week intervention period. Two-way mixed ANOVAs were used to test mean differences between groups over time. Independent variables of interest included high vs low leader self-reported change, dyadic relationship between leader and follower and follower's employment type.

Leader's managerial orientation change (leader self-reports)

Analysis of the leader data [4.2 *Impact of the intervention on leaders*] revealed that some leaders in the intervention changed their managerial orientation more than others. This implies that followers received different 'doses' of the intervention via their leader whereby followers of leaders who changed a great deal would have presumably received a stronger "dose" of autonomy support compared to those followers whose leader did not report changing their managerial orientation. It is thus reasonable to assume that followers of leaders who improved their managerial orientation would be more likely to experience changes in provision of autonomy support from the leader compared to followers whose leaders did not change. To prepare for this analysis the leader data was retrieved and the difference between each leaders' pre-test and post-test managerial orientation was calculated and inspected. Leaders in the 75th quartile, representing those who showed the greatest change towards autonomy support, were identified as "high improvement" and those leaders in the 25th quartile were identified as "low improvement". Followers reporting on their experience of autonomy support from a leader in the high improvement group and those reporting on their experience of autonomy support from a leader in the low improvement group were flagged for comparison.

Two-way mixed ANOVA compared perceived autonomy support amongst followers of "high improvement" and low "improvement" leaders before and after the SDT-based leadership development program. There was no statistically significant interaction between leader-improvement group and time on autonomy support perceived by followers, $F(1, 52) = 1.10$, $p = .299$, partial $\eta^2 = .021$. Examining main effects of time, there was no difference in mean autonomy support reported by followers at pre-test compared to post-test. Examining main effect of leader-improvement group, there was no difference in mean autonomy support reported by

followers of high-improvement leaders compared to followers of low-improvement leaders. This result suggests followers of leaders in the 75th percentile/high-improvement group and followers of leaders in the 25th percentile/low improvement group experienced similar levels of autonomy support from their leader. Both groups of followers reported no significant change in provision of autonomy support over the nine-week period.

Dyadic relationship between leader and follower

There were different dyadic relationships between leader and follower in the sample and this relational factor might influence the sensitivity of followers to changes in the provision of autonomy support. Some were manager/direct-report dyads where there was a formal supervisory relationship between the leader and the follower. Others were leader-colleague dyads where the leader and follower worked together outside of a formal manager/subordinate organisation structure. Two-way mixed ANOVA compared perceived autonomy support amongst direct reports and colleague followers before and after the SDT-based leadership development program. There was no statistically significant interaction between dyadic relationship and time on managerial autonomy support, $F(1, 97) = .088$, $p = .768$, partial $\eta^2 = .001$. Examining main effects of time, there was no difference in mean autonomy support at pre-test compared to post-test. Examining main effect of dyadic relationship, there was no difference in mean autonomy support reported by colleague followers compared to direct-report followers. This result suggests that followers who were colleagues and those who were direct reports experienced similar levels of autonomy support and neither group reported experiencing changes in provision of autonomy support over the nine-week period.

Employment type

Two-way mixed ANOVA compared perceived autonomy support amongst paid and volunteer followers before and after their leader received the intervention. There was no statistically significant interaction between employment type and time on managerial autonomy support, $F(1, 97) = .609$, $p = .437$, partial $\eta^2 = .003$. Examining main effect of time, there was no difference in mean autonomy support at pre-test compared to post-test. Examining main effect of employment type, there was no difference in mean autonomy support reported by volunteers compared to paid workers. This result suggests volunteer and paid workers experience similar levels of

managerial autonomy support from leaders and both groups of workers reported no significant change in provision of autonomy support over the nine-week period.

In summary, the findings of the analysis of changes in autonomy support amongst different groups were in line with the results for the follower group as a whole. There was no significant change in followers experience of autonomy support from leaders completing the SDT-based leadership development intervention. Follower employment type (paid vs volunteer), their dyadic relationship with the leader (direct report vs colleague) or the extent to which their leader reported changing their managerial orientation (high improvement vs low improvement) did not influence followers' experience of autonomy support over the nine-week research period.

Examining follower turnover behaviour

One year after the intervention organisations provided turnover data, reporting whether each of the followers had resigned or was still a member of the organisation. Comparisons were made between those followers who continued versus those who quit within the year. As there was no control group of followers, the effect of the intervention on followers' turnover behaviour cannot be inferred. Rather the analysis adds to supplement the structural equation modelling results [4.1 *Test of the theoretical model in the volunteer emergency services context*] to address the first objective: *Develop and test a hypothesized conceptual model of 'effective volunteer leadership' in emergency service organisations.*

Table 4.11 presents the results of independent samples t-tests conducted to examine whether there were any differences between followers who were still active ($n = 133$) versus those who resigned ($n = 20$) within a year. Drawing upon baseline measures obtained at the beginning of the research, there were no significant differences between the two groups on perceived autonomy support, basic psychological need satisfaction, job satisfaction or turnover intention.

Next, followers were matched to data obtained from their leaders to examine whether there were any differences between followers who were active versus those who resigned, on leader-reported managerial orientation. Regarding changes in leaders' self-reported managerial orientation from before to after the intervention, independent samples t-tests showed no significant differences between the active vs

resigned followers on changes in their leaders' managerial orientation overall or for any of the subscales (highly controlling, moderately controlling, moderately autonomy supportive or highly supportive). Regarding leaders' managerial orientation at pre-test, independent samples t-test found a significant difference between followers who resigned versus those who stayed on their leaders' pre-test highly controlling score, $t(129) = -2.02, p < .05$, but not for the moderately controlling, moderately autonomy supportive or highly autonomy supportive subscale scores. Those followers who resigned were in a dyad with leaders who scored significantly higher on the highly controlling ($M = 3.23, SD = 0.81$) subscale than the leaders of followers who remained active ($M = 2.86, SD = 0.75$). Finally, the resigned versus active followers were compared on their leaders' managerial orientation at post-test. Independent samples t-tests showed no significant differences between the active vs resigned followers on the managerial orientation reported by their leaders after the intervention. There were no differences between the groups for post-test managerial orientation overall or for any of the subscales (highly controlling, moderately controlling, moderately autonomy supportive or highly supportive).

Table 4.11

Comparison of baseline measures for followers who remained active ($n = 133$) versus resigned ($n = 20$) within a year. ($df = 151$)

Measure	Active <i>M (SD)</i>	Resigned <i>M (SD)</i>	<i>t</i>	<i>p</i>
Managerial autonomy support	6.02 (1.08)	5.80 (1.35)	.89	.42
Basic psychological needs				
Autonomy	4.81 (0.89)	4.77 (0.92)	.19	.85
Relatedness	5.67 (0.98)	5.68 (1.12)	-.01	.99
Competence	5.98 (0.81)	5.67 (1.12)	.14	.89
Job satisfaction	6.05 (1.06)	6.17 (0.96)	-.48	.63
Turnover intention	2.28 (1.42)	2.35 (1.89)	-.38	.86

Overall, analysis of resignation data revealed that followers who resigned within a year had leaders who were significantly more highly controlling at the beginning of the research period than that of followers who remained active.

4.4 POST-HOC COMPARISON OF LEADER AND FOLLOWER REPORTS

Subsequent analysis was conducted to further investigate misalignment between the leader and follower results. The findings from the leader data showed significant improvements towards autonomy support amongst leaders who took part in the intervention [4.2 *Impact of the intervention on leaders*]. However, followers reported experiencing no changes in these leaders or their socio-contextual climate [4.3 *Evaluate flow-on effects of the intervention to followers*]. Post hoc analysis was performed to compare data obtained from the leader and follower from each dyad. Data from 131 followers were matched to data collected from their leader at the same point in time.

First, associations between leader and follower reports were assessed at baseline. Table 4.12 presents the intercorrelations between follower measures and their leader's self-reported managerial orientation prior to intervention.

Table 4.12

Intercorrelations between follower variables and their leaders' self-report at baseline (n=131 follower-leader dyads)

<u>Follower Measures</u>	<u>Leader self-report</u>				
	MAS Index	HA	MA	MC	HC
Managerial autonomy support	.08	.03	.06	.01	-.08
Basic psychological needs	.02	.02	-.03	-.05	.01
Job satisfaction	.08	.11	.15	.03	.06
Turnover intention	-.03	.01	.04	.10	.03

All correlations are non-significant. MAS index = managerial orientation index, HA = highly autonomy supportive, MA = moderately autonomy supportive, MC = moderately controlling, HC = highly controlling

There were no significant relationships between leader self-reported managerial orientation and follower experiences at pre-test. Followers' perceived autonomy support from their leader was unrelated to that same leader's self-reported managerial orientation towards autonomy support. There was no relationship between follower-reports of autonomy support and leader-reported managerial orientation overall, or any of the subscales (highly autonomy supportive, moderately autonomy supportive, moderately controlling and highly controlling). Furthermore, there was no relationship between leaders' self-reported managerial orientation and follower-reported basic psychological need satisfaction, job satisfaction or turnover intention.

Table 4.13

Intercorrelations between difference in follower reports from pre-test to post-test and differences reported by their leaders from pre-test to post-test (n=103 follower-leader dyads)

<u>Follower reported difference</u>	<u>Leader self-reported difference</u>				
	MAS index	HA	MA	MC	HC
Managerial autonomy support	-.12	-.07	.07	.07	.15
Basic psychological needs	-.07	-.06	.02	.01	.08
Job satisfaction	.05	.01	.15	.07	.16
Turnover intention	.10	.10	-.16	-.03	-.16

All correlations are non-significant. MAS index= managerial orientation index, HA=highly autonomy supportive, MA= moderately autonomy supportive, MC=moderately controlling, HC=highly controlling

The second analyses examined whether changes reported by followers were related to changes reported by the leader in the dyad. For each variable, differences scores between pre-test and post-test observations were calculated and correlations between variables were tested. Table 4.13 shows the intercorrelations for change reported by followers and their leaders over the intervention period. All correlations were non-significant. Differences in follower reports from pre-test to post-test were unrelated to difference in their leader's reports from pre-test to post test.

In summary, followers' perceived autonomy support from their leader, their basic psychological needs satisfaction, job satisfaction and turnover intention were unrelated to their leaders' self-reported managerial orientation. Despite using validated instruments for measuring autonomy support from the perspective of the recipient (followers, WCQ) and the motivator (leader, PAWs), the findings imply that the two variables were unrelated in this context.

Chapter 5: Discussion

The purpose of this thesis was to generate empirical insight into managerial autonomy support as an approach to the leadership of volunteers. The emphasis was on exploring the application of managerial autonomy support as an avenue towards improving followers' job satisfaction and ongoing participation in volunteering. The absence of established volunteer leadership theory and limited research testing of Self-Determination Theory in volunteer workplace settings meant that it was necessary to validate the SDT-based conceptual model in the volunteer context. This was the first focus of the thesis, and the relations between perceived managerial autonomy support, basic psychological need satisfaction, job satisfaction and turnover intention were tested with Australian volunteer-based emergency service workers. The research then went on to investigate the organisational application of SDT, in the form of leadership training that sought to develop leaders' interpersonal orientation towards autonomy support. The second focus of the thesis was to test the impact of the SDT-based leadership-development intervention, with emphasis on measuring the capacity for emergency service leaders to develop their interpersonal orientation towards autonomy support and sustain it over time. The immediate flow-on effects to those being led by leaders who participated in the intervention was also explored. Hence, this thesis is comprised of empirical inquiries into the application of managerial autonomy to the leadership of volunteers, its relationship with critical volunteer retention outcomes and its effectiveness as a leadership-development intervention. This chapter includes a discussion of the results in relation to the research objectives and research questions as well as integrating the specific findings within broader theory and previous literature.

5.1 OBJECTIVE 1: MODEL TEST IN THE VOLUNTEER EMERGENCY SERVICE CONTEXT

The results of this study provided support for the thesis's hypothesised conceptual model amongst workers in Australian volunteer emergency service organisations. The model, derived from Self-Determination Theory (Ryan and Deci, 2002), hypothesised that managerial autonomy support from emergency service leaders would predict satisfaction of workers' basic psychological needs and, in turn,

would predict job satisfaction and lower intention to leave the volunteer organisation. Structural equation modelling found support for full mediation, whereby emergency service workers' perceptions of their leaders' managerial orientation influenced their job satisfaction and subsequent turnover intention through basic psychological needs satisfaction.

The first research question asked, "*Does managerial autonomy support promote ongoing participation in emergency services volunteering?*". As hypothesised (H1), perceived managerial autonomy support from leaders predicted higher job satisfaction and lower turnover intentions amongst followers in emergency service organisations. The total overall effect of managerial autonomy support on turnover intention in the model was $-.496$, indicating that perception of their leader's managerial orientation accounted for 50% of variance in emergency service workers' intention to leave their organisation. That is, the more emergency service workers perceive their leader to be autonomy supportive, the less likely they are to intend leaving the organisation. Assessment of alternate direct effects models describing the relations between leadership and ongoing participation outcomes showed that, in this volunteer work context, perceived managerial orientation predicted job satisfaction and, in turn, job satisfaction was negatively related with turnover intention. These findings reveal that emergency service workers' interpersonal experiences with their leaders are critically important in their decisions about whether they wish to stay with the organisation. Managerial autonomy support, with its emphasis on providing workers with choices, rationales and acknowledgement of their perspective (Deci et al., 1981, Stone et al., 2009), contributes towards workers' evaluation of their emergency service role as satisfying. In turn, workers who are more satisfied in their role are less likely to intend to leave their volunteer organisation.

These findings lend support to previous volunteer-leadership research, maintaining volunteers' interpersonal experience with their leader is important for them to feel satisfied with their volunteering role and sustain their participation in volunteering activities (Bang, 2015, Boezeman and Ellemers, 2014, Waikayi et al., 2012). Whilst only a few studies have tested the effect of managerial autonomy support in volunteering contexts (van Schie et al., 2015, Allen and Bartle, 2014), the results of the present study are consistent with initial reports of a positive association between the provision of autonomy support from organisational leaders and future work

intentions and ongoing participation in volunteer populations (Gagne, 2003, Li et al., 2016). They also corroborate Oostlander et al. (2014), who also found that autonomy supportive leadership had a positive effect on volunteer satisfaction amongst elderly teaching volunteers.

The literature so far, however, has either investigated the relations between managerial autonomy support and volunteers' turnover intention or job satisfaction. This study expands the research area by providing an initial model of all three variables together within the volunteer work context. Finding that the influence of managerial autonomy support on volunteers' turnover intention was through job satisfaction, this study unravels the relationships between these variables and begins to shed light on the inner psychological mechanisms through which managerial autonomy support comes to shape workers' intentions to stay with their volunteering organisations. This structural path revealed in the analysis also provided the basis for a subsequent extension of the model to test the hypothesised mediation.

The second research question asked, *'To what extent does the relationship between managerial autonomy support and volunteers' turnover intention act through basic psychological needs satisfaction and/or job satisfaction?'* As hypothesised, motivational processes, namely satisfaction of basic psychological needs, were found to mediate the beneficial influence of managerial autonomy support on job satisfaction and subsequent turnover intention. Experiencing autonomy support was positively related to emergency service workers' basic psychological need satisfaction. Basic psychological need satisfaction predicted job satisfaction and, in turn, related negatively to turnover intention. These findings suggest emergency service workers derive satisfaction in their job from having leaders exhibit autonomy supportive leadership because such interpersonal interactions satisfy their basic psychological needs for autonomy, relatedness and competence. In turn, experiencing satisfaction in the role is associated with lower likelihood that workers intend to leave their emergency service organisation.

Finding a positive association between autonomy support and basic psychological needs lends support to SDT theoretic assumptions and conceptual definition of autonomy support as an interpersonal approach that facilitates basic psychological needs satisfaction (Ryan and Deci, 2017). The findings are also consistent with previous research in paid (Slemp et al., 2018, Baard et al., 2004) and

volunteer organisations (Haivas et al., 2012, Gagne, 2003, Oostlander et al., 2014) where it was also found that autonomy support from a leader affects the degree to which a worker feels autonomous, competent, and related. As this was the first study to reveal this association in the volunteer emergency services context, the findings add further support for the external validity of managerial autonomy support as a need-supportive social contextual construct. The findings also point to motivational benefits that emergency service workers gain from autonomy supportive interpersonal interactions with their leaders, further building the case for the value and relevance of autonomy support as a beneficial leadership approach in volunteer emergency service settings.

The results imply that autonomy supportive interpersonal experiences with an organisational leader initiates motivational processes that come to influence workers' decisions about leaving the volunteer organisation. The few prior studies examining managerial autonomy support in volunteer workplaces also seem to suggest that motivational mechanisms may help explain how managerial autonomy support stimulates positive volunteer outcomes such as engagement (van Schie et al., 2014, Allen and Bartle, 2014), job satisfaction (Oostlander et al., 2014) and intention to remain (Li et al., 2016). However, these results are not always consistent as Gagné (2003) did not find a direct correlation between autonomy support and engagement, and therefore, by definition, there cannot be a mediation effect (Barron & Kenny, 1989). Furthermore, she found only marginal support for need satisfaction as a mediator between autonomy support and number of hours volunteered. Recognising the need for more research, the present study re-tested the mediating role of basic psychological need satisfaction in a different and larger volunteer sample and found tentative support for the mediation predicted by SDT (Ryan and Deci, 2017).

Previous research has recognised that the leadership context and motivational context is different between volunteer and paid work organisations (Posner, 2015, Pearce, 1993, Boezeman and Ellemers, 2009). It is encouraging that the findings of the present study with volunteer workers are consistent with studies of employees in paid workplaces because it provides support for the idea that SDT transcends organisational paradigm boundaries. The results of this study, with volunteers, are in line with organisational studies linking autonomy support from managers to high employee job satisfaction (Chang et al., 2015) and lower turnover intention (Liu et al., 2011, Otis

and Pelletier, 2005) amongst paid employees (Gillet et al., 2013). Similarly, the mediating role of basic psychological needs in the current research is consistent with previous studies in paid workplace contexts that reported autonomy support from a leader affects the degree to which a worker feels autonomous, competent, and related, and in turn stimulates positive outcomes (Slemp et al., 2018, Baard et al., 2004). These results imply that like paid workers, volunteers' interpersonal experiences with their leaders initiates a motivational process that comes to influence their satisfaction and decisions about leaving the organisation (Gillet et al., 2013).

Issues with measurement, specifically relating to the measurement of basic psychological needs, were highlighted in the results. These issues were indicated by: 1) a standardised regression coefficient larger than one, 2) high correlation between basic psychological needs and both job satisfaction and turnover intention and, 3) poor discriminant validity. Starting with the unusually large standardised regression coefficient (greater than one) from basic psychological needs to job satisfaction in the partial mediation model, researchers have established that standardised coefficients greater than one can legitimately occur (Deegan, 1978, Joreskog, 1999). They have also demonstrated that the likelihood of such coefficients legitimately occurring increases as a function of multicollinearity in the data (Deegan, 1978). Whilst the presence of this large coefficient, alone, does not necessarily warrant concern, the negative suppression effect in the same model indicates possible instability in the measurement model. Second, the data showed some evidence of multicollinearity, indicated by strong bivariate correlations between basic psychological needs and the latent variables job satisfaction and turnover intention in the model. There is some ambiguity in the literature about whether multicollinearity is a problem in SEM (Grewal et al., 2004). Some researchers warn that multicollinearity can lead to incorrect parameter estimates (Grapentine, 2000) whereas others suggest that structural equation models are robust against multicollinearity (Maruyama, 1998). A recent simulation experiment sought to identify conditions when multicollinearity poses a problem for theory testing in SEM (Grewal et al., 2004). The findings revealed that multicollinearity becomes problematic for type II error when combined with low sample size, poor measurement reliability and low explained variance. This leads to the final issue: the measurement model revealed a possible discriminant validity problem for basic psychological needs. Based on the findings of Grewal, it could be

argued that the combination of both multicollinearity and low discriminant validity between basic psychological needs satisfaction and job satisfaction enhanced the likelihood that measurement issues affected the results and an improper solution was obtained.

In summary, the results of this study provide support for the prediction that managerial autonomy support from emergency service leaders promotes ongoing participation in volunteering by creating a need-supportive motivational climate that contributes to higher job satisfaction. Finding support for the conceptual model, the results reveal managerial autonomy support to be a beneficial leadership approach to address volunteer-retention problems in emergency services and validates the underlying logic of the SDT-based leadership development program in this organisational context.

5.2 OBJECTIVE 2: TEST THE TRAINING MALLEABILITY OF MANAGERIAL AUTONOMY SUPPORT AMONGST LEADERS

Addressing the research question ‘*Can organisation leaders change their interpersonal orientation towards autonomy support?*’ this study provides evidence that leaders can indeed learn autonomy support over nine weeks and sustain this learning for at least one year.

Participating in the SDT-based leadership development program led to observable changes in emergency service leaders’ self-reported managerial orientation towards autonomy support. A quasi-experiment compared leaders who received the intervention to an untreated control group before and after the intervention and found a significant interaction between group and time for leaders’ self-reported managerial orientation. Leaders in the treatment and control groups commenced the research with the same mean managerial orientation, but at the end of the nine-week intervention period the leaders in the treatment group had significantly higher managerial mean orientation than the control group. In line with the hypothesis (H4), leaders showed a change in their interpersonal orientation towards autonomy support. Leaders who received the training intervention improved their interpersonal orientation away from controlling approaches. After leaders had completed the SDT-based leadership development program there were significant changes in their self-reported managerial

orientation towards autonomy support, whereas the control group remained the same. Changes were observed in leaders' responses to vignettes from the problem at work questionnaire whereby they rated autonomy supportive examples as more appropriate for addressing workplace problems and more readily disagreed with controlling leadership examples after the intervention.

Finding changes within the leader in the short-term provides support for the idea that managerial orientation is malleable and that changes can take place over a relatively short period of time (Deci et al., 1989, Su and Reeve, 2011, Hardre and Reeve, 2009). Over the course of nine weeks leaders came to understand, conceptualise and assimilate autonomy support into their existing schemas for how leaders might interact with and motivate workers. Comparing their responses from before the training to after the training, we can see that leaders developed their capacity to distinguish examples of autonomy supportive managerial behaviours from examples of controlling managerial behaviours. Furthermore, they learnt to discern autonomy supportive approaches as more appropriate to leading workers than controlling interpersonal strategies. These results imply knowledge acquisition (Blume et al., 2010), and that leaders have changed the way they think about interacting with and motivating workers.

The findings add to the growing body of evidence that people can develop a more autonomy supportive interpersonal orientation through training interventions (Su and Reeve, 2011). Development of autonomy-support has been shown in studies with teachers who became more autonomy supportive with students (de Charms, 1976, Tessier et al., 2008, Reeve, 1998), health professionals who become more autonomy supportive with their patients (Murray et al., 2015) and workers who become more autonomy supportive in organisations (Jungert et al., 2018). Up until now, evidence for the malleability of autonomy support in managers is based on just two studies (Deci et al., 1989, Hardre and Reeve, 2009). These initial studies have provided promising indications that managers can learn autonomy support. However, the research suffered from major sampling and design limitations. This thesis specifically addressed two major limitations of previous work: a) small sample sizes - samples of no more than 21 managers have been previously analysed, and b) inappropriate design and analysis for within subjects change (Hardre and Reeve, 2009). The findings from this present study are drawn from a sample (167 leaders) almost eight times larger than previous

research. As such, the current study yields results with increased certainty in the estimates, provides greater power and precision to detect differences, and is more likely to be representative of the population (Dattalo, 2018, Field, 2009). Addressing previous design limitations, leaders who received the intervention and those in a control group were measured over multiple time points. This design allows a test of the hypothesis about changes within the participants (i.e. development and expansion of the individual leader) and can isolate this effect to the intervention (Mitchell and Jolley, 2004). In doing so, this current study provides for a more robust test of the research question than has been possible previously and serves to strengthen evidence that, through learning and development interventions in workplaces, leaders can develop their interpersonal orientation towards autonomy support.

This thesis responded to a call within recent literature for research to investigate whether the effects of intervention programs designed to support autonomy endure over time (Murray et al., 2015). The results revealed that leader's managerial orientation not only changed immediately after the program, but they changed in an enduring way. Leaders' development trajectories over time were investigated by assessing their managerial orientation at three points in time: 1) baseline, 2) immediately after the intervention, and 3) one year later. As hypothesised the intervention elicited statistically significant changes in managerial orientation over the course of the year. A significant improvement in leaders' managerial orientation towards autonomy support was evident from pre-test to post test and no change was evident from post-test to one year. This result indicates that initial improvements immediately following the intervention were sustained up to one year later.

Up until now the literature has focused on short-term change in intervention participants' orientation towards autonomy support, and previous studies have measured intervention participants at midpoint (Cheon et al., 2018), endpoint (Reeve, 1998, Murray et al., 2015, Cheon et al., 2018, Tessier et al., 2008, Hardré and Reeve, 2009) and/or up to one month after the intervention (Deci et al., 1989, Reeve, 1998). Reeve et al. (2004), who found that teachers adopted autonomy supportive instruction in the classroom up to 10 weeks after a training intervention, provides perhaps the furthest indicator of longer-term maintenance to-date. The results of this current study, which extend a full year after intervention, reveal these initial improvements in participants' interpersonal orientations towards autonomy support are maintained

beyond what was previously known. Whilst it may not be too surprising that leaders showed changes in the way they think about motivating and leading volunteers immediately after training (Barnett and Ceci, 2002), it is encouraging to find that these are not just short-term temporary effects. The findings of this study indicate that improvements in leaders' orientation reflect enduring changes in the way leaders have come to think about interacting with workers. Despite no further intervention or contact from researchers over a year, the leaders did not revert back to their old leadership orientation and continued to show evidence of an intervention effect 12 months after the intervention.

Whereas previous literature focused on whether people can learn to adopt autonomy supportive orientations, this research unpacked the line of enquiry further by asking "*Do some people change towards autonomy support more readily than others? And, if so, who?*". This study explicitly considered leaders' individual differences in their development trajectories to ascertain whether certain groups of leaders show greater propensity for developing their managerial orientation. Leader characteristics including age, length of service, managerial experience, gender and role type (volunteer versus paid staff) were tested as moderators of the intervention effect on changes in managerial orientation. The effectiveness of the intervention did not depend on leaders' age, length of service, gender, role type or paid-managerial experience – as indicated by non-significant moderation effects. A marginal moderation effect was found for volunteer-managerial experience, indicating the extent to which intervention participants develop their managerial orientation towards autonomy support, varied according to the amount of years' experience the leader had managing volunteers. Simple slopes analysis showed a significant negative association between volunteer managerial experience and changes in managerial orientation in the treatment condition only. Thereby, the less experience a leader had managing volunteers the higher the likelihood of them changing their managerial orientation towards autonomy support after completing the intervention. Simple effects tests revealed that leaders in the intervention group with no prior experience managing volunteers showed a significantly greater change in their managerial orientation than leaders in the control group. In contrast, the managerial orientation of highly experienced leaders who received the intervention did not change and was no different to that of leaders in the control group. In summary, the intervention was particularly

effective amongst inexperienced volunteer leaders, who showed greater propensity for developing their managerial orientation towards autonomy support relative to leaders with more volunteer managerial experience.

The findings imply experienced leaders are less likely to integrate information about autonomy support into their established cognitive frameworks about leading volunteers. A possible explanation may be that veteran leaders bring prior experiences, beliefs and established cognitive schemas about volunteer leadership into the intervention. Their pre-existing experiences and beliefs might conflict with the new information they encounter in the intervention, leading them to resist the information, give rise to counterarguments or disengagement with the learning content (Su and Reeve, 2011, Reeve, 1998). It may be that experienced leaders are simply less engaged in the leadership development experience because they believe they already know how to lead volunteers. In contrast, inexperienced volunteer leaders more readily assimilate the new information and are more open to new strategies and ideas about volunteer leadership. Leaders with little prior experience may be more actively seeking to develop their skills and knowledge and have a greater desire to learn and actively engage in the content. Their schemas, implicit leadership frameworks, beliefs and experiences with leading volunteers are likely to be less complex or crystalized, and thus more malleable and amenable to change (Day et al., 2014).

Similar effects of experience level have previously been observed in the Su and Reeve (2011) meta-analysis of training interventions designed to increase autonomy. The effect size of training offered to inexperienced trainees was reported to be greater than the effect size of training offered to experienced professionals. In the area of leadership development, Hirst et al. (2004) also found that a leader's level of experience determines how much he or she will learn, and experience will moderate the relationship between leadership learning and facilitative leadership. By further differentiating the context within which experience was gained, the findings of this present study offer new insights into the role of previous experience in the effectiveness of training interventions such as those designed to increase autonomy support. First, the moderating effect of experience on managerial orientation development is contextually bound. For training that took place in a volunteer context, a leader's experience managing volunteers, not their experience managing paid workers, moderated their development trajectories. Leaders who were highly

experienced in managing paid workers did not show the same ‘resistance’ to training transfer that was found amongst highly experienced volunteer leaders in the sample and previous reports in the literature (Su and Reeve, 2011, Hirst et al., 2004). A possible explanation may be that leaders conceptualise ‘leadership of volunteers’ and ‘leadership of paid staff’ as distinct schemas and cognitive frameworks. Leaders are not generalising their paid managerial experience across contexts and are instead being open and responsive to integrating *new* leadership knowledge and interpersonal strategies. Leadership of volunteers is also recognised as a unique phenomenon within research (Posner, 2015, Ferreira et al., 2015, Pearce, 1982) and the findings of this present study lend support to a distinction and fundamental difference between leadership of paid versus leadership of volunteer workers.

Second, finding no moderating effect of age or tenure more clearly distinguishes the effect of leadership experience from other potential time-based moderation effects. It is not surprising that leaders in this study with greater number of years’ experience leading volunteers were also more likely to be older and be members of the organisation for longer. Regarding long serving organisational members, prevailing organisational culture ingrained in workers over their organisational tenure is known to hinder the implementation of new leadership models and organisational change initiatives (Johansson et al., 2014). Failing to find a moderation effect of tenure, it is reasonable to infer that experienced volunteer leaders were not resisting change because the new leadership models misaligned with the established norms and values of their organisation. Furthermore, since leaders’ age did not moderate the intervention effect, it is unlikely that the moderated effect of experience reflects generational differences. This is important to differentiate as previous literature recognises generational differences in leadership values, expectation and behaviours (Sessa et al., 2007, Arsenault, 2004) as well as an effect of age on resistance to change and training transfer (Kunze et al., 2013, Blume et al., 2010). Overall the findings highlight the distinct effect that previous experience has on the effectiveness of leadership development training.

5.3 OBJECTIVE 3: EVALUATE FLOW-ON EFFECTS TO FOLLOWERS

Addressing the research question ‘*Do followers perceive changes in their socio-contextual climate during the leader-intervention period?*’, this research found no change within followers over nine weeks. Comparing followers’ pre-test scores, taken

prior to their leader commencing the intervention, to their post-test scores, taken at the end of the leader-intervention, there was no significant differences in perceived autonomy support from the leader, basic psychological need satisfaction, job satisfaction or turnover intention. This unexpected finding implies that followers did not report any improvement in their work climate over the nine weeks that their leader was taking part in the SDT-based leadership development intervention. The results of this study appear to challenge earlier research showing interventions aimed at increasing autonomy supportive behaviours effect others' ratings of the trainees' autonomy supportive style (Su and Reeve, 2011). Evidence for 'flow-on-effects' have predominantly been observed within the education domain, where students of teachers who took part in a training intervention reported greater autonomy support, increased need satisfaction and classroom engagement (Cheon and Reeve, 2015, Reeve et al., 2004). Within the limited published studies from the work domain, however, findings regarding the flow-on effects of managerial interventions on subordinates' experience of autonomy support have been less consistent. The result from this present study differs from Hardre and Reeve (2009) but align with Deci et al. (1989) who also failed to find evidence that the intervention with the managers had affected the experience of their employees in the short-term.

Subsequent analysis was conducted to further test for changes in followers' reports of autonomy support from their leader that may not have shown up in overall group analysis. It is likely that followers received different doses of the intervention via their leader – due to differences in the extent to which their leader changed or the amount of contact between follower and leader during the nine-week period. Analysing the followers together as a single group may have diluted the effect and resulted in a type II error. A series of 2×2 mixed ANOVAs were conducted to investigate whether certain groups of followers were more likely to perceive changes in the provision of autonomy support from their leader over the nine-week intervention period. It is reasonable to assume that followers of leaders who improved the most would be more likely to experience changes in provision of autonomy support compared to followers whose leaders did not change. The first analysis therefore compared followers of leaders who showed substantial improvement towards autonomy support (in the 75th percentile for improvement) and followers of leaders in the bottom 25th percentile. Contrary to expectations there were no main effects or

significant interaction between time and leader change group (75th percentile vs 25th percentile) on perceived autonomy support from the leader. This indicates followers led by high-improvement leaders and those led by low-improvement leaders perceive similar levels of autonomy support and neither group reported changes in their leader's provision of autonomy support during the intervention period.

Differences in perceptions amongst followers can also arise because of differences in observational opportunities (Taylor et al., 2009). Leaders' interpersonal behaviours, such as involving followers in decision making and listening to and acknowledging their concerns, can more readily be observed by direct-reports and those people who interact with the leader frequently. When asked to rate a leader over the past nine weeks, colleagues and people in less regular contact with the leader may have to rely on only a few, if any, instances of direct observation and infer the leaders' interpersonal approach from their prior interactions. The second analysis therefore compared the ratings of followers in a direct-report/manager dyad to the ratings of followers in a colleagues/leader dyad. There were no main effects or significant interactions between time and dyadic relationship on perceived autonomy support from the leader. Followers who were direct reports and followers who were colleagues perceived similar levels of autonomy support and neither group reported changes in the provision of autonomy support from their leader during the intervention period. Finally, comparisons were made between followers who were volunteers, and may only interact with their leader a few hours per week or fortnight, versus those who were paid workers and have opportunities for daily interactions with their leaders up to 40 hours per week. No main effects or significant interactions were found between employment type and time on perceived autonomy support from the leader. There were no differences in autonomy support experienced by volunteers and paid workers and neither group reported experiencing a change in the provision of autonomy support from their leader over nine weeks. In summary, the findings of further analysis confirmed the initial result that followers did not experience changes in their leaders over the intervention period.

Failing to find a change in followers' ratings of autonomy support from their leader is interesting considering these same leaders self-reported changes in their managerial orientation towards autonomy support during this period. Prior literature comparing the effect sizes for management training transfer obtained from alternate

perspectives indicates that differences between self-ratings and others' ratings are very common (Taylor et al., 2009). From their meta-analysis of 107 managerial training intervention studies the authors concluded that manager self-reports show the largest effect sizes for training transfer whereas subordinates' ratings showed the smallest effect size. The findings observed in this current study may therefore reflect such a pattern. Taylor's study further revealed that subordinates rating of their manager's training transfer was particularly small when the intervention focused on interpersonal managerial skills, as was the focus of the intervention in the current study.

This thesis offers several explanations for why the hypothesised changes in followers' ratings of the leader, and socio-contextual climate more broadly, were not found despite evidence of change from the leaders themselves. The discussion focuses on several critical assumptions that are made: 1) leaders who change their self-reported managerial orientation also change their behaviour, 2) the change in leaders' behaviour will be perceived/noticed by the follower and 3) followers' experience of their leaders interacting with them differently over a nine-week timeframe changes their rating of the leader.

Assumption 1: Leaders who change their self-reported managerial orientation also change their behaviours.

One explanation of the discrepancy between leaders' self-report change and their followers' perceptions of change in leaders might be that, while leaders changed their attitudes or knowledge, they did not change their behaviours. New knowledge of autonomy supportive managerial practices, evidenced by changes in leaders' responses to the PAW questionnaire, may not have transferred to new behaviours during interpersonal interactions with their followers. The application of workplace training and the extent to which learned knowledge comes to affect changes in behaviour is recognised to be a complex and dynamic process (Alliger et al., 1997, Baldwin and Ford, 1988). Referred to as *transfer of learning*, the disconnect between learning and behaviour is an enduring problem (Grose and Birney, 1963) and is influenced by various factors including characteristics of the trainee, work-environment and the training intervention (Burke and Hutchins, 2007, Blume et al., 2010, Kirwan, 2009). Recognising potential transfer of learning issues, the Apply module [*Chapter 3 Methods, Section 3 Intervention*] was intentionally included in the intervention to facilitate and support behavioural application by the leaders through

structured activities and mentoring. For example, all leaders in the intervention submitted action plans for how they intended to support follower autonomy, support and competence during the intervention period and subsequent reflection exercises about the implementation of these plans. It was assumed that leaders were actively applying SDT, however they may simply have been completing the written exercises to satisfy the requirements of the program.

Assumption 2. The change in the leader's behaviour is perceived by the follower

Another explanation may be that followers did not consciously perceive a change in their leaders' behaviours. Research recognises that there is a perceptual threshold for the amount and intensity of a stimuli required before it is consciously detected by an individual (Rouder and Morey, 2009, Fechner, 1966). Leaders may have made attempts to be more autonomy supportive in their interactions with followers but did not reach the minimum exposure duration or intensity required for followers to consciously perceive their leader interacting with them differently. Followers' exposure to autonomy support from the leaders could have been minimal, inconsistent or irregular during the intervention period because their leaders were still learning and not enacting the behaviours fully (Jarvis et al., 2003, Hirst et al., 2004) or because there was limited contact between leader and follower. Deci et al. (1989), who also found no short-term effects of the managerial autonomy support intervention on subordinates, proposed their null result was due to minimal contact between managers and subordinates. Indeed, emergency service volunteers who took part in the present research may have only interacted with their leader for a few hours per fortnight, or even less. It is therefore possible that contact between leader and follower may not have reached the minimum exposure duration for followers to notice behavioural differences in their leaders during the research period. However, as the earlier analysis also found no treatment effect amongst followers who had opportunities for regular interactions with their leader, the data of this present study does not point towards this line of reasoning. Another possibility is that the leaders changed their behavioural interactions with some followers and not others, perhaps focusing their efforts with one or two difficult/problematic followers (Taylor et al., 2009). This is likely since the intervention role-plays and the leaders measure (Problems at Work Questionnaire) focused on addressing performance and motivation problems with followers. Because the sample in this study did not represent every follower of the leader, those who chose

to participate in the research may have not experienced a great deal of autonomy supportive behaviours themselves and been unaware of changes in the leader's behaviour with other more difficult followers. Furthermore, the poorly motivated problematic followers, who would have received the most exposure to the changes in leaders' behaviour, may have been less willing to take part in the research and are therefore not represented in the sample.

Assumption 3. Followers' experience of their leaders interacting with them differently over a nine-week timeframe changes their rating of the leader.

Another possible explanation is that followers simply did not change their ratings of the leader and/or socio-contextual conditions despite the leader exhibiting a more autonomy supportive interpersonal approach. Most of the followers had been working with their leader for many years and changes in the leader's behaviour over the relatively small timeframe of nine weeks may not have influenced followers' ingrained perceptions of their leader's interpersonal style. People hold existing belief structures that gradually develop from past experience, and are difficult to change because they subsequently guide the way new information is organized (Walsh, 1988, Rousseau, 2001). In making judgements, people focus on information that supports their current belief structures and which satisfies their pre-judgement (Akgün et al., 2007). For example, workers who believe their leader to be controlling will tend to focus on their leaders' controlling behaviours. When faced with information that conflicts with pre-existing beliefs it is difficult for the person to accommodate the dissonant information, resulting in perceptual rigidity and inaccurate causal attributions (Starbuck, 1996, Akgün et al., 2007). Therefore, when followers were asked to report on their experience of autonomy support from the leader over the past nine weeks, they may have drawn inferences based on their pre-existing beliefs about their leader, rather than objective observations of their leaders' behaviour during the nine-week timeframe.

Overall, the flow-on-effects of the intervention may require a longer period of time to be realised by followers. Transfer of learning is a complex and dynamic process and it is likely that it takes more than nine weeks for leaders to understanding managerial autonomy support, how to apply it in the emergency service context and change their behaviours during interaction with their own followers. During these early weeks of learning, leaders' practice of autonomy supportive behaviours may be inconsistent or infrequent and, coupled with irregular contact with followers, may not

yet cross the perception threshold for followers to notice changes in their leaders' behaviour. Longer term explicit changes in leaders' behaviours may be required for followers to change their pre-existing judgments of the leader and come to see them as being more autonomy supportive. Findings from prior literature also seem to support this idea with Deci et al. (1989) finding long-term but not short-term changes in the experiences of employees whose managers were trained to be autonomy supportive. The need for a longer-term measurement period is further supported by the Hirst et al. (2004) study on leadership learning which suggested a time lag of 8-12 months between leaders learning leadership skills and seeing the effects on the performance of subordinates.

5.4 MEASURING SDT CONSTRUCTS IN ORGANISATIONS

Although not a primary aim of this thesis, tests of the scales used to measure autonomy support and basic psychological needs yielded some important results that warrant discussion due to their implications to theory and interpretation of the findings.

Regarding basic psychological need satisfaction (W-BPN; Van den Broeck et al., 2010), results from structural equation modelling revealed that the theorised three-factor structure of basic psychological needs, comprising of autonomy, competence and relatedness, was not reflected in the data. Amongst emergency services followers participating in this research, basic psychological needs satisfaction was best represented as a single overall latent factor. Prior studies have commonly adopted a single latent factor model (Van Den Broeck et al., 2008, Gagne, 2003), despite SDT assuming that each of the three needs are separate constructs with their own unique influence (Deci and Ryan, 2014). In their recent meta-analysis of studies investigating basic psychological needs in the work context, Van den Broeck et al. (2016) also drew attention to the prevalence of modelling basic psychological needs as a single factor and uncertainty around what such an overall latent construct would represent within SDT theoretically. Whilst not denouncing the use of latent overall needs satisfaction constructs, the authors recognised that more research is required to determine whether it is appropriate to model needs in this way and what the overall construct represents theoretically.

The measurement of leaders' self-reported managerial orientation (PAW) also appeared to deviate from theoretic expectations. Self-determination theory (SDT)

proposes a conceptualization of interpersonal orientation along a continuum from highly controlling to highly autonomy supportive (Deci et al., 1989). Accordingly, the four subscales of the PAW (highly controlling, moderately controlling, moderately autonomy supportive and highly autonomy supportive) are weighted to produce an overall composite score indicating the respondent's relative orientation towards autonomy support. The tenability of the managerial orientation composite score and the continuum structure of the PAW were tested by checking the intercorrelations between subscales for quasi-simplex patterns. Subscales that are theoretically closer are likely to be more positively related than subscales that are not theoretically close (Ryan and Connell, 1989). In line with expectations, stronger correlations were evident for subscales closer on the autonomy continuum and intercorrelations become progressively weaker as subscales become further apart. Also, in line with expectations, the controlling subscales were significantly related. However, contrary to expectations, highly autonomy supportive and moderately autonomy supportive subscales were unrelated. Instead, the moderately autonomy supportive subscale correlated positively with both the highly controlling and moderately controlling subscales. This finding suggests that the moderately autonomy supportive items may not reflect autonomy supportive approaches but rather a variation of controlling strategies and would be more accurately termed "slightly controlling". This finding is not unique to the dataset of this present research as other studies have also reported the moderately autonomy supportive subscale to be positively correlated with the controlling orientation (Reeve et al., 1999, Chua et al., 2014). This is an important finding because it suggests that the current scoring system for measuring a leaders' orientation towards autonomy support may be somewhat flawed. Based on these results, a more appropriate relative autonomy index score could be achieved by changing the relative weights of each subscale such that the MA subscale is negatively weighted to reflect its controlling elements. Alternatively, the original weighting system could be retained, and new MA items could be developed to produce a revised version of the questionnaire.

Perhaps the most surprising finding regarding the measures was that followers' ratings were independent of their leaders' self-reported orientations. The analysis tested the correlations between the rating of 131 follower and leader dyads, obtained prior to the intervention. Managerial orientation rated by the leader was not associated

with their follower's experience of autonomy support or the followers' basic psychological need satisfaction, job satisfaction or turnover intention. This means that, prior to any research intervention, leaders' self-reported managerial orientation was not reflected in followers' reports. This is an important finding because it raises questions about the validity of the measure. Speaking to the validity test of a teacher-version of the self-reported autonomy support scale the authors emphasized "to be considered valid, the [self-report] teacher measure should correlate with the children's perceptions of the teacher and also with the actual intrinsic motivation and perceived competence of the children" (Deci et al., 1981, p. 646). In this present research, the self-report leader measure did not correlate with the followers' perception of the leader or their perceived basic psychological need satisfaction. As research does not usually obtain measures of autonomy support from both parties in the leader-follower dyad, it is unclear if the findings are unique to sample and context, or if this reflects a broader issue which may or may not have to do with the validity of the managerial autonomy support scale. An alternate explanation may be that this finding reflects a common discrepancy effect reported in the broader leadership literature. Prior research investigating the congruence between self-rated and subordinates' ratings of leadership indicate that the self-reports of leaders seldom align with followers perceptions (Aarons et al., 2017, Bass and Yammarino, 1991, Becker et al., 2002). Several factors have been reported to give rise to the self-vs-other discrepancies which serve to emphasise the delicate process through which leaders form accurate self-perceptions (Aarons et al., 2017).

Discussion summary

To summarise, several important findings emerged from the research results. Addressing the first research objective of testing the theory in the emergency services context, overall support was found for the hypothesised conceptual model underpinning the thesis and the intervention. In line with the hypothesis, workers who perceived a leader to be autonomy supportive were more satisfied with their volunteering role and intended to remain with the volunteer organisation. This was because autonomy supportive interpersonal relations between leaders and workers provided a social contextual condition that supported workers' basic psychological needs for autonomy, relatedness and competence. These results complement previous studies and support the benefits, both motivational and participation outcomes, of

managerial autonomy support as an interpersonal approach to leading emergency service volunteers. In addressing the second objective of testing the malleability of autonomy support amongst emergency service leaders, the findings revealed that leaders did show significant changes towards autonomy support over the nine-week intervention and these changes were sustained one year after the program. The intervention was most effective for leaders who had relatively little prior experience leading volunteers. They showed greater propensity for developing their managerial orientation. The findings align with earlier studies that found people can develop their interpersonal orientation towards autonomy support in the short-term. The current study further extends the literature by: 1) addressing design and sampling limitations of prior research with managers, 2) assessing longer term maintenance of transfer effects reported previously and 3) considered leaders' individual differences in their development trajectories. The final objective was to assess changes in followers' perceptions during the nine weeks their leader was participating in the intervention. Followers did not report changes in the provision of autonomy support from their leader, basic psychological need satisfaction, job satisfaction or turnover intention during the intervention period. As previous findings regarding flow-on effects of interpersonal skills training including managerial autonomy support training to subordinates have been mixed, the findings from the followers in this study serve to highlight that managerial training transfer is a complex process and a longer time frame may be required for benefits to be realised by subordinates.

Chapter 6: Conclusions

This final chapter consolidates the main areas covered in the thesis and provides final comments. Returning first to the aims and research problem, the findings of the research are summarised and their significance to addressing the problem are highlighted. Next, the thesis's contribution to our understanding of leadership theory and motivation theory are extrapolated in *6.2 Implications for Theory* and the contribution towards how we research and measure these phenomena is discussed in *6.3 Methodological Implications*. The research was established to address an applied problem in volunteer management and leadership and the significance of the findings for organisations are discussed in *6.3 Implications for Practice*. Several important limitations are highlighted and suggestions for a future research agenda are established in *6.4 Limitations* and *6.5 Future Directions* respectively. The chapter and research conclude with final comments.

6.1 THESIS SUMMARY

This thesis was developed to address the problem of high turnover of volunteers in Australian volunteer emergency service organisations. Establishing the foundation for this research, *Chapter 1.1 Background* presented the mounting concern over high turnover rates amongst volunteers and the associated risk for the future capacity of Australia's emergency service response provision. From a review of the industry (Victoria Emergency Service Association, 2016), government (Auditor General NSW, 2014, Office of the Auditor General Western Australia, 2015) and academic enquiries (McLennan et al., 2009), it became apparent that improvements in the quality of leadership are required to ensure the future sustainability of these organisations to deliver vital services to the community. The thesis set out to provide a solution to this problem and formulate an evidence-based approach for improving leadership to help retain volunteer workers in Australian emergency service organisations.

As its first contribution to addressing the problem, this thesis sought to distinguish a leadership approach that promotes ongoing participation in volunteering and delineate how volunteers' interpersonal experience with a leader comes to

influence their decision to stay or leave the organisation. Accordingly, the first objective was to develop and test a hypothesized conceptual model of ‘effective volunteer leadership’ in emergency service organisations. A review of the volunteer leadership literature [*Section 2.1 Leadership of Volunteers*] revealed very limited prior empirical and theoretical investigation distinguishing how leaders can effectively respond to the unique needs of volunteers or how their behaviours or interpersonal style influences volunteer participation. Drawing on Self-Determination Theory research [*Section 2.2.2 Self-Determination Theory: A theoretical and empirical review in management*], this thesis examined the application of managerial autonomy support as an approach to volunteer leadership and investigated its influence on job satisfaction and turnover in volunteer emergency service organisations. The limited research testing managerial autonomy support in volunteer organisations [*Section 2.3 Self-Determination Theory and Volunteerism*] meant that it was also necessary to validate the SDT-based conceptual model in the volunteer context.

From the findings it can be concluded that managerial autonomy support appears to be a suitable leadership approach for retaining emergency service volunteers. Structural equation modelling [*Section 4.1 Test of the theoretical model*] analyses provided support for the SDT process model in which perceived autonomy support predicted basic psychological need satisfaction, which in turn predicted job satisfaction and lower turnover intention. In addressing the research questions, the findings indicate that managerial autonomy support promotes ongoing participation in emergency services volunteering and does so by providing an interpersonal context that satisfies volunteers basic psychological needs and fosters job satisfaction. Validation of the model (Figure 6.1) amongst workers in Australian volunteer emergency service organisations also provides support for the underlying logic of a leadership intervention based on developing leader’s interpersonal orientation towards autonomy support.

Next, the research then went on to examine the application of the theoretical model as an organisational intervention. A leadership development intervention, which aimed to develop leaders’ interpersonal approach towards autonomy support, was implemented and tested across four Australian emergency service organisations. In line with the second and third research objectives, a quasi-experiment tested the training malleability of managerial autonomy support amongst leaders. Flow-on

effects of the leader-intervention to followers were also assessed over the intervention period. This study provides evidence that leaders can change their interpersonal orientation towards autonomy support in the short-term and sustain some part of this learning for at least one year. The intervention was especially effective for relatively inexperienced leaders who showed greater propensity towards developing the interpersonal orientation. Despite changes in leaders' self-reports, followers did not perceive changes in their socio-contextual climate during the intervention period. A detailed discussion and interpretation of the thesis findings were covered in *Chapter 5. Discussion*.

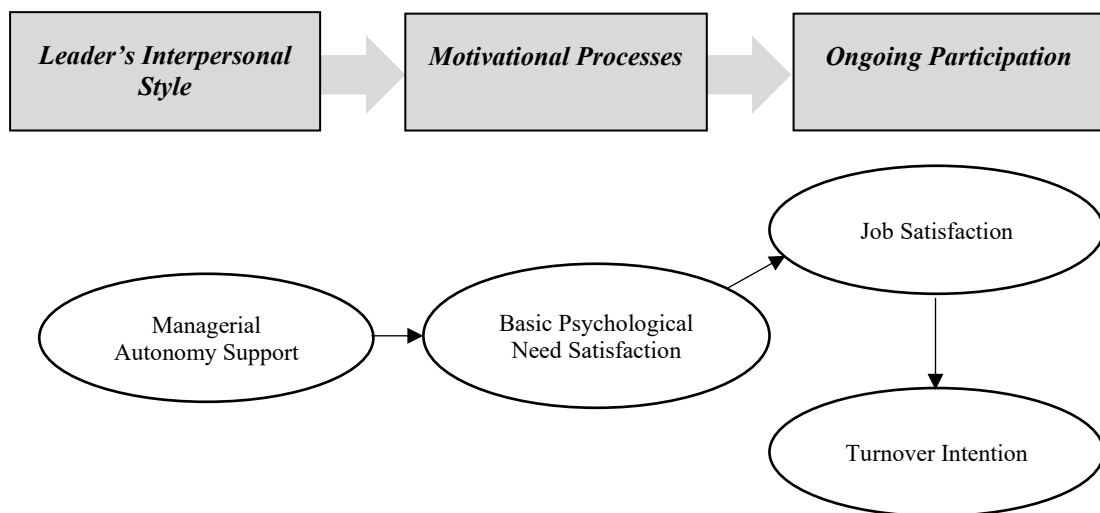


Figure 6.1 Model describing the process through which perceived managerial autonomy comes to reduce turnover intentions amongst emergency service workers.

6.2 CONTRIBUTION AND IMPLICATIONS FOR THEORY

6.2.1 Volunteer leadership

This thesis makes a theoretical contribution to scholarly study of volunteer leadership by offering a validated theoretic model of leadership and its influence on followers in the volunteer context. Volunteer-leadership is a unique construct but, despite its differentiation from leadership of paid workers (Posner, 2015, Ferreira et al., 2015, Pearce, 1982), has not received distinct theoretical attention. Theories of volunteer-leadership are yet to be developed and traditional leadership theories, which have unequivocally been developed to describe responses of workers in traditional paid organisational paradigms, may not be effective or even appropriate with volunteer

workers. This present research set out to establish the validity of a framework of leadership with volunteer workers. From the results it can be concluded that managerial autonomy support, as a leadership construct, is responsive to the unique needs of volunteer workers. The provision of autonomy support from leaders appears to have a beneficial influence on volunteers by providing the socio-contextual conditions necessary for supporting their basic psychological need. In doing so, managerial autonomy support enhances satisfaction with the volunteering experience and promotes ongoing participation.

The findings also make an empirical contribution to this body of knowledge, adding to only a few prior studies which examine the influence of leadership on volunteer attitudes and behaviour. Despite an increase in the number of organisations relying on volunteers (Curran et al., 2016) there is a scarcity of scholarly research investigating the relations between leadership and volunteer outcome variables (Zievinger and Swint, 2018, Oostlander et al., 2014, Catano et al., 2001, Dwyer et al., 2013). Studying the effects of leadership within volunteer populations is critical to understanding what leadership practices are effective with volunteer followers. Furthermore, mapping the nomological network of volunteer variables associated with leadership can support initial theory building for a model of volunteer leadership. The findings of this research provide evidence that managerial autonomy support predicts job satisfaction and is negatively related to turnover intention amongst volunteer workers. Furthermore, by showing basic psychological needs to be the mediator in this relationship, the study further reveals motivational processes to be a mechanism through which leadership influences volunteer turnover. This second point serves to also highlight the value of applying a motivation theory to study leadership phenomena. Whilst most leadership theories acknowledge that leaders influence follower behaviour (Barling et al., 2011), they mostly remain silent about the inner psychological process through which this is achieved. This thesis, alongside other research combining the study of motivation and interpersonal relationships between leaders and followers, sheds some further light on explaining an integral part of the leadership process – the mechanisms through which leaders influence follower behaviours.

6.2.2 Self-Determination Theory

The findings provide support for Self-Determination Theory in the volunteer-work context. The literature, revealing the unique nature of volunteer leadership (Farmer and Fedor, 2001, Pearce, 1982) and differences in paid vs volunteer responses to leadership (Catano et al., 2001), has served to highlight the need to explicitly study managerial autonomy support in volunteer populations, rather than generalising findings from studies of paid employees. However, only a small number of studies have tested SDT's core theoretic assumptions within volunteer workers, and their findings have often been inconsistent, contradictory or indicative of volunteerism being a unique motivational context (Oostlander et al., 2014, Haivas et al., 2012). This research contributes to the theoretic testing of Self-Determination Theory and provides evidence that SDT's core theoretic assumptions, regarding managerial autonomy support, transcend organisational boundaries and are valid within the volunteer work context. Specifically, the study tested two theoretic propositions with volunteer workers: 1) SDT's conceptual definition of managerial autonomy support as a socio-contextual condition that satisfies basic psychological needs and 2) the mediating role of basic psychological needs in the beneficial influence of autonomy support on worker outcomes. Support was found for both tenets and implies that, despite the unique motivational climate and leadership context in volunteer organisations, managerial autonomy support as a construct and its beneficial role in initiating motivational processes transcend these differences and hold true. From this thesis it can be concluded that managerial autonomy support has external validity within volunteer emergency service organisations.

This thesis provides one of the most in-depth empirical explorations, to date, of the malleability of managerial autonomy support amongst organisational leaders. The findings reveal that, through structured training, leaders' interpersonal orientation can change towards autonomy support and away from control and that these reflect enduring changes that remain evident one year later. Revealing that managers interpersonal orientation is malleable is important for our understanding of motivation because it implies that the primary socio-contextual condition responsible for motivation within the work domain is not stable but subject to change. Because leaders can change their interpersonal orientation, the motivating potential of the context may readily fluctuate and initiate changes in workers' motivation and related outcomes.

This study might help us better understand motivational processes at work by emphasising its dynamic nature and highlighting the potential for positive change towards self-determination. Because managerial autonomy support is pivotal for internalisation, knowing that this contextual factor can be manipulated and enhanced opens opportunities for positive changes in organisations in the form of internalising the value of work, enhancing motivation towards people's jobs and improving employee wellbeing. Coming to conceptualise motivational climate in organisations as fluid, rather than static, also leads to thinking about and researching motivation in new ways. It highlights the importance of drawing on time-series and longitudinal studies which can better account for and investigate the dynamic nature of motivation and fluctuations in motivational factors and outcomes.

This study also makes an empirical contribution by clarifying the relations between managerial autonomy support, job satisfaction and turnover intention in volunteers. Initial studies, so far, have either investigated the effect of managerial autonomy support on volunteers' turnover intention (Gagne, 2003, Li et al., 2016) or the effect of managerial autonomy support on volunteers' job satisfaction (Oostlander et al., 2014). This study modelled all three variables together within the volunteer work context to reveal that volunteers experience of autonomy support from their leader is associated with them evaluating their job as satisfying. In turn, the more satisfied a volunteer is, the less likely they are to want to leave the organisation. In doing so, this thesis has helped unravel the relations between these variables and shed light on the inner psychological mechanisms through which managerial autonomy support comes to influence workers' intentions to stay with their volunteering organisations.

6.3 METHODOLOGICAL IMPLICATIONS

Dyadic phenomena require dyadic methodology to be properly investigated and understood (Kenny, 2006). Leadership and managerial autonomy support are dyadic constructs concerned with relationships, interaction and exchanges that take place between two members of a dyad, the leader and the follower. However researchers interested in dyadic relationships or interactions have been criticised for studying such topics from the perspective of only one party involved in the interpersonal exchange (Krasikova and Lebreton, 2012). This practice of ignoring the second party in the interaction is certainly evident within SDT and previous research of managerial autonomy support. Whilst the theory acknowledges the dyadic nature of

autonomy support (Ryan and Deci, 2017), studies have primarily focused on the experience of the follower, measuring autonomy support from only the perspective of the “recipient” within the interpersonal relationship (Deci et al., 2001, Slemp et al., 2018). This research responds to this issue and a call for future research to obtain data on autonomy support from other sources to provide additional validity to the model (Gagne, 2003).

Capturing autonomy support from both the leader/provider and the follower/recipient in the dyad, this thesis found a misalignment between the viewpoints of the two members of the interpersonal relationship. Because both parties in the relationship have rarely been examined together, this study is the first to emphasise such a substantial incongruence and reveal the complexity of this interpersonal exchange. The findings of this research might therefore serve as a catalyst for the greater use of dyadic techniques (Krasikova and Lebreton, 2012) in leadership and SDT research. Examining autonomy support, and interpersonal aspects of leadership, from both the leader and follower perspective would present opportunities for investigating the source and impact of disparity in perspectives as well as addressing unanswered questions about dyadic influences, relations and exchanges in the context of leadership. Overall it can be concluded that considering both parties involved in the interpersonal interaction is critical to appropriately study a dyadic phenomenon and to obtain a more holistic understanding of interpersonal relationships and their influence in organisations.

This thesis also contributes to the literature by improving methodological diversity to address limitations of prior research. The literature review revealed that previous studies testing SDT within volunteers have relied extensively on self-report measures and cross-sectional research designs. However, the nature of motivation and leadership is inherently dynamic, and such processes cannot be sufficiently examined via cross-sectional methods alone. Addressing this limitation, the thesis captured data over multiple points in time to reveal substantial changes in socio-contextual factors can take place in a relatively short period of time. Further to the theoretical implications discussed in the previous section, the findings also have methodological implications by emphasising the importance of time-based methodologies for studying motivation. Evidence of fluctuations and change in social contextual conditions serve to underscore how dynamic and fast changing the motivational context of an

organisation can be. SDT's core theoretical assumptions, regarding an individual's sensitivity and motivational responses to their social contextual climate, recognises the dynamic interplay between the worker and their environment. To align theory and methods and contribute to greater understanding of how interpersonal contextual conditions and motivational processes develop and change, research should reflect the dynamic and longitudinal nature of these phenomena.

Finally, the research overcomes prior methodological limitations to strengthen evidence that, through learning and development interventions, managers in organisations can learn how to become more autonomy supportive towards others. Prior intervention studies [*Section 2.4 Interventions: Applying autonomy support in the field*] suggests that people can learn to be more autonomy-supportive (Murray et al., 2015, Williams et al., 2002, Cheon et al., 2018, Reeve, 1998). However, evidence for the malleability of autonomy support in workplaces has been limited (Deci et al., 1989, Hardre and Reeve, 2009) and researchers have yet to fully establish whether the initial improvements, reported in studies, are sustained over time. To address limitations of prior studies, the present research employed a substantially larger sample size of managers, included a pre-test in the quasi-experimental design and incorporated a longitudinal follow-up measure of participants one year after the intervention. The use of moderation analysis, to test for differences in treatment effects, expanded the investigation further by revealing that leaders' prior managerial experience influences their propensity to change their interpersonal orientation towards autonomy support. In doing so, this research responds to calls in the literature, for intervention studies to use larger samples and examine whether intervention effect endure over time (Murray et al., 2015), and contributes to enhancing the body of knowledge regarding the training malleability of autonomy support.

6.4 IMPLICATIONS AND RECOMMENDATIONS FOR PRACTICE

Overall this research highlights that the provision of managerial autonomy support from leaders is a viable solution to the turnover problem in Australia's emergency service organisations. The findings of this thesis offer an evidence-based solution for how emergency services organisations can improve the quality of leadership and overcome barriers to ongoing participation in volunteering. Generalising the findings outside of the emergency services context, the research can

also have implications for volunteer leadership and retention practices across the growing NPO sector globally.

First, this research has major implications for how *leadership is practiced* in volunteer organisations. The findings provide leaders, human resource professionals, and volunteer organisations more broadly, an evidence-based framework delineating what ‘effective volunteer leadership’ looks like and what volunteers need from their leaders in order to be satisfied and remain with the agency. The results show that the interpersonal experience the volunteer has with their leader is critical in their decision to stay or leave. Therefore, if organisations want to retain volunteers, leadership approaches that fulfil basic psychological needs should be encouraged. The language leaders use and the way they interact with volunteers, directly affects the degree to which a worker feels autonomous, competent and related, and the degree to which the volunteer comes to enjoy their volunteer role and willingly chooses to continue volunteering with the organisation (Gagne, 2003). Emergency service leaders can support volunteers by adopting an autonomy supportive interpersonal approach in their interactions. This involves taking the volunteer’s perspective, spending time listening to and acknowledging the volunteer’s feelings, providing rationales for tasks or the restrictions they impose, using non-controlling language and providing the volunteer opportunities to make decisions and fostering a sense of choice (Ryan, 1982, Koestner, 1984, Deci et al., 1994, Stone et al., 2009). Leaders who are autonomy supportive rather than controlling help to sustain and build volunteers’ motivational resources and, through this, create a climate where volunteers are satisfied and willingly choose to continue to participate with their volunteering organisation into the future.

This thesis also provides volunteer organisations an empirically verified *leadership program* that can develop this interpersonal approach in leaders. The research revealed that participating in the *Inspire Retain Engage* leadership development program, can help leaders change their interpersonal orientation towards autonomy support and sustain this learning a year later. Given the critical importance of autonomy support in volunteer retention, the large-scale implementation of the intervention across the emergency service sector and volunteer organisations would be highly advantageous. The program was particularly effective amongst inexperienced volunteer leaders, who showed greater propensity for developing their managerial orientation towards autonomy support relative to leaders with more volunteer

managerial experience. It is therefore suggested that the intervention, in its current form, be targeted towards early-career leaders, for example, utilising the program as induction training for those coming into a leadership role.

Autonomy supportive leadership should still be encouraged amongst highly experienced volunteer leaders. However, development initiatives may need to take different forms. For veteran leaders, learning and development professionals will need to establish and evaluate alternate strategies for developing their orientation towards autonomy support and overcome resistance to changing their established leadership style. This could involve utilising alternate development methodologies such as leadership coaching, for example, which is provided in the context of a one-on-one relationship (MacKie and Association for, 2016, Ely et al., 2010). Such more individualised development could focus on addressing the previous experiences and breaking down established schemas so that the leader can come to recognise and internalise the value of managerial autonomy support. Future research could support this endeavour.

Finally, the research has practical implications for organisations seeking to improve the retention of their volunteer workforce by providing guidance on where to focus their efforts. The model delineates managerial autonomy support and basic psychological needs satisfaction as ingredients for volunteer satisfaction and retention. The scope of this thesis focused on leadership development and applying the model as a framework upon which training and development of leaders can be based. However, the theoretical model, highlighting the need to enhance autonomy support and establish an organisational climate that enables volunteers to have their needs for autonomy, competence and relatedness met, can be implemented in other ways to enhance the organisation's capacity to retain volunteers.

One opportunity for application might be in organisational climate surveys and assessment (Kraut, 2006). Employee surveys provide one of the most common methods of data collection used by practitioners and researchers (Langford, 2009). Organisations could embed measures of perceived autonomy support and basic psychological need satisfaction within their existing organisational climate surveys or assessment practices. Regularly measuring these important contextual conditions would enable the organisation to evaluate and monitor the climate within volunteer units, identify problem areas and establish targeted strategies for addressing unique

issues. For examples, units or divisions reporting low basic psychological needs satisfaction or other problems can be flagged early and addressed *before* the volunteers resign, thus preventing unnecessarily turnover.

From a Learning and Development (L&D) perspective, the model could serve in evaluating and identifying training needs. Training needs analysis involves a review of learning needs which considers the gap between the knowledge, skills and behaviours the individual and organisation need versus their current capabilities (Brown, 2002). Volunteer organisations, and NPOs more broadly, are often challenged to find funding for training. Therefore, a more targeted approach, which involves identifying those leaders most in need of development, would be highly beneficial and provide greatest return on investment. For example, assessing managerial orientation of leaders across the organisations could identify those leaders who tend to rely on controlling managerial approaches and would benefit most from the leadership development intervention. Recent recommendations have also been made to introduce leadership competencies grounded in Self-Determination Theory into organisational competency frameworks and leadership development practices (Fowler, 2018)

Up until now, human resources professionals and organisational managers have had little empirical guidance on what effective volunteer leadership looks like or what leaders can say or do to retain volunteers. From this research it can be concluded that autonomy support is an important leadership capability for promoting ongoing participation in volunteering and, through structured training, organisations can successfully develop these skills in people who lead volunteers. It is recommended that emergency service organisation implement the intervention and embed elements of the model into their organisational practices.

6.5 LIMITATIONS

Several limitations and weaknesses of this research need to be acknowledged.

The data were quasi-experimental and therefore cannot be used to infer causality. Only if leaders had been randomly assigned to the experimental conditions could we draw the conclusion that the leadership development program caused changes in leaders' managerial autonomy support.

The study did not assess managers' actual interactions with their employees, and it is not evident whether self-reported managerial orientation actualises in managerial

behaviours. Several assumptions were made regarding leaders' behavioural application of autonomy support, including a) leaders were actively practicing autonomy support during the implementation stage of the intervention, b) leaders who change their self-reported managerial orientation also change their behaviours and c) changes in leaders' behaviour were perceived by their follower. However, as the design did not incorporate a behavioural observation, the present study is limited in being able to objectively assess the behavioural application of autonomy support by leaders. Consequently, evidence-based conclusions cannot be drawn regarding the misalignment between leaders' self-reported change and the experiences of their followers.

The follower sample in this study did not include every follower of the leader. As addressed previously in the discussion, it is possible that those followers who chose to participate in the research differed to those followers who did not take part. These differences may have impacted their exposure to autonomy support from the leader and the results.

Limitations regarding the measurement of basic psychological need satisfaction and leader self-reported managerial autonomy support and their misalignment with theoretical assumptions are also noted. As discussed, results from structural equation modelling revealed that the theorised three-factor structure of basic psychological needs, comprising of autonomy, competence and relatedness was not reflected in the data. Instead psychological needs satisfaction was best represented as a single overall latent factor. The practice of using a single factor to represent basic psychological needs is not uncommon in previous research (Van den Broeck et al., 2016); however, it is acknowledged as a theoretical deviation and measurement limitation of this study. Second, the measurement of leaders' self-reported managerial orientation also deviated somewhat from theoretical expectations. A discussion of this issue was addressed in *Section 5.4 Measuring SDT Constructs in organisations*. Assessment of the tenability of the managerial orientation composite score and the continuum structure highlighted problems with the validity of the moderately autonomy supportive subscale.

The relatively short timeframe of nine-weeks may not have been a sufficient time period to evaluate change in followers' experiences in the context of this research. Emergency service volunteers have infrequent and irregular contact with their leader

and their leaders may have had minimal opportunities for exposing followers to new interpersonal approaches. A longitudinal measure, like the one year follow-up with leaders, would have improved the design.

The low number of follower respondent per leader limited investigation of the dyadic leader-follower data to a partial correlational level. Dyadic data are multilevel where leaders and followers are nested within dyads. In the one with many (OWM) design, employed in this study, followers were nested within groups defined by the leader focal person. The application of more sophisticated multilevel analysis models, such as the reciprocal OWM analysis methods outlined by Krasikova and Lebreton (2012) for example, would enable a more robust assessment of the multilevel data. However, the sample size of leader and follower dyads was too small for this analysis, and further examination of the issue was not vital for addressing the research objectives of this thesis. As such, more in-depth analysis of this dyadic data, including multilevel modelling, is flagged as an opportunity for further research.

The ability to analyse a longitudinal model via SEM was limited by the size of the follower sample obtained in this study. An ideal approach would have been to include time-series data from followers, which involves adding latent variables for each post-test measure and additional paths between latent variables across time. Increasing the complexity of a model has been shown to necessitate increased sample size requirements in order to obtain sufficiently accurate estimates (Wolf et al., 2013). Unfortunately, the decline in response rate, from 196 followers at pre-test to 113 at post-test, meant that the study did not have a large enough sample to examine a more complex longitudinal model with additional latent variables and parameter estimates. A larger follower sample at post-test could have allowed a test of longitudinal invariance in the measurement model, to establish whether the measures assess the same construct with equal structural validity across time points. Longitudinal measurement invariance of the scale is important in longitudinal research in order to determine whether change observed over time is due to true change or to changes in the structure or measurement of the construct over time (Esnaola et al., 2019). Cross-lagged panel analysis, where both pre-test and post-test data are included in the same model to analyse the interactions and reciprocal influences between variables over time, would have also been an ideal method of analysis because it would have allowed the research to test the directional influence that study variables have on each other

(Gagne et al., 2019, Juengst et al., 2017). Future longitudinal research with larger samples could employ such approaches.

The findings were drawn from workers in the volunteer emergency service context and may not be representative of volunteer workers in other organisations or sectors. Caution should be taken when generalising the findings outside of the context of this research. Further research might test the validity of this model of volunteer leadership within other NPO organisations or alternative volunteering contexts (e.g. episodic, informal or corporate volunteering settings).

6.6 FUTURE DIRECTIONS

This research hopes to establish the foundation for recognising the importance of explicitly studying leadership in volunteer populations, rather than generalising findings from studies of paid employees. Despite an increase in the number of organisations engaging with volunteers (Curran et al., 2016), empirical and theoretical enquiry into volunteer leadership is still in its infancy. This presents a plethora of research opportunities for scholars to develop knowledge about the unique nature of leadership and organisational behaviour in the volunteering context. Future research agendas may focus on theory building to establish a model of volunteer-leadership and serve to align this currently fragmented literature into a larger, more coherent body of work. There are also extensive opportunities for testing the validity of traditional theories within volunteer populations. Future research may for example test Leader-Member Exchange theory or Authentic Leadership theory, both of which are showing to be valuable leadership models within traditional organisational research (Avolio and Gardner, 2005, Gardner et al., 2011, Gerstner and Day, 1997, Graen and Uhl-Bien, 1995).

Clearly one area of importance for future research is further testing and application of SDT to the study of volunteerism. SDT is based on strong empirical underpinnings and has, from the start, evolved with an emphasis on systematic empirical testing, refinement and extension (Deci et al., 2017). At present, relatively few studies have tested the theory with volunteer workers and, whilst there is initial support for its validity in volunteer populations, many theoretical propositions remain untested. Of particular interest is the need for future research to resolve divergent findings regarding the motivational effects of autonomy support within volunteer

samples. Whilst theoretically managerial autonomy support is expected to show positive and progressively stronger correlations with more internalized regulations (Deci et al., 2017, Gagné et al., 2014), tests of this central tenet within volunteer samples have not always aligned or been consistent with this expected pattern. Some studies have even reported positive associations between managerial autonomy support and both autonomous and controlled motivation for volunteering activities (Oostlander et al., 2014, Haivas et al., 2012). Future research of volunteers through the lenses of SDT could assist in shedding light on these issues and other, and what they represent theoretically, to better understand motivational processes in volunteer organisations.

Further testing of the hypothesised continuum structure of managerial autonomy support and the measurement of this construct would also be a valuable endeavour. This thesis maintained the current conceptualisation and established methodology for measuring managerial autonomy support but acknowledges the need to further refine and test these in future studies. Measurement limitations already noted in this thesis warrant further attention. Firstly, certain subscale items and the method of calculating the composite score of leaders' self-reported orientation towards autonomy support (PAW; Deci et al., 1989) were identified as problematic. Secondly, contrary to theory, no association was evident between leader-rated managerial autonomy support and followers' ratings of perceived autonomy support from that leader or their basic psychological need satisfaction. The Problems at Work (PAW) questionnaire is today's established measure of self-reported managerial orientation, yet has not received further validation attention outside of its initial introduction to the literature (Deci et al., 1989). A valid and reliable measure is critical to research a construct in a systematic manner (Cooper et al., 2005) and future research is pertinent to investigating and resolving these methodological issues. Such research could be guided by other studies within the SDT literature where there has been mounting research interest towards evaluating the validity of motivation scales (Fernet, 2011, Gagné et al., 2015) and SDT's hypothesised continuum structure of motivation (Ryan and Connell, 1989, Chemolli and Gagné, 2014, Guay et al., 2015, Howard, Gagné, and Bureau, 2017, Howard et al., 2018). Future research could draw from these methodologies, including recent application of advanced SEM-based analysis techniques (Howard et al., 2018), to examine managerial autonomy support. Such

research would not only contribute to validation of measures but also add to the recent research discourse debating whether autonomy and control are opposite ends of a single continuum or if they are distinct interpersonal styles (Amoura et al., 2015).

Finally, there are substantial opportunities for extending the intervention literature and further exploring training-transfer of interventions designed to increase autonomy support. First, future research could expand the findings of this present study by providing a more in-depth and longitudinal investigation into possible intervention flow-on effects to followers. Such research could establish if, over time, the new leader behaviours transfer to become recognised by followers and influence their experiences. Furthermore, studies could explore unanswered questions regarding the complex interactions between a motivator's development of autonomy support, the recipient's experiences and variables that may influence such effects.

The present research adds to the growing body of literature to show that interpersonal orientation towards autonomy support is not stable, but plastic. These findings present a plethora of research opportunities for scholars to develop knowledge about change and development towards autonomy support. Future research agendas could include investigating what experiences shape one's interpersonal orientation and investigate patterns of development throughout a leader's career or lifetime. Examining trajectories of development and providing comprehensive accounts of why and how humans come to establish particular leadership or interpersonal styles offer important avenues for research. Longitudinal studies could allow us to explore if and how leaders' managerial orientation fluctuates naturally over time. Perhaps we might observe peaks or troughs in times of stress, following coaching and other forms of reflective personal development or in times of organisational crisis. In practical terms this would provide guidance for enabling us to better learn from those who develop more quickly and effectively and to apply the knowledge to help those who struggle to develop as leaders (Day et al., 2014). Future research evaluating alternate L&D methodologies for increasing autonomy support amongst more experienced leaders would also be a valuable endeavour.

6.7 CONCLUSION

Understanding how leaders can retain volunteer workers is critical for the future success of Australia's Emergency service organisation, and the growing non-profit

sector more broadly. The findings of this thesis suggest that, if organisations want to promote ongoing participation in volunteering, leadership approaches that support basic psychological needs should be encouraged. Leadership development interventions, based on teaching leaders to be autonomy supportive in their interactions with volunteers, appear to provide a viable means for organisations to positively change the way leaders think about interacting with and motivating volunteers.

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