# THE ROLE OF SELF-REGULATION AS A META-COMPETENCY IN DEVELOPING LEADERS: A LONGITUDINAL FIELD EXPERIMENTAL STUDY

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Doctor of Philosophy

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March 2011

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## THESIS SUMMARY

The question of how to develop leaders so that they are more effective in a variety of situations, roles and levels has inspired a voluminous amount of research. While leader development programs such as executive coaching and 360-degree feedback have been widely practiced to meet this demand within organisations, the research in this area has only scratched the surface. Drawing from the past literature and leadership practices, the current research conceptualised self-regulation, as a meta-competency that would assist leaders to further develop the specific competencies needed to perform effectively in their leadership role, leading to an increased rating of leader effectiveness and to enhanced group performance.

To test this conceptualisation, a longitudinal field experimental study was conducted across ten months with a pre- and two post-test intervention designs with a matched control group. This longitudinal field experimental compared the difference in leader and team performance after receiving self-regulation intervention that was delivered by an executive coach. Leaders in experimental group also received feedback reports from 360-degree feedback at each stage. Participants were 40 leaders, 155 followers and 8 supervisors. Leaders' performance was measured using a multi-source perceptual measure of leader performance and objective measures of team financial and assessment performance.

Analyses using repeated measure of ANCOVA on pre-test and two post-tests responses showed a significant difference between leader and team performance between experimental and control group. Furthermore, leader competencies mediated the relationship between self-regulation and performance. The implications of these findings for the theory and practice of leadership development training programs and the impact on organisational performance are discussed.

***Keywords:*** *Leadership development, competencies, self-regulation, coaching, self-regulatory intervention*

## Dedication

Firstly, this thesis is dedicated to my family who raised me up to be more than I can be and it is their belief in me that made it possible for me to be where I am. It is with a heavy heart that the man who raised me passed away on the last month of my writing up and the successful completion of this thesis is the least I could do to honour his love. I would like to include an excerpt from my eulogy in his memory:

*"It breaks my heart that you could not attend any of my graduations because of your health, but this time, when I graduate for the last time, I know you will be watching me from above, just as you watched me on the first day you took me to school".*

Secondly, I would also like to dedicate this thesis to Prof. Mike Grojean for having the faith in me to give me the opportunity to start this PhD. For this, I will be eternally grateful.

Finally, I would like to dedicate this thesis to Yusuf Abowath, whose love, support and laughter I cherish, and showed me that good things come to those who persevere and wait.

**Acknowledgement**

This endeavour would not have been possible without the enormous help and guidance from so many individuals.

First of all, I would like to thank my supervisor, Prof. Robin Martin, for his commitment, devotion, and patience in supervising my thesis.

I am grateful to Prof. Nick Lee in his early guidance during my qualifying report and first year viva. In addition, I would also like to acknowledge Prof. Pawan Budhwar for his constructive feedback during my qualifying viva.

I am deeply grateful to Dr. Ann Davis and Dr. Qin Zhou in their support and advice in obtaining the ethical approval for my research. Also, I would like to thank Dr. Gina Herzfeldt who took the time to integrate me into the Work and Organisational Psychology Group when I started my PhD.

A special thank you to Prof. Helen Higson and Mr. John Overend for making it possible to conduct my research within the Business Strategy Game module.

Chapter Four is made possible with the help of Mr. Jeremy Dawson the statistical genius of our department and Dr. Yves Guillaume for his words of advice.

I am also deeply grateful to Jenny Thompson, Lynne Woolley, Sue Rudd and Jeanette Ikuomola for all their administrative help throughout this journey.

I am deeply indebted to the friends and colleagues who read drafts of this document (Gareth Hughes, Ria Perkins, Klaus Thiele) and provided guidance throughout the completion of this research (Mariam Shebaya, Dr. Evmorfia Argyriou, Chris Chu, Anna Topakas).

There were occasions when motivation was lost and I am grateful to those who spark it back in place. I would like to thank Thomas Bermudez, Stephanie Feiereisen, Kirsten Challinor, Elaine Foley, Jade Goh, Bob Maddox and Naresh Nihalani for their unwavering support.

I want to express my gratitude to Dimah Sweis-Gentles, Julia Postnikova, Joanna Agathoklidi, Evelyn Kanda, Michael Ridger, Adam Frost, Pierre Prévot and Robin Ibbotson for the indirect help they gave which meant a lot to me.

Many thanks to Work and Organisational Psychology Group, ABS Research Degrees Programme (especially Prof. Sam Aryee) and Overseas Research Students Awards Scheme UK for their generous funding of my PhD in terms of scholarship, conference and research needs.

Last but never the least, my eternal thanks to Charmi Patel who propelled me up and over the finish line. I will never forget your saying whilst I was writing up, “Joobee is getting hysterical and her sayings are becoming historical”. You made writing up fun!

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# CHAPTER 1

## Introduction to the Research

*This chapter aims to give an overview of the research reported in this thesis. Section 1.1 provides an introduction and background of leadership research and practice. Next, Section 1.2 states the main research problems, and establishes the research questions. Section 1.3 discusses the purpose and Section 1.4 gives an overview of the nature of this study. Finally, Section 1.5 puts forward the significance and contribution of the research to theory, methodology and practice are presented.*

### 1.1. Introduction

Within the context of today's increasingly competitive organisational environment, leaders frequently need to confront crucial and relevant real time issues and come up with the best solutions in the shortest period of the time (Day, 2000; Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000). To do so, leaders need work-related competencies to develop and implement solutions with followers and senior managers operating in these complex and dynamic contexts. Within this process, leaders face complex interactions between them and the social and organisational environment (Fiedler, 1996). Effective leaders need to have the social skills to persuade not only followers, but various constituencies involved, to accept and support their proposed solutions (Conger & Kanungo, 1987). Thus, it is very important to possess the competencies required to deal with the variety of interpersonal and organisational problems faced in the workplace (Mumford, Marks, Connelly, Zaccaro, & Reiter-Palmon, 2000; Ulrich, Brockbank, Yeung, & Lake,

1995; Wexley & Baldwin, 1986; Zaccaro, Mumford, Connelly, Marks, & Gilbert, 2000)

Therefore, unsurprisingly, large amounts of money are invested by organisations into leadership development programmes annually in the hope of developing effective leaders (Gibler, Carter, & Goldsmith, 2000). For example, Accenture spends US$800 million; McDonalds spends US$480 million; and General Electric spends US$400 million annually on their leadership development programmes (Top 10 best companies for leadership, 2010). Recently, as the economic condition has gradually picked up from 2009 to 2010, it is reported that the budget for leadership development which saw a drop during the recession had bounced back from 8.8% to a substantial 22% of training resources as presented in Training Industry Report (2010 Training Industry Report, 2010) of the survey conducted from June to August of 2010. A budget for leadership development has always been allocated by organisations because they recognise the return on their investment in cultivating effective leaders.

To address and provide better leadership development practice, there is a substantial body of research dedicated to leadership development as demonstrated by the amount of publications in this field. Leadership development research still continues to gain momentum as can be seen within the publications of some of the most distinguished journals such as *Leadership Quarterly* (e.g., Avolio, Avey, & Quisenberry, 2010; Ely et al., 2010; Moss, Dowling, & Callanan, 2009; Orvis & Ratwani, 2010; Reichard &

Johnson, 2011; Seifert & Yukl, 2010), *Journal of Applied Psychology* (DeRue & Morgeson, 2007), and *Academy of Management Journal* (e.g., Dragoni, Tesluk, Russell, & Oh, 2009; Hooijberg, 2009).

Among the many leadership development practices, Day (2000) identified six that are most widely applied and researched; (i) job assignments, (ii) mentoring, (iii) executive coaching, (iv) action learning, (v) networking and (vi) 360-degree feedback. These programmes have been widely employed by organisations in the hope to develop leaders' effectiveness (Feldman & Lankau, 2005; Hernez-Broome & Hughes, 2004), however, the pervasiveness of the research and practice gap is still irrefutable (Avolio & Chan, 2008). This could not be more prominent in the practice and research of 360-degree feedback and executive coaching. The lag of research in informing practice could be due to the fact that practitioners tend to approach leadership problems using 'trial and error' techniques, more often than not based on popular fads (Zaccaro & Horn, 2003). Considering the amount of money, time and effort invested by organisations into leadership development, transferring validated scientifically grounded findings from research to organisations would not only bridge the gap but also inform practitioners to develop leaders in a more efficient and productive manner. To accomplish this, a brief overview of leadership development programmes is presented below and the gap between practice and research is highlighted.

## 1.2. Background of the problem

360-degree feedback, also known as multi-source feedback, has significantly extended the leadership and leadership development literature since the 1990s (Atwater & Waldman, 1998). Unlike other developmental programmes that employ self report evaluation and hence suffer from response bias (Mabe & West, 1982; Schwarz, 1999), 360-degree feedback extends the evaluation of leader behaviours from self evaluation to multiple sources of evaluation such as subordinates, peers, superiors, customers and others (Atwater & Waldman, 1998). Numerous studies have demonstrated the benefits and effectiveness of 360-degree feedback (e.g., Atwater, Ostroff, Yammarino, & Fleenor, 1998; Atwater & Yammarino, 1992; Bass & Yammarino, 1991; Fleenor, McCauley, & Brutus, 1996; Fleenor, Smither, Atwater, Braddy, & Sturm, 2010; Smither, London, & Reilly, 2005; Walker et al., 2010).

360-degree feedback helps leaders to create awareness of a leader's strength and weaknesses, hence helping them to recognise areas for development (Tornow & London, 1998; Van Velsor, Taylor, & Leslie, 1993). Self-awareness has been proposed to be the core of leadership development (Avolio & Chan, 2008; Hannah & Avolio, 2010; Neck & Houghton, 2006; Riggio, 2008). However, the assumption of self-awareness using 360-degree feedback is that leaders who are aware of the need for the development of certain competencies in order to overcome their weaknesses and to perform better, will change their behaviour (McCarthy & Garavan, 1999). Obviously this is not always the case as there are mixed findings of the effect of 360-degree feedback on the improvement in leader's performance (Ghorpade, 2000;

Kluger & DeNisi, 1998). A crucial study conducted by Smither, London, Flautt, Vargas and Kucine (2003), who investigated the effect of executive coaching and 360-degree feedback on leadership behaviour change, brings light to these mixed findings. Data from the research revealed that, senior managers who worked with an executive coach were rated higher by others than senior managers who did not work with an executive coach. The point to note here is, *360-degree feedback did yield an improvement in ratings*, but the improvement was just less when compared to senior managers who worked with an executive coach. Working with an executive coach has highlighted the issue where there needs to be a translation from 'knowing' to 'doing.'

Executive coaching, which is a new approach in leadership development, has grown exponentially over the past 15 years. The practice of executive coaching is far ahead of its scientific understanding (Ely et al., 2010). Since its conception, professional publications such as, *Consulting Psychology: Practice and Research* has dedicated two special issues in 1996 and 2001 to the understanding of executive coaching. However, executive coaching still remains a 'blackbox,' i.e., when input of leader and executive coaching are entered into the 'blackbox,' positive output is obtained. Some went as far as claiming that executive coaching brings more than $100,000 average return or 600% return on investment (Fisher, 2001; Poston, Manning, & Barrow, 2001); productivity rose by 88% for training course participants followed up by executive coaching versus a 22.4% increase for those who did not receive help from coaches (Olivero, Bane, & Kopelman, 1997). In another survey among Fortune

100 companies, 53% saw higher profitability, 39% experienced lower turnover rates, and 61% had higher job satisfaction (Savage, 2001). Furthermore, 71% of 170 human resources professionals believe executive coaching is more effective than traditional courses (Thomas, 2002).

Stimulated by the growth in executive coaching practice, research has been conducted to investigate the impact of executive coaching and understanding the phenomena. Executive coaching has been found to improve skills and acquire new skills, correcting and improving performance, prepare leaders for future role, and utilised for long term development (Witherspoon & White, 1996). Review of empirical studies conducted to date have established that executive coaching indeed brings about positive benefits to facilitate change and development of a leader, as well as improving the organisation's performance and value through the development of human capital (Gegner, 1997; Hall, Otazo, & Hollenbeck, 1999; Kampa-Kokesch, 2001; Luthans & Peterson, 2003; Olivero, Bane, & Kopelman, 1997; Smither, London, Flautt, Vargas, & Kucine, 2003; Thach, 2002).

Synthesising reports from researchers as well as practitioners (Douglas & Morley, 2000; Olivero, Bane, & Kopelman, 1997; Saporito, 1996; Tobias, 1996; Winum, 2006; Witherspoon & White, 1996), the current research will identify the similarity of executive coaching process to that of self-regulation stages: (i) *receiving* relevant information, (ii) *evaluating* the information and comparing it to the desired goal, (iii) *triggering* change, (iv) *searching* for options to change, (v) *formulating* plan(s), (vi)

*implementing* the plan(s), and (vii) *assessing* the effectiveness of plan(s) (Miller & Brown, 1991). Self-regulation is the underlying process that drives individuals to allocate effort and resources into action (Kanfer & Heggestad, 1997; Karoly, 1993). Hence, 360-degree feedback and executive coaching together reflect the process of self-regulation. In other words, the executive coach plays the role of 'regulator' in the equation of leader development with the application of 360-degree feedback during the start of the coaching process.

Self-regulation has been used in clinical psychology to control addictive behaviour (Karoly, 1993), educational psychology to promote learning (Nenniger, 2005) and organisational psychology to promote effective work behaviours (Sosik, Potosky, & Jung, 2002; Tsui & Ashford, 1994; Vancouver & Day, 2005). Within leadership, self-regulation has been researched within the context of emergence leadership (Gangestad & Snyder, 1985), trust (Sosik, 2001), and managerial effectiveness (Atwater, Ostroff, Yammarino, & Fleenor, 1998). There are attempts within the literature of leadership development to conceptualise the importance of self-regulation into the development of leaders (Avolio & Gardner, 2005; Gardner, Avolio, Luthans, May, & Walumbwa, 2005; Ilies, Morgeson, & Nahrgang, 2005; Mazutis & Slawinski, 2008). However, there is a paucity of research that has attempted to manipulate leader self-regulation within the context of leadership training.

The current research is grounded in self-regulation theory to rationalise the success behind executive coaching. As mentioned previously, 360-degree feedback and executive coaching, together reflect the process of self-regulation. In clinical and educational psychology, self-regulation has long been applied to equip individuals as a competency *to help individuals to help themselves* i.e., to better one self. For example, in an educational setting, when individuals are trained to self-regulate, it helps them to self-initiate the formulation of strategies to help them learn in various subjects such as reading, comprehension, writing, mathematical problem solving, science and social science (Dignath, Buettner, & Langfeldt, 2008; Paris & Paris, 2001). On the other hand, in clinical psychology where individuals are treated to change their behaviour such as reducing alcohol consumption or increasing diet of healthy food; individuals who are trained to self-regulate will formulate strategies to avoid alcohol consumption or consume healthier food (Nagoshi, 1999; Scholl & Zimmerman, 2001). This in turn, assists individuals to achieve their goal of overcoming alcohol abuse or losing weight. Therefore, it is not surprising that executive coaching which utilises self-regulatory process is achieving successful results in facilitating change and development of a leader.

The current research will argue that, instead of adopting a myopic view of solving an immediate problem i.e., by using executive a coach to regulate a leader's action to develop a particular competency which is needed at a particular moment in order to be more effective, leaders should be developing self-regulation competency for long term development. An intervention where leaders are trained with self-regulation

competency will allow leaders to perform effectively by meeting the demands of various constituencies through awareness of what is needed and proactively engaging themselves to develop further competencies that are needed.

Meanwhile, it also resolves another concern surrounding executive coaching. The question of who is the most qualified to deliver this leadership development training to achieve the desired results (Collins & Holton III, 2004; Ely et al., 2010; Levinson, 1996; Peterson, 1996; Wasylyshyn, 2003). According to Implicit Leadership Theory (Lord, Foti & DeVader, 1984), the importance or need for a particular leader attribute depends on the perceiver (leader/follower/group/organisation) within the context. For instance, a follower who prefers higher guidance and direction in his/her job would perceive a leader to be effective if the leader were to possess the competency to guide this follower. However, another follower who is creative would prefer a leader with competency to coach rather than direct him/her. Hence, it can be said that competencies needed by leaders "lies in the eye of the followers". A leader him/herself will know better what is needed in his or her role to be effective and meet the demands of the followers. In this case, who would be best to develop the leaders and know what leader development is needed, but the leaders themselves. Therefore, leaders should strive to develop themselves rather than just being developed.

## 1.3. Purpose of the research

The problems stated in the section above, set the platform to conduct the current research. The current study seeks to examine the effect of self-regulation intervention, using 360-degree feedback and executive coaching, had on leaders' and team's performance.

### 1.3.1. Main research questions

The following research questions provide a focus for this research and determined its methods and validity:

- Do leaders' competencies increase after receiving an intervention on how to self-regulate?
- Are there significant differences in followers' ratings of leaders' performance and objective team performance between leaders who receive a self-regulation intervention and leaders who do not receive the intervention?
- After receiving self-regulation intervention, do the relevant competencies that are needed by the leaders to performance effectively in his/her current role increases?
- What relationship exists between self-regulatory process, leadership competencies and leadership outcomes?

To answer the research questions above, a set of hypotheses are established in Chapter Two after reviewing the literature. Chapter Three presents how the questions are operationalised and Chapter Five discusses how the present research answers the above questions.

## 1.4. Nature of the research

The purpose of this quantitative, longitudinal field experimental research is to evaluate the effects of a self-regulation intervention (independent variable) on leaders' and team's performance (dependent variables). The self-regulation measures of leaders who participated in the intervention were compared, via a pretest and two posttest survey questionnaires using carefully selected scales, with leaders who were assigned to the control group. Forty leaders took part in the study, with twenty-five acting as a control group. The other fifteen leaders took part in leadership development workshop (experimental group) to improve their self-regulatory competency. The intervention was conducted on students in Aston Business School who were taking the Business Simulation Game (BSG) module as part of their degree. As part of the module, students are allocated into groups thus providing a naturally occurring leader-member group structure suitable for this study. Within this module, their task was to manage a virtual European car manufacturing company that runs across three virtual years. Within each team, apart from the leader who has the role of managing director, each team member has a specific task (marketing, operations, human resource and finance). The work tasks of each team includes the strategic planning and assessment of the markets and competitors; implementing marketing, operation, human resource management and financial strategies; and at the same time, to meet shareholders expectations to generate return on investment. The intervention for the leaders included a four hour training session and two follow-up 360-degree feedback reports.

The control and experimental groups' leaders and their followers filled out a pretest and two posttest surveys across nine months. The leaders performance measures were divided into three areas; (i) leader performance, measured as leader satisfaction, leader effectiveness and extra effort, (ii) team's financial performance, measured as retained profit, return on capital employed, earnings per share, and gearing (from BSG simulation) and (iii) team's assessed performance, measured as presentation, business plan, group report, simulation performance and reflective report. Leaders' competencies were also measured. Discussion on research methodology and research instruments will be presented in greater detail in Chapter three.

## 1.5. Significance of the research

***Theoretical significance.*** Integrating research and practice in management has always been a challenge, and could not be more prominent in the field of leadership development as articulated by Avolio and Chan (2008, p.206), "the practice of leadership development is far ahead of its scientific understanding". Practitioners tend to approach leadership problems using trial and error techniques, more often than not based on popular fads than validated scientifically grounded findings. On the other hand, research and empirical studies conducted in leadership development tends to place high emphasis on understanding constructs that would facilitate leadership development, which is crucial, but with limited translation to practical application (Boyce, Zaccaro, & Wisecarver, 2010; Zaccaro & Horn, 2003). One of the main aims of the current research is to bridge the gap within leadership

development where fads have driven the growth in the practice of executive coaching as a leadership development programme, as well as 360-degree feedback.

This research applied the theory of self-regulation to explain the widely reported effectiveness of executive coaching in practice (Campbell Quick & Macik-Frey, 2004; Diedrich, 1996; Kampa-kokesch & Anderson, 2001; Kiel, Rimmer, Williams, & Doyle, 1996; Kilburg, 1997; 2001; Kombarakaran, Yang, Baker, & Fernandes, 2008; Kralj, 2001; Levinson, 1996; Peterson, 1996; Saporito, 1996; Wasylyshyn, 2003; Winum, 2006; Witherspoon & White, 1996). At the same time, the conceptual model ties in the understanding of why 360-degree feedback is widely applied in organisations today (Fleenor, Smither, Atwater, Braddy, & Sturm, 2010), yet it has yielded mixed findings in performance outcomes but demonstrated significant performance improvement when combined with executive coaching intervention (Ghorpade, 2000; Kluger & DeNisi, 1998).

Thus, the conceptual derivation of the effectiveness of 360-degree feedback and executive coaching provides a greater insight into both leadership development programmes which are based on theory. Bridging the gap between the "trial and error" and "grounded theory" approach to develop leaders allows a more refined application of leadership development programmes by practitioners, hence leading to a more symbiotic relationship between leadership development theory and practice.

***Methodological significance.*** Yukl (1998, p.438) raised a perturbing fact when he stated that "past research on leadership has relied too much on weak research methods". A meta-analysis of leadership intervention literature in the past 100 years looking at studies conducted that were experimental or quasi-experimental revealed two crucial limitations within the methodologies applied (Reichard & Avolio, 2005). Firstly, that when leadership is manipulated, the manipulations are conducted in laboratory settings rather than in field settings. In addition, these manipulations mainly consist of manipulations through the assignment of leader or by manipulation of leader expectations, manipulation of leader effects through the use of scenarios, role play or the use of confederates, rather than manipulating leadership through leadership training itself. Secondly, most of the manipulations lasted less than a day. This short term focus in leadership interventions raised concerns with regards to the long term effect and the durability of the change.

The design of the current research seeks to address the limitations in the methods used to study a leadership intervention whilst advancing knowledge of leadership development. A longitudinal field experiment design with control and experiment groups were employed to study the effect of a self-regulation intervention on leaders' and team's performance. The intervention was designed to train and equipped leaders with self-regulatory competency and was delivered by an external executive coach to the leaders. Leaders in the experimental group first received a 360-feedback report during the intervention and then twice after the intervention. Objective and subjective measures were taken during pretest and twice for posttest.

Besides answering to the call by Gardner, Lowe, Moss, Mahoney, and Cogliser (2010) in their recent review of research published in *Leadership Quarterly* journal to apply the underutilised method of field experiments, the current research also heeds to their suggestions to use computer simulations and to draw upon the strengths of such methods. The computer simulation, structures and settings, in which the leaders interacted in this research, reflect an organisational setting. Group leaders led and influenced their teams in developing a competitive strategy, developing and managing a virtual company's portfolio, creating shareholder value, analysing competitor and creating customer value. In addition to the task, leaders needed to manage the individuals and relationship between individuals within the team. The use of a computer simulation is a new methodological aspect within leadership research, that the Gardner, Lowe, Moss, Mahoney and Cogliser (2010) review suggests, "will move the science of the field forward (p.951)" over the next decade.

The significance of the methodology and design of this research are many fold. Conducting the experiment in a natural setting instead of a contrived artificial one in a laboratory, allows the transfer of findings to real life settings (Christensen, 2007). Combined with the longitudinal nature of the experimental design, it allows the investigation of the causal relationships between constructs as well as evaluating the long term effect and the durability of the change as a result of the intervention (Bryman, 2001; Shadish, Cook, & Campbell, 2002).

***Significance to practice.*** The use of 360-degree feedback is widely applied in many organisations, and with the large number of validated 360-degree feedback instruments available, feedback is an increasingly accessible and inexpensive leadership development intervention (Atwater, Ostroff, Yammarino, & Fleenor, 1998; Fleenor, Smither, Atwater, Braddy, & Sturm, 2010; Tornow & London, 1998). Executive coaching interventions are expensive, and the cost is continuing to rise (Johnson, 2004). If self-regulation intervention is found to be an effective way to improve leaders' performance, where the leaders could regulate their own strategies to develop relevant competencies to be effective rather than needing an executive coach as the 'regulator', then many more leaders and organisations could benefit from this cost effective leadership development intervention. 360-degree feedback can be repeated anytime following the intervention to provide feedback to leaders.

Compared to the old saying, "Give a man a fish and you feed him for a day, teach a man to fish, and you feed him for life;" leader intervention programmes designed to develop leaders' self-regulation is, in this case, a way to train leaders 'to fish'. Executive coaching, instead of adopting a myopic view of solving the immediate problem e.g., regulating leaders' actions to develop a particular competency which is needed at that moment, should be taken advantage of by developing leaders' meta-competency i.e., self-regulation. This will allow leaders to perform effectively by meeting the demands of various constituencies through awareness of what is needed, and proactively engaging themselves to develop further competencies that are needed. Thus, a leadership development intervention designed to increase self-

regulation will not only sustain a continuous cycle of leader development but also reduce cost and expand the benefits of executive coaching to more leaders beyond the upper echelons.

# CHAPTER 2

## Literature Review

*CONTENT: This chapter presents an extensive literature review and a theoretical discussion of the approach used within leadership development. Section 2.1 is an introduction to leadership. This is followed by Section 2.2 which discusses the overview of the evolution of leadership theories. Section 2.3 distinguishes the difference between leader and leadership development. Next, Section 2.4 introduces the six widely practised leadership development programmes. This section focuses on 360-degree feedback and executive coaching, the limitations of current approaches are highlighted and an alternative approach, taking in the self-regulation perspective is discussed. Section 2.5 draws the arguments presented and proposed a set of hypotheses. Finally, Section 2.6 provides a conclusion to this chapter.*

### 2.1. Introduction: Leadership defined

In his book, Rost (1993) discovered from his analysis of research on leadership, that 62% of researchers did not specify a definition of leadership. However, for those who attempted to define leadership, it is a phenomenon in itself as there are countless definitions (Yukl, 1989; Yukl, 2005). One notable definition of leadership which has been cited many times in leadership research and literature stated that *leadership is a process whereby an individual influences a group of individuals to achieve a common goal* (Bass & Bass, 2008; Northouse, 2007; Yukl, 2005). This is a simple definition of leadership but if we look closely, without (i) individual influencing, (ii) a group of individuals being influenced or (iii) a common goal, the occurrence of leadership does not exist. Leadership involves *influence*, it relates to how the leader affects the followers. "Influence is the *sine qua non* of leadership" (Northouse, 2007,

p.3). Leadership occurs in *groups*, which is the context in which leadership takes place. Leadership involves influencing a group of people who have a common purpose. Groups can be small or big in size, from a work task group to the whole organisation. Finally, leadership takes account of *goals*, whereby leadership involves directing a group or individuals toward achieving a common objective. Thus, leadership is a process whereby a shared desired outcome is achieved by a group of individuals working together with the influence of a leader.

## 2.2. Overview of leadership research

As per the definition of leadership above, when applied successfully, leadership can lead to the successful attainment of a goal. It is no wonder, that interest in leadership can be considered as old as mankind. There are references to the topic in the history of the majority of civilizations; from the ancient Egyptians and Chinese scriptures, to the writings of Plato, Caesar and Homer's Iliad (Bass, 1990). It is only in the early 1930s that systematic empirical research of the topic began (House & Aditya, 1997).

The most notable starting point of leadership research is the 'Great Man' approach (Carlyle, 1907). The **trait approach** attempted to identify universal personal characteristics of effective leaders based on the assumption that there are enduring features that distinguish leaders and non-leaders. It gives rise to research into personality using the 'Big Five' model as a way to interpret and categorise effective leaders. Traits such as self-confidence, self-esteem, achievement are frequently found to be correlated to leader effectiveness (Atwater, Dionne, Avolio, Camobreco,

& Lau, 1999; Judge, Erez, Bono, & Thoresen, 2002). Considering the long history of research into leadership traits, only limited consensus has been reached. Recently, Judge, Bono, Ilies and Gerhardt (2002), in their review, outlined that traits such as extraversion and conscientiousness contribute to predicting leadership emergence. Other research in leadership emergence also found self-monitoring, intelligence and generalised self-efficacy to be contributing factors (Day, Schleicher, Unckless, & Hiller, 2002; Lord, de Vader, & Alliger, 1986; Smith & Foti, 1998). Even more recently, with the advancement of technologies such as functional magnetic resonance imaging (fMRI) to investigate the biological underpinning of an effective leader, a revival of the trait approach has brought forth again the question of whether leaders are born or made.

To surmise, one of the main conclusions from the trait approach is that personality does indeed matter and should be taken into consideration when predicting leadership emergence. Thus, the accumulated research in this area indicates that there are certain attributes to take into consideration when making selection decisions to predict whether a more or less successful candidate will succeed in their current leadership role within an organisation (McCauley & Van Velsor, 2004). However, as put pertinently by Avolio and Chan (2008, p.198):

*"...evidence of past reviews indicates that if one were to put the made part of leadership over the born part as a fraction, then the denominator, although important, would be relatively small compared to the numerator."*

The limitation to replicate and identify consistent traits contributing to leader effectiveness led to the emergence of the **behavioural approach** to leadership. Starting in the 1950s, researchers began a series of studies based on the assumption that effective leaders performed certain identifiable behaviours towards their followers. Two of the most prominent studies were conducted simultaneously at the University of Michigan and Ohio State University. Findings from the studies suggested that leadership behaviour could be divided into two dimensions; consideration (focus on people) and initiation structure (focus on task). People focused behaviour is when a leader takes a personal interest in subordinates, and seeks to nurture strong interpersonal relationships. On the other hand, task focused behaviour is when a leader is interested in developing a productive work group and defines a structured work task for subordinates. Again, similar to the trait approach, the underlying assumption of this approach is that there are universal characteristics that could identify leaders – only this time, in the form of leaders' behaviour instead of leaders' trait.

Even with the lack of empirical evidence supporting the link between the two behaviours put forward by both studies (House, 1971), the approach can still be observed in current leadership literature (House & Aditya, 1997). For instance, even when the focal point of leadership theories focuses more on the psychological level within the leader and how they actually think about and influence followers, behavioural measures are still widely applied to assess leadership behaviour and styles that are related to performance outcomes (Shamir, House, & Arthur, 1993;

Yukl, 2005). Charismatic leadership and transformational leadership are some examples of leadership theories that were operationalised behaviourally (Bass & Avolio, 1990; Conger & Kanungo, 1987) even though the focus of the theories is on emotional appeal. On the other hand, cognitively based leadership theories such as, attribution models of leadership rely on behavioural observations to explain how leaders lead (Bresnen, 1995; Calder, 1977).

In addition, leadership development researchers and practitioners contributed to the attention in behavioural approach through leadership training programmes which often aimed at having impact on leaders' behaviours and actions which can positively impact performance outcomes. To illustrate this, many leadership development training programmes have regularly combined a behavioural oriented training focus with the use of feedback tools such as the 360-degree feedback (Atwater & Waldman, 1998). Instead, the focus should be on changing the leaders' mindsets in terms of self-awareness (Avolio, 2005).

Around the same time when the leadership field expanded to the behavioural approach from the trait approach, Stogdill (1948) also agreed for more integration of situational factors into the trait approach. His call was answered by the emergence of the **contingency approach** in leadership research. Fiedler (1964) developed the Least Preferred Coworker (LPC) Contingency Model, which focuses on the relationship between a leadership style (determined from the LPC score) and the situation in which leadership occurs. He proposed to match the most favourable

situations for leaders based on their characteristics that will allow leaders to become more effective. On the other hand, House's (1971) Path-Goal Theory suggests that a leader's behaviour will affect followers' job satisfaction and effort and this is moderated by the situation characteristics. Similarly, Hersey and Blanchard (1972) in their Situational Theory, also suggested that leaders should adapt their behaviour to match the situation and followers' maturity level. Thus, it is noticeable that contingency theories converge into three main variables, the interaction between leader, follower and situation which expand the understanding of leadership beyond the 'Great Man' approach.

Within the contingency approach, Vroom and Yetton (1973) attempted to conceptualise a model of seven decision-making styles (behaviours) depending on the nature of the problem (situation) and the characteristic of the people being led (followers) to identify a decision making style in which the leader could apply to be more effective. In advertently, this model paved the first step towards the information-processing approach of leadership because this model took into consideration how leaders should process information in order to make decisions. Also, Fiedler and Garcia (1987) in their research to better understand contingency theory investigated the effect of situation induced stress on leaders and followers as a form of a situational unfavourableness variable. As a result, they developed the cognitive resource theory. The theory posits that under low stress, cognitive capabilities are positively correlated with performance and experience is negatively correlated with performance. On the contrary, under high stress, cognitive

capabilities are negatively correlated, and experience is positively correlated with performance. Consequently, both perspectives within the contingency approach, have led to a new direction for leadership research towards cognitive revolution in leadership research.

Calder (1977) articulated that leadership is not directly observable because an observer's perceptions are based in part on attributions. This is put eloquently by Bresnen (1995) that leadership is in the eye of the beholder. Leadership is a process perceived by others and then labelled 'leadership' (Lord & Maher, 1990). There is some degree of error or bias when attributing leadership effectiveness by followers based on the implicit notion of leadership and this is coined Implicit Leadership Theory (ILT) by Lord and Maher (1991), whose work is associated with the early development of the **cognitive processing approach**. For example, an early empirical study demonstrated that college students exposed to the same experimental leadership conditions interpreted leadership behaviours differently (Rush, Thomas, & Lord, 1977). Phillips and Lord (1981) attributed the findings of these differences to a cognitive categorisation process. This process uses contextual and behavioural cues to categorise leadership behaviours because each individual has a pre-existing mental structure, thus when behaviour is observed, they organise these behaviours according to their own categorisation process.

Perceptions of leadership are based on hierarchically organised categories; each corresponding to a prototype based on experiences from events or with individuals

(Lord, Foti, & DeVader, 1984). A military, political, or religious leader is an example of a prototypical category. If a follower discerns the resemblance between salient actions or quality of a so-called-leader with their leader prototype, then they would classify the person as a leader (Cronshaw & Lord, 1987).

The cognitive processing approach has made a significant impact in leadership literature in terms of guiding how leaders emerge, are perceived and evaluated (Lowe & Gardner, 2000). More importantly, work on Implicit Leadership Theories clearly has implications for leadership development. It highlights that there could be more than one definition and model of leadership. Thus, when designing a leadership intervention programme, it is no wonder there are various strategies around for developing leadership stemming from the implicit theories of leadership in the minds of a leadership development intervention designer (Avolio & Chan, 2008). Leadership development practitioners may have a preference for one theory and approach over another and consequently may not be the most appropriate for the demands of the leadership being addressed (Collins & Holton III, 2004). Later in the chapter, implicit leadership theory will be incorporated to discuss how it is relevant in the leadership development intervention proposed.

The overview of approaches in leadership above provides the relevant starting point for the subsequent section which will focus on leadership development. As noted above, research on leadership started from the focus of the 'great man' with the trait approach, asking the question 'Who is the leader?' The behavioural approach then

asked ‘What does the leader do?’ followed by the contingency approach that questioned ‘What situations are most favourable for the leader?’ Within the contingency approach, a more holistic perspective of leadership process was conceptualised taking into consideration not just the situation, but also the followers. In turn, this led to the question, ‘Given the followers and situation the leader is in, how does the leader decide on how to lead?’ The overview above draws attention to the implications of leadership research for leadership development (summarised in Table 1)

| **Leadership approaches** | **Question raised** | **Assumptions for leadership development** |
|---|---|---|
| Trait | Who is the leader? | Leaders are born, thus not made |
| Behavioural | What does the leader do? | Development is possible and should focus on leader behaviours |
| Contingency (Situational) | What situations are most favourable for the leader? | Development is possible with situational factors taken into consideration. |
| Cognitive processing | Given the followers and situation that the leader is in, how does the leader decide on how to lead? | Development is possible with situational factors and followers taken into consideration. |

Table 1: Approaches in leadership research and implications for leadership development

## 2.3. Leader and leadership development

From the previous section, one realises the importance of leadership within organisations. It is not surprising that there are so many books in the market on leadership, especially on how to be a good leader. If one were to search the Amazon.com website for books on leadership, the search would return over 150,000 results. Books such as "Not Bosses but Leaders, How to Lead the Way to Success" by John Adair (2009), "How to Lead: What You Actually Need to Do to Manage, Lead and Succeed" by Jo Owen (2009), "The Seven Habits of Highly Effective People" by Stephen Covey (2004) and the likes often appears in best selling list.

Equally as passionate, within the research arena, there is a substantial body of research on leadership development aiming to find the answer on *how to develop an effective leader*. This is evident in the amount of research conducted in this area and still continues to snowball. From one of the initial meta-analyses conducted by Burke and Day (1986), the authors discussed some of the earliest available empirical findings of leadership development research in organisations. The results from empirical research conducted between 1952 and 1982 were presented, and a fairly promising result showing 70% of studies conducted demonstrated effectiveness of interventions performed. The authors then concluded that while leadership training was reasonably effective, they proposed that there was still a need for more empirical research to be conducted before a concrete conclusion could be derived. Hence, from the literature, we can see that leadership development research continues to grow. Recently, another meta-analysis study was conducted on the research of leadership

development between 1982 and 2001 by Collins and Holton (2004). They found that in terms of conceptual and methodological approaches taken by researchers between 1952 and 1982, there had been a shift in leadership development compared to when Burke and Day (1986) conducted their meta-analysis. To name a few, 360-degree feedback, executive coaching and on the job assignment have been introduced into the leadership development literature. Still, distinguished journals such as *Leadership Quarterly* and *Consulting Psychology: Practice and Research* are publishing special issues, with the intent of satiating the gap within leadership development research on…*'how to develop an effective leader?'*

Sometimes the terms 'leader development' and 'leadership development' are used interchangeably in the literature, which can cause confusion. In an attempt to fully understand the concept of leader development, it is essential to distinguish it from leadership development. Both, Day (2000) and McCauley & Van Velsor (2004) provided a clear conceptualisation of leader and leadership development.

McCauley & Van Velsor (2004) in their definition described leader development as focussing on an individual level and "the expansion of a person's capacity to be effective in leadership roles and processes" (p.2). Said differently by Day (2000, 2004), when the focus of development is to enhance human capital, which is individualised-based knowledge, skills and abilities associated with leader's role, it is termed leader development. The overarching development strategy is to build the intrapersonal competencies that allow leaders to form an accurate model of

themselves and to use it to perform effectively in various organisational roles and processes. These competencies facilitate leaders to grow and subsequently be effective (Day, 2000; McCauley & Van Velsor, 2004).

Leadership development, on the other hand put emphasis on the development of social capital (Day, 2001) which consist of the relationships that are created from a complex interaction involving leaders, followers and situations (Fiedler, 1996). Leadership requires a social context. Interpersonal competencies needed to build these networked relationships amongst individuals to enhance cooperation and resource exchange in creating organisational value (Bouty, 2000; Gardner, 1993; Tsai & Ghoshal, 1998) is the foundation to leadership development strategy.

Developing a leader is critically important to leadership. In leader development, the leader is equipped with intrapersonal competencies for the demand and challenges of leadership. Drawing the distinction between leader, leadership development, and its importance, the current research is interested in developing the intrapersonal competencies that are the primary step that could facilitate the development of a leader that transcends situations and sustain this development as a continuous developmental process as part of leadership development. Therefore, the term leader and leadership development will be used interchangeably in this thesis.

## 2.4. Leadership development programmes

Leader or leadership development programmes have been widely employed by organisations in the hope to develop leaders' competencies (Feldman & Lankau, 2005; Hernez-Broome & Hughes, 2004). These programmes are a process with a specific, well defined purpose that identifies the leadership behaviours and skills that are needed to support the business strategy of the organisation (Bracken et al., 1997). Traditionally, leadership development programmes are classroom based (Hernez-Broome & Hughes, 2004; Mccall, 2004; Pernick, 2001). In the late 80s and early 90s, recognition of the importance of experiential development on the job started to increase and became more influential (Hunt, 1991; Keys & Wolfe, 1988; Mccall, 2004; Wexley & Baldwin, 1986). Currently, six developmental programmes for leaders that incorporate experiential development that are most commonly practiced are: (i) job assignments, (ii) mentoring, (iii) executive coaching, (iv) action learning, (v) networking and (vi) 360-degree feedback (Day, 2000).

### 2.4.1. Action learning

Action learning can be viewed as the opposite of classroom learning. Within this developmental method, leaders learn through hands-on, experiential activities in which leaders work on real time organisational problems (Conger & Toegel, 2003; Mumford, Hunter, Eubanks, Bedell, & Murphy, 2007). The underlying assumption of this method is that people learn most effectively when they solve problems or perform tasks in real-world settings (Revans, 1980) because the situation "pushed them to the edge of their comfort zones, where learning wasn't an option but a

necessity" (Yost & Plunkett, 2002, p.50). In 2000, in his review of leader and leadership development programmes, Day (2000) acknowledged the benefits of action learning but he also cautioned that when selecting this method of development, it is crucial to match individuals with the appropriate assignment. For example, recently Skipton Leonard and Lang (2010) demonstrated how action learning was used successfully in leadership development. Four case examples from the study (U.S. Department of Commerce, Boeing, the National Institutes of Health and the U.S. Department of Agriculture) illustrated how action learning built leadership competencies. The authors argued that action learning provides a learning environment and problem context which allows the development of leadership skills. Furthermore, the real life environment also provides real-world practice and accountability. As Hernez-Broome and Hughes (2004) concluded, there is no doubt that for the future of leader or leadership development, developmental activities should be on the job and embedded in a leader's ongoing work to be most effective.

### 2.4.2. Mentoring

Mentoring programmes offer participants support and advice from experienced leaders (Solansky, 2010). Mentors, as defined by Clutterbuck and Megginson (1999), pass on their personal and professional skills, life experience and knowledge to their protégées. As a developmental programme, mentoring offers collaborative learning experiences to ensure support for goal attainment and development by mentors helping their protégées to understand their own strengths and weaknesses (Pernick, 2001; Solansky, 2010). Mentoring can significantly enhance the development of

leaders (Tracey & Nicholl, 2007). Among the main advantages of mentoring, is that it facilitates communication and the transfer of tacit knowledge, which serves to foster career development and sustain organisational culture. Moreover, leaders who have worked with a mentor reported higher levels of satisfaction on their job, pay and benefits (Pittenger & Heimann, 2000).

### 2.4.3. Job assignments

Job assignments, also referred to as 'stretch assignments', refer to developmental methods whereby leaders are exposed to new and demanding job-related assignments (Ohlott, 2004). Some examples of job assignments include job rotation, team projects, special assignments, new start up businesses, global assignments, or closing a business. By providing leaders with a variety of challenging job experiences, this helps to challenge leaders in a way that demonstrates the limitations of their current skill levels for the kinds of complex tasks they would need to confront at upper levels of organisational leadership. In other words, job assignments create a talent pool of competent leaders for future positions in organisations (McCauley & Van Velsor, 2004). Because leaders are required to work outside of their comfort zone, hence the name stretch assignment, when faced with complex and novel challenges, it is a make or break moment. Leaders who can adapt to become more effective, grow and leaders who cannot, derail (Zaccaro & Banks, 2004).

### 2.4.4. Networking

As Day (2000) concisely put it, networking is "to develop leaders beyond merely knowing *what* and knowing *how*, to knowing *who* in terms of problem-solving resources" (p.596). The networking developmental programme aims to expand a leader's knowledge of how things are done through challenges provided by others to construct a new understanding and be open to new revenue. This can be seen through the rapid expansion of networking sites such as LinkedIn.com to more profession specific site such as Academia.edu for researchers, to promote knowledge sharing amongst professionals. In conclusion, peer relationship fostered through networking is a valuable component in the overall leader and leadership development process (Day, 2000).

### 2.4.5. 360-Degree feedback

One significant extension of the leader and leadership development literatures since that of the 1990s, is 360-degree feedback (Atwater & Waldman, 1998), also known as multi-source feedback. In a recent review of this developmental programme, Fleenor, Smither, Atwater, Braddy, & Sturm (2010) noted that 360-degree feedback "continues to be widely used in organisations" (p.1029). Unlike other developmental programmes that employ self-report evaluation that suffers from response bias (Mabe & West, 1982; Schwarz, 1999), 360-degree feedback extends the evaluation of leader behaviours from self-evaluation to multiple sources of evaluation. These sources include subordinates, peers, superiors, customers and others (Atwater & Waldman, 1998). The main assumption here is that perceptions from the different sources are

likely to differ from the leader's thus discrepancies in these perceptions provide the leader with valuable feedback to enhance one's self-awareness (Atwater & Waldman, 1998; Fleenor, Smither, Atwater, Braddy, & Sturm, 2010; Fleenor, Mccauley, & Brutus, 1996; Rosti & Shipper, 1998). Thus, the most prevalent and successful application of 360-degree feedback is for individual leader development i.e., development of intrapersonal competencies (Atwater, Ostroff, Yammarino, & Fleenor, 1998; McCarthy & Garavan, 1999).

Recently, Smither, London and Reilly (2005) conducted a meta-analysis on 24 longitudinal multisource feedback studies to uncover whether 360-degree feedback resulted in performance improvement as evaluated by improved feedback ratings over a period of time. In their findings, they found, although nearly all the effect sizes for multiple sources evaluation were positive, the magnitude of improvement was very small. This led them to deduce that the small effect sizes reflect the fact that, following 360-degree feedback programmes, some managers improve their performance while others do not. They suggested that other factors might affect the large percentage of variance in effect sizes of the improvement in leaders' performance that was not explained by a sampling error, or the effect of the mediator.

When studies were conducted where 360-degree feedback is combined with training or executive coaching, results showed that leaders' performance improved as compared to leaders who did not receive training or coaching. Firstly, Rosti and

Shipper (1998) conducted a field experimental study comparing the impact of combined management development training and 360-degree feedback intervention with that of a 360-degree feedback intervention alone. They found that leaders who received 360-degree feedback intervention in conjunction with management development training improved their performance more than leaders who only received 360-degree feedback intervention. Secondly, Luthans and Peterson (2003) conducted a longitudinal field study examining the impact of a combined 360-degree feedback and coaching intervention. In their study, leaders participating in the intervention showed increased self-awareness and received improved performance ratings from their followers. Thirdly, Smither, Manuel London, Flautt, Vargas and Kucin (2003) conducted a field quasi-experimental study comparing the impact of a combined executive coaching and 360-degree feedback intervention with that of a 360-degree feedback intervention alone. They found that leaders who received 360-degree feedback intervention in conjunction with executive coaching improved more in the ratings they received in comparison to leaders who only received 360-degree feedback intervention. In addition, for both leaders and subordinates, work attitudes (job satisfaction, organisational commitment and turnover intentions) improved for leaders who received 360-degree feedback intervention in conjunction with executive coaching. The three studies above lend support to the notion that training and coaching following the receipt of 360-degree feedback have a positive impact on the results of 360-degree feedback interventions, bridging the gap identified by Smither, London, & Reilly (2005).

### 2.4.6. Executive coaching

In Kilburg's (1996) attempt to understand the fastest growing trend of executive coaching as a leader development programme over the past fifteen years, he conducted a review of literature to understand this phenomenon. In his conclusion, he defined executive coaching as:

"…a helping relationship formed between a client who has managerial authority and responsibility in an organisation and a consultant who uses a wide variety of behavioural techniques and methods to help the client achieve a mutually identified set of goals to improve his or her professional performance and personal satisfaction and, consequently, to improve the effectiveness of the client's organisation within a formally defined coaching agreement" (Kilburg, 1996, p.142).

Similarly, in a more recent definition, Centre of Creative Leadership (CCL) defined executive coaching as:

"…a formal one-on-one relationship between a coach and a client, in which the coachee and coach collaborate to assess and understand the client and his or her leadership developmental needs, to challenged current constraints while exploring new possibilities, and to ensure accountability and support for reaching goals and sustaining development" (Ting & Hart, 2004, p.116).

The above definitions are the staple definitions of executive coaching among researchers in this field (Ely et al., 2010; Feldman & Lankau, 2005; Kampa-kokesch & Anderson, 2001; Richard, 2003). In defining executive coaching, this highlights the basic aims that is, leaders engage in a developmental relationship with an executive coach to become a better leader.

#### 2.4.6.1. Why executive coaching?

In 1996, Witherspoon and White conceptualised the four essential purposes of executive coaching. Firstly, executive coaching could be used to improve skills whereby leaders focussed on acquiring new skills for a specific task or project. Secondly, executive coaching could improve performance or correcting performance problems within the leader's present role. Executive coaching in its initial application, was to assist leaders who were derailing (Judge & Cowell, 1997). Currently, as Tapsell (1999) stated, executive coaching "is no longer the survival of the fittest but the development of the fittest" (p.45). Within the second purpose, the executive coach targets the change in leaders' behaviours or to improve their effectiveness. Thirdly, executive coaching could prepare leaders for a future role or in other words, succession. Thus, leaders are geared up by strengthening their leadership skills, focus on long term development need, and possibly to address any current skill drawbacks. Finally, executive coaching could be utilised for long term development. Here, as the organisation's strategies could be broad and evolving, leaders are coached for comprehensive learning and executive coaching used to tie leader development to the organisation's goal. In summary, the central function of

executive coaching is to facilitate change and development of a leader, with the ultimate goal of improving the organisation's performance and value through the development of human capital in a change dominated world (Ely et al., 2010; Hudson, 1999).

One of the earliest empirical researches that were conducted on the outcome of executive coaching was an unpublished Masters dissertation by Gegner in 1997 (cited in Feldman & Lankau 2005). All of the twenty-five executives who received an executive coaching intervention that were interviewed confirmed that they were either more self-aware or gained new skills. 84% of participants reported positive experiences from the intervention and 32% reported improvement in their performance. On the other hand, all the participants also reported positive improvement in their personal lives and 24% reported personal growth in terms of confidence and openness to change.

Further, Olivero, Bane, & Kopelman (1997) carried out a research study investigating the effects of executive coaching on productivity in a public sector municipal agency. Thirty-one managers participated in the study and received executive coaching for two months after receiving management productivity training. Statistical analysis showed that there was a significant increase in organisational outcomes in terms of productivity between management productivity training alone, as compared to management productivity training with executive coaching. Productivity increased by 22.4% as a result of management productivity training

alone. However, when augmented by executive coaching, productivity increased by 88%. These results put forward the notion that executive coaching does increase organisational outcomes.

Hall, Otazo, & Hollenbeck (1999) interviewed seventy-five executives from Fortune 100 companies and fifteen executive coaches with the aim to understand the outcome of executive coaching. Executives participating in this study reported high satisfaction with the experience. Most importantly, executives stated that they (i) learned new abilities and skills, (ii) acquired new attitudes and perspectives, and (iii) are more self-aware with all the above which consequently led to a wide variety of job performance related outcomes improvement.

In 2001, in her unpublished PhD thesis, Kampa-Kokesch evaluated the impact of executive coaching on transactional and transformational leadership styles of fifty executives. She found a statistical significant difference between thirteen executives in their pre/early stages of executive coaching in comparison to thirty-seven executives in their post/later executive coaching in upper management and CEO positions. Leaders were rated higher on charismatic behaviour, ability to impact followers and inspire followers by clients suggesting executive coaching does impact leadership style.

Another empirical study was conducted by Thach in 2002, whereby she collected longitudinal data across three years from 281 executives and high potential managers

in mid-size, global telecommunications firm with their head-quarters in the USA. All participants received 360-degree feedback on their competencies as assessed by peers, direct reports, managers and self. Also, participants attended a one-day training session and executive coaching session in which the executive coach assisted participants in interpreting a 360-degree feedback report. Three more coaching sessions followed the first for the next six months and a mini survey was conducted at the end of the six month period. From the results obtained, participants demonstrated a higher increase in leadership effectiveness in correlation to how frequently they followed up with the coaching session.

Luthans and Peterson (2003) conducted research to demonstrate the effectiveness in executive coaching in bridging the gap between leaders' rating of self and other ratings when 360-degree feedback programme is implemented. Twenty managers from a small manufacturing company participated in this study. Besides demonstrating that executive coaching, when used as a follow up after 360-degree feedback was administered, reduced the discrepancy between leaders' rating of self and self-other ratings but in addition, contributed to positive change in the leaders. For example, the researchers observed positive leader and follower satisfaction, commitment, lower intentions to leave and also indirectly, improved company performance.

Noted as one of the most rigorous empirical studies (Ely et al., 2010; Feldman & Lankau, 2005), Smither, London, Flautt, Vargas, & Kucine (2003) investigated the

effect of executive coaching and feedback on leadership behaviour change. The authors used a treatment and control group experimental design, and collected data from 1,361 senior managers in a large global financial services organisation and tested the assumption that 360-degree feedback supplemented with coaching would yield better organisational outcomes than the 360-degree feedback alone across twelve months. All senior managers received 360-degree feedback at the start of the experiment. Senior managers in the experimental group worked with an executive coach and the rest of the senior managers did not. After twelve months, another 360-degree feedback was administered. Data of senior managers who worked with an executive coach from post experiment revealed that executive coaching had a significant impact on leaders' behaviour change suggesting the positive value of executive coaching.

Such substantiate evidence of the benefits of executive coaching cannot be ignored when it comes to leader development. Executive coaching is still a buzz word as seen from studies conducted wherein executive coaching affects leadership style, leaders' behaviour, leader's effectiveness, follower's satisfaction, job performance as well as organisational performance.

#### 2.4.6.2. The executive coach

With rising evidence of executive coaching as a leader development programme that accelerates individual learning and skill, as well as dramatically improving organisation performance, this equally raises the question, who is the most qualified

to deliver this training programme to achieve the results desired (Ely et al., 2010; Feldman & Lankau, 2005; Levinson, 1996; Peterson, 1996; Wasylyshyn, 2003) The debate is mainly divided into two schools of thought (Kampa-kokesch & Anderson, 2001). Psychologists tend to think that they make better coaches and management consultants tend to think they make better coaches. The psychologists believe that with their background in established psychological principles, they are better equipped to help leaders make the behavioural changes that produce more effective leadership skills and sustain these behaviours across time (Kilburg, 2001; Sperry, 1997; Tobias, 1996). As quoted from Brotman, Liberi and Wasylyshyn (1998),

"*Psychologists have a duty to define the competencies required to achieve sustained behaviour change through the medium of executive coaching and to proactive in conveying these standards of competence to the public. Only in this way can this fast-developing realm within psychology reach its full potential as an invaluable resource for business executives (p.45)*".

On the other hand, management scholars argue that executive coaches, without background in business or lacking in industry knowledge, are unable to provide leaders with practical suggestions (Diedrich & Kilburg, 2001; Thach, 2002). Robert Mintz, the director of human resources for Time Inc. Magazines, interviewed twenty-five psychiatrists and psychologists as potential coaches and found them all "clueless'.' Worst of all, he noticed they were stuck with a 1950s image of how organisations work (cited in Smith 1993, p.127). Thus, it is critical that an executive

coach has a good grasp of industry knowledge of the context in which the client operates (Ely et al., 2010; Kampa-kokesch & Anderson, 2001; Levinson, 1996; Saporito, 1996; Tobias, 1996).

Because of the success of executive coaching and the greater demand for executive coaching within this unregulated arena, executive coaches mushroomed from all various functional backgrounds such as training, sports, education, drama, clinical and engineering, to name a few (Feldman & Lankau, 2005; Judge & Cowell, 1997). Judge and Cowell (1997) conducted research exploring the demographics of people who call themselves 'executive coaches'. Demographic findings showed that among the sixty executive coaches that they interviewed, all were between 35 to 55 years of age with an average of 24 years working experience. 45% of these executive coaches reported having a PhD, 90% have a Masters degree in business or social sciences. In 2003, Wasylyshyn conducted a survey looking from the perspective of eighty-seven executive coaching clients and their opinion of what they look for in a credible executive coach. Two main criteria emerged from this survey where leaders, as the client look for an executive coach who has training in psychology and also has knowledge or experience business. On the other hand, Garman, Whiston and Zlatoper (2000) conducted a survey looking from the perspective of the media. They analysed the content of seventy-two articles from popular press and academic literature and found that less than 33% of articles mentioned training in psychology. Concluding that, a background in psychology is "neither regularly nor universally recognised as important or relevant to the practice of executive coaching" (p. 833).

Besides the background of the executive coach, another issue is whether the executive coach should be internal or external to the company. An internal coach has the advantage that he or she already has knowledge of the company, organisational culture, history, politics and current situation (Hall, Otazo, & Hollenbeck, 1999). Also, an internal coach allows an organisation to keep the cost of executive coaching low and ideally, integrate leaders' development within the organisation. However, external coaches are preferred if issues to be resolved involve possibilities where there might be a conflict of interest or involve highly sensitive or confidential issues (Bonfield, 2003; Hall, Otazo, & Hollenbeck, 1999; Witherspoon & White, 1996). External coaches are not employees of the organisation (often self-employed, partner of a coaching or management consultancy firm), thus allowing clients the 'safety' to explore target issues in depth with the external coach. Nevertheless, the cost of an external coach is substantial in comparison to an internal coach (Hall, Otazo, & Hollenbeck, 1999).

According to Implicit Leadership Theory (Lord, Foti & DeVader, 1984), the importance or need for a particular leader attribute depends on the perceiver (leader/follower/group/organisation) within the context. For instance, a follower who prefers higher guidance and direction in his/her job would perceive a leader to be effective if the leader possess the competency to guide this follower. However, another follower who is creative would prefer a leader with competency to coach rather than direct him/her. Thus, it can be said that competencies needed by leaders "lie in the eyes of the followers".

The real question here is, who knows better of what a leader needs than the leaders themselves. The leaders should strive to develop themselves rather than just being developed; this will be elaborated further in Section 2.5.4.

#### 2.4.6.3. The executive coaching process

There are numerous terms used to describe the steps taken by executive coaches in the process of executive coaching (Douglas & Morley, 2000; Ely et al., 2010; Feldman & Lankau, 2005; Koonce, 1994; Saporito, 1996; Winum, 2006; Witherspoon & White, 1996). The framework for the executive coaching process has been conceptualised since its inception, scholars and practitioners have yet to come to a consensus. Below, the three most cited frameworks for executive coaching process are discussed.

The work of Saporito (1996) has been widely quoted in the literature (to name a few: Cocivera & Cronshaw, 2004; Day, 2000; Douglas & Morley, 2000; Ely et al., 2010; Feldman & Lankau, 2005; Kilburg, 1997; Orenstein, 2002; Sherin & Caiger, 2004). He proposed a four stage framework starting with (i) defining the process, followed by (ii) assessment of the individual, (iii) development planning and finally, (iv) implementation. In the first stage, the executive coach seeks to gather information of the challenges the organisation is facing or the outcome expectation of the client involved that means the success of his/her organisation. Assessment of the individual would then be conducted to understand the need of the individual but also to assess the individual itself. A profile of the individual will be gathered through an interview

or more objectively, using multisource feedback. This stage allows a comprehensive assessment of the client's developmental need and helps identify any issues that need to be addressed. In the next stage, the coach will provide feedback based on the data collected and draft an action plan together with the client. Finally, during implementation stage, the plan is put into action.

Witherspoon and White (1996) also put forward a framework for the coaching process. The four stage model proposed by them comprised of (i) commitment, (ii) assessment, (iii) action and (iv) continuous improvement. The first stage involves commitment to the coaching contract by the organisation, the client and the client's superior. In the assessment stage, the problem is defined and goal set based on data gathered using relevant tools. This is followed by the next stage whereby an action plan is developed and put into action. In the final stage, the coach provides the client with ongoing feedback to facilitate continuous improvement.

In their book, "Evaluating leadership coaching: A review and integrated framework", Douglas and Morley (2000) discussed that in executive coaching; the process usually has four parts: (i) goal-setting, (ii) assessment, (iii) awareness and action planning, and (iv) implementation and monitoring. In the preliminary meeting, goals are set and the coach forms a contract with the client. Then in the assessment phase, tools such as 360-degree feedback, interviews, and personality measurements are used to collect information about the client's strengths and weaknesses. Next, the coach provides information gathered from the assessment information to the client to create

awareness in the client of how others perceive him or her. The coach will assist the client in developing a personal action plan for change. This is followed by the client implementing this action plan with ongoing discussions and monitoring of progress with the coach.

Other frameworks have also been put forward to capture the stages that occur in the coaching relationship. For example, steps suggested by Tobias (1996) include gathering feedback from several sources, identifying strengths and weaknesses of a leader, planning changes and finally, evaluating progress made by the leader. On the other hand, Olivero, Bane and Kopelman (1997) outlined the seven phases of coaching as goal-setting, collaborative problem solving, practice, feedback, supervisory involvement, evaluation of results and public presentation. The most recent, Winum (2006) recommended five key components in the delivery of executive coaching: assessment, feedback, planning, development and integration.

Although, researchers and practitioners have proposed various steps of executive coaching, the obvious similarity between them is irrefutable. The executive coaching process starts with the leader receiving feedback from multiple sources such as subordinates, peers, superiors, customers and others. This is followed by an evaluation of the feedback, which triggers the search for possible solutions. Once solutions are identified, leaders will need to formulate and implement the plan to achieve the desired outcome. Lastly, assessing the outcome from the implementation completes the cycle of executive coaching.

## 2.5. Conceptual model

### 2.5.1. Creating self-awareness through 360-degree feedback

Nearly every author mentions that the beginning point of developing leaders starts with an enhanced sense of self-awareness (Avolio, 2005; Day, 2000; Riggio, 2008). Within leadership, self-awareness can be broadly defined as a process wherein the leaders make assessments about themselves and how they are perceived by others (Atwater & Yammarino, 1992; Church, 1997; Goleman, 1998; Van Velsor, Taylor, & Leslie, 1993). Simply put, self-awareness is the degree to which individuals understand their own emotions, strengths, weaknesses, and drives (Goleman, 1998). A self-aware leader will have a more accurate self-assessment of him- or herself because he or she is able to incorporate an assessment of how they are perceived by others into their own self-evaluation (Atwater & Yammarino, 1992). Hence, within leadership development, to increase self-awareness, leaders need to be open to feedback from assessment tools which provide feedback from superiors, peers, and subordinates, and to personally reflect on their leadership (Riggio, 2008).

The conceptualisation of self-awareness is put into operation in the form of self and other agreement (Van Velsor, Taylor, & Leslie, 1993). The most widely used method is 360-degree feedback. Self-awareness is operationalised as the congruence between self and others (supervisor, peer, subordinates, clients etc) ratings, i.e., the extent to which self and others ratings agree (Fletcher & Baldry, 2000; London & Smither, 1995; Wohlers & London, 1989). Thus, the more congruent the ratings, the more self-aware the leader is (Atwater & Yammarino, 1992; Church, 1997).

Research into self-other agreement in 360-degreefeedback, has found that self-awareness is related to leadership performance (Atwater, Ostroff, Yammarino, & Fleenor, 1998; Atwater & Yammarino, 1992; Fleenor, Mccauley, & Brutus, 1996). For example, in their research Bass and Yammarino (1991) and Atwater and Yammarino (1992), leaders with higher self-awareness (operationalised as self and other agreement using 360-degree feedback) were found to be more effective. Church (1997) further confirmed these findings in his study of 134 high-performing and 470 average-performing managers where data was obtained from four independent datasets. Results based on several different approaches to measuring ratings agreement between leaders and others, demonstrated high-performing managers are more self-aware in comparison to average-performing managers. This relationship is consistent across different data sources, organisations or methods of assessing managerial performance. Thus, a higher level of self-awareness is positively related to better performance amongst leaders.

On the other hand, the positive impact of 360-degree feedback has been questioned and there appears to be mixed findings of the benefits of 360-degree feedback (Ghorpade, 2000). In Kluger and DeNisi's (1996) review of six hundred studies, found that only one third reported an improvement in performance, one third reported negative changes in performance and the rest reported no impact. Many 360-degree feedback leadership development programmes fail to improve performance. This leads us to question why this could be so.

A crucial study conducted by Smither, London, Flautt, Vargas, & Kucine (2003) who investigated the effect of executive coaching and 360-degree feedback on leadership behaviour change may bring light to these mixed findings. The authors used a treatment and control group experimental design, and collected data from 1,361 senior managers in a large global financial services organisation and tested the assumption that 360-degree feedback supplemented with coaching would yield better organisational outcomes than the 360-degree feedback alone across twelve months. All senior managers received 360-degree feedback at the start of the experiment. Senior managers in the experimental group worked with an executive coach and the rest of the senior managers did not. After twelve months, another 360-degree feedback was administered. Data of senior managers who worked with executive coach from post experiment revealed that they were rated higher than senior managers who did not work with an executive coach. The point to note here is, *360-degree feedback did yield an improvement in ratings*, but the improvement was less when compared to senior managers who worked with an executive coach.

360-degree feedback helps leaders to identify cognitive discrepancies between how the leaders sees themselves and how others see them, hence helping them to recognise areas for development (Tornow & London, 1998; Van Velsor, Taylor, & Leslie, 1993). However, the assumption here is that leaders who are aware of the need for the development of certain competencies in order to overcome their weaknesses and to perform better, will change their behaviour (McCarthy & Garavan, 1999). Obviously this is not always the case. Working with an executive

coach has highlighted the issue where there needs to be a translation from 'knowing' to 'doing'. For example, a leader who is aware that he/she is lacking in delegating skills, will not be more effective in delegating when the next round of 360-degree feedback assessment is administered if he/she does not seek to change his/her behaviour or acquire such competency. He/she is in the state of *knowing*, or even very aware of the lacking in such competency. But, without the relevant tool or competency to bridge that gap, he/she will not be more effective as a leader. However, as demonstrated by Smither, London, Flautt, Vargas and Kucine (2003), when a leader works with an executive coach, leaders received better ratings compared to leaders who only received feedback from raters.

### 2.5.2. When you *know*, do you *do* it? The application of self-regulation

Self-regulation originated from clinical psychology, to answer the question, "how to help people help themselves?" (Kanfer & Karoly, 1972). Self-regulation has been used in clinical psychology to control addictive behaviour (Karoly, 1993), educational psychology to promote learning (Nenniger, 2005) and organisational psychology to understand effective work behaviour (Sosik, Potosky, & Jung, 2002; Tsui & Ashford, 1994; Vancouver & Day, 2005). Within leadership, self-regulation has been researched within the context of emergence leadership (Gangestad & Snyder, 1985), trust (Sosik, 2001), managerial effectiveness (Atwater, Ostroff, Yammarino, & Fleenor, 1998) and so on. There are attempts within the literature of leadership development to conceptualise the importance of self-regulation into the development of leaders (Avolio & Gardner, 2005; Gardner, Avolio, Luthans, May, &

Walumbwa, 2005; Ilies, Morgeson, & Nahrgang, 2005; Mazutis & Slawinski, 2008). However, leader self-regulation has not been manipulated explicitly within leadership training itself. If one looks closely at the review from Section 2.4.6.3, the concept of the regulatory process has been applied widely within leadership development i.e., executive coaching.

Before moving on, self-regulation needs to be understood. Self-regulation is the underlying process that drives individuals to allocate effort and resources into action (Kanfer & Heggestad, 1997; Karoly, 1993). Three theoretical perspectives; Goal-Setting Theory (Latham & Locke, 1991), Social-Cognitive Theory (Bandura, 1991) and Control Theory (Carver & Scheier, 1998) provides convergent conceptualisation of self-regulation. All three theories share the same perspective that is, in order for the self-regulatory process to be activated, there must be a discrepancy between the current state and the desired state (Bandura, 1991; Carver & Scheier, 1998; Latham & Locke, 1991). Central to all three theories is, individuals aim for congruence between their own and other's perception of their behaviour or competencies, and therefore, will allocate resources and effort towards reducing the discrepancies (Carver & Scheier, 2000).

Latham and Locke (1991) noted that in life's process, people are naturally self-regulators but not all people are effective self-regulators. They take the theoretical perspective where self-regulation is traditionally conceptualised as a personality trait and as an individual differences (Eisenberg, Fabes, Guthrie, & Reiser, 2000;

Koestner, Bernieri, & Zuckerman, 1992). This is a point of view that most current leadership development advocates; i.e., self-regulation as a trait which could lead to more effective leadership. An example could be seen in authentic leadership development. Within authentic leadership, self-regulation is proposed as part of the underlying component which is associated in the development of an authentic leader and follower relationship (Avolio & Gardner, 2005). Self-regulation within leader developmental context here provides the understanding of how a leader's actions are guided by a leader's true self reflecting core values, beliefs, thought and feelings. The demonstration of this high level of openness is the pertinent component to developing trust in leader and follower relationships (Gardner, Avolio, Luthans, May, & Walumbwa, 2005). As leadership development is a strategy to expand a leader's capacity to be effective in the leadership role and processes (McCauley & Van Velsor, 2004), self-regulation has so far been conceptualised as the '*what*' that contributes to leader effectiveness but the application of '*how*' it could be developed has not been empirically tested in leadership development.

Within this research, the point of view is that self-regulation is an iterative process (Boekaerts, Maes, & Karoly, 2005; Carver & Scheier, 2000; Zimmerman, 2000). Three of the theoretical perspectives mentioned above (i.e., Goal-Setting Theory, Social-Cognitive Theory and Control Theory) endorse the view that self-regulation is a form of competency and posited that learning and performance outcomes are affected by self-regulatory processes. Hence, it is argued that self-regulation could be acquired through training where an individual engages in the self-regulatory

processes (Binswanger, 1991; Latham & Locke, 1991) to achieve their desired outcomes.

Looking back at the mixed findings of 360-degree feedback where individuals are aware of the discrepancies in their leadership competencies but their awareness does not *always* yield an increase in performance after the feedback. One of the reasons could be, as mentioned by Latham and Locke (1991), people are naturally self-regulators but not all people are effective self-regulators. Those who have the predisposition to self-regulate allocate resources and effort to develop themselves and thus, perform better. On the other hand, there are those who do not go beyond knowing their weaknesses and translate the feedback received into action to develop themselves. Thus, it is suggested that self-regulation processes provide the strategies to allocate resources and effort into action towards reducing these discrepancies. As a result, bridging the gap between *knowing* and *doing*.

### 2.5.3. Mechanism of self-regulation

One of the first researchers to formulate the processes of self-regulation is Kanfer (1970), which included self-monitoring, self-evaluation and self-reinforcement. These stages describe the process in which an individual observes information about one's current state and comparing it with the desired goal. More recently, Brown, Miller and Lawendowski (1999) extended on Kanfer's model to clarify multiple processes involved for successful self-regulation. The more comprehensive framework theorised that self-regulation consists of seven stages: (i) *receiving*

relevant information, (ii) *evaluating* the information and comparing it to the desired goal, (iii) *triggering* change, (iv) *searching* for options to change, (v) *formulating* plan(s), (vi) *implementing* the plan(s), and (vii) *assessing* the effectiveness of plan(s). The stage of receiving relevant information is the attention allocated to information received (formally or informally) and from this information, individuals will then self-evaluate by comparing themselves to a standard. After evaluating the information received, it will then trigger the process of change and consideration of how to change by searching for alternatives to meet the desired outcome. Next, individuals will devise a clear plan or plans to change, followed by the implementing and maintaining the plan(s). Once, the plan(s) has been put into action, the final step is the evaluation of the achievement of the plan(s). According to Miller and Brown (1991), interventions can be designed based on these stages to develop self-regulation within individuals.

In clinical and educational psychology, self-regulation has long been applied to equip individuals as a competency to help individuals to help themselves through planned interventions (Boekaerts, Maes, & Karoly, 2005). Empirical evidence supports the relevance of self-regulation skills for substance use, alcohol abuse, healthier diet consumption, etc. For example, Wechsler, Dowdall, Davenport and Rimm (1995) examined the use of self-regulation strategies to overcome alcohol abuse and alcohol-related consequences. Participants with lower self-regulatory strategies demonstrated higher levels of total alcohol problems, drinking and driving, and physical illness. Similarly, Nagoshi (1999) demonstrated that college students with

higher levels of self-regulatory skills to strategise and control their alcohol use displayed lower levels of alcohol-related consequences. For substance abuse, Wills and Stoolmiller (2002) demonstrated in their longitudinal study that self-regulation is predictive of an escalation of substance use behaviour. They found that higher self-regulatory skills were associated with less substance use and a smaller increase in substance use over time because they were more likely to develop strategies to control substance use. Another example of self-regulatory skill application was used for people who are looking to change their diet to incorporate healthier eating. Participants who incorporated self-regulation strategies consumed a 91% healthier diet compared to those who did not (Scholl & Zimmerman, 2001). Thus, self-regulation has been applied in clinical settings to help people develop strategies to overcome addiction related problem or in general to change their lifestyle for the better.

Within educational psychology, training in self-regulation strategies to improve academic achievement is not a new concept. A multitude of research has demonstrated the value of a self-regulation training programme and there is a consensus on the effectiveness of such interventions (Chung, 2000; Dignath, Buettner, & Langfeldt, 2008; Paris & Paris, 2001; Zimmerman & Bandura, 1994). Providing students with self-regulation training about how to self-regulate helps them to self-initiate strategies formulation to help them learn in various subjects such as reading, comprehension, writing, mathematical problem solving, science and social science (Dignath, Buettner, & Langfeldt, 2008; Paris & Paris, 2001). For

example, Zimmerman and Bandura (1994) found that self-regulatory mechanisms influence writing grade attainment. A more recent study was conducted by Perels, Gurtler, & Schmitz (2005), where they conducted training on self-regulatory competences on 249 students in Germany. Their results further confirmed that it is possible to increase self-regulatory components in students and these self-regulatory strategies leads to increased learning and mathematical problem solving skills. To conclude, self-regulation competency can be improved through training as demonstrated empirically in educational psychology (Dignath, Buettner, & Langfeldt, 2008). Self-regulatory processes helped students to develop strategies in order to learn and enhance academic achievements.

Facing such conspicuous empirical evidence from both clinical and educational psychology, it is no wonder executive coaching has been conveying positive results when it comes to a leader acquiring relevant competencies to be more effective and perform better in their role. 360-degree feedback and executive coaching, together reflect the process of self-regulation as shown in Table 2. In other words, the executive coach plays the role of the 'regulator' in the equation of leader development with the application of 360-degree feedback during the start of the coaching process.

| Saporito (1996) | Tobias (1996) | Witherspoon & White (1996) | Olivero, Bane & Kopelman (1997) | Douglas and Morley (2000) | Winum (2006) | Brown, Miller & Lawendowski (1999) |
|---|---|---|---|---|---|---|
| Defining the process | Gathering feedback | Commitment | Goal-setting | Goal-setting | Assessment | Receiving relevant information |
| Assessment of Individual | Identify strengths/ weaknesses of leader | Assessment | Problem solving | Assessment | Feedback | Evaluating the information &comparing it to the desired goal |
| Development | Plan changes | Action | Practice | Awareness | Planning | Triggering change |
| Planning | Evaluate progress | Continuous improvement | Feedback | Action planning implementation | Development integration | Searching for options to change |
| Implementation | | | Supervisory involvement | | | Formulating plans |
| | | | Evaluation of results presentation | | | Implementing plans |
| | | | | | | Assessing the effectiveness of plan |

Table 2: Stages of executive coaching in comparison to stages of self-regulation

Therefore, leader development, instead of adopting a myopic view of solving the immediate problem (e.g., by using an executive coach to regulate a leader's action to develop a particular competency which is needed at a particular moment in order to be more effective), should be developing leaders' self-regulation for long term development. Interventions where leaders are trained with self-regulation should allow leaders to perform effectively by meeting the demand of various constituencies through awareness of what is needed through self-regulation, therefore proactively engaging themselves to develop further competencies that are needed. Thus, it is proposed that:

Hypothesis 1: A self-regulation intervention should lead to better leader and team performance

*Hypothesis 1a: A self-regulation intervention should lead to better leader performance, measured as leader satisfaction, leader effectiveness and extra effort*

*Hypothesis 1b: A self-regulation intervention should lead to better team's financial performance, measured as retained profit, return on capital employed (ROCE), earnings per share (EPS) and (negative) gearing*

*Hypothesis 1c: A self-regulation intervention should lead to better team's assessed performance, measured as presentation, business plan, group report, simulation performance and reflective report.*

Within the leadership development literature, it is acknowledged that time is crucial in the study of leader development, ironically the limitation posed by time to conduct longitudinal studies often prevent this (Gardner, Lowe, Moss, Mahoney, & Cogliser,

2010; Lowe & Gardner, 2000). Executive coaching as noted by practitioners as well as researchers, always works within a time frame to attain change in leaders and consequently, change in performance (Blattner, 2005; Ely et al., 2010; Feldman & Lankau, 2005; Joo, 2005; Tobias, 1996).

Based on resource allocation theory (Kanfer & Ackerman, 1989), individuals possess a limited store of cognitive and attentional resources. Attention will be diverted to a resource demanding activity, and in contrast, fewer resources are needed if the task is automated. Therefore, when a leader receives a self-regulation intervention, he or she is exposed to multiple tasks (e.g., learning to self-regulate, at the same time as being responsible for his/her regular tasks), and competing demands are likely to take place. Furthermore, Kanfer and Ackerman (1989) state that a significant amount of attentional resources are required to self-regulate. However, a study conducted by DeShon, Brown and Greenis (1996) does not support the notion that self-regulatory activities use a significant amount of attentional resources.

In congruence with the resource allocation theory, it is expected that after leaders are trained on how to self-regulate, the leaders will divert attention and resources to absorb new information, operationalise the new competency learned; lead their team, and also strive to accomplish the goal expected of them as a leader. As suggested by DeShon and colleagues, self-regulatory activities do not use up significant amount of attentional resources and following this logic (DeShon, Brown, & Greenis, 1996), it is expected that after the intervention, leaders would take some time (but not

significant amounts of time) to accumulate attentional resources necessary to translate self-regulation learned into performance outcomes, and in time, demonstrate increased performance. As the relationship between self-regulation training and leader performance becomes more pronounced over time, it is proposed that it is methodologically needed to measure benefits of self-regulation intervention over time.

### 2.5.4. Leaders competency model

Competency models are the predominant approach to leadership development efforts to identify those relevant competencies required for leading people toward organizational goals (Wells, 2003, p.46). Competency models are useful for articulating effective performance standards and aligning individual behaviours and skills with organizational goals and strategies (Zenger & Folkman, 2002).

It is no wonder researchers and practitioners alike, have jumped onto the bandwagon of the competency modelling movement to identify the taxonomy of competencies to which leaders should have to meet such as the demands stated above. For example, Moran and Riesenberger (1994) suggested that leaders should be able to work with diversity, have long term vision, manage organisational change, motivate employees, and manage conflicts. Srinivas (1995) defined eight competencies needed to meet organisational challenges, they are; curiosity and concern with context, acceptance of complexity and its contradictions, diversity consciousness and sensitivity, seeking opportunity in surprises and uncertainties, faith in organizational processes, focus on

continual improvement, extended time perspective, and systems thinking. Rhinesmith (1996), on the other hand, identified six competencies where leaders need to manage complexity, be competitive, be adaptable, network, value multicultural teamwork, manage uncertainty and manage learning. Brake (1997) put forward four competencies in which leaders should have i.e., managing relationship, business savvy, transformational and persona effectiveness. Jordan and Cartwright (1998) identified the ability to maintain relational abilities, cultural sensitivity, and ability to handle stress as some of the crucial competencies for leader effectiveness. Goldsmith and Walt (1999) suggested that competence to thinking globally, appreciating cultural diversity, demonstrating technological savvy, building partnerships, and sharing leadership are all needed for future leaders. Conner (2000) put forward six competencies; personal influence, business savvy, global perspective, ability to motivate, entrepreneurship and strong character as needed by a good leader. Mumford, Zaccaro, Harding, Jacobs and Fleishman (2000) proposed five competencies that a leader needs to manage change. The first four are social judgment skills, social skills, creative problem solving skills and knowledge. The fifth competence is the willingness to exercise all the four competencies proposed. Judge and Bono (2001) demonstrated that self-esteem and integrity predict performance and similarly, Bueno and Tubbs (2004) identified communication skills, motivation to learn, flexibility, open-mindedness, respect for others and sensitivity as the most important leadership competencies. Battilana, Gilmartin, Sengul, Pache and Alexander (2010) suggested that leadership competencies such as communicating the

need for change, mobilizing others to support the change, and evaluating the change implementation is needed for leaders to implement change.

Competency models are the predominant approach to the leadership development effort to identify the leadership competencies that are required for leading people toward organisational goals (Conger & Benjamin, 1999; Wells, 2003). In addition, competency models also communicate the attributes that are recognised and rewarded, providing a benchmark for organisational performance (Zenger & Folkman, 2002). Despite the benefits, competency modelling has its limitations. Competencies identified within the model could be numerous (Prewitt, 2003)**.** Also, there may be unintended consequences where leaders are just 'checking-off' competencies in the model systematically, limiting innovation and synergistic growth of the leader as an individual (Zenger & Folkman, 2002). If rigidly applied, it may create 'cookie-cutter' leaders inside the organisation. The homogeneity, in time will contradict an organisation's aim to achieve competitive advantage through its leaders (Zaccaro & Banks, 2004). Not all competencies are of equal importance, competencies modelling face the challenge that the competencies needed by leaders vary from one situation to another; and from one follower to another.

For example, as leaders ascend to higher level positions in an organisation, the competencies which leaders possess need to be further developed to enable them to successfully perform the different leadership role requirements (Hooijberg & Schneider, 2001; Hooijberg, Hunt, & Dodge, 1997). This is explained by Stratified

System Theory (Jacobs & Jacque, 1987; 1990) and Interactive Complexity Theory (Streufert & Nogami, 1989; Streufert & Swezey, 1986), which both stress the need for different competencies in leaders across different organisational levels. Empirical findings by Mumford, Marks, Connelly, Zaccaro and Reiter-Palmon (2000) in their research assessing the competencies across six grade levels of officers in the U.S. Army, demonstrated an increase in leaders' competencies in higher grade levels in comparison to their lower-level counterparts. It is acknowledged that the competencies measured by Mumford and his colleagues are relevant to military leadership and leadership knowledge and skills needed for organisation leadership is arguably different. However, the pertinent point here is that the necessary competencies increase as the leader ascends into higher level positions within an organisation. Although competencies modelling may try to capture different competencies needed in different levels of organisations (Mumford, Campion, & Morgeson, 2007), specifying this is a specific set of competencies that a leader should develop may be too rigid an approach. Although it is agreed that competencies required by leaders are different according to their role, relevant competencies that are perceived to be important for each follower or organisation will also differ. According to Implicit Leadership Theory (Lord, Foti, & DeVader, 1984), the importance or need for a particular leader attribute depends on the perceiver (leader/follower/group/ organisation) within the context. Take the classical example, followers who prefer higher guidance and direction in their job would perceive a leader to be effective if the leader possesses the competency to guide

them. However, other followers who are creative may prefer a leader with that competency to coach rather than direct.

The challenges of the complex interaction of leaders with situational and social variables; to model the best competencies for effective leaders have long tantalised researchers. On the other hand, practitioners for their part in developing leaders, are faced with the same challenges in trying to design interventions to develop what is perceived to be the most effective competencies needed in leaders at that moment. In view of this, it is suggested that when leaders are trained with self-regulatory competency, they are able to recognise the competencies that are most relevant to their current leadership needs and seek to develop those competencies.

Hypothesis 2: Leaders who attended self-regulation training should exhibit greater improvement in the competencies required in their leadership role compared to leaders who have not been trained.

*Hypothesis 2a: Leaders who attended self-regulation training would exhibit greater improvement in the competencies required in their leadership role, measured as promoting teamwork, planning, basic leadership, relationship management and keeping others informed.*

*Hypothesis 2b: Leaders who did not attend self-regulation training would exhibit less improvement in the competencies required in their leadership role, measured as promoting teamwork, planning, basic leadership, relationship management and keeping others informed.*

### 2.5.5. Leader competencies and leader performance

In order to appreciate why competencies are important and the voluminous amount of research dedicated to develop leader competencies (as demonstrated in section 2.5.4), one must understand the term 'competencies'. Ulrich, Brockbank, Yeung and Lake (1995, p.474) defined competencies as "an individual's demonstrated knowledge, skills or abilities" whereas Blancero, Boroski and Dyer (1996, p.387) termed competencies to be "the knowledge, skills, abilities and other attributes required to perform desired future behaviour". On the other hand, McLagan (1996 cited in Shippmann et al., 2000, p.706), argued competencies as "knowledge and skills that underlie effective performance", which was also agreed by Mirabile (1997) to be associated with high performance on a job. As it can be seen, competencies have been defined in many ways. However, the common denominator among the many definitions of competencies is that competencies are a *group of related behaviours or required knowledge, skills, abilities and other attributes.* These competencies, when put into operation, contribute to the successful performance of a certain activity or task (Catona, Cronshaw, Wiesner, Hackett, & Methot, 2001; Shippmann et al., 2000).

The above definition of competencies paints the picture of why the leader competency development model has experienced exponential growth as a function of the competitive organisational environment. Leaders frequently need to confront crucial and relevant real time issues and come up with best solutions in the shortest period of the time (Day, 2000; Mumford, Zaccaro, Harding, Jacobs, & Fleishman,

2000). To do so, leaders need skills and abilities to develop and implement solutions with followers, peers or supervisors operating in complex and dynamic contexts. Within this process, leaders face complex interactions between them and the social and organisational environment (Fiedler, 1996). Effective leaders need to have the social skills to persuade followers in these intricate social situations, to accept and support their proposed solutions (Conger & Kanungo, 1987). It is therefore important to possess the skills and abilities required to solve this variety of interpersonal and organisational problems (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000; Ulrich, Brockbank, Yeung, & Lake, 1995; Wexley & Baldwin, 1986; Zaccaro, Mumford, Connelly, Marks, & Gilbert, 2000). Moreover, leaders need certain knowledge sets in order to come to the solutions required in addressing these challenges (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000). The knowledge set also serves as a repertoire of behavioural responses from which the leader can draw to solve problems effectively (Zaccaro, Foti, & Kenny, 1991). Therefore the KSAO (knowledge, skills, abilities and other attributes) package of leaders summarised in the form of competencies is crucial for leaders to perform effectively in their role. Following this logic, it is proposed that:

Hypothesis 3: Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to the leader developing relevant competencies for his/her role and (ii) these competencies positively affects performance.

*Hypothesis 3a: Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to the leader developing relevant competencies*

*for his/her role and (ii) these competencies positively affects leader performance, measured as leader satisfaction, leader effectiveness and extra effort.*

*Hypothesis 3b: Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to the leader developing relevant competencies for his/her role and (ii) these competencies positively affects the team's financial performance, measured as retained profit, return on capital employed (ROCE), earnings per share (EPS) and (negative) gearing*

*Hypothesis 3c: Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to the leader developing relevant competencies for his/her role and (ii) these competencies positively affects the team's assessed performance, measured as presentation, business plan, group report, simulation performance and reflective report.*

## 2.6. Conclusion

The introduction of this chapter states the importance of leadership and the attempts of leaders and practitioners to develop effective leaders. Next, the review of the evolution of leadership theories informed the views and implications on leadership development. It also highlighted that the practice of leadership development precedes its scientific understanding (Avolio, 2005; Day, 2000) and there is a need to bridge this gap.

In particular, the literature reviewed in leader and leadership development has revealed that the phases of executive coaching reflect the process of self-regulation. The executive coach plays the role of the 'regulator' in the equation of leader development. Thus, it is not surprising that coaching has proved to be successful

especially when it is used to improve or gain specific leader competencies (Tobias, 1996). Looking at self-regulation theory, it explains the underlying mechanism whereby individuals aim for congruence between their own and other's perception of their behaviour or competencies and therefore, will allocate resources and effort towards reducing the discrepancies (Carver & Scheier, 2002). 360-degree feedback applied on its own yields mixed positive findings because it only activates the first stage of self-regulation i.e., it helps leaders to become more aware of cognitive discrepancies between how the leaders sees themselves and how others see them, hence helping them to recognise areas for development (Tornow & London, 1998; Van Velsor, Taylor, & Leslie, 1993). However, the assumption here is, leaders who are aware of the need for the development of certain competencies in order to overcome their weaknesses and to perform better will change their behaviour (McCarthy & Garavan, 1999), resulting in the conflicting findings as stated.

Self-regulation framework theorised that self-regulation consists of seven stages: (i) *receiving* relevant information, (ii) *evaluating* the information and comparing it to the desired goal, (iii) *triggering* change, (iv) *searching* for options to change, (v) *formulating* plan(s), (vi) *implementing* the plan(s), and (vii) *assessing* the effectiveness of plan(s) and interventions that can be designed to develop self-regulation within individuals (Miller & Brown, 1991). Executive coaching when applied was found to be effective because it completed the framework of self-regulation, where it followed up from the stage of *knowing* to the stage of *doing*. Following these, the current chapter synthesises a conceptual framework and

research hypotheses proposing the notion that self-regulation competency should be developed in leaders instead, to facilitate development of relevant competencies needed to be effective in their role, thus fostering a continuous development in leaders.

The conceptual model theorised that 360-degree feedback and executive coaching, together reflect the process of self-regulation. In other words, the executive coach plays the role of the 'regulator' in the equation of leader development with the application of 360-degree feedback during the start of the coaching process. With this in mind, the author suggests that instead of adopting a myopic view of solving the immediate problem e.g., using an executive coach to regulate leaders' action to develop a particular competency which is needed at a particular moment in order to be more effective, leaders and organisations should be developing leaders' self-regulation for long term development. Interventions where leaders are trained with self-regulation will allow leaders to perform effectively by meeting the demands of various constituencies through awareness of what is needed through self-regulation, and proactively engaging themselves to develop further competencies that are needed. In turn, the relevant competencies developed will lead to better leader performance.

The hypotheses proposed will be examined using a field experimental design with control and experimental groups. Justification for the suitability of the methodological approach will be discussed and justified in the next chapter.

# CHAPTER 3

# Methodology

*CONTENT: This chapter provides a description of the methodological approach used to examine the hypotheses derived from the previous chapter. Section 3.1 is an introduction to the longitudinal field experiment. This is followed by Section 3.2, 3.3 and 3.4 which cover the research paradigm and design selected, as well as providing justifications for the suitability of the approach. Section 3.5 outlines the population and sampling techniques applied. Next, Section 3.6 discusses the steps involved in the data collection process; starting with a pilot study, a pretest, an intervention and lastly, two posttests. This is followed by Section 3.7 with the discussion of scale selection and Section 3.8 on how data will be analysed. Last but not least, Section 3.9 presents consideration of ethical issues involves in the research and, Section 3.10 gives a summary of this chapter.*

## 3.1. Introduction

In the previous chapter, a conceptual model of leadership development, which consists of a causal relationship between self-regulation training and leader performance as well as the mediating effect of leadership competencies, was put forward. In order to establish causal relationships within the model, typically an experimental design is the most suitable as it allows manipulation and control of the causality (Shadish, Cook, & Campbell, 2002). The current study will adopt a longitudinal field experimental design to investigate the hypotheses proposed in Chapter Two. As such, this chapter will discuss the generic philosophy, and methodology of experimental designs, with justifications of the design selected.

## 3.2. Research paradigm

The purpose of this chapter is to discuss the research methodology; however, it would be a gross oversight to ignore the influence of philosophy upon the development of research design and the research process. Burrell and Morgan (1979) define 'paradigm' as a general way to view the world or social reality. This social world view is guided by basic theoretical assumptions, which will provide a frame of reference, a form of theorising and an approach to research. The concept of paradigm is useful since it allows theories to be grouped by common elements (Burrell & Morgan, 1979). It further permits us to distinguish between the work of various theorists and researcher, and allows us to become aware of our own frame of reference and the implication this carries (Burrell & Morgan, 1979; Kirk, 1999).

Burrell and Morgan (1979) proposed four research paradigms; functionalist, interpretivist, radical humanist, and radical structuralist. These paradigms are primarily defined by three of the assumptions that Burrell and Morgan (1979) make; ontology, epistemology and methodology. These assumptions, according to Gioia and Pitre (1990) are the best way to characterise the four different paradigms. Ontology refers to the assumption about the nature of social reality, in other words, the phenomena being studied. Epistemology refers to the nature of how the researcher understands the world and how knowledge can be acquired of the social reality. Lastly, methodology refers to the ways in which to study social reality.

The functionalist paradigm underlies the current research. The functionalist paradigm emphasises the seeking of causal explanation of social phenomenon with the assumption that the researcher is objective and neglects the subjective state of the researcher (Hussey & Hussey, 1997; Saunders, Lewis, & Thornhill, 2000). The functionalist paradigm has a highly structured methodology to facilitate replication (Saunders, Lewis, & Thornhill, 2000) which reinforces the choice of this paradigm. Replication is crucial in Organisational Psychology which is an applied discipline, thus a highly structured methodology provides a logical and rational explanation (Weick, 1995) in this regard. Since the current research is interested in deducing the hypotheses generated from the literature, the interpretivist paradigm, which is more concerned with gaining new insights and building theories from the participant's subjective state (Burrell & Morgan, 1979), is less suitable.

However, functionalism is criticised by interpretive researchers who consider it as being too conservative, and unable to provide important explanations. They believe that science should be concerned with understanding rather than objectivism and feel that the scientific method is outdated and inapplicable (Griffiths, 1999). Another point that functionalists fails to address, includes; people influencing society, the world is created through social interaction, the disagreement within the paradigm, is an extreme commitment to functionalism regardless of the nature of phenomena being studied. Those assumptions have long become taken for granted, and theory and models are no longer challenged in the way they should be (Burrell & Morgan, 1979; Griffiths, 1999; Weick, 1995), causing the researcher to miss phenomena

occurring because of the focus on the theory or hypothesis testing rather than on theory or hypothesis generation (confirmation bias). As mentioned, each paradigm and approach has its strengths and limitations and what is the most appropriate depends on the aim of the research and in this case, the research endorsed the view of the functionalist paradigm as it is more suited for the research aim and objectives.

### 3.3. Quantitative versus qualitative approaches

The distinction between qualitative and quantitative methodology has been a constant debate in the social sciences (Hammersley, 1996). There are two different ways to follow this argument. One could contend that qualitative and quantitative methods represent opposing paradigms, which differ fundamentally in their assumptions about the world. As such, they cannot be consolidated. Others, however, argue that qualitative and quantitative methodologies are tools for data gathering and therefore complement each other (Hammersley, 1996). Thus, it is important to consider the strengths and weaknesses of a variety of research methods in order to identify those most suited to this research.

Quantitative research is structured, used primarily to confirm theoretical relationships, produce nomothetic findings, assume social reality to be independent of the researcher and participants, and produces hard and reliable data (Hammersley, 1996). This is achieved through the measurement of variables from data collected, which is then analysed through numerical comparisons and statistical inferences (Minichiello, Aroni, Timewell, & Alexander, 1992). Researchers endorse objectivity

by emphasising distance between themselves and their participants and not allowing themselves to become personally involved in the research.

Quantitative research is deductive and is therefore useful for the testing of theories (Deshpande, 1983). This approach develops a research question and variables to be tested from the analysis of the theory and literature which means that quantitative research answers the precise question that has been asked (Lee, 2008). Although this is often seen as an advantage of quantitative research, it is possible to assert that the structured nature of this approach can be restrictive. For exploratory research, an inductive approach is sometimes preferable where patterns emerge from the data which may have previously been unaccounted for by theory.

Thus, the qualitative approach, on the other hand, is a way to explore participants' subjective meaning to understand human behaviour from the perspective of the individual and assumes a dynamic and negotiated reality exists (Minichiello, Aroni, Timewell, & Alexander, 1992). Using this research technique, data is collected using what participants say and do using methods such as interview, focus group or observation. Therefore, the theory is produced through research, methodology is generally unstructured, findings are ideographic, the social reality is viewed as a socially construed process; the data tends to be rich and descriptive and is analysed thematically (Hammersley, 1996; Minichiello, Aroni, Timewell, & Alexander, 1992). In qualitative research, a close relationship with participants is deemed

necessary and researchers generally view their involvement as an integrated part of the research process (Hammersley, 1996).

Nevertheless, the distinction between quantitative and qualitative methods is not as clear-cut as it appears. Many researchers have recognised that qualitative and quantitative methods are not mutually exclusive (Richardson, 1996). Instead they can be viewed as complementary methods, which address different questions of equal importance to the field of psychology. Quantitative researchers often use qualitative methods to explore their research question. Similarly, qualitative researchers may choose to quantify their data for the purpose of analysis (Hammersley, 1996). Richardson (1996) argues that, the choice of research methods should always be informed by philosophical and pragmatic considerations in terms of the specific research questions that are to be addressed.

### 3.4. Research method and design appropriateness

As discussed in the previous section, each method has its own strengths and weaknesses. The choice between qualitative or quantitative methods depends mainly on; (i) what the research question is, (ii) what the topic of research is, (iii) what methods can be found in the literature relating to the research, (iv) practical considerations, (v) which approach will teach us more about what we are trying to learn, and (vi) the preference for the approach (Punch, 1998).

Organisational Psychology research has become well recognised. This is mainly due to the use of functionalist epistemology and quantitative methods (Creswell, 1994; King, 2000; Baum, 1995) which allow research to be replicated and generalised. Quantitative methods allow the researcher to test the theory using hypotheses, establish causal relationships, make generalisations that lead to understanding, and at the same time, allow the researcher to remain independent from the research participants. This in turn, will lead to the most crucial aim of this research, which is to inform the practice of leader development. Most importantly, the current research is interested in deducing the hypotheses generated from the literature, the quantitative approach therefore, which is highly structured and deductive in nature, is most suitable.

Within quantitative design, researchers reduce experiences and other complex phenomena into numbers (Baum, 1995; Creswell, 1994). Through the use of questionnaires (Section 3.7), participants' answers can be converted into numerical data which permits statistical analyses to be carried out. The approach is noted to be highly applied in many researches carried out within this field (e.g., Dvir & Shamir, 2003; Ehrhart & Klein, 2001; Gaudine & Saks, 2004; Hirst, Mann, Bain, Pirola-Merlo, & Richver, 2004; Judge & Bono, 2000; van Knippenberg, van Knippenberg, De Cremer, & Hogg, 2004; Seifert & Yukl, 2010).

A longitudinal field experimental design is selected for this research as it is deemed most suitable as it allows evaluating interventions on leader's performance as well as

its desired results between control and experimental groups. A field study allows the researcher to conduct the experiment in real life settings (Christensen, 2007). The Business Strategy Game (BSG) module was selected as a suitable setting for the experiment. The structures and settings in which students interact in the simulation program reflect the organisational setting. Group leaders lead and influence their teams in developing competitive strategy, develop and manage the virtual company's portfolio, create a shareholder value, analyse the competitors and create customer value. In addition to that the task, leaders need to manage the individuals and the relationships between individuals within the team.

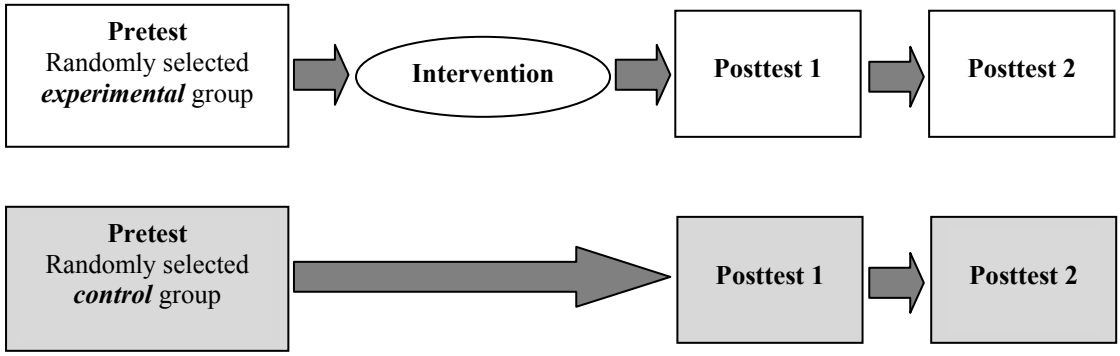



Figure 1: Research design model

All teams competed in the simulation and were graded in their performance for the game simulation as well as the written assignments. The use of a business simulated environment has been used previously (Rapp & Mathieu, 2007; Roux & Steyn, 2007) to conduct experimental research to examine leadership and teamwork. The BSG

module provides a suitable setting for the current research to explore the relationship between the independent and dependent variables by comparing between the control and treatment group.

However, it has to be noted that this research does not fall under quasi-experimental field design. The main difference between quasi-experiment and experiment is how participants in the study are selected to receive the intervention. Shadish, Cook and Campbell (2002) noted that "random assignment is not random sampling". Within an experiment, the researcher may use the most appropriate method to select individuals who are representative and have similar characteristics of the overall population of interest. However, the participants in the study must be randomly assigned into control and experimental groups in order to qualify the study as experimental design, which this study managed to follow (Section 3.6.3).

The field experiment approach is selected over a laboratory experiment because, even though laboratory experiments allow for higher control of the variable under investigation, it suffers artificiality and threatens external validity. This is due to the fact that the highly controlled settings in the laboratory might not be transferable to a real life context (Bryman, 2001). Thus, a field experiment design is closer to the dynamics of the real world and inferences of the research findings are transferable into practice.

On the other hand, it is arguable that a field experiment might suffer potential threats of internal and external validity. Although the field experiment offers a fairly high control over the study, the question of "did the intervention make the difference in the outcome or other extraneous or confounding variables that caused the outcome?" still stands (Shadish, Cook, & Campbell, 2002). Shadish and his colleagues have identified a number of confounding factors such as history, maturation, instrumentation, testing instruments, regression artefact, attrition and selection, that can affect a study's outcome. History, which are events occurring during the period of the experiment and maturation, which is due to participants aging, could both impact the changes at the end of the experiment (Bryman, 2001). However, in this study, both factors were controlled by including a control group within the experimental design. If both experimental and control groups are equally exposed, then both groups are comparable (De Vaus, 2001). Testing instruments was not applicable within this study as the researcher will use a questionnaire as a measurement instrument and did not change the instrument selected. Regression artefact refers to the measurement scores of participants tending to move towards the mean, even without intervention (Shadish, Cook, & Campbell, 2002). Such incidents need to be controlled in order to draw valid inferences from research findings. To avoid this, the researcher used the proposed solution of a randomisation assignment. Sometimes, some participants in an experimental study could not complete the study due to certain circumstances and this is fairly common. The researcher controlled for attrition during the data analysis. Finally, although the experiment randomly allocated participants into control and experimental groups, there could be the threat

of self-selection biases where participants possessing certain characteristics are more likely to turn up for the intervention. Participants were informed that the intervention would improve their leadership skills, it is possible that participants who already posses higher self-regulation are more likely to attend the intervention. Thus, measurements for self-regulation and other performance measures were taken during pretest and were analysed for any significant difference between groups. Results are presented in Chapter Four.

| | **Pretest** | **Control Group** | **Randomisation** |
|---|---|---|---|
| ***Internal validity threats*** | | | |
| History | | ✓ | |
| Maturation | | ✓ | |
| Testing instruments | | | |
| Regression to mean | | ✓ | ✓ |
| Attrition | ✓ | | |
| Selection | ✓ | | ✓ |
| ***External validity threats*** | | | |
| Interactive effects of testing | | | |
| Interactive effects of sampling | ✓ | | |

Table 3: Techniques for controlling external and internal validity of experimental design

The researcher also considered the potential threats to external validity such as interactive effects of testing and interactive effects of sampling (Bryman, 2001; Christensen, 2007; Cooper & Schindler, 2003). As the current research consists of pretesting, there is a possibility that participants could become more or less sensitive

to experiment variable or treatments. However, pretesting is crucial within an experimental design to make an initial comparison between participants in control and experimental groups so they are not significantly different on relevant variables. Pretesting also allows for the control of interactive effects of sampling in case random assignment of participants into teams showed to be fallible. Finally, Table 3 summarises the techniques by which the researcher applied to control any threats to external and internal validity of the experimental design.

The use of a quantitative method permits generalisation and wider application of results through the use of large, representative samples (Baum, 1995). In view of the research aim, generalisability allows the application of results to the entire population even though situations do not permit sampling of the entire population.

Furthermore, a quantitative method allows researchers to represent experiences and other complex phenomena to numbers (Baum, 1995). This simplifies the data and adds a degree of objectivity to analyses. Numbers are also valuable, since they permit a range of statistical analyses to be carried out quickly. Doctoral research falls within the constraint of a time frame and these methods are often not as time-consuming as qualitative research methods hence allowing researchers to use a larger sample size in a short period of time.

Since the questionnaire is the chosen technique for data collection, several scales measuring the intended construct will be used. The aim of adopting this method is to enhance the validity of measurement to produce more robust data for analysis.

### 3.5. Population and sample

Before proceeding with data collection, it is important to understand and identify the samples that will be taken. Three basic steps were used in selecting the sample for this research; (i) defining the population, (ii) specifying the sampling technique and (iii) determining the sample size.

The first basic step was to define the target population, which refers to the set of individual units which the research question seeks to find out about (Bryman, 2001). Therefore, any individuals holding a leadership position was defined as a member of the population for this research. It is extremely unlikely for a researcher to have the time or resources to conduct research on the entire population, thus a representative sample from the population should be selected using the most appropriate sampling method. This sample allows the researcher to draw inference from the findings of the sample and generalise the findings to the population (Clark-Carter, 2004).

Within purposive sampling, selected individuals needed to posses characteristics specified by the researcher. In this case, the purposive sampling technique was applied in selecting the sample. Using a purposive sampling technique, the researcher is able to specify the characteristics of the population of interest and locate the

individuals who match those characteristics within the Business Strategy Game (BSG) module. Characteristics such as: (i) participants need to hold the position of a leader, (ii) participants are fairly new to the particular leadership tasks, position and role requirements, and (iii) participants need to be leading team members to achieve specific goals within a time frame, were considered during the selection process.

The BSG module is taken by all second year business degree students in Aston Business School. Within each class, students were divided into a four- to five-person team by the Business School programme administrator who balances the relative ethnicity, gender, country of origin and different disciplines across the groups. Within a team, apart from the leader, each team member has a specific task (marketing, operations, human resource and finance) to reflect organisational functions (see Table 4 for detailed role description of team member).

| **Role** | **Role description** |
|---|---|
| Managing Director | Managing and integrating strategies from all departments, planning and leading meetings, promote teamwork, manage conflict and relationship in team, lead team to achieve company's goal |
| Marketing Director | Conduct market research, identify target market, position product, plan promotional strategies, pricing of product |
| Operations Director | Set up manufacturing factory, manage operational strategies, product quality control, reduce cost per car, manage supply chain |
| Human Resource Director | Recruiting employees, manage wage and bonus, training and development, manage Human Resources issues such as motivation |
| Finance Director | Reporting, forecasting, budgeting, control cost, managing company's cash flow |

Table 4: Role description for team members in the BSG module

The teams meet each week to manage a virtual European car manufacturing company that runs across three virtual years. The work tasks include the strategic planning and assessment of the markets and competitors; implementing marketing, operation, human resource management and financial strategies; and at the same time, to meet shareholders expectations to generate return on investment. For detailed activities of the module, please refer to Table 5.

The selected sampling technique falls under non-probability sampling which has been criticised for its limitation in representing the population (Clark-Carter, 2004). However, as noted by Shadish, Cook, & Campbell (2002) within experimental design, random sampling is uncommon and suffers practical constraints for the researcher to randomly sample the population. Kish (1987), an advocate for random sampling also admitted that random sampling is ideal but rarely feasible. Evidence of this can be seen in previous research conducted using purposive sampling (c.f., Keith & Frese, 2005; Kozlowski & Bell, 2006; Oettingen, Hönig, & Gollwitzer, 2000; Rapp & Mathieu, 2007).

However, for this research, based on the principles suggested by Shadish, Cook and Campbell (2002), the researcher ensured the surface similarity and ruled out irrelevancies when selecting a sample to ensure construct and external validity of using purposive sampling. S*urface similarity.* Team leaders from the BSG modules were identified to hold the position of a leader; are new to this leadership position

| WEEK | SCHEDULE | ACTIVITIES* | DATA COLLECTION |
|---|---|---|---|
| 1 | **Lecture1** | **Overview of the module, learning objectives and learning outcomes** | |
| 2 | **Lecture 2**<br>Tutorial 1 | **Learning styles**<br>Team members meeting for the first time and getting to know each other | |
| 3 | **Lecture 3** | **Overview of car manufacturing industry and Business Plan (BP) proposal** | |
| 4 | **Lecture 4**<br>Tutorial 2 | **Overview of Business Strategy Game (BSG) simulation software**<br>Tutorial on strategies of how to enter the car manufacturing industry.<br>Team members establish roles within the team (e.g. Managing Director, Finance Director, Operations Director, and Human Resource Director) and create brand image (company name, objectives and mission statement, vision to inform strategies, etc.) | **PRESTEST 1** |
| 5 | **Lecture 5** | **Overview of library resources and information system** | |
| | Simulation 0 | Test practice to get familiar with the BSG software | |
| 6 | **Lecture 6**<br>Tutorial 3 | **Strategies for working in teams and working in diversity**<br>Tutorial on how to give a good presentation. Teams refine strategy and prepare for BP presentation to examiners from the industry acting as potential investors (from the industry) | **INTERVENTION** |
| 7 | **Lecture 7**<br>Presentation | **Writing styles, focussing on reflective writing**<br>Presentation of BP to examiners from the industry acting as potential investors (from the industry such as Vauxhall, Ford etc.) | |
| 8 | BP deadline | Submission of BP proposal | |
| 9 | X | | |
| 10 | Tutorial 4 | Tutorial provided feedback on presentations and business plan.<br>Teams refine strategies for the first simulation. | |
| 11 | Simulation 1 | | |
| | | **Christmas Break (3 weeks)** | |

| | | | |
|---|---|---|---|
| 12 | X | | |
| 13 | X | | |
| 14 | Tutorial 5 | Tutorial on the requirements for Managing Director's presentation reflecting on strategies implement<br>Teams evaluate performance and feedback of first simulation. | |
| 15 | Simulation 2 | | |
| 16 | Tutorial 6 | Tutorial on the requirements for Finance Director's presentation to the first and second Annual General Meeting of the board of directors (the tutors assumed the role of the board of directors)<br>Managing Director presented performance of the company since its launch<br>Teams evaluate performance and feedback of second simulation | **POSTTEST 1** |
| 17 | Simulation 3 | | |
| 18 | Tutorial 7 | Tutorial on the requirements for Finance Director's presentation to the first Annual General Meeting of the board of directors (the tutors assumed the role of the board of directors)<br>Finance Director presented first year financial performance of the company<br>Teams evaluate performance and feedback of third simulation. | |
| 19 | Simulation 4 | | |
| 20 | Tutorial 8 | Tutorial on the requirements for group and reflective assessment report.<br>Teams evaluate performance and feedback of fourth simulation. | |
| 21 | Simulation 5 | | |
| | | **Easter Break (4 weeks)** | |
| 22 | Tutorial 9 | Finance Director presented first year financial performance of the company.<br>Teams evaluate performance and feedback of fifth simulation | **POSTTEST 2** |
| 23 | Simulation 6 | | |
| 24 | Tutorial 10 | Tutorial provided further help on group and reflective report.<br>Teams evaluate performance and feedback of sixth simulation. | |

*Teams tend meet outside scheduled sessions at least once every week

Table 5: Weekly schedule and activities for the Business Strategy Game module

and role expectation, and they need to lead team members to achieve specific goals within a specific time frame. Identifying the main characteristics of the participant and settings allows findings from the study to be generalised to a population with similar important characteristics. *Ruling out irrelevancies*. An example of a feature of the sample that could be argued to be irrelevant is that the sample consists of students. The study is interested in how self-regulation as a competency affects leaders' performance when faced with novel and complex tasks across situations. A student based sample can be argued to be comparable. Team leaders in the BSG teams, like leaders in general, were facing new and novel leadership tasks and expectations in the position which they held. Hence, the use of a student sample has minimal impact on the size or direction of a cause and effect relationship of the research question.

Finally, the sample size required for the research depends on many possible influences (Cooper & Schindler, 2003). The size of the sample needed can be affected by the nature of the research and analysis, sampling techniques applied, time constraints, non-response and completion rates, similar research in the past and resource constraints (Bryman, 2001; Cooper & Schindler, 2003).

The BSG module consists of approximately 52 leaders and 196 team members, which represent the population size of this study. Comparing to previous studies, this size is more than sufficient with regards to completion rates, number of variables, aggregation of levels, and using repeated measure of analysis of covariance (Avolio,

2007; Jung & Avolio, 1999; Seifert, Yukl, & McDonald, 2003; Shea & Howell, 1999; Sue-Chan & Latham, 2004). Previous longitudinal field experiment studies normally reported a sample size between 23 to 54 leaders with a minimum of two followers per leader. After defining the sample from the population, techniques of sampling and the size required, the next section will discuss the procedures in which data was collected.

## 3.6. Data collection process

### 3.6.1. Pilot

A pilot study was conducted with thirty-one participants consisting of the BSG module leader and tutors who taught the module as well as students who had completed the module in the year prior to when the research and data collection was conducted. The aim of the pilot study was to identify five competencies perceived to be highly relevant for the team leaders to perform successfully in the required tasks of the BSG module (e.g. lead the team as the managing director, managing the company strategy and completing the module's assignment, etc.). Each participant was presented with a questionnaire consisting of twenty-eight competencies from the 360° Professional Quest provider (see Appendix I). They were asked to select five competencies they perceived to be most important and rank them according to the order of relevance. A frequency analysis was conducted on the data and the following five competencies were concluded as the most important for team leaders within the BSG module to perform effectively; basic leadership skills, relationship management, planning, promote teamwork and keeping others informed. Results

were presented and discussed with the module leader who agreed with the findings (see Appendix II).

### 3.6.2. Pretest

A closed-ended questionnaire was selected for the data collection because it offers the advantage of large-scale sample in a less time consuming method (Saunders, Lewis, & Thornhill, 2000). Moreover, the main advantage is that this approach enables the standardisation of the questions ensuring a high level of internal validity of data. In particular, pre-coded choices enhance the comparability of answers (Bryman, 2001) which is an essential requirement in this research in order to compare any change in constructs such as self-regulation and leader's performance measures between conditioning and over time. Thereby, closed-ended questionnaires provide suitable data for statistical analysis which in turn allows the testing of hypotheses (Barnes, 2001) to generate generalisable results. Considering the amount of money spent by organisations on leader development programmes, it is particularly important that findings of this study are generalisable and can inform the practice in leader development.

While a questionnaire technique has its advantages, at the same time it poses certain restrictions. Closed-ended questionnaires are criticised for their lack of exhaustiveness and capability to generate other possible answers (Bryman, 2001) compared to other method such as, open-ended questionnaires. The current research being deductive in nature, argues that exploration is not the main requirement during

data collection. Based on the hypotheses generated from the literature review, the research is interested in testing the relationships between the constructs. To be confident in the answers received before the data analysis, it is important to eliminate any problems posed by open-ended questions such as the accuracy of post-coding of answers and be certain that the code is genuinely comparable for data analysis. Therefore, a close-ended questionnaire is best suited for this study. Another main drawback of this method is getting a low response rate if the questionnaires are sent to the participants using email or post. Thus, precautions were taken to overcome this shortcoming by using a person-administered approach whereby questionnaires were distributed by the researcher during the first 20 minutes of the class.

The questionnaire consists of two main parts. The first consists of questions to collect demographic information of participants such as age, gender, and work experience. The second consists of scales of the measurement for constructs such as, self-regulation (Diehl, Semegon, & Schwarzer, 2006), self-efficacy (Chen, Gully, & Eden, 2001), Multifactor Leadership Questionnaire (Bass & Avolio, 1990) and 39 behavioural questions (based on the five core competencies). These core competencies were identified from the pilot studies conducted with a similar sample (i.e., students taking the BSG module the year before) which includes basic leadership skills, relationship management, promote teamwork and keeping others informed. The whole questionnaire took approximately 20 minutes to complete by the participants.

| | Variables | Tutor | Leader | Team member | BSG software |
|---|---|---|---|---|---|
| **Stage 1: Pretest** | Self-regulation | | ✓ | | |
| | Self-efficacy | | ✓ | | |
| | Leaders' performance | | ✓ | ✓ | |
| | Leaders' competencies | ✓ | ✓ | ✓ | |
| **Stage 2: Posttest 2** | Self-regulation | | ✓ | | |
| | Leaders' performance | ✓ | ✓ | ✓ | |
| | Leaders' competencies | ✓ | ✓ | ✓ | |
| | Team financial performance | | ✓ | | ✓ |
| | Team assessment | ✓ | | | |
| **Stage 3: Posttest 2** | Self-regulation | | ✓ | | |
| | Leaders' performance | ✓ | ✓ | ✓ | |
| | Leaders' competencies | ✓ | ✓ | ✓ | |
| | Team financial performance | | ✓ | | ✓ |
| | Team assessment | ✓ | | | |
| **Stage 4: Posttest 3*** | Team financial performance | | | | ✓ |

* Financial data starts at zero at stage 1, thus additional financial data were gathered at Stage 4

Table 6: Summary of data collection timeline for all variables

The questionnaire was distributed at the beginning of the class to all participants, both team leaders and team members. Participants were informed verbally and in writing concerning the general purpose of the study and why they were being asked to participate. Participants were also informed that participation is voluntary and that their responses would be kept confidential. The wording used for this can be found in Appendix III and Appendix IV. Participants were asked to give their Student University Number (not Candidate Number which is only used for assessment purposes) to ensure the researcher was able to match their responses in the next two stages of data collection. Those who agreed were asked to give their consent in

writing on the second page of the questionnaire (Appendix III and Appendix IV). The researcher then provided participants with brief instructions to complete the questionnaire. After giving participants approximately 20 minutes, the researcher collected the questionnaire. In order to increase the response rate for participants that were not present during the survey, an electronic questionnaire was sent out to all students taking the module immediately after the survey. A reminder email was sent out on the third day and sixth day after the survey to encourage participants to complete the survey.

### 3.6.3. Intervention

As the design for the research is a field experiment, an experimental group of randomly selected leaders were exposed to the intervention and the other half of participating leaders were not exposed to the intervention. A table of random numbers was used to ensure every participant who gave consent to take part in the study had equal chance to be selected into either group, and those who declined were omitted from the study. Leaders selected to attend the intervention received an email inviting them to attend a three to four hour training session after the first survey was conducted[1] (see Appendix VI).

The intervention was delivered by a qualified executive coach working with a leading management consulting company within the UK. The executive coach had 20 years of experience in leadership development field with affiliation to leadership

[1] Leaders who received the invitation but declined or could not attend the intervention were omitted from the study.

management programmes across 60 countries. The external executive coach was not a member of university staff and had no influence on participants' assessment in class. Furthermore, by using an external coach, reliability of the potential influence or contamination of the researcher on the treatment delivered was controlled for (Christensen, 2007). During the intervention, the researcher introduced the executive and was not present at the intervention after that.

The researcher and executive coach used the self-regulation framework of (Brown, Miller, & Lawendowski, 1999) to design the intervention.

1. Receiving relevant information
2. Evaluating the information and comparing it
3. Triggering change
4. Searching for options
5. Formulating a plan
6. Implementing the plan
7. Assessing the plan's effectiveness

As part of receiving relevant information, each participant received a feedback report generated using 360° Professional Quest software based on pretest data collected. The feedback reports were compiled based on the response of their team members assessing each item of the leaders' competencies from pretest data collection. A sample of feedback report could be found in Appendix VII. The executive coach

started by training the leaders on how to interpret and evaluate the feedback. Emphasis was placed on the importance of receiving feedback and how to use their feedback results to assist them in developing their own leadership development plans in which they set personal goals as part of change. Participants were encouraged to ask the question if triggering change is needed and how it relates to their performance as a leader to meet the task and followers' expectation. Once the need for change was identified, leaders were encouraged to brainstorm and search for options available to them to trigger change. This is followed by formulating a plan and setting goals on how they will implement the change to develop their leadership skills. Finally, they were informed that they will be given another two feedback reports in the next six months to assess the effectiveness of the plan they implemented. Development of leadership skills is an iterative process and they were informed of the importance of continuous regulation of their own leadership development using the self-regulatory process.

Three and six months after the intervention, the leaders received similar feedback reports generated using 360° Professional Quest software. Both feedback reports were based on data collected from their followers during the first and second posttest surveys.

### 3.6.4. Posttest 1

Three months after the intervention, the same questionnaire from Section 3.6.2 was distributed at the beginning of the class to all participants. Again, participants were

informed verbally, and in writing, of the general purpose of the study and why they are being asked to participate. Participants were also informed that participation is voluntary and that their responses would be kept confidential (Appendix III and Appendix IV). Participants were asked to give their Student University Number (not Candidate Number which is only use for assessment purposes) to ensure the researcher was able to match their responses with previous survey and also to the next wave of data collection. Those who agreed were asked to give their consent in writing on the second page of the questionnaire. The researcher then provided participants with brief instructions to complete the question are. After giving participants approximately 20 minutes, the researcher collected the questionnaire. In order to increase the response rate for participants that were not present during the survey, an electronic questionnaire was sent out to all students taking the module immediately after the survey. A reminder email was sent out on the third day and sixth day of the survey to encourage participants to complete the survey.

### 3.6.5. Posttest 2

Six months after the intervention, the final stage of survey was conducted using the same procedures as Posttest 1 (Section 3.6.4).

### 3.6.6. End of study

All participants (team leader and team members) were invited via email for an opportunity to attend the leadership training intervention attended by the leaders in the experimental group on a designated day after all data collection was completed.

A sample of the email can be seen in Appendix VIII. All participants were debriefed on the purpose of the studies and were given an opportunity to ask questions to the researcher during the leadership development training.

Finally, once all of the three stages of survey were completed, the researcher entered the data into SPSS to analyse the data. All signed forms and completed survey responses were secured by the researcher and will be retained for five years for future research.

## 3.7. Scales selection

### 3.7.1. Reliability and validity

The level of reliability and validity of the scale are crucial to determine the suitability. Within the questionnaire, "a valid question will enable accurate data to be collected while, one which is reliable, means that the data are collected consistently" (Saunders, Lewis, & Thornhill, 2000, p.288). Thus, it is very important to know the reliability and validity of the scales chosen that will be used in the current research questionnaire. A high level of reliability is determined by its internal consistency measure such as, test-retest reliability, equivalent forms, split-half and Cronbach alpha coefficient. Only scales with a minimum of 0.7 Cronbach alpha coefficient will be selected as recommended by Nunnally (1978). On the other hand, methods such as assessing content validity, convergent validity, discriminant validity or numological validity (Saunders, Lewis, & Thornhill, 2000) determines scale validity.

In order to measure each construct in this research, previously developed scales were used. The indicators for the constructs in the conceptual framework were measured on Likert scales. Likert scales are commonly use in organisational research because it allows individuals to respond to a series of statements by indicating the extent of agreement. For examples from "Strongly disagree" to "Strongly agree". The statements in this research were about leaders and the scales selected were constructed in term of a 4-, 5- or 7-point Likert. The sum of this numerical value in turn indicates the attitude or belief in statements presented. The scale response format was based on that employed in the original scale developed.

### 3.7.2. Constructs measures

#### 3.7.2.1. Self-regulation

Diehl, Semegon and Schwarzer (2006) developed a 10-item Self-Regulation Scale (SRS) to capture this construct. Items included are "If I am distracted from an activity, I don't have any problem coming back to the topic quickly", I stay focused on my goal and don't allow anything to distract me from my plan of action," and "When I worry about something, I cannot concentrate on an activity (reverse coded)". They reported a Cronbach alpha of 0.82 and test re-test reliability of 0.62. The SRS also showed strong convergent validity.

Diehl, Semegon, & Schwarzer (2006) describe the ability to focus attention on a given task, to regulate internal thoughts and feelings and external distractions to work toward a desired outcome or goal as part of the components in self-regulation.

The scale includes all these elements of cognitive, emotional and behavioural self-regulation. With its central leaning to direct behaviour in specifics ways, it is suitable for assessing the outcome of the leadership intervention on leaders' self-regulation.

### 3.7.2.2. Leaders' performance measure

Leader performance was rated by followers using the 9-item measure of the Multifactor Leadership Questionnaire for Research (MLQ 5X-Short) (Bass & Avolio, 1990). Permission was obtained through purchase of the questionnaire from Mind Garden® Inc, who is the copyright owners of the scale. The nine items measure followers' satisfaction with leader and his/her methods, leaders' effectiveness, and extra effort by followers due to the leaders' influence.

***Leader satisfaction***. Followers' satisfaction of leaders' performance was measured using 3-items within the MLQ-5X outcome measure. A sample of the item includes "Works with me in a satisfactory way", which was rated on a 5-point scale ranging from "Not at all" to "Frequently, if not always". Using Partial Least Squares analysis, the developers reported a strong convergent validity and the Cronbach alpha for this scale was 0.88 (Bass & Avolio, 1990; Sosik & Megerian, 1999).

***Leader effectiveness***. The measure of leader effectiveness was captured using 3-items within the MLQ-5X outcome measure. An example item includes "Is effective in meeting organisational requirements" which was rated on a 5-point scale ranging from "Not at all" to "Frequently, if not always". Cronbach alpha for this scale was

0.83. Using Partial Least Squares analysis, the developers reported a strong convergent validity (Bass & Avolio, 1990; Sosik & Megerian, 1999).

***Follower work motivation***. The measure of leaders' influence on followers' work motivation was measured using 3-items within the MLQ-5X outcome measure. This scale captures the willingness of followers to exert extra motivation as a result of the influence. A sample of this item includes "Gets me to do more than I expected to do", which was rated on a 5-point scale ranging from "Not at all" to "Frequently, if not always". The reported Cronbach alpha for this scale was 0.87. Using Partial Least Squares analysis, the developers reported a strong convergent validity (Bass & Avolio, 1990; Sosik & Megerian, 1999).

### 3.7.2.3. Leaders' competencies

Thirty nine items from the 360° Professional Quest were used to measure leaders' behaviours, corresponding to five competencies; basic leadership skills, relationship management, planning, promote teamwork and keeping others informed. The five competencies selected from a total of twenty-eight competencies listed in the 360-degree feedback questionnaire. Selection was based on the ratings of importance and relevance weighed by the module lecturer and tutors who taught the module and students who had taken the module previously. The five selected competencies were perceived to be highly relevant to the team leader to perform successfully in the required tasks within the BSG module. Reliability and validity for this measure is reported in Chapter Four.

### 3.7.2.4. Self-efficacy

General self-efficacy was measured using Chen, Gully and Eden's (2001) New General Self-Efficacy (GSE) scale. This scale captures the construct of a person's belief in his or her "overall competence to effect requisite performance across a wide variety of achievement situations" (Eden, 2001, p.75). As self-efficacy within individual leaders may influence the outcome of leader intervention (Gist, Stevens, & Baveita, 1991; Judge, Jackson, Shaw, Scott, & Rich, 2007; Tai, 2006), the measure of self-efficacy was used to control for the effect of individual differences to ensure that the outcome of the intervention is not influence by the leaders' initial individual beliefs in their competence to achieve the desired outcome.

The scale consists of eight items that are rated on a 5-point scale with the indicators from "Strongly Disagree" to "Strongly Agree". Examples of these items are; "I will be able to achieve most of the goals that I have set for myself," "I will be able to successfully overcome challenges" and "When facing difficult tasks, I am certain that I will accomplish them". Chen, Gully and Eden (2001) reported a Cronbach alpha of 0.92 and stability coefficients between $r$ = 0.62 to 0.65. This range is reasonably high for variables capturing individual differences (Crocker & Algina, 1986). The GSE also showed strong convergent validity.

### 3.7.2.5. Team financial performance indicators

The leaders' team financial performance was assessed using four financial measures; retained profit, return on capital employed (ROCE), gearing, and earnings per share

(EPS). Data was obtained from the BSG simulation. Firstly, profit is the remaining profit retained by the team after all deductions have been made (e.g. tax, interest, dividends, etc.). If the team is not performing well, the team may retain a loss (negative profit) instead of a profit. The second financial performance indicator, ROCE is calculated from the profit as a percentage of the capital employed thus signifying how well the money invested into the business is providing a return to the investors. Thirdly, gearing is calculated as the ratio that compares the company's equity or capital to borrowed funds. In brief, gearing refers to the extent to which the company is funded by debt. The higher the gearing of the company, the more the company is considered risky. Finally, EPS is calculated by the total profit of the company divided by the number of shares. EPS serves as an indicator of a company's profitability. All four financial indicators are useful in making comparison across companies in terms of company performance (Waldman, Javidan, & Varella, 2004). The financial performances of the team hold high consequence to the module assessment.

#### 3.7.2.6. Team assessment

Students taking the BSG module undertook five different assessments; writing a business plan proposal, presentation of the business plan, group report, reflective report, and simulation performance. All five assessments contributed to one hundred percent of the module's marks. The business plan proposal assessed the teams' strategies and planning for their company based on their research of the market, application of knowledge from different areas such as marketing, operations, human

resource management and financial management to compete with their competitors and be successful. Next, based on the business plan, the team was assessed by external examiners on their presentation skills in convincing potential investors to invest money into their company. After operationalising their strategies into the computer simulated business environment, teams then produced a report reflecting upon their strategies. Also, each individual within the team reflected upon their experience of working as a team the report. Both reports were also assessed. Finally, the performance of the teams during the simulation was also graded by their tutors. Each of the assessments was graded based on percentage system.

### 3.8. Data analysis

The purpose of this study is to analyse how self-regulation is related to outcome variables of leaders' performance and team performance and to ascertain whether leaders trained in self-regulatory process are more effective. To do so, the computer software program, Statistical Package for Social Science (SPSS) version 16 was used.

The process used to test the research hypotheses was fourfold. First, Cronbach's alphas (Nunally, 1978) were calculated to check for internal consistency and to determine test-re-test reliability (Zeller & Carmines, 1979), Pearson correlation was used to compare data collected in three stages. In addition, Confirmatory Factor Analysis (CFA) using SPSS and AMOS was conducted to measure scale validity

(Byrne & Crombie, 2003). Second, descriptive and correlational results were reviewed for statistically significant relationships between variables.

Third, the data was analysed using a repeated measures ANCOVA (Field & Hole, 2003; Maxwell & Delaney, 2004). The significance of main effects of intervention leader and team performance measures were used to test the hypotheses with leaders' and teams' performance measures as dependent variables. This analysis was appropriate for three main reasons. Firstly, this study is interested in measuring the effects of the intervention relative to the control subjects and this method of analysis permit the researcher to make such comparison. Also, the two groups (experimental and control) might start off with different scores during pretest thus the analysis selected allowed the comparison of both groups. Finally, this method allows for the analysis of the increase in performance captured in the longitudinal measures of the constructs i.e., repeated measures of the participants and outcomes.

Fourth, a series of analyses were conducted to test for mediating effects of leaders' competencies on performance. According to Baron & Kenny (1986), three series of regression analyses need to demonstrate; (i) the independent variable must significantly predict the mediating variable; (ii) the mediator variable must then significantly predict the dependent variable; and finally, (iii) the relationship between the independent variable and dependent variable should be not significant or weaker when the mediator is controlled for. However, the current study is a field experimental design, thus the conventional approach to conduct mediation analysis is

not the most appropriate. However, in accordance to Yzerbyt, Muller and Judd (2004), to evaluate the presence of a mediation effect in the current field experimental study, the mediator variable (i.e., leaders' competencies) was included as a covariate in the repeated measure analysis of covariance (ANCOVA). The effect of the mediating variable must be significantly related to the main effect. At the same time, the *F*-value for interaction effect must diminish and become non-significant when the mediator is included as a covariate. Perfect mediation, as explained by the authors, occurs when the independent variable has no effect on the dependent variable when the mediator is controlled. Perhaps more relevant to applied research, a partial mediating effect becomes tenable when the relationship between the independent variable and dependent variable is reduced or lessened when the mediator is controlled. Finally, a Sobel (1982) test was then conducted to further assess the significance of the mediation.

### 3.9. Ethical considerations

This research met the ethical requirements of Aston Business School and conformed to the UK Integrity Research Office (UKRIO) Code of practice for research. Prior to conducting the study, the methodology and procedures were reviewed by the Research Ethics Committee (REC). The following issues were considered and respected when the research was conducted.

### 3.9.1. Informed consent

Signed informed consent was obtained from all of the participants in the study. The essence of informed consent is to allow participants to make an informed decision whether to agree or refuse to take part in the current study after being given comprehensive information regarding the nature of the research (Homan, 1991). Thus, participants were informed of the purpose of the study, how the research process would unfold, the length of time they would be required to participate, what would be expected of each participant, how the data would be collected and treated, how anonymity of their identity would be maintained when reporting data collected, and finally, the voluntary nature of the research was also emphasised. A consent form was provided for participants to sign prior to the start of the research (Appendix III and Appendix IV).

### 3.9.2. Risk and benefit analysis

When research is conducted, it is important to predict that the foreseeable risk does not outweigh the anticipated benefits (Oliver, 2003). A good experimental design often requires the use of a control group where a group of participants do not receive the intervention (treatment) while the participants are being studied. This highlights a specific ethical issue that when the intervention proves to be beneficial, participants assigned to control group may perceived that they are disadvantaged (Homan, 1991). As the current research proposed an intervention to improve leaders' performance which consequently should lead to better team performance, REC raised this potential concern. REC stated that there was a potential risk that students in the

control group did not receive the potential benefit of the intervention. The researcher had foreseen such a risk and had therefore integrated a leader training intervention for all students (not only the leaders from control group, but all students taking the BSG module) after the study was completed. After rigorous evaluation of the risk and benefits, the researcher received approval from the REC and the Director of Undergraduate Programmes (gatekeeper) that the benefits outweigh the risk in the long run. If the proposed intervention was successful and had positive effects on students' performance, it could be integrated within the module in the future.

### 3.9.3. Confidentiality, anonymity and data protection

In keeping with the Data Protection Act (1998), under which the data handling procedures at Aston Business School are registered, participants were informed verbally and in writing on how their confidentiality and anonymity will be upheld. All electronic data will be kept for 5 years and physical data (questionnaires) will be kept for 2 years. Homan (1991) suggested that all research materials were kept in secure and locked setting. Only the researcher has the access to identify the data. All data collected were sanitised by allocating a unique code to remove all identifying information of participants. Participants were also informed that they were free to withdraw their informed consent to participate in this study. Once notified, the researcher will then delete any relevant data immediately from the database.

### 3.9.4. Safety of researchers

After evaluating any potential risks that the researcher may encounter when conducting the research, it was concluded that the researcher faced minimal risk of threat or abuse, psychological trauma as a result of interaction, accusations of improper behaviour, exposure to risks of everyday life and social interactions, and causing psychological or physical harm to others.

### 3.9.5. Research involving university staffs or students

As the research was conducted on Aston Business School students and some members of staff, it was important to minimise the risks whereby they may perceive that they were coerced into participating, especially if there is a hierarchical relationship between researcher and participants (e.g., student-tutor relationship). To ensure that students participating in the research did not have an academic advantage compared to students choosing not to participate, any assessment for students that participated in the study were cross marked by another 2 members of staff. This is to ensure fairness between participating and non-participating student.

### 3.9.6. Research plan for collection, storage and analysis of data

As mentioned in Section 3.9.3, all research materials were kept in a secure and locked setting and only the researcher has the access to identify the data. All data collected was sanitised by allocating a unique code to remove all identifying information of participants. Participants were also informed that they were free to

withdraw their informed consent to participate in this study. Once they notified the researcher, their data would be deleted immediately from the database.

## 3.10. Conclusion

The purpose of this quantitative, field experimental research study was to discover the effect self-regulation intervention (independent variable) had on leaders' and team's performance (dependent variables). The self-regulation measures of leaders who participated in the intervention were compared, via a pretest and two posttest survey questionnaires using carefully selected scale, with leaders who were assigned to the control group. Forty leaders took part in the study, with twenty-five acting as a control group. The other fifteen leaders took part in a leadership development workshop (experimental group) to improve their self-regulatory competency. The control and experimental groups' leaders and their followers completed a pretest and two posttest survey questionnaires to determine each leader's performance measure. Also, data from objective measures such as, financial measures generated by BSG software package and group assessments were obtained.

The raw data collected was recorded on SPSS using all pretest and posttest information. The demographic data of age, sex, leader experience, and work experience was gathered from each participant in this study. Chapter Four reports and analyses the results generated by this research.

# CHAPTER 4

## Analyses and Research Findings

*CONTENT: This chapter presents the analyses and findings from the longitudinal field experiment. Section 4.1 is an introduction to the longitudinal field experiment. This is followed by Section 4.2 on data screening, Section 4.3 on reliability and validity of construct and Section 4.4 on aggregating data to group level. Next, Section 4.5 presents the descriptive data of the study and Section 4.6 on the correlation among the study variables. Section 4.7 discusses the manipulation check of the intervention. This is followed by Section 4.8 which reports the analyses of the intervention effects on performance and Section 4.9 reports the analyses of intervention effects on leader competencies. Section 4.10 presents the analyses of mediation relationships and finally, the results are summarised in Section 4.11.*

### 4.1. Introduction

In Chapter Two, a set of hypotheses was put forward about the effect of self-regulation intervention on leader and team performance. In order to test the hypotheses empirically, a longitudinal field experimental study was design as proposed in Chapter Three. In this current chapter, data is analysed and the results are presented from the study. The longitudinal field experimental study manipulated the leadership training program to develop self-regulation of the leaders in an experimental group. The objective of this experiment is to establish whether leaders trained in self-regulation will yield better leader performance as well as better team performance. In this experiment, a control group was included where randomly selected leaders did not receive the intervention. Performance measures were taken

across three stages (once before the intervention and twice after the intervention). As such, the longitudinal field experiment study provides an investigation of the causal link between self-regulation intervention and leader as well as team performance. The following sections report this experiment.

## 4.2. Data screening

Handling of missing data is crucial as it could cause biases in results obtained. Therefore, missing data was identified prior to statistical analyses. There could be several reasons for missing data, the main one being participants not answering several items of questions; to participants not answering the entire section of questionnaire (Saunders, Lewis, & Thornhill, 2000). The current study treated missing data with caution, as having to delete an entire case due to missing data could lead to reduction of effective sample size.

Across the three stages of data collection, all participating tutors completed their questionnaires without any missing data. There were a total of 52 questionnaires from participating leaders and 196 for participating followers. Seven out of 52 leader cases were removed either due to an entire section of the questionnaire not having been completed or over 5% of data were missing from all three questionnaires collected during the longitudinal study. Twenty-two cases from the followers' responses were deleted for similar reasons. Thus, the final sample size of consisted of 45 leaders and 174 of followers.

From the remaining cases, rather than eliminating the cases that had less than 5% of data missing, values were imputed using the Expectation-Maximisation (EM) algorithm in SPSS. This method was recommended by Hair, Black, Babin, Anderson and Tatham (2006) for data that are missing randomly. As the values were found to be randomly missing across both variables and cases, it is assumed, therefore to be missing completely at random. Most importantly, using this method allows the preservation of the sample size for both leaders and followers.

### 4.3. Reliability and validity of construct

Before performing analyses to test proposed hypotheses, a series of preliminary analyses were conducted to examine the reliability and validity of measures associated with independent, control, mediating, and dependent variables. The aim of performing reliability test is to assess the scale reliability and the homogeneity of items in a multi-item scale to ensure high internal consistency. In other words, the scale is consistently reflects the construct it is measuring (Field, 2005). A scale that is high in internal consistency should have a reliability estimate (Cronbach' alpha, α) of above .70 as suggested by Nunally (1978).

After ensuring a high level of internal consistency, construct validity was tested using Confirmatory Factor Analysis (CFA) with AMOS 16. CFA is a theory based analysis that evaluates the latent variables as identified by measured factors that has been developed by previous researchers (Byrne, 2001). Factor loading identifies the latent variables as they could not be directly measured and theory determines how

the latent variables are expected to relate to the factors. Several indicators are used to assess the fit of the model such as, chi-square ($\chi^2$) statistic, Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Normed Fit Index (NFI) and Goodness of Fit Index (GFI) (Bentler & Bonett, 1980; Byrne, 2001; Schumacker & Lomax, 2004).

Chi-square is a frequently used as a fit statistic. For a good fit of the model, a lower value and a non-significant chi-square indicates a better fit of the model to the data (Byrne, 2001; Schumacker & Lomax, 2004). However, chi-square has a limitation where it is sensitive to sample size. A large sample size will tend to cause chi-square to become large and significant and may lead to a rejection of a model with good fit (Schumacker & Lomax, 2004). Therefore, additional fit statistics are used for evaluation and support the conclusion drawn for the model to data fit. RMSEA values of .05 indicate a close fit and also RMSEA values in the range of up .05 to .08 indicate fair fit (Browne & Cudeck, 1989). A CFI value of above .90 indicates a good model fit to the data (Byrne, 2001; Hu & Bentler, 1999). NFI is an incremental fit index which measures the improvement of a target model to a more restricted baseline model and therefore, NFI is indicative of a good model fit when its value approaches .90 and above (Hu & Bentler, 1999). NFI indicates good fit of the model to the data when its value approaches 1.0. GFI is based on the ratio of the sum of squared differences between the observed and reproduced matrices to the observed variances and does not depend upon the sample size to measure the model fit (Byrne,

2001). GFI equal or exceeding a value of .90 is an indication of good fit of the model (Hu & Bentler, 1999).

Based on the above, the following section evaluates and reports the reliability and validity of the independent, control, mediating, and dependent variables.

### 4.3.1. Independent variable

***Self-regulation.*** Leaders in both control and experimental groups were asked to complete a 10-item questionnaire on self-regulation once before and twice after the intervention. The reliability (Cronbach alpha, α) for self-regulation was .75, exceeding the recommended reliability estimates recommended by Nunally (1978). The confirmatory factor analysis showed that the one-factor model of self-regulation provided acceptable fit to the data, $\chi^2$ (33, N = 79) = 38.63, $p > .05$, CFI = .95, RMSEA = .05, NFI = .76 and GFI = .91.

### 4.3.2. Mediator

***Leader competencies.*** Next, the reliability analysis was conducted on the mediator, i.e., leader competencies. The 39-item scale for leader competencies, which was completed by team members and tutors (supervisors), yielded a Cronbach alpha of .97, which is above the threshold of .70. Examining the fit indices suggests that the five-factor model ($\chi^2$ (685, N = 411) = 1891.68.00, $p < .05$, CFI = .91, RMSEA = .06, NFI = .86 and GFI = .90) provided an adequate fit for the leader competencies data. The chi-square for the model is significant. However, the chi-square value is

sensitive to sample size (Schumacker & Lomax, 2004). Medsker, Larry and Gina (1994) recommended the use of CFI value which is less sensitive to sample size to determine the quality of the model fit. In this case, the CFI is above the recommended value, therefore the model is concluded to be a good fit.

### 4.3.3. Dependent variables

Team members in both, control and experimental groups were asked to complete a 9-item questionnaire on leader performance once before and twice after the intervention. Leader performance is a three factor scale consisting of leader satisfaction, leader effectiveness and extra effort (3-items for each respective factor). The Cronbach' alpha (α) for leader satisfaction was .81, leader effectiveness was .85 and extra effort was .73, all exceeding the recommended reliability estimates. The confirmatory factor analysis showed a significant chi-square value ($\chi^2$ (24, N = 286) = 47.00, $p < .05$) as chi-square value is sensitive to sample size (Schumacker & Lomax, 2004). Therefore, CFI value which is less sensitive to sample size is used to determine the quality of the fit of the model (Medsker Larry & Gina, 1994). Examining the rest of the fit indices (CFI = .98, RMSEA = .05, NFI = .96 and GFI = .97), suggests an adequate fit for the leader performance data. Thus, the results support the discriminant validity of the leader satisfaction, leader effectiveness and extra effort measures.

### 4.3.4. Control variable

***Self-efficacy.*** Next, the reliability analysis was conducted on the control variable, self-efficacy. The 8-item scale for self-efficacy yielded a Cronbach alpha of .90, which is above the threshold of .70. Fit indices ($\chi^2$ (18, N = 79) = 24.63, $p > .05$, CFI = .98, RMSEA = .06, NFI = .93 and GFI = .93) for the five-factor model of leader performance provided acceptable fit to the data. These results support the discriminant validity of the leader satisfaction, leader effectiveness and extra effort measures.

## 4.4. Aggregation to group level

From a theoretical point of view, this study was designed at a leader level. However, some of the measures of leader's performances (dependent variables) were collected at the follower's (team member) level. The number of followers providing ratings for each leader ranged from three to four. To ensure the congruency of the level of theory, measurement and statistical analyses (Klein, Dansereau, & Hall, 1994), it is necessary first to aggregate the data in order to obtain the leader's level construct by taking the average of followers' ratings of the leaders. The aggregated followers' ratings will subsequent hypothesis testing to tap into the shared followers' perception of leaders' performance.

To justify aggregating followers' ratings for each leader, James, Demaree, and Wolf's (1984) agreement index ($r_{wg}$) of within-group interrater agreement was calculated for each dependent variable and $r_{wg}$ values above .70 indicate acceptable

consensual validity. Then, the intraclass correlation coefficients (ICCs) were examined. ICC(1)[2] assesses the reliability of individual ratings. A one-way ANOVA with the leader's team as the independent variable and the followers' rating for each the dependent variable was conducted. If ANOVA's results displayed that within-group variances are homogeneous while variances across groups are significantly different, this would indicate that aggregation is appropriate (Dansereau, Alutto, & Yammarino, 1984). ICC(2)[3] assesses the reliability of the leader's group average rating and ICC(2) values above .50 are suggestive of acceptable discriminant validity (Klein, Conn, Smith, & Sorra, 2001). However, ICC(2) value is strongly proportional to team size (Bliese, 2000). Hence, in this study, the decision to aggregate followers' ratings mainly depended upon ICC(1). Statistics of agreement ($r_{wg}$) and reliabilities (ICCs) of ratings by followers are reported in Table 7.

***Leader satisfaction.*** Initial examination of $r_{wg}$ index showed five teams' scores were unacceptable and they were excluded from further analyses. The mean $r_{wg}$ index before intervention was .726, and after intervention was .763 and .745 respectively. One-way ANOVA detected significant leader level effects in all three measurements ($F_{(40,84)} = 1.787$; $p < .05$), ($F_{(40,72)} = 2.164$; $p < .01$) and $F_{(40,75)} = 2.103$; $p < .01$)

[2] The ICC(1)s were determined by using the following: Level 1 variance component/intercept variance component + Level 1 variance component.

[3] The ICC(2)s were determined by using the following: Level 1 variance component/mean square between groups

| Variable | Time 1 (Pretest) | | | | | Time 2 (Posttest 1) | | | | | Time 3 (Posttest 2) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean (SD) | Mean $r_{wg}$ | F $_{(40,84)}$ | ICC(1) | ICC(2) | Mean (SD) | Mean $r_{wg}$ | F $_{(40,72)}$ | ICC(1) | ICC(2) | Mean (SD) | Mean $r_{wg}$ | F $_{(40,75)}$ | ICC(1) | ICC(2) |
| ***Leader Competencies*** | 5.328 (.754) | .808 | 4.146** | .522 | .758 | 5.480 (582) | .753 | 2.010** | .280 | .502 | 5.631 (.624) | .732 | 1.856* | .245 | .461 |
| ***Leader performance*** | | | | | | | | | | | | | | | |
| Leader satisfaction | 3.662 (.609) | .726 | 1.787* | .218 | .440 | 4.011 (.544) | .763 | 2.164** | .312 | 0.538 | 4.163 (.571) | .745 | 2.103** | .295 | .524 |
| Leader effectiveness | 3.677 (.644) | .703 | 2.131** | .286 | .531 | 4.048 (.512) | .769 | 1.325$^{\dagger}$ | .113 | 0.246 | 4.080 (.543) | .708 | 1.475* | .153 | .322 |
| Leader extra effort | 3.280 (.719) | .715 | 2.031** | .267 | .508 | 3.616 (.672) | .714 | 1.441* | .147 | 0.306 | 3.769 (.665) | .750 | 1.316$^{\dagger}$ | .107 | .240 |

Note. $N$ = 40 leaders; $n$ = 155 followers.
$^{\dagger}$ $p < .10$ *$p < .05$ **$p < .01$

Table 7: Mean, standard deviation, $r_{wg}$, F-values and, ICC values

as shown in Table 7. The ICC(1) was .218, .312 and .295 in the first, second and third measurements, indicating that 78%, 69% and 70% of the variability in the leader satisfaction score existed in intra-individual level, respectively. This can be concluded that leader satisfaction ratings by followers can be aggregated to leader level.

***Leader effectiveness.*** Across all three measurement times, average rating agreement ($r_{wg}$) of followers on leader effectiveness were .703, .769 and .708, respectively. Similar to the above, five teams were omitted as they did not achieve acceptable team level $r_{wg}$ index. One-way ANOVA detected significant leader level effects in all three measurements ($F_{(40,84)} = 2.131$; $p < .01$), ($F_{(40,72)} = 1.326$; $p < .10$) and ($F_{(40,75)} = 1.475$; $p < .05$). In the first, second and third time measurements, the ICC(1) was .286, .113 and .153, indicating that 71%, 89% and 85% of the variability in leader effectiveness score existed in intra-individual level. All results are shown in Table 7. Given these sufficient levels of agreement, it is justifiable to compute average follower ratings for each leader.

***Extra effort.*** $r_{wg}$ index, F-value and ICCs(1) were calculated for followers' agreement on leader's influence on the extra effort they had put into team performance. The team level $r_{wg}$ index showed five teams' scores to be unacceptable and they were excluded from further analyses. The mean $r_{wg}$ index for pre intervention was .715, and for post intervention were .714 and .750. One-way ANOVA detected significant leader level effects in all three measurements ($F_{(40,84)} =$

2.031; $p < .01$), ($F_{(40,72)} = 1.441$; $p < .05$) and ($F_{(40,75)} = 1.316$; $p < .10$) as shown in Table 7. ICC(1) was .267, .147 and .107 in the first, second and third measurements, indicating that 75%, 85% and 89% of the variability in extra effort score existed in intra-individual level, respectively. Aggregation of dependent variables for the followers' ratings of leadership was justified based on results demonstrated.

***Leader competencies.*** Across all three measurement times, average rating agreement ($r_{wg}$) of followers and tutors (supervisors) on leader effectiveness were .808, .753 and .732. Similar to the above, five teams were omitted as they did not achieve acceptable team level $r_{wg}$ index. One-way ANOVA detected significant leader level effects in all of the three measurements ($F_{(40,84)} = 4.146$; $p < .01$), ($F_{(40,72)} = 2.010$; $p < .01$) and ($F_{(40,75)} = 1.856$; $p < .05$) as shown in Table 7. ICC(1) were .522, .280 and .245 in the first, second and third measurements, indicating that 48%, 72% and 75% of the variability in leader competencies score existed in intra-individual level, respectively. As such, it was concluded that leader competency ratings by followers and tutors (supervisors) can be aggregated to leader level.

## 4.5. Descriptive results

The data collected consisted of second-year business degree students taking the Business Strategy Game (BSG) simulation. In the BSG simulation, students are divided in teams of four to five with one student appointed as the team leader. This sample was selected because the structures and settings in which students would be interacting in the simulation program reflect the organisational setting. Team leaders

lead and influence their teams in developing a competitive strategy, developing and managing virtual company's portfolio, creating shareholder value, analysing competitor, managing company's manufacturing operations, and creating customer value.

In the natural setting of the BSG module, when students were divided into teams, the relative gender, background and majors were balanced as part of the learning objective of the module. Students were required to work in a diverse team. Leaders then were randomly allocated to control and experimental conditions for this study. However, it is still crucial to ensure that the demographics in the experimental and control groups were similar.

Firstly, an independent *t*-test was used to evaluate differences in the mean between the two groups (Field, 2005), i.e., the control and experimental groups. As gender is a categorical data, a Pearson chi-square test was performed to compare if there is any differences in gender between the control and experimental group (Field, 2005). Both, the *t*-test and chi-square test conducted between the 40 leaders in both conditions revealed no significant difference in terms of age, gender, leader experience and work experience (see Table 8). In the experimental group, 53.3 % of leaders were male and 46.7 % of leaders were female and within the control group, 59.3 % of leaders were male and 40.7 % of leaders were female. The average age for leaders in the study is 19.98 years ($SD$ = .701) with a mean of 2.83 ($SD$ = 1.63) years of work experience and a mean of 1.50 ($SD$ = 1.73) years of leadership experience.

In the leaders sample, an additional comparison of general self-efficacy between control and experimental were conducted because individual differences between leaders who have higher general self-efficacy may influence the outcome of the intervention due to their initial beliefs in their competence to achieve the desired outcome (Gist, Stevens, & Baveita, 1991; Judge, Jackson, Shaw, Scott, & Rich, 2007; Tai, 2006). As such, leaders with higher self-efficacy may be more likely to be able to self-regulate their behaviours to achieve their goals. In order to eliminate any potential effect of general self-efficacy on self-regulatory process, this study included self-efficacy as a covariate for examining differences between the trained and control groups. There was, however, no significant difference between the two groups in terms of average general self-efficacy ratings, $t(40) = .606$, $p$ = ns. These could be attributed to an effective randomisation process where leaders were randomly split into control and experimental groups.

| | **Leader**[a] | | | **Follower**[b] | | |
|---|---|---|---|---|---|---|
| | **Exp.** | **Control** | | **Exp.** | **Control** | |
| | ***M*** | ***M*** | | ***M*** | ***M*** | |
| **Pearson chi-square** | | | $\chi^2$ | | | $\chi^2$ |
| Gender | | | .617 (*ns*) | | | 1.824 (*ns*) |
| **Independent t-test** | | | **t-value** | | | **t-value** |
| Age | 19.95 | 19.96 | .038 (*ns*) | 20.61 | 18.97 | .707(*ns*) |
| Leader experience | 1.62 | 1.44 | .842 (*ns*) | 1.74 | 1.39 | .886 (*ns*) |
| Work experience | 2.54 | 2.99 | .334 (*ns*) | 4.17 | 3.41 | 1.065 (*ns*) |
| General self-efficacy | 5.66 | 5.48 | .606 (*ns*) | | | |

Note. [a]$n = 40$; [b]$n = 155$; [c]$n = 8$

Table 8: Results of Pearson chi-square and tests independent *t*-tests

Secondly, when comparing the 155 follower sample for both experimental and control groups, *t*-test revealed no significant different in terms of age, leader experience of followers and work experience. Chi-square test also revealed no significant difference between genders in both groups (see Table 9). The experimental group comprised of 46.2 % of male followers and 53.8 % of female followers and within the control group, 51.3 % of male followers and 48.7 % of female followers. The average age for followers in the study is 18.02 years (*SD* = 6.53) with a mean of 2.20 (*SD* = 1.95) years of work experience and a mean of 1.06 (*SD* = 1.68) years of leadership experience.

| | **Leader** [a] | **Follower** [b] | **Tutor** [c] |
|---|---|---|---|
| Gender | | | |
| Male | 54.8 % | 51.5 % | 23.3 % |
| Female | 45.2 % | 48.5 % | 76.7 % |
| Age | 19.98 (.701) | 18.02 (6.53) | 24.78 (19.76) |
| Leader experience | 2.83 (1.63) | 2.20 (1.95) | 9.98 (13.02) |
| Work experience | 1.50 (1.73) | 1.06 (1.68) | 3.19 (4.41) |

Note. *SD* shown in parentheses.
[a]*n* = 40; [b]*n* = 155; [c]*n* = 8

Table 9: Participants' characteristics

Finally, the demographics for the eight tutors (i.e. supervisors) who provided ratings for leaders were also examined. 23.3 % of tutors were male and 76.7 % of tutors were female. On average, they were 24.78 (*SD* = 19.76) years old, with 9.98 (*SD* = 13.02) years of work experience and a mean of 3.19 (*SD* = 4.41) years of leadership experience.

Full descriptive statistics showing the means and standard deviations for each of the variables discussed for the leaders, followers and tutors (supervisor) are presented in Table 9.

### 4.6. Correlations among outcome variables

A correlation analysis allows an initial understanding of the variables within the research. It is a measure of the linear relationship between variables (Field, 2005). The analysis used was Pearson correlation coefficient, which ranges between -1 to +1 indicating the degree of association between two variables. A positive value implies a positive association and a negative value indicates negative or inverse association. Correlations among the outcome variables across three times are presented in Table 10, Table 11 and Table 12. The relationship showed a strong positive relationship between variables as expected, except gearing ratio in Table 11. This negative relationship is consistent with expectation because of its inverse relationship with other performance measures.

**Leaders' performance (rated by followers)**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| **Leader satisfaction** | | | | | | | | | |
| 1. Pretest | | | | | | | | | |
| 2. Posttest 1 | .710** | | | | | | | | |
| 3. Posttest 2 | .529** | .756** | | | | | | | |
| **Leader effectiveness** | | | | | | | | | |
| 4. Pretest | .760** | .528** | .459** | | | | | | |
| 5. Posttest 1 | .467** | .686** | .642** | .566** | | | | | |
| 6. Posttest 2 | .368** | .642** | .772** | .442** | .806** | | | | |
| **Leader extra effort** | | | | | | | | | |
| 7. Pretest | .634** | .487** | .354* | .615** | .459** | .429** | | | |
| 8. Posttest 1 | .522** | .580** | .435** | .498** | .569** | .555** | .836** | | |
| 9. Posttest 2 | .358* | .517** | .607** | .355* | .646** | .702** | .539** | .722** | |
| | | | | | | | | | |
| **Experimental group (n = 15)** | | | | | | | | | |
| *M* | 3.696 | 4.282 | 4.443 | 3.622 | 4.167 | 4.307 | 3.270 | 3.746 | 4.032 |
| *SD* | .451 | .336 | .344 | .589 | .349 | .314 | .682 | .574 | .532 |
| **Control group (n = 25)** | | | | | | | | | |
| *M* | 3.669 | 3.926 | 4.036 | 3.721 | 3.959 | 3.932 | 3.254 | 3.602 | 3.656 |
| *SD* | .422 | .371 | .428 | .396 | .375 | .336 | .448 | .407 | .368 |

† $p < .10$ *$p < .05$ **$p < .01$

Table 10: Correlation, means, and standard deviation of leaders' performance (follower's ratings)

**Teams' financial performance indicators**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Profit** | | | | | | | | | | | | |
| 1. Posttest 1 | | | | | | | | | | | | |
| 2. Posttest 2 | .893** | | | | | | | | | | | |
| 3. Posttest 3 | .823** | .932** | | | | | | | | | | |
| **Return on capital employed (ROCE)** | | | | | | | | | | | | |
| 4. Posttest 1 | .485** | .510** | .620** | | | | | | | | | |
| 5. Posttest 2 | .593** | .623** | .674** | .685** | | | | | | | | |
| 6. Posttest 3 | .552** | .615** | .651** | .724** | .882** | | | | | | | |
| **Gearing** | | | | | | | | | | | | |
| 7. Posttest 1 | -.454** | -.536** | -.606** | -.813** | -.723** | -.857** | | | | | | |
| 8. Posttest 2 | -.516** | -.610** | -.623** | -.658** | -.878** | -.907** | .779** | | | | | |
| 9. Posttest 3 | -.528** | -.596** | -.631** | -.719** | -.816** | -.935** | .808** | .816** | | | | |
| **Earnings per share (EPS)** | | | | | | | | | | | | |
| 10. Posttest 1 | 1.00** | .893** | .823** | .485** | .593** | .552** | -.454** | -.516** | -.528** | | | |
| 11. Posttest 2 | .893** | 1.00** | .932** | .510** | .623** | .615** | -.536** | -.610** | -.596** | .893** | | |
| 12. Posttest 3 | .809** | .914** | .983** | .624** | .672** | .665** | -.610** | .629** | -.641** | .809** | .914** | |
| **Experimental group (n = 15)** | | | | | | | | | | | | |
| *M* | 39096 | 279575.3 | 703426.7 | -1.174 | 26.647 | 44.419 | 60.316 | 42.387 | 26.167 | .078 | .559 | 1.319 |
| *SD* | 195689.5 | 308861.8 | 552828.4 | 14.540 | 17.193 | 17.022 | 6.849 | 6.984 | 12.466 | .391 | .618 | 1.086 |
| **Control group (n = 25)** | | | | | | | | | | | | |
| *M* | -182016 | -77802.6 | 115129.3 | -9.783 | 6.210 | 19.113 | 70.127 | 59.233 | 44.532 | -.037 | -.156 | .232 |
| *SD* | 201853.6 | 279287.5 | 452471.0 | 14.350 | 13.695 | 22.294 | 11.827 | 13.169 | 22.783 | .404 | .559 | .892 |

† $p < .10$ *$p < .05$ **$p < .01$

Table 11: Correlation, means, and standard deviation of leaders' financial performance

**Teams' assessment**

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Presentation | | | | | |
| 2. Business plan | .406** | | | | |
| 3. Group report | .430** | .681** | | | |
| 4. Simulation performance | .253* | .333* | .574** | | |
| 5. Reflective report | .428** | .694** | .730** | .506** | |
| **Experimental group (n= 25)** | | | | | |
| *M* | 69.8 | 67.6 | 73.73 | 7.53 | 70.33 |
| *SD* | 5.506 | 3.481 | 8.439 | 1.06 | 5.219 |
| **Control group (n= 15)** | | | | | |
| *M* | 63.48 | 62.3 | 63.19 | 6.56 | 64.52 |
| *SD* | 6.875 | 10.611 | 9.845 | 1.281 | 5.543 |

† $p < .10$ *$p < .05$ **$p < .01$

Table 12: Correlation, means, and standard deviation of leaders' assessments

## 4.7. Manipulation check of intervention

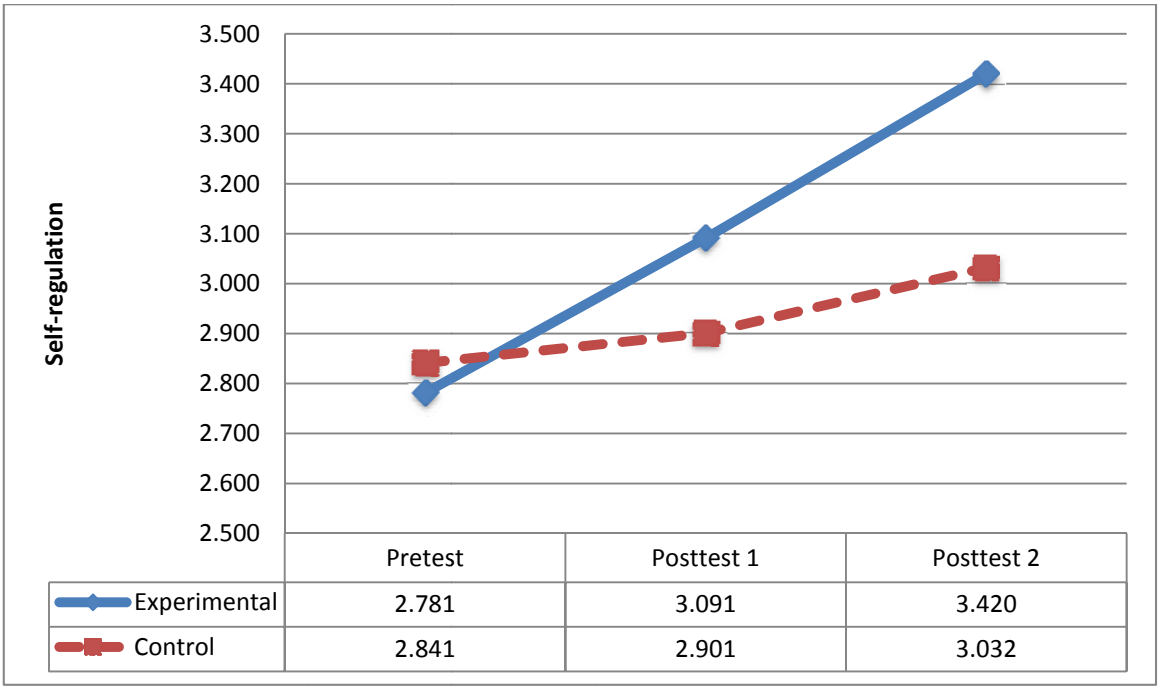
To provide a check of the leaders' self-regulation intervention training, leaders' self-regulation prior to intervention and after intervention was assessed. If the intervention was successfully implemented, then the experimental group is expected to demonstrate higher self-regulatory process in comparison to the control group after receiving intervention. Leaders rated the accuracy of ten statements each describing self-regulation (from Schwarzer, Diehl, & Schmitz, 1999) on a four-point Likert scale, ranging from "not at all true" to "very true". Responses were taken at pretest (prior to intervention), posttest 1 and posttest 2 (after intervention). Sample items included: "I stay focused on my goal and don't allow anything to distract me from my plan of action" and "When I worry about something, I cannot concentrate on an activity (reverse scored)". Cronbach's alpha was .75 for this scale, exceeding the .70 criterion.

| | ***F*** | $\eta^2$ | **M Control Group** [b] | **M Experimental Group** [b] |
|---|---|---|---|---|
| Within group | $5.943_{(1,74)}$ ** | .159 | | |
| Between group | $2.886_{(1,37)}$ † | .069 | | |
| Pretest | $.817_{(1,37)}$ | .021 | 2.841 (.392) | 2.781 (.435) |
| Posttest 1 | $2.854_{(1,37)}$ † | .068 | 2.901 (.327) | 3.091 (.332) |
| Posttest 2 | $8.938_{(1,37)*}$ | .186 | 3.302 (.418) | 3.420 (.353) |

Note. *df* for *F* shown in parentheses; *SD* for *M* shown in parentheses
[a] $n = 25$. [b] $n = 15$.
[c] Pre-intervention measurement was used a covariate to eliminate confounds
† $p < .10$ *$p < .05$ **$p < .01$

Table 13: Results of manipulation checks

Table 13 displays the means, standard deviations, *F* statistics and effect size for the manipulation check and Figure 2 presents graph of the marginal mean for the data.




| | Pretest | Posttest 1 | Posttest 2 |
|---|---|---|---|
| Experimental | 2.781 | 3.091 | 3.420 |
| Control | 2.841 | 2.901 | 3.032 |

Figure 2: Estimated marginal mean for leaders' self-regulation

Results of the manipulation check showed that the intervention, using analysis of covariance (ANCOVA) with age, gender and self-efficacy as covariates, yielded a significant interaction effect between experimental and control groups ($F_{1,74} = 5.943$; $p < .01$; $\eta^2 = .159$) with a significant high contrast[4] ($F_{1,34} = 11.618$; $p < .05$; $\eta^2 = .194$). There is also a significant main effect of time ($F_{1,74} = 9.366$; $p < .01$; $\eta^2 = .230$) and significant main effect between the experimental and control groups ($F_{1,37} = 2.886$; $p < .10$; $\eta^2 = .069$). Figure 2 demonstrates that the increase in mean of self-regulation is higher in the experimental groups compared to the control group.

[4] Planned contrast (or trend analysis) is used to explore whether a linear function fits the data well.

In order to interpret the significant effects of training on self-regulation in detail (see Table 13), the pretest and posttest means were compared at each three measurement point. Results show that there is no significant difference between control and experimental group ($F_{1,37}$ = .817; $p$ > .05) during pretest. As expected, after receiving the intervention, the results in posttest 1 revealed a statistical significant difference ($F_{1,37}$ = 2.854; $p$ < .10) between the control and experimental groups. At posttest 2, leaders who received the intervention scored significantly higher ($F_{1,37}$ = 8.938; $p$ < .01) in self-regulation in comparison to those who did not receive intervention.

A Tukey HSD (Honestly Significant Difference) test was conducted for both experimental and control groups to compare if the increase in self-regulation between pretest and posttest 1 as well as posttest 1 and posttest 2 is significant. This test is generally considered a more robust test to compare all possible pairs of means while controlling for Type I error (Pagano, 1994). Analyses for the experimental group demonstrated that the increase from pretest to posttest 1 (2.781 vs. 3.091, respectively, $p$ < .05) and posttest 1 and posttest 2 (3.091 vs. 3.420, respectively, $p$ < .05) are significant. On the contrary, the control group demonstrated a non-significant increase from pretest to posttest 1 (2.841 vs. 2.901, respectively, $p$ > .05) and posttest 1 to posttest 2 (2.901 vs. 3.032, respectively, $p$ > .05).

Although the main effect between self-regulation training and self-regulation was significant at $p$ < .10, the results for the comparisons at each time point for gearing

between the two groups still supports that self-regulation over the three times. Overall, the results showed that both groups possessed a similar level of self-regulation during pretest and that there is an increase in self-regulation for experimental and control groups. However, there is a significantly higher increase in leaders' self-regulation for the leaders in the experimental group after receiving the intervention when compared to the control group, leading to the conclusion that the manipulation was successful.

## 4.8. Effects of training condition on leaders performance measures

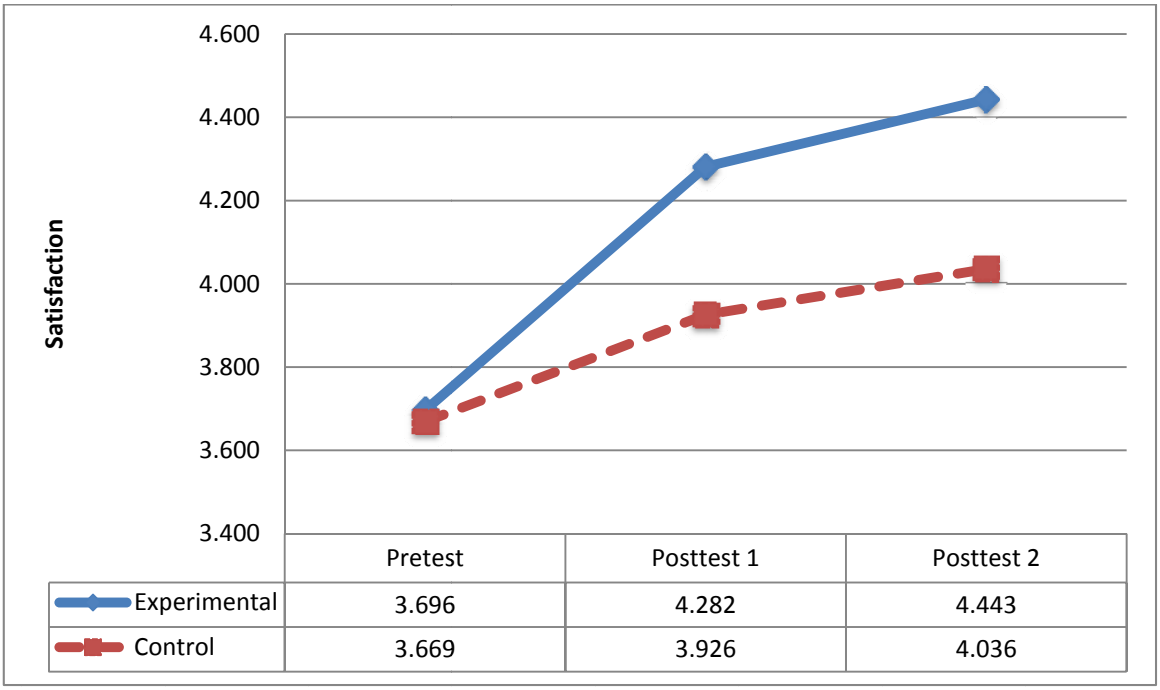
### 4.8.1. Leadership outcomes

***Effects for leader satisfaction***

The influence of self-regulation training on leader satisfaction was tested using repeated measures analysis of covariance (ANCOVA) with age, gender and self-efficacy as covariates. Leader satisfaction ratings by followers was the dependant variable. The leaders that received self-regulation intervention versus those that did not represented the between-group factor, and the rating of leader satisfaction taken at three different intervals was the within-group measures. Consistent with Hypothesis 1a, the analysis yielded a significant main effect for differences between experimental and control groups ($F_{1,37}$ = 4.343; $p < .05$; $\eta^2$ = .110). The within subject results did not reveal a significant overall effect of time (See Table 14). However, a significant interaction effect ($F_{1,74}$ = 6.401; $p < .01$; $\eta^2$ = .155) with a high contrast of ($F_{1,37}$ = 7.472; $p < .01$; $\eta^2$ = .76) was evident. This effect

demonstrated that followers of the leaders who received the intervention were rated significantly different to those leaders who did not receive the intervention (shown in Figure 3).

In addition, a Tukey HSD test for each group to compare between pretest and posttest 1 as well as posttest 1 and posttest 2 was conducted. Ratings of leader satisfaction by followers in the experimental group showed a significant increase from pretest to posttest 1 (3.696 vs. 4.282, respectively, $p < .05$) and from posttest 1 to posttest 2 (4.282 vs. 4.443, respectively, $p < .05$). For the control group, ratings of leader satisfaction by followers showed a significant increase from pretest to posttest 1 (3.669 vs. 3.926, respectively, $p < .05$) but a non-significant increase from posttest 1 to posttest 2 (3.926 vs. 4.036, respectively, $p > .05$).




| | Pretest | Posttest 1 | Posttest 2 |
|---|---|---|---|
| Experimental | 3.696 | 4.282 | 4.443 |
| Control | 3.669 | 3.926 | 4.036 |

Figure 3: Estimated marginal mean for followers' rating of leader satisfaction

Additionally, in order to interpret the significant interaction of self-regulation training on leader satisfaction in details (see Table 14), the pretest and posttest means were compared for each three measurement points. As demonstrated in Figure 3, there was no significant difference between leaders in the trained and untrained groups at pretest. However, starting in posttest 1, leaders that received intervention were rated significantly higher ($F_{1,37}$ = 8.559; $p < .01$; $\eta^2 = .189$) than the leaders who were in the control group, and continued to receive significantly higher ratings in posttest 2 measurement ($F_{1,37}$ = 8.932; $p < .01$; $\eta^2 = .194$).

Consistent to expectation, the results demonstrated that followers are more satisfied with leaders' performance across time in the experimental group, as compared to the control group. This result is attributable to leaders who had a higher level of self-regulation and therefore use methods of leadership which are more satisfying than leaders who had a lower level of self-regulation.

***Effects for leader effectiveness***

A repeated measures analysis of covariance (ANCOVA) with age, gender and self-efficacy as covariates was performed on the leader effectiveness data. Leaders who received self-regulation intervention versus those that did not represented the between-subjects factors and the follower ratings of leaders' effectiveness taken at three different intervals were the within-subject factor. There was a significant interaction effect ($F_{1,37}$ = 9.198; $p < .01$; $\eta^2 = .208$) with a highly significant contrast of ($F_{1,37}$ = 13.204; $p < .01$; $\eta^2 = .274$). However, no main effect of time was obtained

for time and between experimental and control group (see Table 14). However, Figure 4 presents the ratings of leaders for both control and experimental groups, and the graphs showed that leaders who attended the intervention were rated higher compared to leaders who did not.

As such, univariate tests to compare both of the groups for each measurement point (i.e., pretest, posttest 1 and posttest 2) were conducted. Examining the results at pretest and posttest 1, followers did not rate leaders to be significantly different between those in the trained and untrained groups. However, in posttest 2, leaders that received the intervention were rated significantly higher ($F_{1,37} = 11.294$; $p < .01$; $\eta^2 = .234$), than the leaders who were in the control group (see Figure 4).

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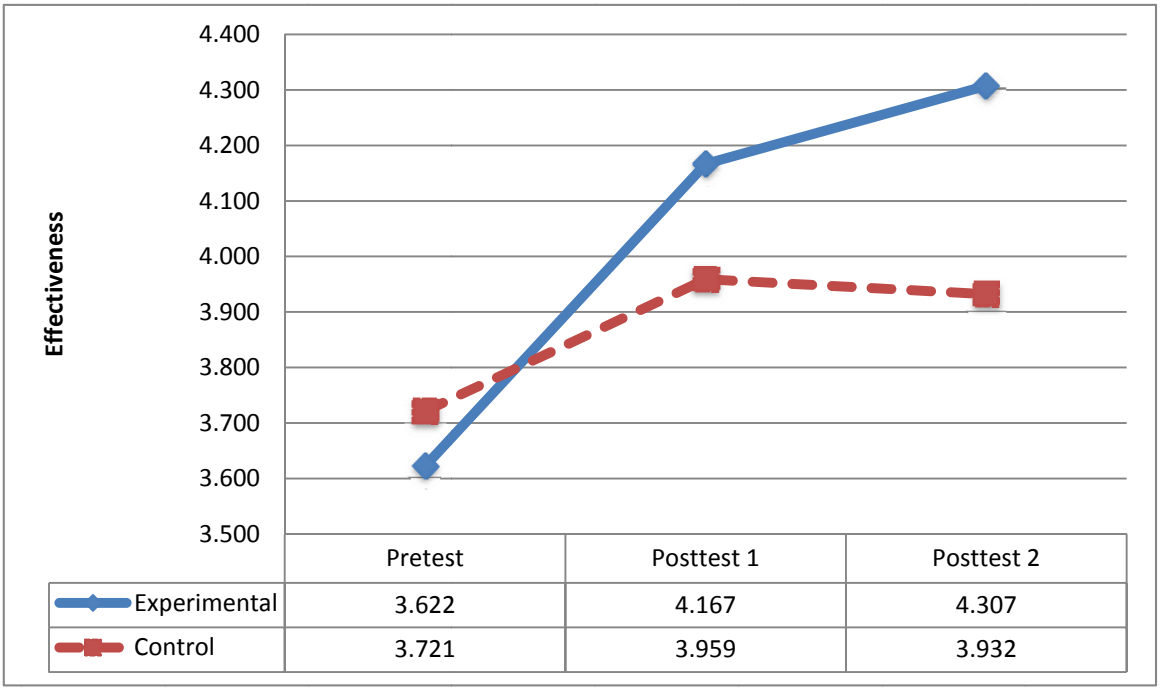



Figure 4: Estimated marginal mean for followers' rating of leader effectiveness

In addition, Tukey HSD analyses were also conducted for each group independently to test for a significant increase in leader effectiveness ratings between pretest and posttest 1 as well as posttest 1 and posttest 2. The test revealed that leader effectiveness, as rated by followers in the experimental group, showed a significant increase from pretest to posttest 1 (3.622 vs. 4.167, respectively, $p < .05$) but was not significantly different from posttest 1 to posttest 2 (4.167 vs. 4.307, respectively, $p > .05$). On the contrary, ratings of leader effectiveness by followers in the control group showed a significant increase from pretest to posttest 1 (3.721 vs. 3.959, respectively, $p < .05$) but a slight decrease from posttest 1 to posttest 2 that is not statistically significant (3.959 vs. 3.932, respectively, $p > .05$).

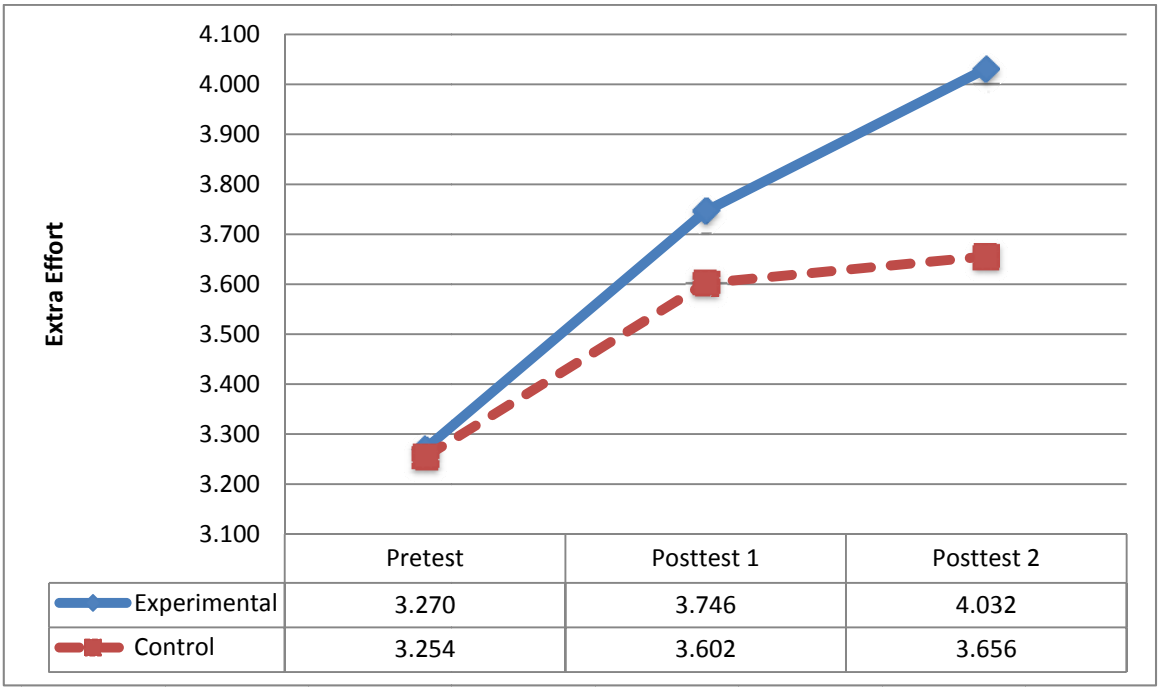
To summarise, the results of receiving self-regulation training caused leaders to be perceived as more effective across time as rated by their followers. Leaders in the intervention training group self regulate more in comparison to leaders in the control group, which ultimately resulted in them being more effective.

***Effects for extra effort***

Next, an examination of whether leaders with higher self-regulatory competency (after receiving intervention) relate significantly with leadership outcome in increasing followers' effort to try harder to perform. A repeated measures analysis of covariance (ANCOVA) with age, gender and self-efficacy as covariates was conducted. The analysis did not yield a significant main effect between the experimental and control groups and time (see Table 14). However, a significant

effect for interaction ($F_{1,74} = 4.507$; $p < .05$; $\eta^2 = .114$) was evident. This is supported by the contrast test which was significant ($F_{1,37} = 5.386$; $p < .05$; $\eta^2 = .133$). Figure 5 demonstrated that followers' willingness to exert extra motivation is higher in the experimental group compared to the control group.

In view of the results above, univariate comparison between the experimental and control groups were conducted at each of the three time points. Neither pretest nor posttest 1 yielded significant differences between ratings for leaders in the trained and untrained groups (See Figure 5). During posttest 2, leaders that received intervention were rated significantly higher ($F_{1,37} = 6.864$; $p < .01$; $\eta^2 = .156$) than the leaders who were in the control group.




| | Pretest | Posttest 1 | Posttest 2 |
|---|---|---|---|
| Experimental | 3.270 | 3.746 | 4.032 |
| Control | 3.254 | 3.602 | 3.656 |

Figure 5: Estimated marginal mean for extra effort

| | Main and interaction effects (F) [a] | | | | Between subject effect (F) [a] | | |
|---|---|---|---|---|---|---|---|
| | **Group effect** [b] | **Time effect** [c] | **Interaction effect** [c] | **Contrast** [b] | **Pretest** [b] | **Posttest 1** [b] | **Posttest 2** [b] |
| ***Leadership outcome*** | | | | | | | |
| Leader satisfaction | 4.343 (.110)* | .391 (.011) | 6.401 (.155)** | 7.472 (.176)** | .020 (.001) | 8.559** (.188) | 8.932** (.194) |
| Leader effectiveness | 1.622 (.044) | .543 (.015) | 9.198 (.208)** | 13.204 (.274)** | .484 (.013) | 2.755 (.069) | 11.294** (.234) |
| Extra effort | 1.433 (.039) | 1.518 (.042) | 4.507 (.114)* | 5.386 (.133)* | .000 (.000) | .817 (.022) | 6.864** (.156) |

Note. $n = 15$ (experimental group), $n = 25$ (control group). Partial $\eta^2$ shown in parentheses.
[a] Self efficacy was used a covariate to eliminate confounds
[b] df = 1,37; [c] df = 1,74
[†] $p < .10$ *$p < .05$ **$p < .01$

Table 14: Results of repeated measures analysis of covariance (ANCOVA) for leadership outcomes rated by followers.

Next, a Tukey HSD test for the control and experiment groups to compare follower ratings of extra effort between pretest and posttest 1 as well as posttest 1 and posttest 2 was conducted. Ratings of extra effort by followers in the experimental group showed a significant increase from pretest to posttest 1(3.270 vs. 3.746, respectively, $p < .05$ and from posttest 1 to posttest 2 (3.746 vs. 4.032, respectively, $p < .05$. For the control group, ratings of extra effort by followers showed a significant increase from pretest to posttest 1 (3.254 vs. 3.602, respectively, $p < .05$) but no significant increase from posttest 1 to posttest 2 (3.602 vs. 3.656, respectively, $p > .05$).

In summary, contrary to the expectations that leaders would receive higher ratings from followers after the intervention in posttest 1, the results revealed a lag in the effect of training. However, overall these results still support that leaders with higher self-regulation yield higher leadership outcomes in increasing followers' effort to try harder to perform, as demonstrated during posttest 2.

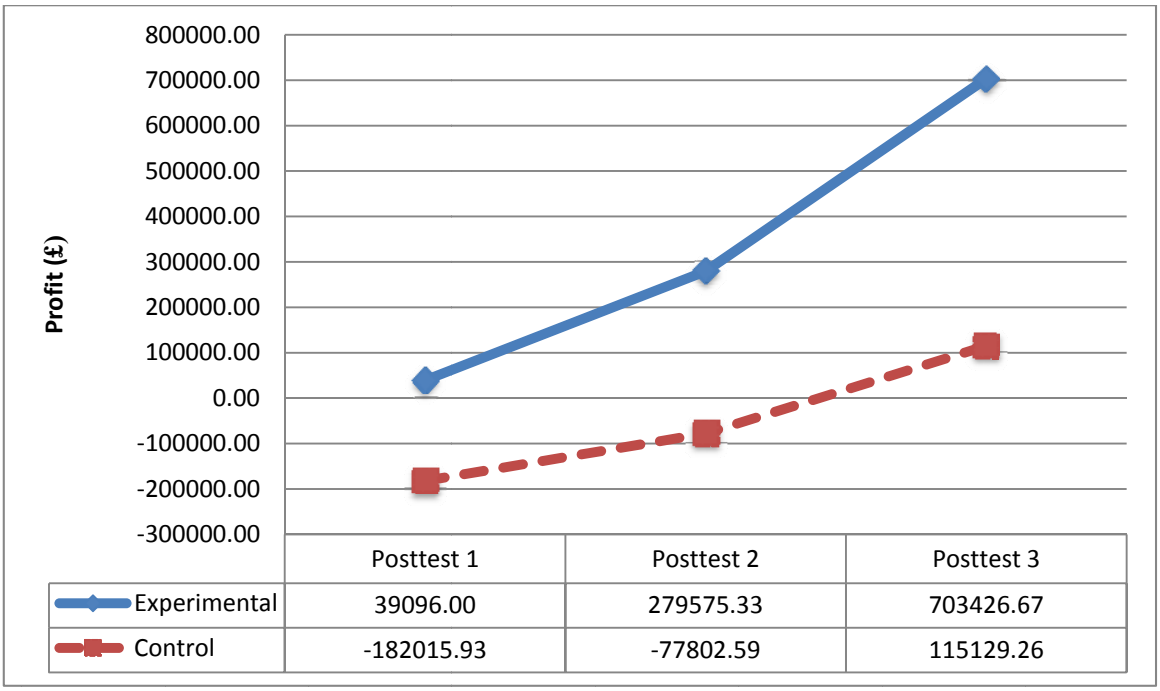
### 4.8.2. Financial performances[5]

***Effects for profit***

The impact of self-regulation training on the financial outcome of the leaders' team was tested using repeated measures analysis of covariance (ANCOVA) treating age, gender and self-efficacy as covariates. Profit, which is the remaining profit retained by the team after all deductions have been made (e.g. tax, interest, dividends, etc.) was obtained from the Business Strategy simulation software. This was the

[5] All financial measures were measured at yearly intervals (in virtual time line) corresponding to subjective measures collected for followers and supervisors ratings

dependant variable. The leaders that received self-regulation intervention versus those that did not represented the between group factor and the measures of profit taken at three different intervals was the within-group measures. Consistent with Hypothesis 1b, a significant main effect for differences between experimental and control groups was evident ($F_{1,37} = 12.992$; $p < .01$; $\eta^2 = .260$). Moreover, a positive interaction between self-regulation training and profit was evident ($F_{1,74} = 7.610$; $p < .01$; $\eta^2 = .171$) with high significant contrast test ($F_{1,37} = 7.472$; $p < .01$; $\eta^2 = .76$). Results did not reveal a significant effect for time (see Table 15). Figure 6 clearly shows that the profit of the team where the leaders attended self-regulation intervention is higher compared to leaders who did not.




| | Posttest 1 | Posttest 2 | Posttest 3 |
|---|---|---|---|
| Experimental | 39096.00 | 279575.33 | 703426.67 |
| Control | -182015.93 | -77802.59 | 115129.26 |

Figure 6: Estimated marginal mean for team profit (or loss)

Next, a Tukey HSD test for each group to compare profit between posttest 1 and posttest 2 as well as posttest 2 and posttest 3 was conducted. Profit for the experimental group showed a significant increase from posttest 1 to posttest 2 (39096.00 vs. 279575.33, respectively, $p < .05$) and from posttest 2 to posttest 3 (279575.33 vs. 703426.67, respectively, $p < .05$). The control group showed a significant increase from posttest 1 to posttest 2 (-182015.93 vs. -77802.59, respectively, $p < .05$) but not a significant increase from posttest 2 to posttest 3 (-77802.59 vs. 115129.26, respectively, $p < .05$).

Additionally, in order to interpret the significant interaction of self-regulation training and profit in detail (see Table 15), the three posttest means[6] were compared for each of the three time points. As demonstrated in Figure 6, there was a significant difference between profit achieved by leaders in trained and untrained groups, in comparison to the leaders who were in the control group during posttest 1 ($F_{1,37} = 10.081$; $p < .01$; $\eta^2 = .214$), posttest 2 ($F_{1,37} = 13.113$; $p < .01$; $\eta^2 = .262$), and posttest 3 ($F_{1,37} = 11.821$; $p < .01$; $\eta^2 = .242$).

As predicted, the results demonstrated that leaders in the experimental group who received intervention training were able to lead their teams to achieve higher profit across time, as compared to the control group. This result is attributable to leaders who had a higher level of self-regulation and there use of methods of leadership which are more effective in attaining higher profit than leaders who did not receive the intervention.

[6] There is no pretest financial measure as all teams started at the same level

***Effects for return on capital employed (ROCE)***

ROCE signifies how well the money invested into the business is providing a return to the investors. A repeated measures analysis of covariance (ANCOVA) with age, gender and self-efficacy as covariates was performed on the ROCE data, with experimental and control groups as the between-subjects factors and the measure of ROCE at three different intervals as a within-subject factor. As predicted (see Table 15), a significant main effect between self-regulation training and ROCE emerged ($F_{1,37} = 13.212$; $p < .01$; $\eta^2 = .263$). Interaction effect was significant ($F_{1,74} = 9.741$; $p < .01$; $\eta^2 = .208$) with significant high contrast ($F_{1,37} = 15.066$; $p < .01$; $\eta^2 = .289$). Results did not reveal a significant effect for time (see Table 15). Figure 7 presents the ROCE for both, control and experimental group, and the graph showed that leaders who attended the intervention achieved higher ROCE compared to leaders who did not.

The groups were also compared independently between posttest 1 and posttest 2 as well as posttest 2 and posttest 3 using a Tukey HSD test. Results showed that ROCE for the experimental group showed a significant increase from posttest 1 to posttest 2 (-1.740 vs. 26.647, respectively, $p < .05$) and from posttest 2 to posttest 3 (26.647 vs. 44.420, respectively, $p < .05$). On the contrary, ratings of leader satisfaction by followers in the control group showed a significant increase from posttest 1 to posttest 2 (-9.783 vs. 6.210, respectively, $p < .05$) but a slight decrease from posttest 2 to posttest 3 that is not statistically significant (6.210 vs. 19.113, respectively, $p < .05$).

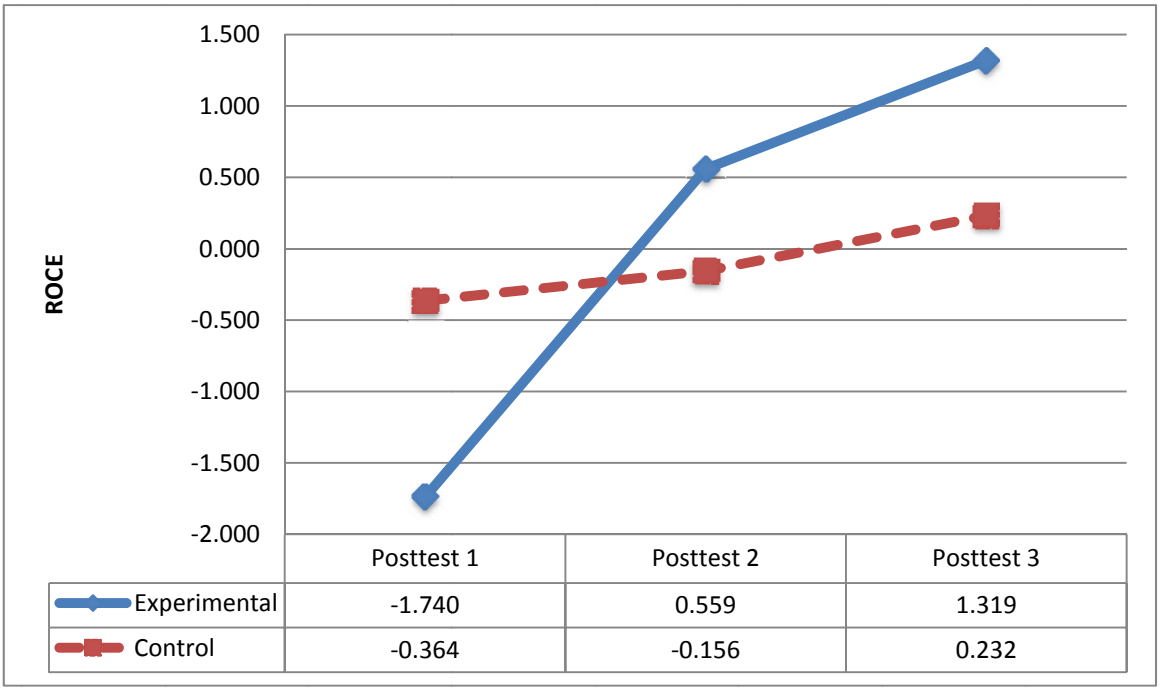



Figure 7: Estimated marginal mean for team ROCE

Further univariate inspections were conducted for each measurement point. Examining the results of posttest 1, there was no significant difference in ROCE between teams where leaders attended the intervention and leaders who did not attend the intervention. However, the mean for ROCE for teams where the leaders received intervention were significantly higher in posttest 2 ($F_{1,37}$ = 18.080; $p$ < .01; $\eta^2$ = .328) and posttest 3 ($F_{1,37}$ = 14.452; $p$ < .01; $\eta^2$ = .281), as compared to the teams where the leaders were in the control group (see Figure 4).

Hence, the results of receiving self-regulation training lead to a better ROCE score for teams led by leaders who were in the experimental group than leaders who were in the control group. Participants in the training group self regulate their performance

as a leader better which ultimately resulted in leading their team to manage the capital employed in the business more effectively to yield a higher return.

***Effects for gearing***

Gearing ratio is calculated as the ratio that compares the company's equity or capital to borrowed funds. In brief, gearing refers to the extent to which the company is funded by debt. The higher the gearing of the company, the more the company is considered risky. To test Hypothesis 1b an examination of whether leaders with higher self-regulation (after receiving intervention) relate significantly with the leaders' team gearing ratio, was conducted using a repeated measures analysis of covariance (ANCOVA) with age, gender and self-efficacy as covariates. Consistent with Hypothesis 1c which predicted an inverse relationship between self-regulation training and gearing ratio, the analysis demonstrated a significant difference between group effect ($F_{1,37}$ = 11.851; $p < .01$; $\eta^2 = .243$) and a significant interaction effect ($F_{1,74}$ = 2.906; $p < .10$; $\eta^2 = .073$). This is supported by the fact that the contrast test is significant ($F_{1,37}$ = 3.216; $p < .10$; $\eta^2 = .080$). Results did not reveal a significant effect for time (see Table 15). Figure 8 demonstrates that gearing ratio is lower in the experimental group compared to the control group.

Next, a Tukey HSD test for each group to compare gearing between posttest 1 and posttest 2 as well as posttest 2 and posttest 3 was conducted. Gearing for teams in which leaders were allocated into the experimental group showed a significant decrease from posttest 1 to posttest 2 (60.316 vs. 42.387, respectively, $p < .05$) and

from posttest 2 to posttest 3 (42.387 vs. 26.167, respectively, $p < .05$). Also, gearing for teams in which the leaders were allocated into the control group showed a significant decrease from posttest 1 to posttest 2 (70.127 vs. 59.233, respectively, $p < .05$) and a significant decrease from posttest 2 to posttest 3 (59.233 vs. 44.532, respectively, $p < .05$).

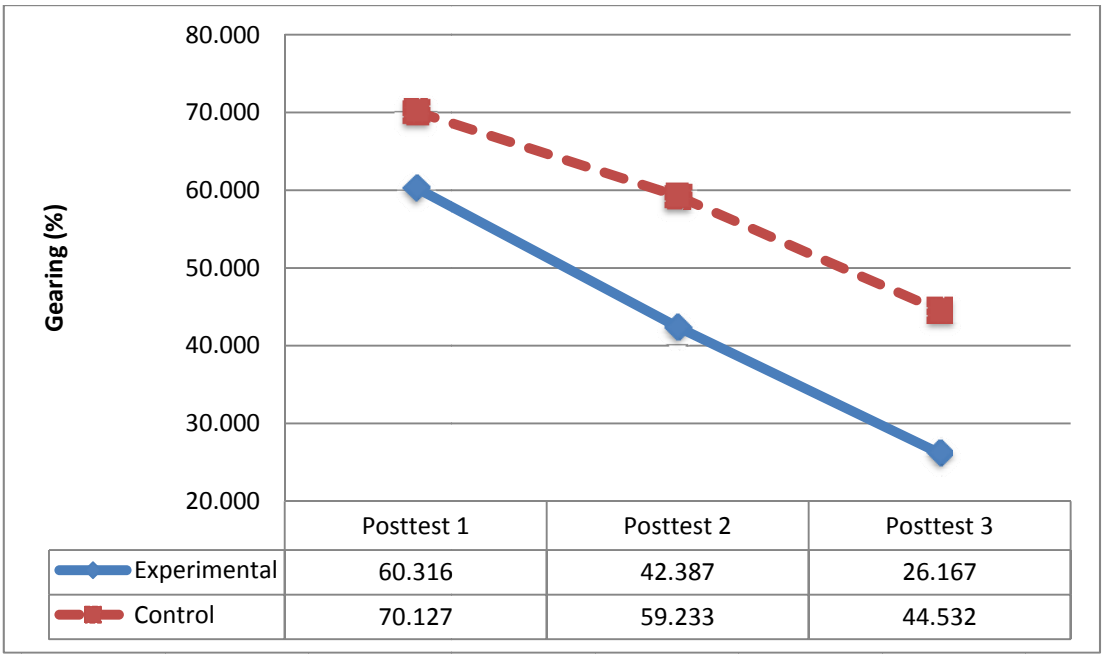



Figure 8: Estimated marginal mean for team Gearing

To facilitate the inference of the significant main effect between self-regulation training and gearing (see Table 15) the experimental and control groups were compared at each of the three time points. In all three time points, teams where leaders received the intervention achieved significantly lower gearing ratio in posttest 1 ($F_{1,37} = 7.310$; $p < .01$; $\eta^2 = .165$), posttest 2 ($F_{1,35} = 21.016$; $p < .01$; $\eta^2 =$

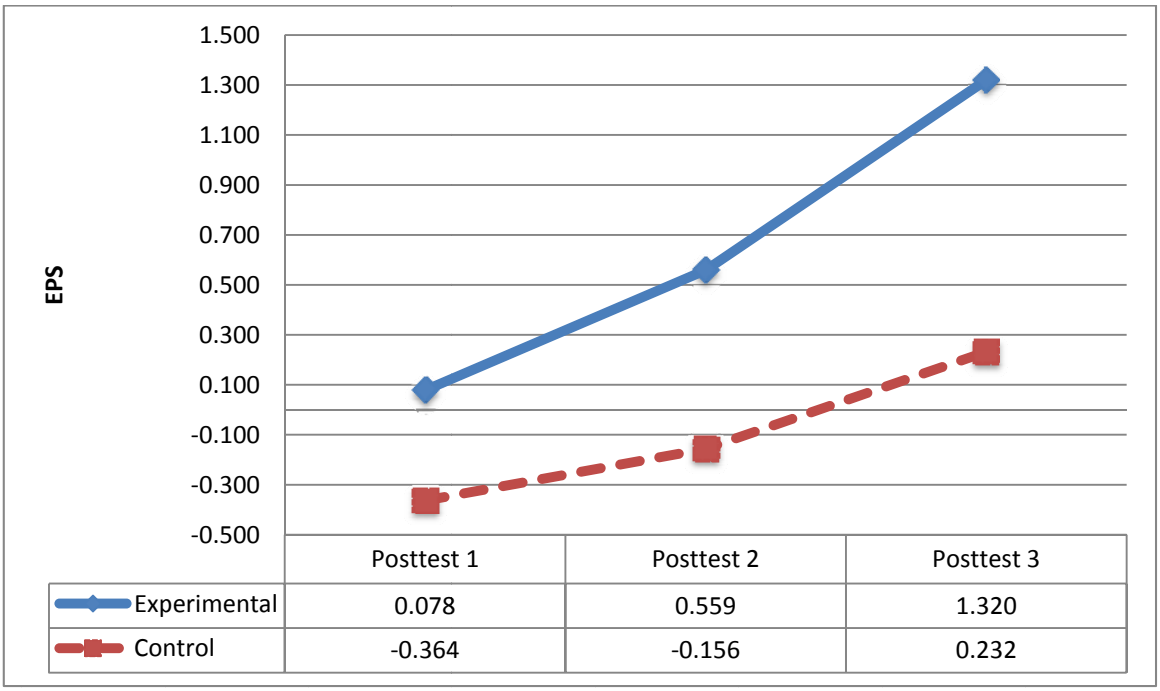
.362), and posttest 3 ($F_{1,37}$ = 7.012; $p$ < .01; $\eta^2$ = .159), in contrast to the teams where leaders were in the control group. Refer to Figure 8.

Although the main effect between self-regulation training and gearing ratio was significant at $p$ < .10, the results for the comparisons at each time point for gearing between the two groups still supports Hypothesis 1c. Leaders with higher self-regulation lead their team to perform better financially as demonstrated in the reduction of gearing ratio within the company which in turn reduces their company's financial risk.

***Effects for earnings per share (EPS)***

EPS is calculated by the total profit of the company divided by the number of shares. EPS serves as an indicator of a company's profitability. The effect of self-regulation training on the financial outcome of the leaders' team was tested using repeated measures analysis of covariance (ANCOVA) including age, gender and self-efficacy as covariates. The EPS measure was used as the dependant variable. Groups that received self-regulation intervention versus groups that did not represent the between-group factor, and the EPS at three different time interval were the within-group measures. There was a significant main effect of training between experimental and control groups ($F_{1,37}$ = 12.385; $p$ < .01; $\eta^2$ = .251). Also, a significant effect for interaction ($F_{1,74}$ = 5.562; $p$ < .05; $\eta^2$ = .131) was observed with highly significant contrast ($F_{1,37}$ = 6.380; $p$ <.01; $\eta^2$ = .147). However, results did not reveal a significant effect for time (see Table 15). This result demonstrates that

the team financial performance of leaders who attended the intervention yields higher earnings per share as compared to the followers with leaders who were allocated to the control group. Figure 9 clearly shows that the EPS of the team where the leaders attended self-regulation intervention is higher compared to leaders who did not.




| | Posttest 1 | Posttest 2 | Posttest 3 |
|---|---|---|---|
| Experimental | 0.078 | 0.559 | 1.320 |
| Control | -0.364 | -0.156 | 0.232 |

Figure 9: Estimated marginal mean for team EPS

Further inspection was also conducted for each group independently for significant increase in the EPS. The Tukey HSD test showed that the EPS in the experimental group increased significantly from posttest 1 to posttest 2 (.078 vs. .559, respectively, $p < .05$) and from posttest 2 to posttest 3 (.559 vs. 1.320, respectively, $p < .05$). Conversely, the EPS for the control group did not show a significant increase from posttest 1 to posttest 2 (-.364 vs. -.156, respectively, $p > .05$). However, the increase from posttest 2 to posttest 3 (-.156 vs. .232, respectively, $p < .05$) was significant.

| | Main and interaction effects (F) [a, b] | | | | Between subject effect (F) [a, b] | | |
|---|---|---|---|---|---|---|---|
| | **Group effect [b]** | **Time effect [c]** | **Interaction effect [c]** | **Contrast [b]** | **Posttest 1** | **Posttest 2** | **Posttest 3** |
| ***Financial performance*** | | | | | | | |
| Profit | 12.992 (.260)** | 1.625 (.059) | 7.610 (.171)** | 8.435 (.186)** | 10.081 (.214)** | 13.114 (.262)** | 11.821 (.242)** |
| ROCE | 13.212 (.263)** | 1.137 (.030) | 9.741 (.208)** | 15.066 (.289)** | 2.28 (.56) | 18.08 (.328)** | 14.452 (.281)** |
| Gearing | 11.851 (.243)** | .192 (.005) | 2.906 (.073) [†] | 3.216 (.080) [†] | 7.310 (.165)** | 21.016 (.362)** | 7.012 (.159)* |
| EPS | 12.385 (.251)** | 1.912 (.049) | 5.562 (.131)* | 6.380 (.147)* | 10.081 (.214)** | 13.114 (.262)** | 10.349 (.219)** |

Note. $n = 15$ (experimental group), $n = 25$ (control group). Partial $\eta^2$ shown in parentheses.
[a] Self efficacy was used a covariate to eliminate confounds
[b] df = 1,37; [c] df = 1,74
[†] p < .10 *p < .05 **p < .01

Table 15: Results of repeated measures analysis of covariance (ANCOVA) for financial performance.

In order to interpret the significant main effect of self-regulation intervention on the EPS (see Table 15), the three posttest means were contrasted for each of the three measurement points. As demonstrated in Figure 9, there was a significant difference between profit achieved by leaders in the trained group in comparison to the leaders who were in the control group shown in posttest 1 ($F_{1,37}$ = 10.081; $p$ < .01; $\eta^2$ = .214), posttest 2 ($F_{1,37}$ = 13.113; $p$ < .01; $\eta^2$ = .262), and posttest 3 ($F_{1,37}$ = 10.349; $p$ < .01; $\eta^2$ = .219).

As predicted, the results demonstrated that leaders in the experimental group who received the intervention training were able to lead their teams to achieve higher profit across time, as compared to the control group. This result is attributable to leaders who had a higher level of self-regulation (in comparison to leaders who did not receive the intervention) and therefore used methods of leadership which are more effective in not just attaining higher profit, but also focus on satisfying shareholders.

### 4.8.3. Assessments outcomes

Testing for differences in means for self-regulation was carried out initially using multivariate analysis of covariance (MANCOVA) with leaders in groups who received self-regulation intervention and leaders in control groups as the independent variables, the five assessment outcomes as the dependent variables, and treating age, gender and self-efficacy as covariates. Specifying age, gender and self-efficacy in this way filters out variance in the dependent variables that is attributable to these

variables. Also, a MANCOVA is performed prior to univariate analysis of covariance ANCOVA to control for inflated Type I error rates and takes into account the correlations among the dependent variables (Stevens, 2002) as the five assessment measures are part of the 100% overall final assessment. A significant effect for Group (Wilks's $\lambda = .644$; $F_{1,37} = 3.651$; $p < .01$; $\eta^2 = .356$) established that any differences due to self-regulation should be regarded as consistent across the five assessment measured.

| | $F$ [a, b] | $p$ | $\eta^2$ |
|---|---|---|---|
| Presentation | 8.831 | .005 | .193 |
| Business plan | 2.665 | .111 | .067 |
| Group report | 10.330 | .003 | .218 |
| Simulation performance | 5.018 | .031 | .119 |
| Reflective report | 10.076 | .003 | .214 |

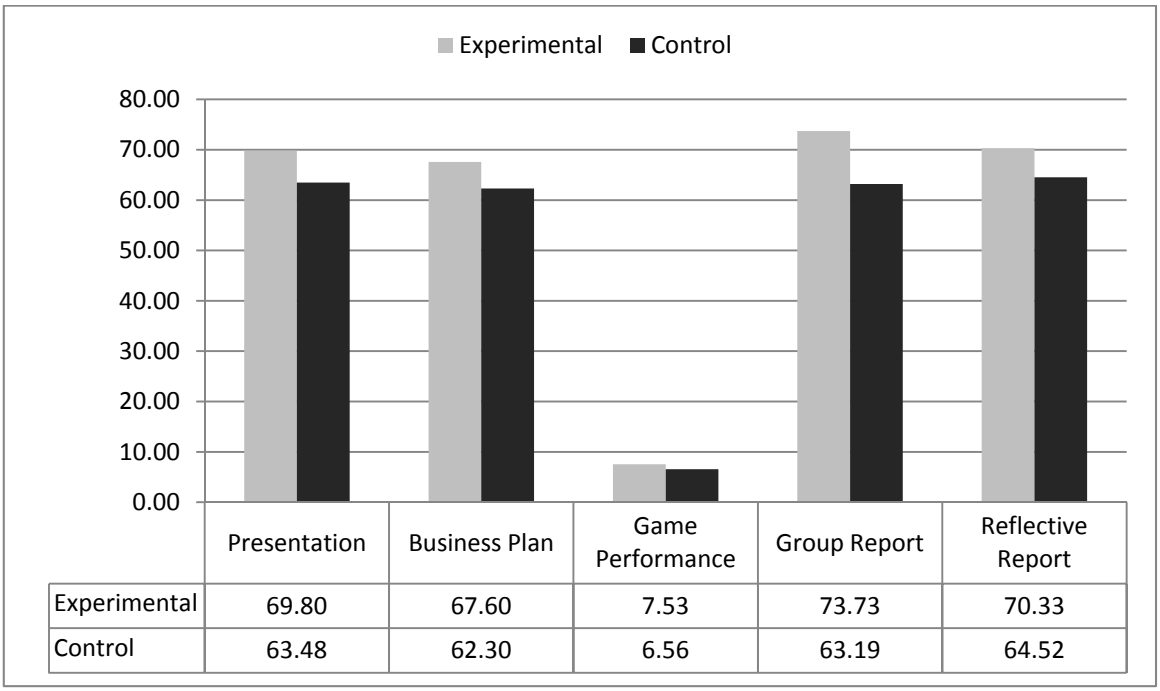
Note. $n = 15$ (experimental group), $n = 25$ (control group).
Wilk's Lambda = .644
[a] Self efficacy was used a covariate to eliminate confounds
[b] df = 1,37

Table 16: Results of analysis of covariance (ANCOVA) for assessment outcomes.

Given the significant main effects of leaders in the experimental and control group, further univariate testing was undertaken with each assessment outcome compared. Results from ANCOVA are reported in Table 16.

***Effects for the Presentation assessment***

Examination of whether leaders who attended self-regulation training related significantly to Presentation marks obtained by the team using ANCOVA with age, gender and self-efficacy as covariates. The main effect demonstrates a significant difference ($F_{1,37}$ = 8.831 ; $p$ < .01; $\eta^2$ = .193) in the higher Presentation marks for teams where leaders attended the training as shown in Figure 10. This result provides support for Hypothesis 1c, which suggests that leaders who were trained would exhibit competency to lead their team to achieve higher Presentation marks than leaders who were not trained.




| | Presentation | Business Plan | Game Performance | Group Report | Reflective Report |
|---|---|---|---|---|---|
| Experimental | 69.80 | 67.60 | 7.53 | 73.73 | 70.33 |
| Control | 63.48 | 62.30 | 6.56 | 63.19 | 64.52 |

Figure 10: Estimated marginal mean for teams' assessments

***Effects for the Business Plan assessment***

The effects of the intervention on self-regulation on Business Plan marks was tested using ANCOVA treating age, gender and self-efficacy as covariates. Although the mean for Business Plan marks were higher (see Figure 10) for the experimental group compared to the control group, the effect was not significant. Thus, no support was found for the predicted effect suggested by Hypothesis 1c.

***Effects for the Game Simulation Performance***

Next, using the Game Simulation Performance mark as the dependant variable, the effect of whether leaders who attended self-regulation training was tested using ANCOVA, specifying age, gender and self-efficacy as covariates. The ANCOVA yielded a significant main effect for training on the Game Simulation Performance marks ($F_{1,37}$ = 10.330 ; $p < .01$; $\eta^2 = .218$). This analysis revealed that leaders who were trained in self-regulation (compared to leaders who were not trained) are able to lead their teams to achieve notably higher Game Simulation Performance marks as shown in Figure 10.

***Effects for the Group Report assessment***

The effect of whether leaders who attended self-regulation training related significantly to the Group Report marks was analysed using ANCOVA with age, gender and self-efficacy as covariates. The main effect demonstrates a significant difference ($F_{1,37}$ = 5.018; $p < .05$; $\eta^2 = .119$) in the higher Group Report marks for team whose leaders attended the training as shown in Figure 10. This result provides

support for Hypothesis 1c, which suggested that leaders who were trained would exhibit competency to lead their team to achieve higher Group Report marks than leaders who were not trained.

***Effects for the Reflective Report assessment***

To test Hypothesis 1c, an examination of whether leaders with higher self-regulation (after receiving intervention) relate significantly with their team's average Reflective Report marks was carried out using an ANCOVA with age, gender and self-efficacy as covariates. As predicted, the analysis demonstrated that leaders in the experimental group, who received intervention training, were able to lead their teams to achieve significantly higher Reflective Report marks ($F_{1,37}$ = 10.076; $p < .01$; $\eta^2$ = .214), as compared to the control group as shown in Figure 10. Support for the hypothesis above is confirmed.

## 4.9. Effects of training condition on leaders competencies

A repeated measures analysis of covariance (ANCOVA) with age, gender and self-efficacy as covariates was performed on the leader competencies data. The experimental and control groups served as the between-subjects factors and the measure of followers ratings of leaders' competencies at three different interval was the within-subject factor. There was no main effect of leader competencies ($F_{1,37}$ = .509; $p > .05$; $\eta^2$ = .014). However, Figure 11 presents the ratings of leaders for both, control and experimental groups, and the graphs showed that leaders who attended the intervention were rated higher compared to leaders who did not.

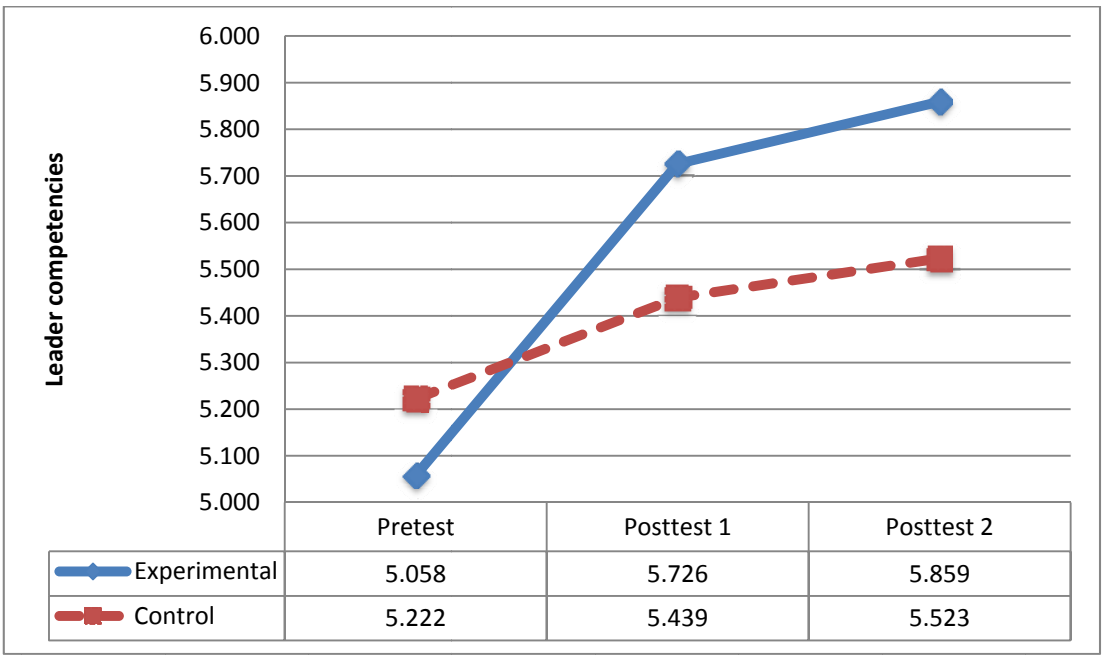



Figure 11: Estimated marginal mean for leader competencies

As such, the experimental and control groups were further compared for each measurement point at pretest, posttest 1 and posttest 2. Examining the results at pretest ($F_{1,37}$ = 1.045; $p > .05$; $\eta^2 = .029$) and posttest 1 ($F_{1,37}$ = .063; $p > .05$; $\eta^2 =$ 2.342), leaders were not rated to be significantly different between leaders in the trained and untrained groups. However, in posttest 2, leaders that received the intervention were rated significantly higher ($F_{1,37} = 4.419$; $p < .05$; $\eta^2 = .112$), than the leaders who were in the control group (see Figure 11).

In addition, Tukey HSD analyses were also conducted for each group independently to test for a significant increase in leader competencies between pretest and posttest 1 as well as posttest 1 and posttest 2. The results showed that leader competencies in the experimental group showed a significant increase from pretest to posttest 1

(5.058 vs. 5.726, respectively, $p < .05$) but not from posttest 1 to posttest 2 (5.726 vs. 5.859, respectively, $p > .05$). Ratings of leader competencies in the control group showed a significant increase from pretest to posttest (5.222 vs. 5.439, respectively, $p < .05$) but not a significant increase from posttest 1 to posttest 2 (5.439 vs. 5.522, respectively, $p > .05$).

To summarise, the results of receiving self-regulation training caused leaders to be perceived as possessing the relevant competencies for their roles across time as rated by their followers and tutors. Participants in the intervention developed relevant competencies which were needed to perform in their role, which ultimately resulted in them developing their competencies from pretest to posttest 1 and 2.

### 4.10. Leader competencies as mediator of leaders performance

The current study is a field experimental design, thus the conventional approach to conduct mediation analysis is not the most appropriate. According to Baron and Kenny (1986), three series of regression analyses to demonstrate; (i) the independent variable must significantly predict the mediating variable; (ii) the mediator variable must then significantly predict the dependent variable; and finally, (iii) the relationship between the independent variable and dependent variable should be not significant or weaker when the mediator is controlled for.

However, in accordance to Yzerbyt, Muller, and Judd (2004), to evaluate the presence of a mediation effect in the current experimental study, the mediator

variable was included as a covariate in the repeated measure analysis of covariance (ANCOVA). The effect of the mediating variable must be significantly related to the interaction effect. At the same time, the F-value for the main effect must diminish and become non-significant when the mediator is included as a covariate. Finally, a Sobel (1982) test was then conducted to further assess the significance of the mediation.

### 4.10.1. Leadership outcomes

***Mediation analysis for leader satisfaction***

To investigate whether leader competencies mediated the effect of self-regulation training on leader satisfaction, the mediating variable was controlled for by adding it as covariate in the analysis. Results of the analysis are show in Table 17. The effect of the leader competencies was significant ($F_{1,37}$ = 13.591; $p$ < .01; $\eta^2$ = .286). Moreover, the interaction effect of self-regulation training on leader satisfaction diminished ($F_{1,37}$ = 5.119; $p$ < .05; $\eta^2$ = .131), although it stayed significant. The Sobel test conducted, confirmed the reduction in the significance level was reliable of the mediation ($z$ = 1.833, $p$ < .01).

***Mediation analysis for leader effectiveness***

For leader effectiveness, including the leader competencies as covariate, reduced the previously significant effect to $F_{1,37}$ = 8.869; $p$ < .01; $\eta^2$ = .204 as shown in Table 17. The effect of the mediating variable was significant on leader effectiveness ($F_{1,37}$ =

5.299; $p < .05$; $\eta^2 = .135$). The Sobel test conducted, confirmed the reduction in significance level was reliable of the mediation ($z = 2.253$, $p < .05$).

***Mediation analysis for extra effort***

The examination of the main effect of whether leaders with higher self-regulatory competency (after receiving intervention) relate significantly with leadership outcomes in increasing followers' effort to try harder to perform, when leader competencies were controlled for as a covariate, revealed a significant effect a $p < .10$ ($F_{1,37} = 3.450$; $p < .10$; $\eta^2 = .092$). Although the effect of leader competencies on followers' rating that leader influenced followers to increase their effort to try harder to perform is significant ($F_{1,37} = 8.447$; $p < .01$; $\eta^2 = .199$), the Sobel test did not reveal a significant mediation effect.

### 4.10.2. Financial performances[7]

***Mediation analysis for profit***

An ANCOVA analysis of profit, with leader competencies as covariate, revealed a significant effect for the covariate ($F_{1,37} = 16.966$; $p < .01$; $\eta^2 = .326$), showing that leader competencies relate to profit. Importantly, the analysis also showed that the effect of intervention on profit reduced ($F_{1,37} = 3.170$; $p > .05$; $\eta^2 = .083$) as shown in Table 17. This reduction is significant ($z = 2.865$, $p < .01$), suggesting that the effect on profit was mediated by leader competencies.

[7]All financial measures are measured at yearly intervals (in virtual time line) corresponding to subjective measures collected for followers ratings

***Mediation analysis for return on capital employed (ROCE)***

For ROCE, adding the leader competencies as a covariate, reduced the previously significant effect to $F_{1,37}$ = 16.076; p < .01; $\eta^2$ = .315 as demonstrated in Table 17. The effect of the mediating variable was significant on ROCE ($F_{1,37}$ = 131.146; p < .01; $\eta^2$ = .789). The Sobel test confirmed that leader competencies significantly mediated the effect of self-regulation on leader effectiveness ($z$ = 2.581, p < .01).

***Mediation analysis for gearing***

When leader competencies is added as a covariate in an ANCOVA analysis of gearing, the analysis revealed a significant effect for the covariate ($F_{1,37}$ = 75.758; p < .01; $\eta^2$ = .684), showing that leader competencies related to gearing. Essentially, the analysis also showed that the effect of the intervention on gearing reduced ($F_{1,37}$ = 24.506; p < .01; $\eta^2$ = .412) as shown in Table 17. This reduction is significant ($z$ = -.3.366, p < .01), suggesting that the effect on gearing was mediated by leader competencies.

***Mediation analysis for earnings per share (EPS)***

The examination of the main effect of whether leaders with a higher self-regulatory competency (after receiving intervention) related significantly with EPS, when leader competencies were controlled for as a covariate, revealed a significant effect at $p$ < .10 ($F_{1,37}$ = 3.170; p < .10; $\eta^2$ = .083). Although the effect of leader competencies on EPS is significant ($F_{1,37}$ = 16.966; $p$ < .01; $\eta^2$ = .326), the Sobel test did not reveal a significant mediation effect.

| | Main effect | | | | Main effect controlling for mediator [d] | | | | Mediation |
|---|---|---|---|---|---|---|---|---|---|
| | IV → M | | IV → DV | M | IV → DV (controlling M) | | | Sobel | |
| | α | $S_\alpha$ | *F* | *F* | *F* | β | $S_\beta$ | *z* | |
| ***Leaders' performance*** | | | | | | | | | |
| Leader satisfaction | .378** | .120 | 15.154 (.302)** | 13.591 (.286)** | 5.119(.131)* | .239 | .106 | 1.833[†] | ✓ |
| Leader effectiveness | .401** | .116 | 20.436 (.369)** | 5.299 (.135)* | 8.869 (.207)** | .297 | .100 | 2.253* | ✓ |
| Leader extra effort | .392** | .120 | 11.487(.247)** | 8.447 (.199)** | 3.450 (.092)[†] | .230 | .124 | 1.613 | |
| ***Leaders's financial performance*** | | | | | | | | | |
| Profit | .398** | .180 | 13.106 (.267)** | 16.966 (.326)** | 3.170 (.083)[†] | 169732.371 | 95333.242 | 2.865** | ✓ |
| ROCE | .398** | .180 | 26.288 (.422)** | 131.146 (.789)** | 16.076 (.315)** | 9.385 | 2.341 | 2.581** | ✓ |
| Gearing | .398** | .180 | 36.199 (.501)** | 75.758 (.684)** | 24.506 (.412)** | -10.381 | 2.097 | -3.366** | ✓ |
| EPS | .398** | .180 | 13.106 (.267)** | 16.966 (.326)** | 3.170 (.083)[†] | .339 | .191 | 1.571 | |
| ***Leader's assessment*** | | | | | | | | | |
| Presentation | .347** | .125 | 8.533 (.192)** | 3.872 (.100)* | 3.714 (.096)[†] | 4.269 | 2.215 | 1.583 | |
| Business plan | .347** | .125 | 4.700 (.115) * | 26.269 (.429)** | .170 (.005)[†] | .962 | 2.335 | .408 | |
| Simulation performance | .398** | .118 | 7.047 (.164)** | 5.024 (.126)* | 1.811 (.049)[†] | .594 | .441 | 1.251 | |
| Group report | .398** | .118 | 15.266 (.298)** | 8.569 (.197)** | 5.375 (.133)* | 7.070 | 3.050 | 1.910* | ✓ |
| Reflective report | .398** | .118 | 16.810 (.318)** | 8.615 (.198)** | 6.258 (.152)* | 4.122 | 1.644 | 2.001* | ✓ |

Note. $n = 15$ (experimental group), $n = 25$ (control group). Partial $\eta^2$ shown in parentheses.
[a] Age, gender and self-efficacy were used covariates to eliminate confounds
[b] df = 1,37
[†] $p < .10$ *$p < .05$ **$p < .01$

Table 17: Mediation analysis for the effects of self-regulation training on leadership outcomes, financial performances and assessment outcomes controlling for leader competencies as mediator

### 4.10.3. Assessments outcomes

Assessment outcomes were not measured repeatedly, but one time after intervention. Univariate testing was undertaken with each assessment outcome as the dependent variable and leader competencies as the covariate. The effect of the covariate must be significantly related to the interaction effect to indicate the covariate is a mediator. Simultaneously, the *F*-value for the interaction effect must reduce and become non-significant when the mediator is included as a covariate. Finally, a Sobel (1982) test was then conducted to further assess the significance of the mediation.

***Mediation analysis for Presentation assessment***

For Presentation marks, adding the leader competencies as covariate, led the previously significant effect to disappear ($F_{1,37}$ = 3.714; $p > .05$; $\eta^2$ = .096) as demonstrated in Table 17. The effect of the mediating variable was significant on presentation assessment ($F_{1,37}$ = 3.872; $p < .05$; $\eta^2$ = .100). In spite of this, the Sobel test did not confirm that leader competencies significantly mediated the effect of self-regulation training on presentation marks ($z$ = 1.583, $p > .10$).

***Mediation analysis for Business Plan assessment***

When leader competencies were added as a covariate in an ANCOVA analysis on Business Plan marks, the analysis revealed a significant effect for the covariate ($F_{1,37}$ = 26.269; $p < .01$; $\eta^2$ = .126), showing that leader competencies relate to Business Plan marks. Although, the analysis also showed that the interaction between group and business plan marks diminished ($F_{1,37}$ = .170; $p > .05$; $\eta^2$ = .005) as shown in

Table 17, this reduction was not significant ($z$ = .408, $p$ > .10), suggesting that the effect on Business Plan marks was not significantly mediated by leader competencies.

***Mediation analysis for Simulation Performance assessment***

The examination of the main effect of whether leaders with higher self-regulatory competency relate significantly with Simulation Performance assessment marks, when leader competencies were controlled for as a covariate, revealed a significant main effect at $p < .10$ ($F_{1,37}$ = 1.811; $p < .10$; $\eta^2$ = .049). Although there is a significant effect of leader competencies on Simulation Performance assessment marks ($F_{1,37}$ = 5.204; $p < .05$; $\eta^2$ = .126), the Sobel test did not reveal a significant mediation effect.

***Mediation analysis for Group Report assessment***

An ANCOVA analysis on the Group Report marks, with leader competencies as a covariate, revealed a significant effect for the covariate ($F_{1,37}$ = 8.569; $p < .01$; $\eta^2$ = .197), showing that leader competencies relate to the Group Report marks. In addition, the analysis also showed that the effect of self-regulation on the Group Report marks reduced ($F_{1,37}$ = 5.375; $p < .05$; $\eta^2$ = .133) as shown in Table 17. This reduction is significant ($z$ = 1.910, $p < .05$), suggesting that the effect on Group Report was mediated by leader competencies.

***Mediation analysis for Reflective Report assessment***

To investigate whether leader competencies mediated the interaction effect of self-regulation training on leader's team Reflective Report marks, the mediating variable was controlled for by adding it to the analysis as a covariate. Results of the analysis are shown in Table 17. The effect of leader competencies was significant ($F_{1,37}$ = 8.615; $p < .01$; $\eta^2 = .198$). Moreover, the interaction effect of self-regulation training on Reflective Report marks reduced ($F_{1,37}$ = 6.258; $p < .05$; $\eta^2 = .152$), although it remained significant. The Sobel test conducted confirmed the significance of the mediation ($z = 2.001$, $p < .05$).

## 4.11. Conclusion

The current chapter has analysed and presented results from the longitudinal field experimental study that tested the influence of self-regulation on leader and team performances. The field study, which manipulated self-regulation training, randomly allocated leaders to an experimental or control group and were trained in self-regulatory process by an executive coach. As expected, the results demonstrated that leaders who attended the intervention yield better performance as rated by followers in terms of leader satisfaction, leader effectiveness and followers' willingness to exert extra effort. The results also suggest that team performance measured by the four financial indicators (i.e., profit, ROCE, gearing ratio, EPS) were significantly affected by the intervention. Four out of five measures (i.e., presentation, business plan, group report, simulation performance) of team assessments were significantly related to the self-regulation intervention. In addition, the intervention also

significantly contributed to the increase in leaders' competencies within the experimental group as compared to the control group. Finally, the analyses also showed that leader competencies mediated the leaders' performance (leader satisfaction, leader effectiveness), teams' financial performance (profit, ROCE, gearing ratio) and teams' assessments (group report, reflective report). Table 18 summarises the results of the hypotheses tested. Next, Chapter Five interprets the results of this chapter and discusses the implications of the findings.

| Hypotheses | |
|---|---|
| H1: A self-regulation intervention should lead to better leader and team performance | |
| H1a: A self-regulation intervention should lead to better leader performance, measured as: | |
| • leader satisfaction | **Supported** |
| • leader effectiveness | **Supported** |
| • extra effort | **Supported** |
| H1b: A self-regulation intervention should lead to better team's financial performance, measured as: | |
| • retain profit | **Supported** |
| • return on capital employed (ROCE) | **Supported** |
| • earnings per share (EPS) | **Supported** |
| • gearing (negative relationship) | **Supported** |
| H1c: A self-regulation intervention should lead to better team's assessed performance, measured as | |
| • presentation | **Supported** |
| • business plan | **Not supported** |
| • group report | **Supported** |
| • simulation performance and | **Supported** |
| • reflective report | **Supported** |
| H2: Leaders who attended self-regulation training would exhibit greater improvement in the competencies required in their leadership role compared to leaders who have not been trained. | |
| H2a: Leaders who attended self-regulation training would exhibit greater improvement in the competencies required in their leadership role, measured as promoting teamwork, planning, basic leadership, relationship management and keeping others informed. | **Supported** |
| H2b: Leaders who did not attend self-regulation training would exhibit less improvement in the competencies required in their leadership role, measured as promoting teamwork, planning, basic leadership, relationship management and keeping others informed. | **Supported** |

| | |
|---|---|
| H3: Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to the leader developing relevant competencies for his/her role and (ii) these competencies positively affects performance. | |
| H3a: Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to the leader developing relevant competencies for his/her role and (ii) these competencies positively affects leader performance, measured as leader satisfaction, leader effectiveness and extra effort. | |
| • leader satisfaction | **Supported** |
| • leader effectiveness | **Supported** |
| • extra effort | **Not supported** |
| H3b: Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to the leader developing relevant competencies for his/her role and (ii) these competencies positively affects the team's financial performance, measured as retain profit, return on capital employed (ROCE), earnings per share (EPS), and (negative) gearing | |
| • retain profit, | **Supported** |
| • return on capital employed (ROCE) | **Supported** |
| • earnings per share (EPS) | **Not supported** |
| • gearing (negative relationship) | **Supported** |
| H3c: Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to the leader developing relevant competencies for his/her role and (ii) these competencies positively affects the team's assessed performance, measured as presentation, business plan, group report, simulation performance and reflective report. | |
| • presentation | **Not supported** |
| • business plan | **Not supported** |
| • group report | **Not supported** |
| • simulation performance and | **Supported** |
| • reflective report | **Supported** |

Table 18: Summary of hypotheses testing

# CHAPTER 5

## Discussion

*This chapter discusses the findings and the implications of this research. Section 5.1 presents a summary of the research questions, data collection and methodology of the study. Next, Section 5.2 discusses the findings of analysis and Section 5.3 outlines the implications of the findings in terms of contribution to theory, methods and practice. Limitations of the research are discussed in Section 5.4, followed by recommendations for future research in Section 5.5. Last but not least, Section 5.6 provides a conclusion to this thesis.*

### 5.1. Introduction: Key research questions

The current research seeks to examine the effect of a self-regulation intervention on leaders' and their team's performance. The main research questions in this research were; (i) does leaders' self-regulation increase after receiving an intervention on how to self-regulate, (ii) are there significant differences in followers' ratings of leaders' performance and objectives team performance between leaders who receive a self-regulation intervention and leaders who do not receive the intervention, (iii) after receiving a self-regulation intervention, does it increase relevant competencies that are needed by the leader in order to perform effectively in his/her current role and finally, (iv) what relationship exists between self-regulatory processes, leadership competencies and leadership outcomes.

The first hypothesis of this research was that, a self-regulation intervention should lead to better leader and team performance. This hypothesis was further divided into three sub-hypotheses as stated below:

*Hypothesis 1a: A self-regulation intervention should lead to better leader performance, measured as leader satisfaction, leader effectiveness and extra effort.*

*Hypothesis 1b: A self-regulation intervention should lead to better team's financial performance, measured as retained profit, return on capital employed (ROCE), earnings per share (EPS) and (negative) gearing.*

*Hypothesis 1c: A self-regulation intervention should lead to better team's assessed performance, measured as presentation, business plan, group report, simulation performance and reflective report.*

The second hypothesis of this research posited that leaders who attend self-regulation training would exhibit greater improvement in the competencies required in their leadership role compared to leaders who have did not have the training. This hypothesis was further divided into two sub-hypotheses as stated below:

*Hypothesis 2a: Leaders who attended self-regulation training would exhibit greater improvement in competencies required in their leadership role, measured as promoting teamwork, planning, basic leadership, relationship management and keeping others informed.*

*Hypothesis 2b: Leaders who did not attend self-regulation training would exhibit less improvement in competencies required in their leadership role, measured as*

*promoting teamwork, planning, basic leadership, relationship management and keeping others informed.*

Finally, the third hypothesis of this research was that, leader competencies should mediate the effect of self-regulation training on performance in that (i) self-regulation training leads to leader developing relevant competencies for his/her role and (ii) these competencies positively affect performance. This hypothesis was further divided into three sub-hypotheses as stated below:

*Hypothesis 3a: Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to leader developing relevant competencies for his/her role and (ii) these competencies positively affect leader performance, measured as leader satisfaction, leader effectiveness and extra effort.*

*Hypothesis 3b: Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to leader developing relevant competencies for his/her role and (ii) these competencies positively affect team's financial performance, measured as retained profit, return on capital employed (ROCE), earnings per share (EPS) and (negative) gearing.*

*Hypothesis 3c: Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to leader developing relevant competencies for his/her role and (ii) these competencies positively affect team's assessed performance, measured as presentation, business plan, group report, simulation performance and reflective report.*

Longitudinal field experimental research was conducted to compare the effects of the self-regulation intervention on leaders' and team's performance. Forty leaders and

their teams took part in this research; fifteen leaders attended the self-regulation intervention (experimental group) while twenty-five leaders did not attend the self-regulation intervention (control group). The intervention trained leaders on self-regulation strategies. All leaders in the experimental group were provided with a 360-degree feedback report (generated from ratings of their followers and supervisors) during the intervention, and twice after the intervention (three and six months after the intervention).

The control and experimental groups' leaders and their followers filled out a pretest and two posttest survey across nine months. The leaders performance measures were divided into three areas; (i) *leader performance*, measured as leader satisfaction, leader effectiveness and extra effort, (ii) *team's financial performance*, measured as retained profit, return on capital employed, earnings per share, and gearing (from BSG simulation) and (iii) *team's assessed performance*, measured as presentation, business plan, group report, simulation performance and reflective report. Leaders' competencies were also measured. Leaders' self-regulation was measured at all three time points to act as manipulation checks. The next section will evaluate and interpret the findings from the data analyses performed in Chapter Four.

## 5.2. Interpretation of findings

### The intervention led to an increase in leaders' self-regulation

The results from the manipulation check showed that prior to intervention, there was no significant difference in self-regulation between leaders who attended the intervention and those who did not. Although the experiment study randomly allocated leaders into control and experimental groups, it is still important to establish that there was no difference in self-regulation between the two groups at pre-test. The analyses yielded a non-significant difference when comparing both groups during pre-test which indicated that there is no difference in the level of self-regulation prior to the leader receiving the intervention and leaders in both groups.

The level of self-regulation for leaders in both groups increased over the three time measures taken, as one might expect when individuals mature across a period of time in longitudinal design. However, as expected, the leaders who attended the intervention demonstrated a greater increase in self-regulation at both posttests, when compared to leaders in the control group. It is thus concluded that, self-regulation training was successful and positively improved leaders' self-regulation competency.

**The self-regulation intervention led to better leader and team performance**

**Hypothesis 1a:** A self-regulation intervention should lead to better leader performance, measured as leader satisfaction, leader effectiveness and extra effort.

***Leader satisfaction.*** For the change over time in the ratings of leaders' satisfaction, there was a significant difference between the ratings for leaders who attended the intervention and those that did not. An initial comparison between the ratings of followers prior to the intervention yielded a non-significant difference between both groups indicating that followers were similar in their satisfaction ratings towards their leaders. Ratings for leaders who attended the intervention increased from pretest to posttest 1 and posttest 2. Consistent with Hypothesis 1a, this effect demonstrated that followers of leaders who attended the intervention were more satisfied with the leaders' performance as compared to the followers with leaders who were in the control group. The findings indicated that, leaders who attended the intervention met the expectations of their followers, used methods of leadership that are satisfactory and work with their followers in a satisfying way thus supporting Hypothesis 1a.

***Leader effectiveness.*** The results showed that the followers of leaders who attended the intervention perceived their leaders as significantly higher on effectiveness at meeting task demands, resolving task problems and effective at leading the team than followers of leaders who did not attend the intervention. The results from the

analyses of leader effectiveness overtime between leaders in the experimental and control groups, suggests that leaders who are trained in self-regulation strategies are able to regulate their behaviour to be more effective in their role.

***Extra effort.*** The outcome of the data analyses supported the fact that followers of leaders who attended the intervention were able to get their followers to work harder than they expected, increase their desire to succeed on task and makes them more willing to try harder as a result of the influence of their leaders than followers of leader who was in the control group. Although contrary to expectations that after the intervention, leaders would receive higher ratings from followers in posttest 1, posttest 1 yielded no significant difference between ratings of followers between leaders in experimental and control groups. The data suggests there was a lag in the effect of training. Extra effort measures the construct of whether leaders were able to motivate followers to perform above and beyond their normal work level in their current task. The initial causal change from the intervention training should be on the leader, which is why leaders' performance (satisfaction and effectiveness) in the previous two sections was observed to have increased significantly. However, it is not surprising that to influence change in the followers, once the leaders received the intervention would need time to be manifested upon the followers, as demonstrated in the lag within these findings. Hence, the results still support the view that leaders with higher self-regulation yield higher leadership outcome in increasing followers' effort to try harder to perform as demonstrated during posttest 2.

Overall, Hypothesis 1a which predicted that a self-regulation intervention should lead to better leader performance was supported. The three facets of leader performance, measured as leader satisfaction, leader effectiveness and extra effort, significantly increase for leaders who attended the intervention as compared to leaders who did not. Followers were more satisfied with leaders who attended the intervention because the leaders displayed behaviours that met their expectations, used methods of leadership that were satisfactory and worked with their followers in a satisfying way. In addition, followers of leaders who attended the intervention perceived their leaders as significantly higher on effectiveness at meeting task demands, resolving task problems and effective at leading the team than followers of leaders who did not receive the intervention. Finally, although there was a lag in the effect of the intervention on extra effort, leaders were still able to get their followers to work harder than they expected, increase their followers' desire to succeed on task and make them more willing to try harder as a result of the influence of their leaders.

**Hypothesis 1b:** A self-regulation intervention should lead to better team's financial performance, measured as retained profit, return on capital employed (ROCE), earnings per share (EPS) and (negative) gearing.

***Profit.*** Consistent with Hypothesis 1b which predicted a positive relationship between self-regulation training and profit, the results from the analyses demonstrated that leaders in the experimental group who received intervention training were able to lead their teams to achieve higher profit across time, as

compared to the control group. This result is attributable to leaders who have higher level of self-regulation uses methods of leadership which are more effective in attaining higher profit than leaders who did not receive the intervention.

***Return on capital employed (ROCE).*** The results of receiving self-regulation training lead to a higher ROCE measure for teams led by a leader who was in the experimental group than leaders who were in the control group. Participants in the training group self regulate their performance as a leader better, which ultimately resulted in leading their team to manage the money invested into the business efficiently which in turn provides a higher return to the investors.

***Gearing.*** For the change over time in the measure of gearing ratio, results yielded a significant difference at $p < 0.1$ between teams where leaders attended the intervention and those that did not. Although the significant level was at $p = 0.052$, it is closely approaching the level of significance at $p < 0.05$. Gearing ratio is calculated as the ratio that compares the company's equity or capital to borrowed funds. In brief, gearing refers to the extent to which the company is funded by debt. The fact that the companies have only been in operation for three (virtual) years, the companies are still in the earlier stages of growth and hence, still funded by debt such as loan. It is not unexpected for car manufacturing companies, that have been operating in the industry for a while such as BMW, Peugeot, Daimler, Renault and Volkswagen, to have a gearing ratio between 20% to 70% (*BMW annual report*, 2009; *Daimler annual report*, 2010; *Peugeot annual report*, 2009; *Renault annual*

*report*, 2009; *Volkswagen annual report*, 2009). Comparisons at each time point in the current study, demonstrated that there is still support that leaders with higher self-regulation lead their teams to perform better financially as demonstrated in the reduction of gearing ratio within the company which in turn reduces their company's financial risk, thus supporting Hypothesis 1b.

***Earnings per share (EPS).*** The increase in earnings per share (EPS) for teams where leaders attended the intervention was as predicted. Both the experimental and control groups saw an increase in EPS from posttest1 to posttest3, however the increase for teams in which the leaders were in the experimental condition were significantly higher than the increase for teams where the leader was in the control condition. As predicted, the results supported Hypothesis 1b and is attributable to leaders who had higher level of self-regulation were able to lead their teams to use their company's capital to generate income more efficiently.

To surmise, Hypothesis 1b, predicting that a self-regulation intervention should lead to better team financial performance, was supported. Data analyses revealed that teams whose leaders attended the intervention made higher profit, effectively invested money into the business and provided a healthier return to the investors, managed debt efficiently thus bringing the risk of the company down, and finally generated greater income through efficient use of company's capital than teams whose leaders who did not attend the intervention.

**Hypothesis 1c:** A self-regulation intervention should lead to better team's assessed performance, measured as presentation, business plan, group report, simulation performance and reflective report.

***Presentation assessment.*** The examination of whether a self-regulation intervention related significantly to the mark attained for the Presentation assessment demonstrated a significant difference between teams in which leaders attended the training and teams in which leaders did not. This result provides support for Hypothesis 1c, suggesting that leaders who were trained in self-regulation were able to lead their team to present their Business Plan more convincingly to potential investors and was assessed significantly higher by external examiners than leaders who did not receive the training.

***Business Plan assessment.*** The results showed that, although the mean for Business Plan marks were higher for the experimental group compared to the control group, the size of the difference was not significant. The Business Plan and Presentation were assessed within the same week and also fairly soon after the intervention. Firstly, it is to be expected that the training effects takes time to be translated into team performance and therefore might not be evident on measure taken soon after the intervention. Secondly, another possible explanation for a significant result for Presentation and a not for Business Plan could be that students may have allocated more effort towards the Presentation because it was assessed by external examiners from the industry (e.g., Ford, Vauxhall, Ernst and Young and the likes) from whom it

might be possible to be offered an internship. Therefore, Hypothesis 1c which predicted that self-regulation intervention should lead to better Business Plan assessment outcome was not supported.

***Simulation Performance.*** The difference between Simulation Performance marks was found to be significantly different between the experimental and control groups. These findings revealed that leaders who were trained in self-regulation (as compared to leaders who were not trained) were able to lead their teams to achieve notably higher Simulation Performance marks.

***Group Report assessment.*** There was a significantly higher Group Report mark for team whose leaders attended the intervention than for those teams whose leader did not attend the intervention. This result provides support for Hypothesis 1c. Leaders who were trained in self-regulation strategies exhibited competencies to lead their team to achieve a higher Group Report marks than leaders who were not trained.

***Reflective Report assessment.*** Hypothesis 1c was supported. The data analysis confirmed that leaders in the experimental group who received intervention training were able to lead their teams to achieve significantly higher Reflective Report marks, as compared to the control group.

In summary, Hypothesis 1c predicting that self-regulation intervention should lead to better teams' assessment was supported for all assessments (Presentation, Simulation

Performance, Group Report, Reflective Report), except for the Business Plan. Leaders trained in self-regulation were able to regulate their behaviour to lead their team to achieve higher performance in marked assignments as assessed by various external and internal examiners.

**Leaders who attended self-regulation training would exhibit greater improvement in competencies required in their leadership role compared to leaders who have not been trained.**

**Hypothesis 2a:** Leaders who attended self-regulation training would exhibit greater improvement in competencies required in their leadership role, measured as promoting teamwork, planning, basic leadership, relationship management and keeping others informed.

**Hypothesis 2b:** Leaders who did not attend self-regulation training would exhibit less improvement in competencies required in their leadership role, measured as promoting teamwork, planning, basic leadership, relationship management and keeping others informed.

The examination of whether the self-regulation intervention led to an increase in relevant leader competencies to perform in their role demonstrated a significant difference between teams in which leaders attended the training and teams in which leaders did not. The result obtained provided support for Hypothesis 2a and 2b, suggesting that leaders who were trained in self-regulation strategies developed other

relevant leader competencies (e.g., promoting teamwork, planning, basic leadership, relationship management and keeping others informed) that they need to perform effectively in their current leadership role, as compared to leaders who were not trained with self-regulation strategies. Leaders in the experimental group received a 360-degree feedback report and were trained on how to evaluate themselves when they receive this feedback. Based on their own evaluation, it would trigger the process of change and consideration of how to change or improve themselves as a leader by searching for alternatives to achieve this. Next, leaders would devise a clear plan to change, followed by the implementation of the plan. Once the plan had been put into action, they would evaluate the achievement of the plan. Based on these strategies, it is apparent in the current findings that leaders in the experimental group were rated higher by others (followers and supervisors) as having improved their leader competencies as an outcome of the self-regulation intervention.

**Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to leader developing relevant competencies for his/her role and (ii) these competencies positively affect performance.**

**Hypothesis 3a:** Leader competencies mediate the effect of training on performance in that (i) self-regulation training leads to a leader developing relevant competencies for his/her role and (ii) these competencies positively affect leader performance, measured as leader satisfaction, leader effectiveness and extra effort.

***Leader satisfaction.*** Examination of whether leader competencies mediate the effect of self-regulation training on leader satisfaction was supported by the analysis conducted. The results provide support for Hypothesis 3a, suggesting that leaders who were trained, gained relevant competencies which in turn allow them to meet the expectations of their followers. They were able to use methods of leadership that are satisfactory and work with their followers in a satisfying way.

***Leader effectiveness.*** The leader competencies were also found to mediate the effect of self-regulation training on followers' ratings of leader effectiveness. These findings revealed that leaders who were trained in self-regulation (as compared to leaders who were not trained) were able develop relevant competencies needed to meet task demands, to resolve task problems and to effectively lead the team.

***Extra effort.***

For the analysis of whether leader competencies mediate the relationship between self-regulation and leadership outcome in increasing followers' effort to try harder to perform, yielded a significant result at $p < 0.1$. The main effect of training was significant on leader competencies but only approaching significant when it is mediating the relationship between the intervention and extra effort. A possible explanation for this is that, the results did demonstrate that self-regulation significantly affected the change in leader competencies, however to put the effect into influencing change in followers' motivation, there is a time lag. This could also be seen in Section 4.8.1 where the effect of self-regulation training was observed to

effect followers' motivation with a time lag when compared to leader satisfaction ratings and leader effectiveness. Thus, it is possible that if the measurement of follower's motivation to exert extra effort is taken again at a later time, it would yield a significant mediation relationship.

In summary, Hypothesis 3a which suggested that leader competencies mediate the relationship between self-regulation intervention and leader performance was supported, except for extra effort which could be caused by time a lag in the effect of the intervention. Self-regulation strategies help leaders develop relevant leader competencies that helped them meet the expectations of the followers, used methods of leadership that were satisfactory and worked with their followers in a satisfying way. Similarly, the self-regulation intervention also facilitated leaders to develop relevant competencies to meet task demands, to resolve task problems and effectively lead the team. However, with regards to influencing followers to work harder than they expected, increase their desire to succeed on task and make them more willing to try harder, time needs to be taken into account for leaders to achieve these after developing themselves.

**Hypothesis 3b:** Leader competencies mediate the effect of self-regulation training on performance in that (i) self-regulation training leads to leader developing relevant competencies for his/her role and (ii) these competencies positively affects team's financial performance, measured as retained profit, return on capital employed (ROCE), earnings per share (EPS) and (negative) gearing.

***Profit.*** The mediation analysis demonstrated that leader competencies mediate the relationship between the self-regulation intervention and profit. This result is attributable to self-regulation strategies helping leaders to develop relevant leadership competencies to lead their teams to attain higher profit, thus supporting Hypothesis 3b.

***Return on capital employed (ROCE).*** The results from the data analysis showed that the relationship between self-regulation training and ROCE is mediated by leader competencies. In consistent with Hypothesis 3b, this effect demonstrated that the self-regulation strategies assist the regulation of leaders' competencies within leaders to lead the team to utilise the money invested into the business efficiently which in turn provides a higher return to the investors.

***Gearing.*** The outcome of the data mediation analysis supported the fact that leader competencies mediate the relationship between self-regulation and gearing. In parallel with Hypothesis 3b, self-regulation led to leaders developing relevant competencies for their role and these competencies positively affect the management of the company's gearing ratio, which is the extent to which the company is funded by debt (indicating high or low risk company).

***Earnings per share (EPS).*** The mediation effect of leader competencies between self-regulation and EPS was not as expected. Data analyses did not reveal a significant mediation effect, thus Hypothesis 1c was not supported. EPS is a market

performance indicator as compared to profit, ROCE and gearing ratio which indicate company's performance. EPS is therefore more susceptible to market environment changes (Bender & Ward, 2008) which could be a possible reason why the mediation analysis did not yield a significant finding. Looking at profit, ROCE and gearing ratio, leader competencies as a result of self-regulation training led to better company performance. Company performance is more directly impacted by leaders' action whereas market environment is complex and more often than not, is out of the leaders' control. Therefore, EPS is possibly not a good indicator when it comes to predicting the relationship between self-regulation intervention, leader competencies and EPS as financial performance.

Overall, Hypothesis 3b which predicted the relationship between self-regulation intervention and teams' financial performance was supported, except for the EPS measure. Data analyses revealed that teams of leaders who attended the intervention developed relevant leader competencies lead their team to make higher profit, to effectively invest money into the business and provide a healthier return to the investors, and also to manage debt efficiently thus bringing the risk of the company down. In contrast to predicting company's performance, EPS which predicts market performance was concluded to be not as effective to predict this relationship.

**Hypothesis 3c:** Leader competencies mediate the effect of self-regulation training on performance in that (i) self-regulation training leads to leader developing relevant competencies for his/her role and (ii) these competencies positively affects better

team's assessed performance, measured as presentation, business plan, group report, simulation performance and reflective report.

***Presentation assessment.*** The mediation effect of leader competencies between self-regulation and Presentation assessment was not as predicted. Data analyses did not reveal a significant mediation effect, thus Hypothesis 3c was not supported. A possible explanation for this could be that the Presentation was assessed very soon after the intervention. Consequently, it could be too short a time for leaders to for leaders to convert the strategies gained into leader competencies which in turn lead to improved performance.

***Business Plan assessment.*** Data analyses did not reveal that the relationship between self-regulation and Business Plan assessment was mediated by leader competencies. Therefore, Hypothesis 3c was not supported. Similar to above, Business Plan and Presentation were assessed within the same week and also fairly soon after the intervention. Under this circumstance, a possible explanation for the finding could be that the Business Plan was assessed too soon after the intervention for its benefits to be manifested on team performance. Therefore, it could be too short a time interval for leaders to implement the strategies learned from the self-regulation intervention into leader competencies that could improve performance.

***Simulation Performance assessment.*** The mediation effect of leader competencies between self-regulation and Simulation Performance assessment was not as

expected. Data analyses did not reveal a significant mediation effect, thus Hypothesis 3c was not supported. The Simulation Performance was assessed mainly based on the share price of the company. The share price of the company is highly dependent on the market environment and shareholders' interest in the company (Bender & Ward, 2008). For example, a company may be performing well in terms of high market shares in the segment they are operating, generating consistent profit and this profit is reinvested into low-risk long term strategies, but some shareholders may prefer to invest in other companies which are generating immediate returns at each quarter. Therefore, Simulation Performance assessment which is highly dependent on the team's share price, is possibly not a good indicator when it comes to predicting the relationship between self-regulation intervention, leader competencies and Simulation Performance as a team assessment performance.

***Group Report assessment.*** Examination of whether leader competencies mediate the effect of self-regulation training on Group Report assessment was supported by the analysis conducted. The result obtained provides support for Hypothesis 3c, suggesting that leaders who were trained, gained relevant competencies which in turn allows them to lead their team to meet the expectations of the Group Report and achieve the relevant marks for the assignment.

***Reflective Report assessment.*** The results from the data analysis showed that the relationship between self-regulation and Reflective Report was mediated by leader competencies. Consistent with Hypothesis 3c, this effect demonstrated self-

regulation led to leaders developing relevant competencies for their role to meet the expectations of the Reflective Report and achieve the relevant marks for the assignment, thus these competencies positively affect the Reflective Report marks.

To surmise, Hypothesis 3c predicted that leaders who were trained in self-regulation, gained relevant leadership competencies which in turn allows them to lead their team to achieve better team assessed performance was partly supported. The relationship between intervention and Presentation, Business Plan and Simulation Performance was not mediated by leader competencies. On the other hand, the relationship between the self-regulation intervention and Group Report and Reflective Report was mediated by leader competencies.

## 5.3. Contributions of the research

### 5.3.1. Implications to theory

The findings of the current research have several theoretical implications that extend existing knowledge and establish an agenda for future research in leadership development.

First, this research provides a theoretical conceptualisation of how 360-degree feedback and executive coaching, when used together as a form of leadership development approach, can work effectively. This was achieved by theorising and providing empirical evidence in support of a self-regulation process model. In

particular, the current conceptual model suggested that the process of 360-degree feedback and executive coaching reflects the process of self-regulation.

The current theoretical conceptualisation provides an understanding of why (i) 360-degree feedback yielded mixed findings in the improvement of leaders' performance (Kluger & DeNisi, 1996) and (ii) why 360-degree feedback combined with executive coaching produced higher leader improvement in leaders' performance (Smither, London, Flautt, Vargas, & Kucine, 2003). 360-degree feedback as a leader developmental programme aims to increase self-awareness within the leader through identifying cognitive discrepancies between how the leader sees themselves and how others see them (Atwater & Yammarino, 1992; Church, 1997). However, the assumption here is that leaders, who are aware of the need for the development of certain competencies in order to overcome their weaknesses and to perform better, will change their behaviour (McCarthy & Garavan, 1999). Obviously this is not always the case.

Looking at the most comprehensive self-regulation framework which is comprised of seven stages (*receiving* relevant information, *evaluating* the information and comparing it to the desired goal, *triggering* change, *searching* for options to change, *formulating* a plan, *implementing* the plan and *assessing* the effectiveness of the plan), 360-degree feedback triggers the first stage of the self-regulation process. The current research outlined that leaders who inherently possess a high self-regulation as a trait, are possibly the leaders who demonstrated improvement in performance when

360-degree is implemented. However, for leaders who do not, the benefit of 360-degree ends at leaders being aware of their need for development i.e., the state of *knowing*. Therefore, from the literature review on executive coaching (Chapter Two), the current thesis revealed that the phases of executive coaching reflect the subsequent process of self-regulation. From the stage of self-awareness, the executive coach helps leaders to *evaluate* their feedback and compare themselves to a standard (expectations from followers, supervisors, etc.). Next, the executive coach will *trigger* change by *searching* for ways of improvements. This is then followed by the *formulating* of a clear plan to change, followed by the *implementation* of the plan. Lastly, the outcome and achievement are *evaluated* against the plan (Douglas & Morley, 2000; Olivero, Bane, & Kopelman, 1997; Saporito, 1996; Tobias, 1996; Winum, 2006; Witherspoon & White, 1996). Thus, it is not surprising when 360-degree feedback is combined with executive coaching as a leadership developmental programme, it was found to be effective (Olivero, Bane, & Kopelman, 1997; Smither, London, Flautt, Vargas, & Kucine, 2003) because the executive coach plays the role of 'regulator' and this completed the framework of self-regulation process. 360-degree feedback forms the state of *knowing* and an executive coach translates the *knowing* state by *doing*, i.e., putting into action the need of development. The theoretical framework suggested by this thesis begins to shed light on the effectiveness of the practice of 360-degree feedback and executive coaching, where currently both of their practical application and success is far ahead of its theoretical understanding.

Second, the current research extends its contribution by integrating and converting the construct of self-regulation to understand the role of self-regulation processes within the context of leadership development. Current leadership development research advocates self-regulation as a construct which could lead to more effective leadership, an example could be seen in authentic leadership development. Within authentic leadership, self-regulation is proposed as part of the underlying component which is associated in the development of an authentic leader (Avolio & Gardner, 2005; Avolio, Walumbwa, & Weber, 2009b). Within this conceptualisation, self-regulation provides an understanding of how a leader's actions are guided by a leader's true self in reflecting core values, beliefs, thought and feelings. The demonstration of this high level of openness is a pertinent component to developing trust in leader and follower relationships (Gardner, Avolio, Luthans, May, & Walumbwa, 2005). As leadership development is a strategy to expand a leader's capacity to be effective in the leadership role and processes (McCauley & Van Velsor, 2004), self-regulation has so far been conceptualised as the '*what*' that contributes to leader effectiveness but the current research extended the application of self-regulation as a construct of '*how*' it could be developed. It is the latter aspect that has not been empirically tested in leadership development.

The use of self-regulation strategies has long been applied in clinical and educational psychology as a form of competency to help individuals help themselves through planned interventions (Boekaerts, Maes, & Karoly, 2005). Drawing on this, the current thesis provided an empirical contribution to the successful development of

self-regulation strategies in leaders within the leadership context, to increase leader performance as well as their team's performance. Leaders who are trained in self-regulation strategies were rated by their followers to be more satisfactory in meeting their demands, more effective and eventually, increased the followers' motivation to exert extra effort in their tasks. In addition, performance measures obtained by leaders' performance in leading their team to run a virtual company, and assessment of their performance in doing so, also provided support that leaders trained in self-regulation strategies were able to lead their team to perform better. Thus, the empirical findings of this research contributed to integration and conversion of the self-regulation construct to self-regulation process within leadership development.

Third, the results from this research have significant implications for competency modelling within leadership development effort to identify the leadership competencies that are required for leading people towards organisational goals. Leaders trained in self-regulation strategies were able to develop relevant competencies needed in the role they were performing. Within traditional methods of leader competency modelling, there are several limitations despite the benefits that come with it. For example, the long and numerous list of competencies identified (Prewitt, 2003) may have unintended consequences where leaders are just 'checking-off' competencies in the model systematically, which could limit the innovation and synergistic growth of the leader as an individual (Zenger & Folkman, 2002). If rigidly applied, it may create 'cookie-cutter' leaders inside the organisation. The high homogeneity, in time, will contradict the organisation's aim of achieving competitive

advantage through leaders (Zaccaro & Banks, 2004). In addition, not all competencies are of equal importance, competency modelling faces the challenge that the competencies needed by leaders vary from one situation to another; and from one follower to another. Competencies required by leaders are different according to their role and levels (Hooijberg, Hunt, & Dodge, 1997; Hooijberg & Schneider, 2001; Mumford, Marks, Connelly, Zaccaro, & Reiter-Palmon, 2000; Streufert & Nogami, 1989; Streufert & Swezey, 1986) and also relevant competencies that are perceived to be important for each follower or organisation, will also differ. According to Implicit Leadership Theory (Lord, Foti, & DeVader, 1984), the importance or need for a particular leader attribute depends on the perceiver (leader/follower/group/ organisation) within the context. Take the following classic example, followers who prefer higher guidance and direction in their job would perceive a leader to be effective if the leader possesses the competency to guide them. However, other followers who are creative may prefer a leader with the competency to coach rather than direct. On the other hand, practitioners for their part in developing leaders are faced with the same challenges in trying to design interventions to develop what is perceived to be the most effective competencies needed in leaders at that moment.

The current research acknowledges the challenges of the complex interaction of leaders with situational and social variables, as well as the limitations to leadership development practitioners designing and identifying competencies in which the leaders need. As Boyatzis (1999) pointed, “competencies, even those empirically

determined to lead or related to outstanding job performance, are necessary but not sufficient to predict performance" (p. 16). Instead of just 'fitting' a leader into his/her role, leaders need to be trained to develop themselves within their role. Theoretical conceptualisation and empirical results from this study make a distinct contribution in view of this limitation. The results suggest that when leaders are trained with self-regulatory strategies, they are able to recognise the competencies that are most relevant to their current leadership role and followers' needs, and seek to develop those competencies.

Fourth, adding to the leader competencies literature, the findings of the current research supported the notion that leader competencies mediate the relationship between self-regulation and leader performance. Drawing from the findings above where self-regulation training leads to the successful acquisition of relevant leader competencies and when these competencies are put into operation, contributes to the successful performance of tasks. In the context of leadership development, these tasks are goals that a leader seeks to achieve and lead the team to achieve them. As previously mentioned in the literature review, leaders frequently need to confront crucial and relevant real-time issues and come up with best solutions in the shortest period of time (Day, 2000; Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000). To do so, leaders need skills and abilities to develop and implement solutions with followers, peers or supervisors operating in complex and dynamic contexts. Within this process, leaders face the complex interactions between them and the social and organisational environment (Fiedler, 1996). Effective leaders need to have

the social skills and abilities required to solve a variety of interpersonal and organisational problems (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000; Ulrich, Brockbank, Yeung, & Lake, 1995; Wexley & Baldwin, 1986; Zaccaro, Mumford, Connelly, Marks, & Gilbert, 2000). In addition, leaders also need certain knowledge sets in order to generate solutions required in addressing these challenges (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000). This knowledge set also serves as a repertoire of behavioural responses from which the leader can draw to solve problems effectively (Zaccaro, Foti, & Kenny, 1991). Therefore the KSAO (knowledge, skills, abilities and other attributes) package of leaders summarised in the form of competencies is crucial for leaders to perform effectively in their role. Results from the subjective (followers ratings) and objective (team financial performance and teams assessment) data of this research, provides strong support that leaders equipped with self-regulation strategies lead to the development of relevant skills which in turn lead to leader effectiveness and successful performance of tasks. Therefore, drawing from these findings, this thesis put forward the unique contribution of conceptualising self-regulation as a meta-competency that will allow leaders to be aware of what competencies are required to perform effectively and regulate their behaviour into developing the relevant competencies to achieve the desired results.

Fifth, this research sought to remedy the methodological gap raised by Reichard and Avolio (2005) that not all research that claimed to investigate leadership development manipulated leadership itself. Based on a meta-analysis study

conducted to evaluate the leadership intervention (experimental or quasi-experimental studies) in the past 100 years, the study identified that when leadership is manipulated, the manipulations are conducted in laboratory settings rather than in field settings (Avolio, Reichard, Hannah, et al., 2009a). In addition, out of 138 studies, only 37 studies manipulated leadership through intervention through training or development of the leader. These studies truly aimed to enhance a leader's knowledge, skills, ability or motivation which will enable leaders to implement positive influence in the leadership context. In contrast, the rest of the 101 studies were considered non-developmental interventions. These studies mainly consist of manipulations of leader's behaviour through assignment, role play, scripts and similar approaches. The intervention conducted within this research was specifically designed to develop leader's self-regulation. Consistent with the meta-analytic findings of Avolio and his colleagues, research that is developmental has a stronger effect for leadership interventions which is observed in the findings of the self-regulation intervention.

Sixth, focussing on the development of the leader, this study also overcomes the limitations of other leadership development studies whereby leaders were developed across a period of at least six months, versus interventions that lasted less than a day. Leaders were initially coached by an executive coach for a minimum of 4 hours and they also received an initial 360-degree feedback report. After 3 months, they received an updated feedback report and after 6 months of the intervention, another updated feedback report. The long term focus of this study, contributes findings that

counteract the short term limitations in short term leadership interventions which raised concerns with regards to the long term effect and the durability of the change (Avolio, Reichard, Hannah, et al., 2009a).

Seventh, the current study measured the effect of the intervention across a period of nine months to evaluate lasting effects of the leadership intervention. The current study contributes to the call for longitudinal designs within leadership research which has fallen on deaf ears. In the 1990s, 82% of studies used a cross-sectional design as compared to 18% with a longitudinal design (Lowe & Gardner, 2000). Between 2000 and 2010, the percentage for longitudinal designs only increased by 3.7% after a decade of calls for more longitudinal designs within leadership research (Gardner, Lowe, Moss, Mahoney, & Cogliser, 2010). Drawing from the resource allocation theory (Kanfer & Ackerman, 1989), a longitudinal design is imperative for research examining an intervention because it is proposed that after leaders are trained on how to self-regulate, the leaders will divert attention and resources to absorb new information, operationalise the new competencies learned, lead their team, and also strive to accomplish the goal expected of them as a leader. As suggested by DeShon and colleagues, self-regulatory activities do not use up a significant amount of attentional resources and following this logic (DeShon, Brown, & Greenis, 1996), it is expected that after the intervention, leaders would take some time (but not a significant amount of time) to accumulate attentional resources necessary to translate self-regulation learned into performance outcomes, and in time, demonstrate increased actual performance. As the relationship between self-regulation training

and leader performance will become more pronounced over time, thus it is crucial to investigate the effect of an intervention using a longitudinal design.

Eighth, the significance of the longitudinal field experimental design of this research, are many fold. Conducting the experiment in a natural setting instead of a contrived artificial one in a laboratory, allows the transfer of findings to real life settings (Christensen, 2007). The study was conducted in a setting where participants hold the position of a leader, they were new to the particular leadership tasks, position and role requirements, and they needed to lead team members to achieve a specific goals within a set time frame. On the other hand, followers worked in highly diverse teams to complete work tasks such as strategic planning and assessment of the markets and competitors; implementing marketing, operation, human resource management and financial strategies; and at the same time, to meet shareholders expectations to generate returns on investment. The level of performance held a high consequence to the leaders' as well as the followers' in terms of the degree they were studying. The field setting, combined with the longitudinal nature of the experimental design, allowed the investigation of the causal relationships of constructs as well as evaluating the long term effect and the durability of the change as a result of the intervention (Bryman, 2001; Shadish, Cook, & Campbell, 2002).

Ninth, by using a longitudinal design with data collected from different sources (followers, supervisors, external raters, computer simulation) to investigate and support the hypotheses proposed, the contribution of the findings cannot be fully

accounted for by the effect of common method variance. Common method variance is one of the main problems when research design collects data from one source and could lead to a systematic measurement error and further bias the relationship among the variables of interest (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Therefore, the different measurement methods used in the current research provide a more robust test for the hypotheses and controlled for the threats of Type I and Type II errors due to inflated or deflated relationships amongst the observed variables.

Tenth, the present study also adds to a growing line of research by applying computer simulations (Gardner, Lowe, Moss, Mahoney, & Cogliser, 2010) and draws upon the strength of such a method. The current research was conducted in a naturally occurring setting in which students take the Business Strategy Game (BSG) module performing an interactive computer simulation. The computer simulations, structures and settings, in which the leaders and followers interacted, reflected an organisational setting. Group leaders led and influenced their teams in developing a competitive strategy, developing and managing a virtual company's portfolio, creating a shareholder value, analysing competitors and creating customer value. In addition to the task, leaders needed to manage the followers and relationships between the followers within their team. The use of a computer simulation is a new methodological aspect within leadership research, which Gardner, Lowe, Moss, Mahoney and Cogliser (2010) suggest in their review; "will move the science of the field forward" (p.951) over the next decade.

### 5.3.2. Implication to practice

Findings from the current research have several noteworthy implications for leadership development practice in organisations as well as for the leadership process.

First and foremost, the current research emphasises the importance of the development of self-regulation strategies to enable leaders to help themselves, i.e., help leaders to develop relevant competencies to enhance their own effectiveness as well as improving team performance. 360-degree feedback is widely applied in many organisations and with the large number of validated 360-degree feedback instruments available, feedback is an increasingly accessible and inexpensive leadership development intervention (Atwater, Ostroff, Yammarino, & Fleenor, 1998; Fleenor, Smither, Atwater, Braddy, & Sturm, 2010; Tornow & London, 1998). However, the current research highlighted the incompleteness in the application of 360-degree feedback as a form of leadership developmental programme when applied independently. To facilitate effective utilisation of 360-degree feedback, the findings from this research suggested that incorporating a self-regulation intervention allows leaders to translate the state of *knowing* from feedback obtained via 360-degree to the state of *doing* via self-regulation strategies.

Second, although references were often made to the limitations of leader competency modelling (Prewitt, 2003; Zenger & Folkman, 2002), the assertion has been lacking in answer as to how those involved in the work of leadership could solve these

limitations. Leaders in organisation, frequently need to confront crucial and relevant real time issues (Day, 2000; Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000) and at the same time, need to have the social skills and abilities required to solve a variety of interpersonal and organisational problems (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000; Ulrich, Brockbank, Yeung, & Lake, 1995; Wexley & Baldwin, 1986; Zaccaro, Mumford, Connelly, Marks, & Gilbert, 2000). Besides the different competencies perceived to be important for a leader by the followers, there could also be a difference in perception amongst practitioners when they try to model these relevant competencies that need to be developed. The current research proposed that leaders would be the best person to identify the competencies needed within their own role and when equipped with self-regulation strategies, they would be able to seek means to improve the relevant competencies needed. Thus, it is suggested that organisations can facilitate this experience-based leadership competency development by providing self-regulatory training to leaders to enhance their continuous development.

Third, although executive coaching has been proven to be effective in ensuring improved performance after 360-degree feedback was conducted (Olivero, Bane, & Kopelman, 1997; Smither, London, Flautt, Vargas, & Kucine, 2003), it is very expensive and can cost from US$300 to US$1500 monthly for one leader (Douglas & Morley, 2000). Because of its high cost, executive coaching is usually only available for upper levels of management. The current research identified that executive coaching plays the role of 'regulator' in the equation of leader

development. 360-degree feedback and executive coaching, together reflect the process of self-regulation. The empirical findings from this research demonstrated positive leader and team outcomes when 360-degree feedback and self-regulation training were implemented. The practical implication of this finding is that many more leaders and organisations could benefit from this cost effective leadership development intervention. 360-degree feedback is already widely applied within organisations, almost 90% of Fortune 500 companies (Bracken, Timmereck, & Church, 2001; Edwards & Ewen, 1996), and is increasingly inexpensive (Fleenor, Smither, Atwater, Braddy, & Sturm, 2010). Group coaching on self-regulation strategies is more cost efficient compared to executive coaching and could be used by organisations along with 360-degree feedback to harvest its full benefits. Thus, a leadership development intervention designed to increase self-regulation will not only sustain a continuous cycle of leader development but also reduce cost and expand the benefits of executive coaching to more leaders beyond the upper echelons.

Fourth, organisations invest in leadership development programmes with the aim to improve performance of the leader, however, research tends to measure leader's performance in terms of subjective or perceptual outcomes (e.g., followers ratings of leader satisfaction or leader effectiveness) (Koene, Vogelaar, & Soeters, 2002). It is no wonder, without objective measures such as financial outcomes, organisations perceived leadership development interventions as something "nice to have" (Avolio, 2005) instead of a requirement. Only relatively few studies have linked a leadership

development intervention with objective financial outcomes (Avolio, Avey, & Quisenberry, 2010; Bradley, Nicol, Charbonneau, & Meyer, 2002; Howell & Avolio, 1993; Koene, Vogelaar, & Soeters, 2002; Mumford, Hunter, Eubanks, Bedell, & Murphy, 2007; Schlosser, Steinbrenner, Kumata, & Hunt, 2006). Measures of objective performance increases the organisations confidence of a return in their investment and that organisational resource are well spent on leadership developmental effort. Findings from the current research, demonstrated that a leadership intervention has an impact on the company's financial performance through increase profit, higher return in capital employed and effective management of debt which in turn, led to a higher return for the investors.

Fifth, as mentioned above, the use of 360-degree feedback and an intervention to increase self-regulation strategies facilitated experience-based leadership competency development and enhanced leaders' continuous development. This form of leadership developmental intervention is beneficial for organisations to prevent derailments among leaders. For example, research in 360-degree feedback found that leaders who are less self-aware are more likely to derail in their career progression (Bass & Yammarino, 1991; McCall & Lombardo, 1983). In addition, examples of executive coaching development case studies have been to support derailed executive (Hall, Otazo, & Hollenbeck, 1999; McDermott & Levenson, 2007; Velsor & Leslie, 1995; Wasylyshyn, 2008; Winum, 2006). Mumford, Campion and Morgeson (2007) in their leadership skill strataplex model put forward that as leaders ascend to higher levels in an organisation or across organisations, they would need different

competencies and these competencies are more cumulative rather than exclusive. Furthermore, empirical findings by Mumford, Marks, Connelly, Zaccaro and Reiter-Palmon (2000) in assessing the competencies across six grade levels of officers in the U.S. Army, demonstrated an increase in leaders' competencies in higher grade levels in comparison to their lower counterparts. It is acknowledged that the competencies measured by Mumford and his colleagues are relevant to military leadership and leadership competencies needed for organisational leadership is arguably different. The pertinent point here is that competencies increase as a leader ascends into higher level positions within an organisation and leaders derail if they are not able to develop new relevant skills to meet the new demands. Therefore, the current research findings of 360-degree feedback and self-regulation training have individual relevance as well as organisational implications by providing a pragmatic solution to problems stated above by: (i) developing relevant competencies for leader's role and (ii) preventing leaders from derailing as they progress in their career.

To surmise, comparing with the old saying of, "Give a man a fish and you feed him for today, teach a man to fish, and you feed him for life"; leader intervention programmes designed to develop leaders' self-regulation is similar to training the leaders 'to fish'. Instead of adopting a myopic view of solving an immediate problem using executive coaching (e.g., regulating leaders' action to develop a particular competency which is needed at that moment), leadership development programmes should develop leaders' meta-competency i.e., self-regulation. Meta-competency in the form of self-regulation will allow leaders to perform effectively by meeting the

demands of various constituencies through awareness of what is needed, and proactively engaging themselves to develop further competencies that are needed. Thus, a leadership development intervention designed to increase self-regulation will not only sustain a continuous cycle of leader development but also reduce cost and expand the benefits of executive coaching to more leaders within the organisation.

## 5.4. Potential limitations

Notwithstanding the previously mentioned contributions, there are several potential limitations to this research that should be kept in mind when interpreting the research findings. Issues concerning both research design and methodological concerns are explored within this section.

There are two potential limitations to the field experimental design for this research, internal and external validity. History, maturation, instrumentation, regression artefact, attrition and self-selection biases were potential threats to internal validity. History, which is events that occur during the period of the experiment and maturation, which is due to participants aging, could impact the changes at the end of the experiment (Bryman, 2001). However, in this study, both factors were controlled for by including a control group within the experimental design. Therefore, if there was any event or change during the study that might impact on the findings, both experimental and control groups were equally exposed to these and were concluded to be comparable (De Vaus, 2001). Next, instrumentation was not an issue in this study as the researcher used the questionnaire as the main measurement instrument

and the same questionnaire was used throughout the study. Another form of threat to internal validity was regression artefacts which refer to the measurement scores of participants tending to move towards the mean, even without intervention (Shadish, Cook, & Campbell, 2002). Such potential incidents were controlled in the study in order to draw valid inferences from the findings. The researcher used the proposed solution of randomisation assignment, where participants were randomly allocated to the experimental and control groups. An independent *t*-test was also conducted to compare the characteristics of both the experimental and control groups and results demonstrated that there was no significant difference. Sometimes, some participants in experimental study could not complete the study due to certain circumstances and this is fairly common. This threat to internal validity is called attrition or mortality. The current experimental design of pretest-posttest with a control group is the best method to control for such a threat. However, such occurrence may not be totally controlled for unless the attrition rate is equal in both, experimental and control group (Shadish, Cook, & Campbell, 2002). Finally, although the experiment randomly allocated participants into control and experimental groups, there could be the threat of self-selection biases when participants possessing certain characteristics are more likely to turn up for the intervention. Participants were informed that the intervention would improve their leadership skills, it was possible that participants who already posses higher self-regulation are more likely to attend the intervention. Thus, measurements for self-regulation and all performance measures were taken during pretest and were analysed for any significant difference between groups.

Results in Chapter Four confirmed that there were no significant differences between those in experimental and control groups.

On the other hand, there are two potential threats to external validity such as interactive effects of testing and interactive effects of sampling (Bryman, 2001; Christensen, 2007; Cooper & Schindler, 2003). As the current research consists of pretesting, there is the likelihood that participants could become more or less sensitive to the experiment variable or treatments. The method to reduce this threat is to utilise an experimental design without pretest. However, pretesting was crucial within an experimental design, particularly for the current research, to make an initial comparison between participants in the control and experimental groups are not significantly different on relevant variables. Pretesting also allowed for the control of the potential threat of interactive effects of sampling in the event of random assignment of participants into teams which showed to be fallible.

The sample size of the participants was lower than expected, which could pose as a potential limitation and decrease the generalisability of the current findings. In addition, due to the relatively small sample size, it was not possible to use statistical analysis such as Structural Equation Modelling that could have tested the model as a whole. Given this potential limitation, the intervention was successful and the findings were promising. It is recommended to replicate the findings with a larger sample to provide further support.

The sample of the research consisted of Business School undergraduate students in the Business Strategy Game (BSG) module performing an interactive computer simulation. Although student samples are widely employed (c.f., Anderson & Schneier, 1978; DeRue & Morgeson, 2007; Rapp & Mathieu, 2007; Stam, van Knippenberg, & Wisse, 2010; Vancouver, More, & Yoder, 2008), there was still a potential limitation of generalisability of the findings to organisational contexts and this needs to be considered. However, the BSG module served as a backdrop for this study as it shared a number of characteristics that would be found in organisational settings. For example, the teams worked in a diverse group to complete work tasks such as strategic planning and assessment of the markets and competitors; implementing marketing, operation, human resource management and financial strategies; and at the same time, to meet shareholders expectation to generate return on investment. Also, the team leader shared characteristics such as; they hold the position of a leader, they were fairly new to the particular leadership tasks, position and role requirements, and they needed to lead team members to achieve a specific goals within a time frame. The module was completed over a ten month period, and the level of performance holds high consequence to their degree result. The intention of these carefully selected characteristics is to make it more probable that the current findings will generalise to other contexts. The next step suggested would be to replicate these findings with non-student sample to provide further support.

## 5.5. Avenues for future research

The current research serves as a solid foundation for future inquiries that could further advance the understanding on leadership development. Within this section, the additional possibilities for future research, to add to the depth and breadth of the present findings will be discussed.

While the successful manipulation of self-regulation as a form of meta-competency allows individual leaders to be aware of what competencies are required to perform effectively and regulate their behaviour into developing the relevant competencies to achieve the desired results, organisational support may enhance or decrease the effectiveness of the relationship. As such, it is recommended for future research to examine if organisational support moderates this relationship. Organisational support in the form of resources made available by the organisation could reinforce development amongst individuals (Tracey, Tannenbaum, & Kavanagh, 1995) and foster a continuous learning environment (Noe & Wilk, 1993). Previous research has demonstrated a link between organisational support practices and performance (Baldwin, Magjuka, & Loher, 1991; Tharenou, 2001). Thus, further research could investigate the effect of organisational level support on the leaders' tendency to develop relevant competencies after self-regulation training and inform how organisation could facilitate leader developments.

In addition, research is also needed to identify individual characteristics that predict leaders' readiness for development and understand how these characteristics affect

the success of the self-regulation intervention. Certain traits are proposed to promote how leaders develop from experience. For example, Tesluk and Jacobs (1998) suggested that traits such as 'openness to experience' and 'risk tolerance' can influence the likelihood that leaders will accept developmental interventions (Tesluk & Jacobs, 1998). More recently, an individual difference in terms of 'developmental readiness' was put forward as a potential moderator that could serve to accelerate leadership development (Hannah & Avolio, 2010). Individuals with higher developmental readiness are proposed to develop quicker and more efficiently (Shebaya, 2010). Identifying the moderators between the leadership development intervention and outcomes would provide more a holistic insight to the current findings as to how much individual differences influence the success of leader developmental effort.

One-on-one coaching is the most commonly practiced method in the leadership field compared to group coaching (Manfred & Kets, 2005). However, group coaching is the fastest growing segment of the coaching profession. According to the research conducted by Manfred and Kets (2005), group coaching yields a higher pay-off. Future research should examine the relative effectiveness of group versus one-on-one coaching by including both these two modalities in the experimental design. Besides extending knowledge on which method yields the most effective coaching process and outcomes, it will also be beneficial to inform practice if group coaching is equal or more effective compared to one-on-one coaching because group coaching will incur less cost and time.

The sample in this research study was students in the Business School who take the Business Strategy Game (BSG) module performing an interactive computer simulation. Future research needs to continue exploring the effects of a self-regulation intervention using other samples from organisations. Although the characteristics of the sample and field settings were carefully selected to make it more probable that the current findings will generalise to other contexts, a replication of the findings from this research in the context of organisations could provide further support. In addition, researchers are often advised to use multiple methods to confirm data and understand the data further (Smith, 1996). Therefore, methods such as interviews with participants or others (e.g., followers, supervisors, clients, etc.), observation of team meetings, or tracking of action plans could provide additional information to confirm pretest/posttest scores and lead to an enriched explanation of the research problem (Martineau, 2004).

## 5.6. Epilogue

The present research compared a leadership development intervention based on self-regulation training and its impact on leader performance. Specifically, it examined the intervention's effect on followers' perceptual measures of leader effectiveness as well as objective measures of teams' financial performance and independent assessment measures. Leader competencies were also tested as a mediator. Overall, the empirical findings revealed that the self-regulation intervention had a positive impact on leader and team performance. Leaders trained in self-regulation developed relevant competencies for their role and these competencies positively affected performance.

This thesis adds to the growing line of leadership development research in terms of theory and practical implications. The conceptual framework suggested in this thesis begins to shed lights on the underlying mechanism of why the practice of 360-degree feedback and executive coaching are successful because the practice of both, has far preceded its theoretical understanding. Additionally, this thesis puts forward the unique contribution of conceptualising self-regulation as a meta-competency that allows leaders to be aware of what competencies are required to perform effectively and regulate their behaviour into developing relevant competencies to achieve the desired results to meet the complex demands of leadership. Furthermore, the robust design of the longitudinal field experimental study advocates the change that has been called for in leadership developmental research. The findings also highlight several important implications for organisations and practitioners of leadership

development, in which the intervention designed to increase self-regulation, will not only sustain a continuous cycle of leader development but also reduce costs and expand the benefits of executive coaching to more leaders beyond the upper echelons.

To conclude, and return to the saying in the introduction of this thesis, instead of saying “Give a man a fish and you feed him for today, teach a man to fish and you feed him for life”, this research suggests “Give a leader an executive coach and you solve his problem for today, teach a leader to self-regulate and you develop him for life”.

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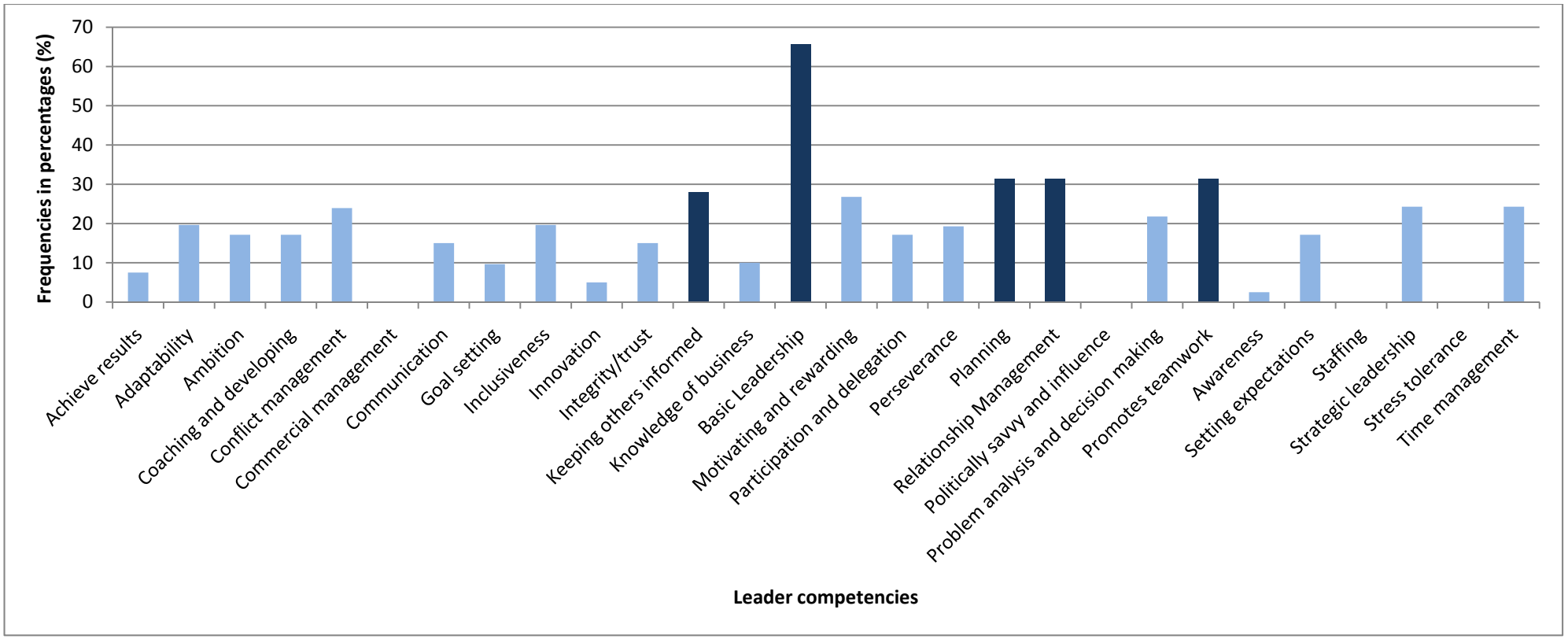
# Appendix I Pilot questionnaire

Please select **5** competencies from the 28 competencies below, to which you consider are the most relevant for the role of Managing Director for him or her to be effective as a leader in managing the Business Game team.

| | **Competency**<br>*Please insert a cross **(x)** on a maximum of 5 competencies you have selected on the right hand side box* | |
|---|---|---|
| 1 | **Achieve results**<br>Consistently meets of exceeds performance targets, manages cost effectively, sets clear performance goals, concentrates on key business priorities. | |
| 2 | **Adaptability**<br>Willing to compromise, accepts criticism openly and non-defensively, adapts approach to situations and individuals. | |
| 3 | **Ambition**<br>Constantly seeks more responsibility, energetic, enthusiastic about business, highly motivated to advance, take initiative | |
| 4 | **Coaching and Developing**<br>Good at judging others strengths and weaknesses, uses challenging assignments to promote development, promotes feedback, genuinely interested in individual achievement | |
| 5 | **Commercial Management**<br>Understands how to make money in business, negotiates with customers for win-win solutions | |
| 6 | **Communication**<br>Good public speaker, listens attentively to, adapts style to suit audience, write clearly and effectively | |
| 7 | **Inclusiveness**<br>Does not allow personal bias to influence decisions, works well with others, promotes diversity | |
| 8 | **Innovation**<br>Generates new ideas, promotes and effectively handles needed changes, involves others, promotes experimentation with new ideas, help team adjust to change | |
| 9 | **Integrity/Trust**<br>Has confidence in others, is trusted and considers ethics of decisions, maintains confidentiality, accepts responsibility for mistakes, is consistent | |
| 10 | **Keeping Others Informed**<br>Direct and timely feedback on performance and ensures employees(group members) have the information they need to do the job, communicates upper management's(tutor) opinion of the team | |
| 11 | **Knowledge of the Business**<br>Thoroughly understands the business, policies and procedures, highly competent in the technical and functional aspects of the work, stays informed about new practices and developments | |
| 12 | **Leadership**<br>Commands respect and attention, link team goals to mission, articulates a common vision/purpose, develops a sense of loyalty within the team, places priority on getting results, comfortable in a position of authority, role models company values | |
| 13 | **Motivating and Rewarding**<br>Rewards people (extrinsicly/intrinsicly) people for performance, give credits and praise for good work, inspires people to excel, communicates confidence in team | |
| 14 | **Perseverance**<br>Persists in the face of obstacles and setbacks, completes projects, willing to take a stand, pushes hard when appropriate | |

| | | |
|---|---|---|
| 15 | **Relationship Management**<br>Approachable, tolerant of difference, good working relationship with team, peers (other Managing Directors) and managers (tutor) | |
| 16 | **Politically Savvy**<br>Involves the right people in decisions, good network of contacts, astute sense of organisational politics, effective at influencing upper management (tutor), negotiates persuasively | |
| 17 | **Problem Analysis and Decision Making**<br>Considers consequences, alternatives and different perspectives, confronts problems promptly, willing to make decisions when outcome is uncertain, does not get sidetracked by irrelevancies | |
| 18 | **Awareness**<br>Understands own strength/weaknesses, learns from success and failure, seeks feedback on performance and adapts behaviour in response, pursue learning and development | |
| 19 | **Setting Expectation**<br>Clarifies everyone's roles and responsibilities, ensures understanding of team goals, sets clear expectation from performance, explains how performance be evaluated | |
| 20 | **Staffing**<br>Good at recruiting talented employees, ensures appropriate training, understands skills required in team, takes appropriate action with consistently poor performance | |
| 21 | **Strategic Leadership**<br>Communicate long term vision with short term performance goals, understands industry dynamics, effectively manages complex organisational changes, seeks new revenue opportunities | |
| 22 | **Stress Tolerance**<br>Maintains composure under stress, works effectively in ambiguous situations, remains optimistic | |
| 23 | **Time Management**<br>Manages time effectively, doesn't over commit, rarely misses deadlines, does not get sidetracked | |
| 24 | **Goal Setting**<br>Set challenging, meaningful goals for the team, communications, monitors progress, give feedback, rewards achievement | |
| 25 | **Conflict Management**<br>Maintains a cooperative atmosphere of the team, finds common ground, knows when conflict is healthy | |
| 26 | **Promotes Team Work**<br>Values and acknowledges the contribution of each team member, promotes cooperation, avoids team rivalries, ensures sufficient resources, shares credit with team for successes and failures | |
| 27 | **Participation and Delegation**<br>Delegates effectively, to the lowest level appropriate, encourages participation in decisions | |
| 28 | **Planning**<br>Well organised, develops contingency plans, effectively plans and prioritises tasks, coordinates work with other parts of organisations (tutor, umpire, other teams), used resource effectively, manages multiple projects | |

## Appendix II Frequency analysis results from pilot study



## Appendix III Leader questionnaire

| | T1 | Leader's copy |
|---|---|---|

Dear Student,

The ABS Undergraduate Programme is working in collaboration with the Work & Organisational Psychology Group to study how interventions can develop leader competencies. The primary purpose of this study is to provide data for the PhD thesis of the researcher, Joobee Yeow. Your participation in this study will be greatly valued. Participation in this study involves the completion of some questionnaires throughout the Business Game module (BS2225), and the chance to be randomly selected to attend a leader development program. **Please note that participation in this study is NOT part of the BS2225 course or assessment, and is purely voluntary. There is no penalty for non-participation.**

All volunteers will be entered into a **PRIZE DRAW** of **1 X £250 / 10 X £100 / 5 X £50 Bull Ring vouchers**. To be entered into the prize draw, participants must complete ALL four questionnaires within the specified deadline on each questionnaire. The prize draw will be made on **31st May 2008** and the winners will be notified by email. If the winner does not respond to notification of winning within **7 days**, the prize will be forfeited and a new winner will be selected.

Please read Option 1 and Option 2:

**Option 1: I want to participate in this study** *(participation in this research is voluntary and you have the right to withdraw at any time)*

You will be fully debriefed about the nature of the study after the module. If you chose this option, you will have to:

1. Complete *four* questionnaires about you and your leadership competencies. These will be administered during Tutorial 2, Tutorial 6, and Tutorial 9. The first questionnaire takes 25 minutes to complete and the subsequent questionnaires will only take approximately 10 minutes to complete.
2. Be randomly selected (by computer) to attend a leader development program during Week 6 which will not take more than 4 hours). Those who are not randomly selected will also have the opportunity to attend the leader development program, if they wish, during Week 6/7, the selection process is mainly for experimental control purposes. You will receive a written feedback report on your leader competencies during this program.
3. Allow the matching of your questionnaire to records held within the Undergraduate Programme regarding your grades from Year 1, 2, and 3, your demographics, and your performance in the Business Game simulation. Only student candidate numbers will be used for this process, no names will be matched to student candidate numbers.
4. Allow the use of the data collected from your questionnaire for further analysis and publication of results in academic and practitioner journals (*only aggregated results, not individual responses, will be reported*).

**Participation in this study will in no way influence your performance or grade in the Business Game module; it is purely for leader developmental purposes.**

All data collected from the questionnaires will be treated in accordance with the Data Protection Act (1998), under which the data handling procedures at Aston University are registered. Electronic data will be kept for 5 years; physical data (questionnaires) will be kept for 2 years. Confidentiality of your data will be maintained at all times. All data collected will be sanitised by allocating a unique code to remove all identifying information of participants. Only the researcher will have access to identifying data. Should you withdraw your informed consent to participate in this study, please send an email to yeowjb@aston.ac.uk and your data will be deleted from the database immediately.

**Option 2: I do not want to participate in this study.**

Please note that this is purely a research study and you are not obliged to participate in this study to meet the course requirements of the Business Game module (BS2225). *You will not be penalised in any form if you do not participate.*

All students in the Business Game module will have the opportunity to attend the leader development program in Week 25 or Week 26 if they wish. Attendees will receive a written feedback report on how to analyse leader competencies during this program.

If you require any further information, please do not hesitate to contact either *JooBee Yeow* at **yeowjb@aston.ac.uk** (Office: SW 8005 or Tel: 0121 204 3328) or Dr. Michael Grojean at **m.w.grojean@aston.ac.uk**.

**ASTON UNIVERSITY** **REG/04/624**

**ETHICS COMMITTEE**

## CONSENT FORM FOR VOLUNTEERS

PROJECT TITLE: Meta-Competencies in Leader Development

RESEARCH WORKERS, SCHOOL AND SUBJECT AREA RESPONSIBLE


**JooBee Yeow**
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SW 8007


**Volunteer's Statement**

I have been informed, in writing, about the purpose of the study and the particular form of participation required. I have read and understand the explanation. I agree to participate in the study of Leadership conducted by the Work and Organisational Psychology group in collaboration with the Aston Business School Undergraduate Office throughout the academic year of 2007/2008. I am aware that I am free to withdraw from the study at any time.

Signature: _____

Full Name: _____
*(Please do not give your Student Candidate Number on this document)*

Date: _____

***Thank you for your participation to assist in this research.***

## INSTRUCTIONS

- In this questionnaire, you are asked to respond to statements about your attitudes, opinions, behaviour and demographics.
- Read each statement carefully and decide whether or not the statement describes you by using the scales given in each section.
- **There are no right or wrong answers**. Simply describe yourself honestly and state your opinions accurately.
- Some of the items will seem repetitive. These are not trick questions. Do not look back at your previous answers, simply answer each question honestly.

## DIRECTIONS ON USING THE SCALES

***Sample 1:*** **Please use the following scale to indicate how closely you think each statement describes you.**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | My favourite fruit is the apple. | 1 | 2 | 3 | 4 | 5 | (6) | 7 |
| B | I do not like to play chess. | (1) | 2 | 3 | 4 | 5 | 6 | 7 |

| | | Very Untrue | Untrue | Somewhat Untrue | Somewhat True | True | Very True |
|---|---|---|---|---|---|---|---|
| C | I like to read during my free time. | | | ~~Somewhat Untrue~~ | | | |
| D | I like to listen to music during my free time. | | | | | | ~~Very True~~ |

***Sample 2:*** **Please use the following scale to indicate how closely you think each statement describes you.**

| Strongly disagree | Disagree | Slightly Disagree | Neither/Nor | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | |
|---|---|---|
| E | I prefer the beach to the mountains for holidays..... | 6 |
| F | I will read the final Harry Potter book in the next 6 months..... | 1 |

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Very **UNTRUE** of me | **UNTRUE** of me | Somewhat **UNTRUE** of me | Somewhat **TRUE** of me | **TRUE** of me | Very **TRUE** of me |

| | | |
|---|---|---|
| G | 4 | I think that Jennifer Lopez is a better actress when compared to Jennifer Gardner. |
| H | 5 | If I were given a choice, I would rather be a footballer than a golfer. |

***Please turn to the next page to start the questionnaire...***

T1 | Leader's copy

## SECTION 1: About you and your team

**Your Student Candidate Number**

| | | | | | |
|---|---|---|---|---|---|
| | | | | | |

**Your Group Number**

| |
|---|
| |

*If your Student Candidate Number is not available, please provide your full name below. Under NO circumstances should you give both Student Candidate Number AND full name.*

**OR Your Company's Name**

| |
|---|
| |

| | | | | | |
|---|---|---|---|---|---|
| 1 | Your country of origin: *(where you mainly grew up)* | ☐ | UK | ☐ | Other (please state) _____ |
| 2 | Your first language: | ☐ | English | ☐ | Other (please state) _____ |

3 If you are a student from outside the UK, you have been living in UK for _____year(s) _____month(s)

| | | | | | |
|---|---|---|---|---|---|
| 4 | You are: | ☐ | Male | ☐ | Female |

5 How old are you? _____year(s) _____month(s)

6 How much work experience do you have? (part-time and full-time) _____year(s) _____month(s)

7 How much leadership experience do you have? _____year(s) _____month(s)

8 Have you held any leadership role/position before? (e.g. captain of a football team / president of student council)

_____

_____

9 Number of people supervised (if any)? _____

10 How did you come to hold the position of the Managing Director:

| | | | | | |
|---|---|---|---|---|---|
| ☐ | I volunteered | ☐ | By majority vote of the team | ☐ | By drawing (random) lot |
| ☐ | That was the only position left for me | ☐ | No one else wanted the position | ☐ | Other (please state) :- _____ |

| | | | | | |
|---|---|---|---|---|---|
| 11 | Do you think you are the real leader in your group? | ☐ | Yes | ☐ | No |

12 If not, who is the real leader in your group? Please select his/her functional role:

| | | | | | |
|---|---|---|---|---|---|
| ☐ | Finance Director | ☐ | Marketing Director | ☐ | HR Director |
| ☐ | Operations Director | ☐ | Other (please state) _____ | | |

13 Your email address: _____

## SECTION 2

*Below are the five competencies required from YOUR role as MANAGING DIRECTOR to perform effectively for this module.*
***Please indicate the degree to which you agree or disagree that the following statements describe YOU as a leader.***

**1. As a team leader, I...**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Provide direct feedback and timely feedback | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Tell team members when they are doing a good job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Tell team members when they are not meeting expectations | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Ensure team members have all the information they need to do their job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Communicate upper management's (lecturer/umpire/tutor) opinion of the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Provide feedback on how to change performance to meet expectations | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**2. As a team leader, I...**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Value the contributions of each team member | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Acknowledge and credit the team for their accomplishments | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Promote cooperation across teams; avoid team rivalries | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Am good at getting people to work together | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Share credit with the team for successes and failures | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Ensure the team has the resources they need to do their work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| G | Minimise distractions for the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**3. As a team leader, I...**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Command respect and attention | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Link the team's goals with the organisation's mission | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Articulate a common vision/purpose for the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Know how to get things done | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Develop a sense of loyalty in the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Translate plan into action | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| G | Place top priority on getting results | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| H | Am primarily oriented towards the bottom line (net profit/loss) of the organisation | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I | Am comfortable in the position of authority | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| J | Role model the organisation's values in my own behaviour | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**4. As a team leader, I...**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Am well organised | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Effectively plan and prioritise the work of the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Develop contingency plans in anticipation of problems | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Effectively coordinate work with other parts of the organisation | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Am realistic about what can be accomplished | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Plan well in advance | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| G | Use resources effectively | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| H | Can manage multiple projects simultaneously | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I | Keep track of the details | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**5. As a team leader, I...**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Am approachable and easy to talk to | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Am tolerant of others' perspectives and differences | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Have good working relationships with team members | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Have good working relationships with peers (Managing Directors from other teams) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Have good working relationships with upper management (lecturer/umpire/tutor) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Treat people fairly; do not exploit people | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| G | Am good at dealing with others' feelings and emotions | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## SECTION 3

***Please indicate the degree to which you agree or disagree that the following statements describe YOU (cross (X) in the relevant box).***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | I will be able to achieve most of the goals that I have set for myself | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
| 2 | When facing difficult tasks, I am certain that I will accomplish them | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
| 3 | In general, I think that I can obtain outcomes that are important to me | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
| 4 | I believe I can succeed at most any endeavour to which I set my mind | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
| 5 | I will be able to successfully overcome many challenges | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
| 6 | I am confident that I can perform effectively on many different tasks | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
| 7 | Compared to other people, I can do most tasks very well | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
| 8 | Even when things are tough, I can perform quite well | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |

## SECTION 4

***Please indicate the degree to which you agree or disagree that the following statements describe YOU (cross (X) in the relevant box).***

| | | | | | |
|---|---|---|---|---|---|
| 1 | I can concentrate on one activity for a long time, if necessary. | Not at all true | Barely True | Somewhat True | Completely True |
| 2 | If I am distracted from an activity, I don't have any problem coming back to the topic quickly. | Not at all true | Barely True | Somewhat True | Completely True |
| 3 | If an activity arouses my feelings too much, I can calm myself down so that I can continue with the activity soon. | Not at all true | Barely True | Somewhat True | Completely True |
| 4 | If an activity requires a problem-oriented attitude, I can control my feelings. | Not at all true | Barely True | Somewhat True | Completely True |
| 5 | It is difficult for me to suppress thoughts that interfere with what I need to do. | Not at all true | Barely True | Somewhat True | Completely True |
| 6 | I can control my thoughts from distracting me from the task at hand. | Not at all true | Barely True | Somewhat True | Completely True |
| 7 | When I worry about something, I cannot concentrate on an activity. | Not at all true | Barely True | Somewhat True | Completely True |
| 8 | After an interruption, I don't have any problem resuming my concentrated style of working. | Not at all true | Barely True | Somewhat True | Completely True |
| 9 | I usually have a whole bunch of thoughts and feelings that interfere with my ability to work in a focussed way. | Not at all true | Barely True | Somewhat True | Completely True |
| 10 | I stay focussed on my goal and don't allow anything to distract me from my plan of action. | Not at all true | Barely True | Somewhat True | Completely True |

**Your opinion is highly valued.**

**Thank you for spending time to assist with this study.**

**END OF QUESTIONNAIRE**

## Appendix IV Follower questionnaire

T1 | Follower's copy

Dear Student,

The ABS Undergraduate Programme is working in collaboration with the Work & Organisational Psychology Group to study how interventions can develop leader competencies. The primary purpose of this study is to provide data for the PhD thesis of the researcher, Joobee Yeow. Your participation in this study will be greatly valued. Participation in this study involves the completion of some questionnaires throughout the Business Game module (BS2225), and the chance to be randomly selected to attend a leader development program. **Please note that participation in this study is NOT part of the BS2225 course or assessment, and is purely voluntary. There is no penalty for non-participation.**

All volunteers will be entered into a **PRIZE DRAW** of **1 X £250 / 10 X £100 / 5 X £50 Bull Ring vouchers**. To be entered into the prize draw, participants must complete ALL four questionnaires within the specified deadline on each questionnaire. The prize draw will be made on **31st May 2008** and the winners will be notified by email. If the winner does not respond to notification of winning within **7 days**, the prize will be forfeited and a new winner will be selected.

Please read Option 1 and Option 2:

**Option 1: I want to participate in this study** *(participation in this research is voluntary and you have the right to withdraw at any time)*

You will be given the opportunity to attend a leader development program in Week 25 or Week 26 after you have completed the module and you will be fully debriefed about the nature of the study. If you chose this option, you will have to:

1. Complete *four* questionnaires about you and your leader. These will be administered during Tutorial 2, Tutorial 6, and Tutorial 9. The first questionnaire takes 20 minutes to complete and the subsequent questionnaires will take approximately 10 minutes to complete.
2. Allow the matching of your questionnaire to records held within the Undergraduate Programme regarding your grades from Year 1, 2, and 3, your demographics, and your performance in the Business Game simulation. Only student candidate numbers will be used for this process, no names will be matched to student candidate numbers.
3. Allow the use of the data collected from your questionnaire for further analysis and publication of results in academic and practitioner journals (*only aggregated results, not individual responses, will be reported).*

**Participation in this study will in no way influence your performance or grade in the Business Game module; it is purely for leader developmental purposes.**

All data collected from the questionnaires will be treated in accordance with the Data Protection Act (1998), under which the data handling procedures at Aston University are registered. Electronic data will be kept for 5 years; physical data (questionnaires) will be kept for 2 years. Confidentiality of your data will be maintained at all times. All data collected will be sanitised by allocating a unique code to remove all identifying information of participants. Only the researcher will have access to identifying data. Should you withdraw your informed consent to participate in this study, please send an email to yeowjb@aston.ac.uk and your data will be deleted from the database immediately.

**Option 2: I do not want to participate in this study.**

Please note that this is purely a research study and you are not obliged to participate in this study to meet the course requirements of the Business Game module (BS2225). *You will not be penalised in any form if you do not participate.*

All students in the Business Game module will have the opportunity to attend the leader development program in Week 25 or Week 26 if they wish. Attendees will receive a written feedback report on how to analyse leader competencies during this program.

If you require any further information, please do not hesitate to contact either *JooBee Yeow* at **yeowjb@aston.ac.uk** (Office: SW 8005 or Tel: 0121 204 3318) or Dr. Michael Grojean at **m.w.grojean@aston.ac.uk**.

**ASTON UNIVERSITY** **REG/04/624**

**ETHICS COMMITTEE**

## CONSENT FORM FOR VOLUNTEERS

PROJECT TITLE: Meta-Competencies in Leader Development

RESEARCH WORKERS, SCHOOL AND SUBJECT AREA RESPONSIBLE


**JooBee Yeow**
Work & Organisational Psychology
Aston Business School
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SW 8005

**Dr. Michael Grojean**
Work & Organisational Psychology
Aston Business School
m.w.grojean@aston.ac.uk
0121 204 3115
NB 609

**Prof. Robin Martin**
Work & Organisational Psychology
Aston Business School
r.martin@aston.ac.uk
0121 204 4293
SW 8007


**Volunteer's Statement**

I have been informed, in writing, about the purpose of the study and the particular form of participation required. I have read and understand the explanation. I agree to participate in the study of Leadership conducted by the Work and Organisational Psychology group in collaboration with the Aston Business School Undergraduate Office throughout the academic year of 2007/2008. I am aware that I am free to withdraw from the study at any time.

Signature: _____

Full Name: _____
*(Please do not give your Student Candidate Number on this document)*

Date: _____

***Thank you for your participation to assist in this research.***

## INSTRUCTIONS

- In this questionnaire, you are asked to respond to statements about your attitudes, opinions, behaviour and demographics.
- Read each statement carefully and decide whether or not the statement describes you by using the scales given in each section.
- **There are no right or wrong answers**. Simply describe yourself honestly and state your opinions accurately.
- Some of the items will seem repetitive. These are not trick questions. Do not look back at your previous answers, simply answer each question honestly.

## DIRECTIONS ON USING THE SCALES

***Sample 1:*** **Please use the following scale to indicate how closely you think each statement describes you.**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | My favourite fruit is the apple. | 1 | 2 | 3 | 4 | 5 | (6) | 7 |
| B | I do not like to play chess. | (1) | 2 | 3 | 4 | 5 | 6 | 7 |

| | | Very Untrue | Untrue | Somewhat Untrue | Somewhat True | True | Very True |
|---|---|---|---|---|---|---|---|
| C | I like to read during my free time. | | | X | | | |
| D | I like to listen to music during my free time. | | | | | | X |

***Sample 2:*** **Please use the following scale to indicate how closely you think each statement describes you.**

| Strongly disagree | Disagree | Slightly Disagree | Neither/Nor | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | |
|---|---|---|
| E | I prefer the beach to the mountains for holidays..... | 6 |
| F | I will read the final Harry Potter book in the next 6 months..... | 1 |

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Very **UNTRUE** of me | **UNTRUE** of me | Somewhat **UNTRUE** of me | Somewhat **TRUE** of me | **TRUE** of me | Very **TRUE** of me |

| | | |
|---|---|---|
| G | 4 | I think that Jennifer Lopez is a better actress when compared to Jennifer Gardner. |
| H | 5 | If I were given a choice, I would rather be a footballer than a golfer. |

***Please turn to the next page to start the questionnaire.***

| T1 | Follower's copy |
|---|---|

## SECTION 1: General Information

**Your Student Candidate Number**

| | | | | | |
|---|---|---|---|---|---|
| | | | | | |

**Your Group Number**

| |
|---|
| |

***If your Student Candidate Number is not available, please provide your full name below. Under NO circumstances should you give both Student Candidate Number AND full name.***

**OR Your Company's Name**

| | |
|---|---|
| | |

| | | | | | |
|---|---|---|---|---|---|
| 1 | Your country of origin: *(where you mainly grew up)* | ☐ | UK | ☐ | Other (please state) _____ |
| 2 | Your first language: | ☐ | English | ☐ | Other (please state) _____ |
| 3 | If you are a student from outside the UK, you have been living in UK for _____year(s) _____month(s) | | | | |
| 4 | You are: | ☐ | Male | ☐ | Female |
| 5 | How old are you? _____year(s) _____month(s) | | | | |
| 6 | How much work experience do you have? (part-time and full-time) _____year(s) _____month(s) | | | | |
| 7 | How much leadership experience do you have? _____year(s) _____month(s) | | | | |
| 8 | Have you held any leadership role/position before? (e.g. captain of a football team / president of student council) _____ _____ | | | | |
| 9 | Number of people supervised (if any)? _____ | | | | |
| 10 | How did the Managing Director in your team come to hold his/her position? | | | | |

☐ They volunteered ☐ By majority vote of the team ☐ By drawing (random) lots

☐ That was the only position left for them ☐ No one else wanted the position ☐ Other (please state) :- _____

| | | | | | |
|---|---|---|---|---|---|
| 11 | Do you think he/she is the real leader in your group? | ☐ | Yes | ☐ | No |

12 If not, who is the real leader in your group? Please select his/her functional role:

☐ Finance Director ☐ Marketing Director ☐ HR Director

☐ Operations Director ☐ Other (please state) _____

## SECTION 2

***How much is each statement TRUE or FALSE for YOU? Please circle the relevant number.***

| | | Definitely False | Mostly False | Don't Know | Mostly True | Definitely True |
|---|---|---|---|---|---|---|
| 1 | I am always courteous even to people who are disagreeable. | 1 | 2 | 3 | 4 | 5 |
| 2 | There have been occasions when I took advantage of someone. | 1 | 2 | 3 | 4 | 5 |
| 3 | I sometimes try to get even rather than forgive and forget. | 1 | 2 | 3 | 4 | 5 |
| 4 | I sometimes feel resentful when I don't get my way. | 1 | 2 | 3 | 4 | 5 |
| 5 | No matter who I'm talking to, I'm always a good listener. | 1 | 2 | 3 | 4 | 5 |

## SECTION 3

*Below are the five competencies required from YOUR LEADER as the MANAGING DIRECTOR to perform effectively for this module.* ***Please indicate the degree to which you agree or disagree that the following statements describe YOUR MANAGING DIRECTOR as a leader.***

### 1. MY TEAM LEADER...

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Provides direct feedback and timely feedback | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Tells team members when they are doing a good job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Tells team members when they are not meeting expectations | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Ensures team members have all the information they need to do their job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Communicates upper management's (lecturer/umpire/tutor) opinion of the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Provides feedback on how to change performance to meet expectations | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

### 2. MY TEAM LEADER...

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Values the contributions of each team member | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Acknowledges and credits the team for their accomplishments | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Promotes cooperation across teams; avoids team rivalries | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Is good at getting people to work together | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Shares credit with the team for successes and failures | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Ensures the team has the resources they need to do their work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| G | Minimises distractions for the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

### 3. MY TEAM LEADER...

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Commands respect and attention | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Links the team's goals with the organisation's mission | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Articulates a common vision/purpose for the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Knows how to get things done | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Develops a sense of loyalty in the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Translates plan into action | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| G | Places top priority on getting results | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| H | Is primarily oriented towards the bottom line (net profit/loss) of the organisation | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I | Is comfortable in the position of authority | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| J | Role models the organisation's values in his/her own behaviour | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

### 4. MY TEAM LEADER...

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Is well organised | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Effectively plans and prioritises the work of the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Develops contingency plans in anticipation of problems | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Effectively coordinates work with other parts of the organisation | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Is realistic about what can be accomplished | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Plans well in advance | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| G | Uses resources effectively | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| H | Can manage multiple projects simultaneously | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I | Keeps track of the details | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**5. MY TEAM LEADER...**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Is approachable and easy to talk to | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Is tolerant of others' perspectives and differences | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Has good working relationships with team members | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Has good working relationships with peers (Managing Directors from other teams) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Has good working relationship with upper management (lecturer/umpire/tutor) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Treats people fairly; does not exploit people | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| G | Is good at dealing with others' feelings and emotions | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**SECTION 4**

***Please use the following scale to indicate how closely you think each statement describes YOUR TEAM LEADER. Please <u>circle</u> the relevant number or cross (X) in the relevant box.***

| | My group leader... | Not at all | Once in a while | Sometimes | Fairly often | Frequently, if not always |
|---|---|---|---|---|---|---|
| 1 | ...expressess satisfaction when I meet expectations. | 1 | 2 | 3 | 4 | 5 |
| 2 | ...uses methods of leadership that are satisfying. | 1 | 2 | 3 | 4 | 5 |
| 3 | ...works with me in a satisfying way. | 1 | 2 | 3 | 4 | 5 |
| 4 | ...is effective at meeting task demands. | 1 | 2 | 3 | 4 | 5 |
| 5 | ...is effective in resolving task problems. | 1 | 2 | 3 | 4 | 5 |
| 6 | ...leads a group that is effective. | 1 | 2 | 3 | 4 | 5 |
| 7 | ...gets me to do more work than I expected. | 1 | 2 | 3 | 4 | 5 |
| 8 | ...increases my desire to succeed on the task. | 1 | 2 | 3 | 4 | 5 |
| 9 | ...makes me more willing to try harder. | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10 | Compared to others in this team, how would you characterise your working relationship with the group leader | A lot worst than average | Worse then average | Average | Better than average | A lot better than average |
| 11 | All things considered, how satisfying do you find this activity (Business Game)? | Very dissatisfied | Dissatisfied | Neither/ Nor | Satisfied | Very satisfied |
| 12 | In general, to what extent do you enjoy performing this activity (Business Game)? | Very dissatisfied | Dissatisfied | Neither/ Nor | Satisfied | Very satisfied |

**Your opinion is highly valued. Thank you for spending time to assist with this study.**

**END OF QUESTIONNAIRE**

## Appendix V Tutor questionnaire

| | T1 | Tutor's copy |
|---|---|---|

Dear Tutor,

The ABS Undergraduate Programme is working in collaboration with the Work & Organisational Psychology Group to study how interventions can develop leader competencies. The primary purpose of this study is to provide data for the PhD thesis of the researcher, Joobee Yeow. Your participation in this study will be greatly valued. Participation in this study involves the completion of some questionnaires throughout the Business Game module (BS2225).

Please read Option 1 and Option 2:

**Option 1: I want to participate in this study** *(participation in this research is voluntary and you have the right to withdraw at any time)*

You will be given the opportunity to attend a leader development program in Week 25 or Week 26 after you have completed the module and you will be fully debriefed about the nature of the study. If you chose this option, you will have to:

1. Complete *four* questionnaires on each of the Managing Directors in your tutorial group. These will be administered during Tutorial 2, Tutorial 6 and Tutorial 9. Each questionnaire takes 15 minutes to complete.
2. Allow the use of the data collected from your questionnaire for further analysis and publication of results in academic and practitioner journals (*only aggregated results, not individual responses, will be reported).*

All data collected from the questionnaires will be treated in accordance with the Data Protection Act (1998), under which the data handling procedures at Aston University are registered. Electronic data will be kept for 5 years; physical data (questionnaires) will be kept for 2 years. Confidentiality of your data will be maintained at all times. All data collected will be sanitised by allocating a unique code to remove all identifying information of participants. Only the researcher will have access to identifying data. Should you withdraw your informed consent to participate in this study, please send an email to yeowjb@aston.ac.uk and your data will be deleted from the database immediately.

**Option 2: I do not want to participate in this study.**

Please note that this is purely a research study and you are not obliged to participate in this study. This is not a part of the course requirements of the Business Game module (BS2225). *You will not be penalised in any form if you do not participate.*

If you require any further information, please do not hesitate to contact either *JooBee Yeow* at **yeowjb@aston.ac.uk** (Office: SW 8005 or Tel: 0121 204 3328) or Dr. Michael Grojean at **m.w.grojean@aston.ac.uk**.

**If you would like to participate, please sign the CONSENT FORM on the next page prior to completing the questionnaire**

**ASTON UNIVERSITY** **REG/04/624**

**ETHICS COMMITTEE**

## CONSENT FORM FOR VOLUNTEERS

PROJECT TITLE: Meta-Competencies in Leader Development

RESEARCH WORKERS, SCHOOL AND SUBJECT AREA RESPONSIBLE


**JooBee Yeow**
Work & Organisational Psychology
Aston Business School
yeowjb@aston.ac.uk
0121 204 3318
SW 8005

**Dr. Michael Grojean**
Work & Organisational Psychology
Aston Business School
m.w.grojean@aston.ac.uk
0121 204 3115
NB 609

**Prof. Robin Martin**
Work & Organisational Psychology
Aston Business School
r.martin@aston.ac.uk
0121 204 4293
SW 8007


**Volunteer's Statement**

I have been informed, in writing, about the purpose of the study and the particular form of participation required. I have read and understand the explanation. I agree to participate in the study of Leadership conducted by the Work and Organisational Psychology group in collaboration with the Aston Business School Undergraduate Office throughout the academic year of 2007/2008. I am aware that I am free to withdraw from the study at any time.

Signature: _____

Full Name: _____
*(Please do not give your Staff Number on this document)*

Date: _____

***Thank you for your participation to assist in this research.***

| T3 | Tutor's copy |
|---|---|

## SECTION 1: General Information

**Your Staff Number**

| | | | | | |
|---|---|---|---|---|---|
| | | | | | |

**Your Group Number** *(please circle the relevant number)*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | R | S | V | W | X | Y |

***If your Staff Number is not available, please provide your full name below. Under NO circumstances should you give both Staff Number AND full name.***

**Your Email Address**

| | |
|---|---|
| | |

| | | | | | |
|---|---|---|---|---|---|
| 1 | Your country of origin: *(where you mainly grew up)* | ☐ | UK | ☐ | Other (please state) _____ |
| 2 | Your first language: | ☐ | English | ☐ | Other (please state) _____ |
| 3 | If you are from outside the UK, you have been living in UK for _____year(s) _____month(s) | | | | |
| 4 | You are: | ☐ | Male | ☐ | Female |
| 5 | How old are you? _____year(s) _____month(s) | | | | |
| 6 | How much work experience do you have? (part-time and full-time) _____year(s) _____month(s) | | | | |
| 7 | How much leadership experience do you have? _____year(s) _____month(s) | | | | |
| 8 | Have you held any leadership role/position before? (e.g. captain of a football team / president of student council) _____ _____ | | | | |
| 9 | Number of people supervised (if any)? _____ | | | | |

## SECTION 2

***How much is each statement TRUE or FALSE for YOU? Please circle the relevant number.***

| | | Definitely False | Mostly False | Don't Know | Mostly True | Definitely True |
|---|---|---|---|---|---|---|
| 1 | I am always courteous even to people who are disagreeable. | 1 | 2 | 3 | 4 | 5 |
| 2 | There have been occasions when I took advantage of someone. | 1 | 2 | 3 | 4 | 5 |
| 3 | I sometimes try to get even rather than forgive and forget. | 1 | 2 | 3 | 4 | 5 |
| 4 | I sometimes feel resentful when I don't get my way. | 1 | 2 | 3 | 4 | 5 |
| 5 | No matter who I'm talking to, I'm always a good listener. | 1 | 2 | 3 | 4 | 5 |

## SECTION 3

*Below are the five competencies required from the LEADER in **EACH** team as the MANAGING DIRECTOR to perform effectively for this module.* ***Please indicate the degree to which you agree or disagree that the following statements describe the MANAGING DIRECTOR as a leader in each of the team.***

### Team 1

**1. THE TEAM LEADER...**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Provides direct feedback and timely feedback | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Tells team members when they are doing a good job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Tells team members when they are not meeting expectations | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Ensures team members have all the information they need to do their job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Communicates upper management's (lecturer/umpire/tutor) opinion of the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Provides feedback on how to change performance to meet expectations | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**2. THE TEAM LEADER...**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Values the contributions of each team member | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Acknowledges and credits the team for their accomplishments | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Promotes cooperation across teams; avoids team rivalries | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Is good at getting people to work together | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Shares credit with the team for successes and failures | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Ensures the team has the resources they need to do their work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| G | Minimises distractions for the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**3. THE TEAM LEADER...**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Commands respect and attention | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Links the team's goals with the organisation's mission | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Articulates a common vision/purpose for the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Knows how to get things done | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Develops a sense of loyalty in the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Translates plan into action | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| G | Places top priority on getting results | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| H | Is primarily oriented towards the bottom line (net profit/loss) of the organisation | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I | Is comfortable in the position of authority | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| J | Role models the organisation's values in his/her own behaviour | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**4. THE TEAM LEADER...**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Is well organised | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Effectively plans and prioritises the work of the team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Develops contingency plans in anticipation of problems | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Effectively coordinates work with other parts of the organisation | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Is realistic about what can be accomplished | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Plans well in advance | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| G | Uses resources effectively | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| H | Can manage multiple projects simultaneously | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I | Keeps track of the details | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**5. THE TEAM LEADER...**

| | | Strongly Disagree | Disagree | Slightly Disagree | Neither/ Nor | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| A | Is approachable and easy to talk to | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| B | Is tolerant of others' perspectives and differences | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| C | Has good working relationships with team members | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| D | Has good working relationships with peers (Managing Directors from other teams) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| E | Has good working relationship with upper management (lecturer/umpire/tutor) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| F | Treats people fairly; does not exploit people | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| G | Is good at dealing with others' feelings and emotions | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Your opinion is highly valued. Thank you for spending time to assist with this study.**

**END OF QUESTIONNAIRE**

## Appendix VI Intervention invitation email

Aston University

Aston Triangle
Birmingham B4 7ET
United Kingdom
Tel +44 (0)121 204 3000
www.aston.ac.uk

Name of Managing Director
Email Address

29th October

**RE: Leader Development Training Invitation**

Dear Sir / Madam,

It is a pleasure to inform you that you have been selected to attend the Leader Development Training. Details of the training are as follow:

Location: 11th floor South Wing, Main Building

Date: of 8th November

Day: Thursday

Time: 1.00pm to 5.00pm

The purpose of the training is to develop you as a leader to be more effective in your role. The training will incorporate multi-rater feedback system and coaching which are amongst the most cutting edge trainings implemented in organizations today.

[redacted], from LMI-UK consulting firm will be conducting the training. [redacted] is an experienced executive coach with ample experience in management consulting, where she works with individuals and teams to improve their efficiency, effectiveness and performance.

Your participation will be greatly appreciated. Please reply to this email if you are attending the training in order for us to plan enough refreshments and materials.

If you are unable to attend, please reply to this email with heading of either:

1) Unable to attend – clashes with class or;

Aston University

Aston Triangle
Birmingham B4 7ET
United Kingdom
Tel +44 (0)121 204 3000
www.aston.ac.uk

2) Unable to attend – other commitments or;
3) Unable to attend – not interested;
4) Unable to attend – other reasons

(It is highly appreciated if you could let us know why you are unable to attend the training for research control purposes.)

Your prompt response to this email would be highly appreciated.

If you require any further information, please do not hesitate to contact me at yeowjb@aston.ac.uk (Office: SW 8005 or Tel: 0121 204 3318)

.

Yours sincerely

**JooBee Yeow**
BEng (Hons), MSc
Doctoral Researcher

Tel +44 (0)121 204 3318
Fax +44 (0)121 204 3327
yeowjb@aston.ac.uk

## Appendix VII Sample of 360-degree feedback report for leaders

360° Analysis Report

**Analysis for:** [redacted]

This report shows an analysis of the performance of this subjectA comparison is made between the subject's own ratings and the ratings of their colleagues, and the difference is shown.

| | | Self-Assessment | Third Party Assessment | Difference |
|---|---|---|---|---|
| Q1(a) 1 | Provides direct feedback and timely feedback | 4.00 | 6.00 | 2.00 |
| Q1(b) 2 | Tells team members when they are doing a good job | 6.00 | 6.50 | 0.50 |
| Q1(c) 3 | Tells team members when they are not meeting expectations | 3.00 | 5.50 | 2.50 |
| Q1(d) 4 | Ensures team members have all the information they need to do their job | 5.00 | 5.50 | 0.50 |
| Q1(e) 5 | Communicates upper management's (lecturer/umpire/tutor) opinion of the team | 6.00 | 6.50 | 0.50 |
| Q1(f) 6 | Provides feedback on how to change performance to meet expectations | 4.00 | 6.00 | 2.00 |

| | | Self-Assessment | Third Party Assessment | Difference |
|---|---|---|---|---|
| Q2(a) 7 | Values the contributions of each team member | 6.00 | 6.50 | 0.50 |
| Q2(b) 8 | Acknowledges and credits the team for their accomplishments | 6.00 | 6.50 | 0.50 |
| Q2(c) 9 | Promotes cooperation across teams; avoids team rivalries | 6.00 | 6.00 | 0.00 |
| Q2(d) 10 | Is good at getting people to work together | 5.00 | 6.50 | 1.50 |
| Q2(e) 11 | Shares credit with the team for successes and failures | 6.00 | 6.50 | 0.50 |
| Q2(f) 12 | Ensures the team has the resources they need to do their work | 4.00 | 5.50 | 1.50 |
| Q2(g) 13 | Minimises distractions for the team | 4.00 | 6.00 | 2.00 |

360° Analysis Report

| | | Self-Assessment | Third Party Assessment | Difference |
|---|---|---|---|---|
| Q3(a) 14 | Commands respect and attention | 3.00 | 5.00 | 2.00 |
| Q3(b) 15 | Links the team's goals with the organisation's mission | 5.00 | 6.00 | 1.00 |
| Q3(c) 16 | Articulates a common vision/purpose for the team | 5.00 | 6.50 | 1.50 |
| Q3(d) 17 | Knows how to get things done | 4.00 | 6.00 | 2.00 |
| Q3(e) 18 | Develops a sense of loyalty in the team | 6.00 | 6.50 | 0.50 |
| Q3(f) 19 | Translates plan into action | 5.00 | 6.50 | 1.50 |
| Q3(g) 20 | Places top priority on getting results | 4.00 | 5.50 | 1.50 |
| Q3(h) 21 | Is primarily oriented towards the bottom line (net profit/loss) of the organisation | 3.00 | 5.00 | 2.00 |
| Q3(i) 22 | Is comfortable in the position of authority | 5.00 | 6.00 | 1.00 |
| Q3(j) 23 | Role models the organisation's values in his/her own behaviour | 5.00 | 6.50 | 1.50 |

| | | Self-Assessment | Third Party Assessment | Difference |
|---|---|---|---|---|
| Q4(a) 24 | Is well organised | 4.00 | 6.00 | 2.00 |
| Q4(b) 25 | Effectively plans and prioritises the work of the team | 4.00 | 6.00 | 2.00 |
| Q4(c) 26 | Develops contingency plans in anticipation of problems | 3.00 | 5.50 | 2.50 |
| Q4(d) 27 | Effectively coordinates work with other parts of the organisation | 5.00 | 6.00 | 1.00 |
| Q4(e) 28 | Is realistic about what can be accomplished | 5.00 | 6.50 | 1.50 |

360° Analysis Report

| | | Self-Assessment | Third Party Assessment | Difference |
|---|---|---|---|---|
| **Q4(f) 29** | Plans well in advance | 4.00 | 5.50 | 1.50 |
| **Q4(g) 30** | Uses resources effectively | 4.00 | 6.00 | 2.00 |
| **Q4(h) 31** | Can manage multiple projects simultaneously | 5.00 | 5.50 | 0.50 |
| **Q4(i) 32** | Keeps track of the details | 5.00 | 6.00 | 1.00 |

| | | Self-Assessment | Third Party Assessment | Difference |
|---|---|---|---|---|
| **Q5(a) 33** | Is approachable and easy to talk to | 6.00 | 6.50 | 0.50 |
| **Q5(b) 34** | Is tolerant of others' perspectives and differences | 6.00 | 6.50 | 0.50 |
| **Q5(c) 35** | Has good working relationships with team members | 6.00 | 6.50 | 0.50 |
| **Q5(d) 36** | Has good working relationships with peers (Managing Directors from other teams) | 5.00 | 6.00 | 1.00 |
| **Q5(e) 37** | Has good working relationship with upper management (lecturer/umpire/tutor) | 5.00 | 6.50 | 1.50 |
| **Q5(f) 38** | Treats people fairly; does not exploit people | 6.00 | 6.50 | 0.50 |
| **Q5(g) 39** | Is good at dealing with others' feelings and emotions | 6.00 | 6.00 | 0.00 |

## Appendix VIII Intervention invitation email (post-study)

Aston University

Aston Triangle
Birmingham B4 7ET
United Kingdom
Tel +44 (0)121 204 3000
www.aston.ac.uk

Name of Managing Director
Email Address

30th May

**RE: Leader Development Training Invitation**

Dear all,

It is a pleasure to invite you to attend the Leader Development Training. Details of the training are as follow:

Location: Warwick Lecture Theatre, Main Building

Date: of 6th June

Day: Friday

Time: 2.00pm to 5.00pm

The purpose of the training is to develop you as a leader to be more effective in your role. The training will incorporate multi-rater feedback system and group coaching which are amongst the most cutting edge trainings implemented in organizations today.

[redacted], from LMI-UK consulting firm will be conducting the training. [redacted] is an experienced executive coach with ample experience in management consulting, where she works with individuals and teams to improve their efficiency, effectiveness and performance.

Your participation will be greatly appreciated. Please reply to this email if you are attending the training with the heading "Attending LDT" in order for us to plan enough materials.

Aston University

Aston Triangle
Birmingham B4 7ET
United Kingdom
Tel +44 (0)121 204 3000
www.aston.ac.uk

Your prompt response to this email would be highly appreciated.

If you require any further information, please do not hesitate to contact me at yeowjb@aston.ac.uk (Office: SW 8005 or Tel: 0121 204 3318)

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Yours sincerely

**JooBee Yeow**
BEng (Hons), MSc
Doctoral Researcher

Tel +44 (0)121 204 3318
Fax +44 (0)121 204 3327
yeowjb@aston.ac.uk

## Appendix IX Email to prize draw winners

Aston Triangle
Birmingham B4 7ET
United Kingdom
Tel +44 (0)121 204 3000
www.aston.ac.uk

Name of Winners
Email Address

31st May

**RE: Prize Draw Winners for BSG survey**

It is the moment we have been waiting for.....the prize draw for the Team Survey in which you have kindly participated during the duration of the Business Game 2007/08.

The 5 lucky winners for the £50.00 Bull Ring Shopping vouchers are:

1. [redacted] (Group 10 Team 1)
2. [redacted] (Group 16 Team 4)
3. [redacted] (Group 15 Team 4)
4. [redacted] (Group 2 Team 7)
5. [redacted] (Group 7 Team 5)

The 10 lucky winners for the £100.00 Bull Ring Shopping vouchers are:

1. [redacted] (Group 12 Team 6)
2. [redacted] (Group X Team 6)
3. [redacted] (Group 5 Team 3)
4. [redacted] (Group X Team 1)
5. [redacted] (Group 17 Team 4)
6. [redacted] (Group S Team 4)
7. [redacted] (Group V Team 6)
8. [redacted] (Group V Team 6)
9. [redacted] (Group R Team 2)
10. [redacted] (Group 6 Team 7)

Aston University

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Your prompt response to this email would be highly appreciated.

If you require any further information, please do not hesitate to contact me at yeowjb@aston.ac.uk (Office: SW 8005 or Tel: 0121 204 3318)

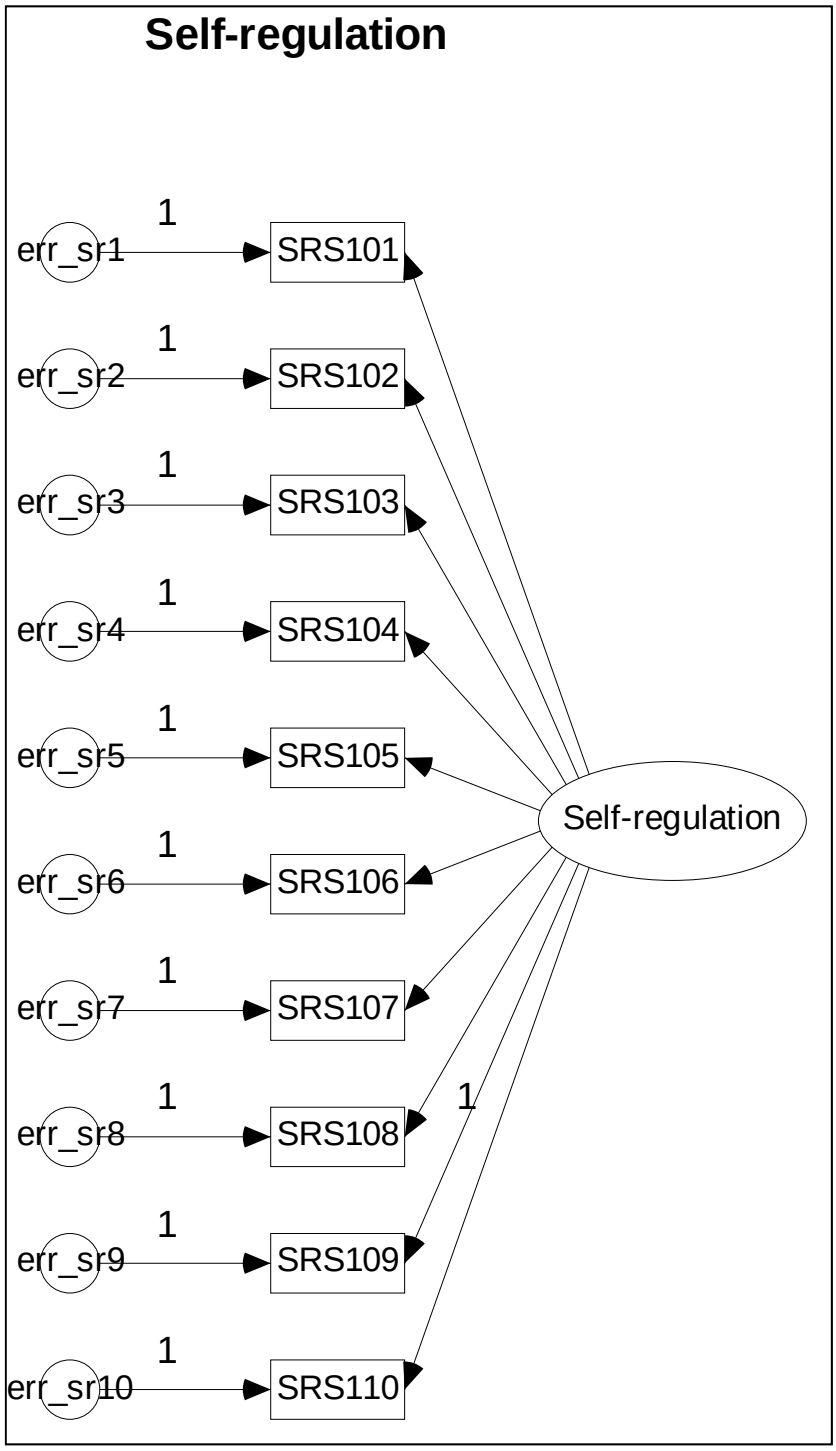
.

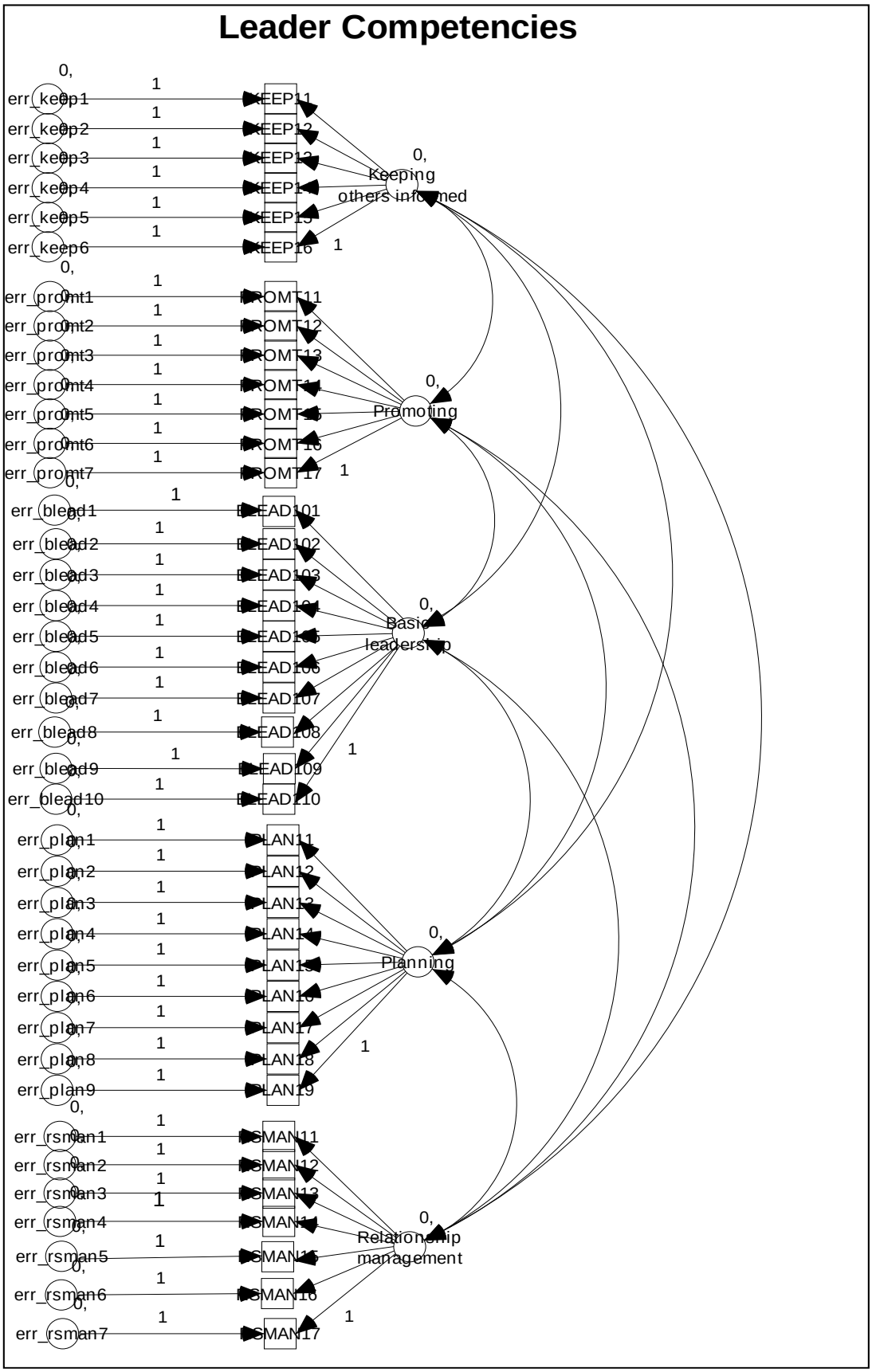
Yours sincerely

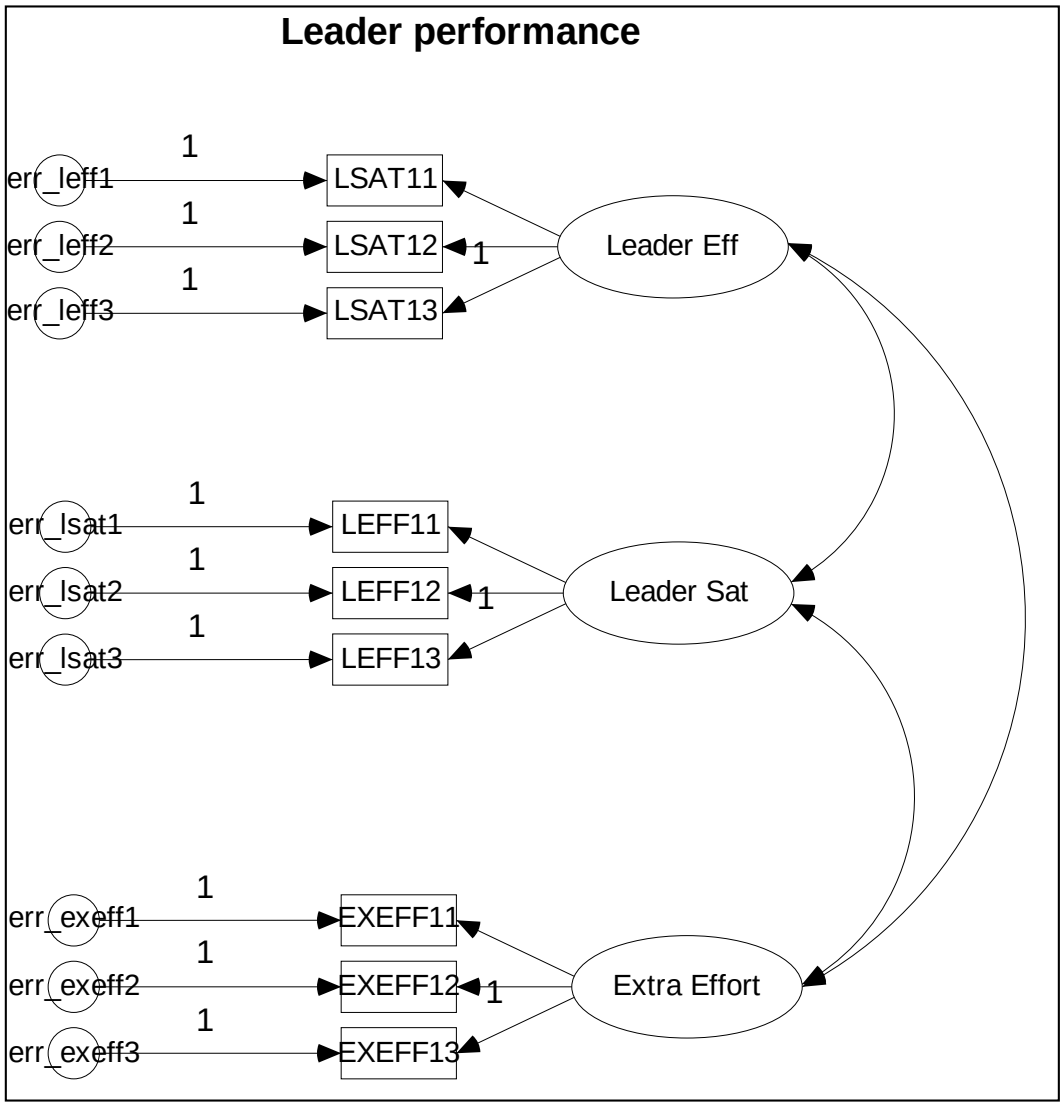
**JooBee Yeow**
BEng (Hons), MSc
Doctoral Researcher

Tel +44 (0)121 204 3318
Fax +44 (0)121 204 3327
yeowjb@aston.ac.uk

**Appendix X Model for confirmatory factor analysis**




Leader Competencies
Keeping others informed
Promoting
Basic leadership
Planning
Relationship management


Leader performance
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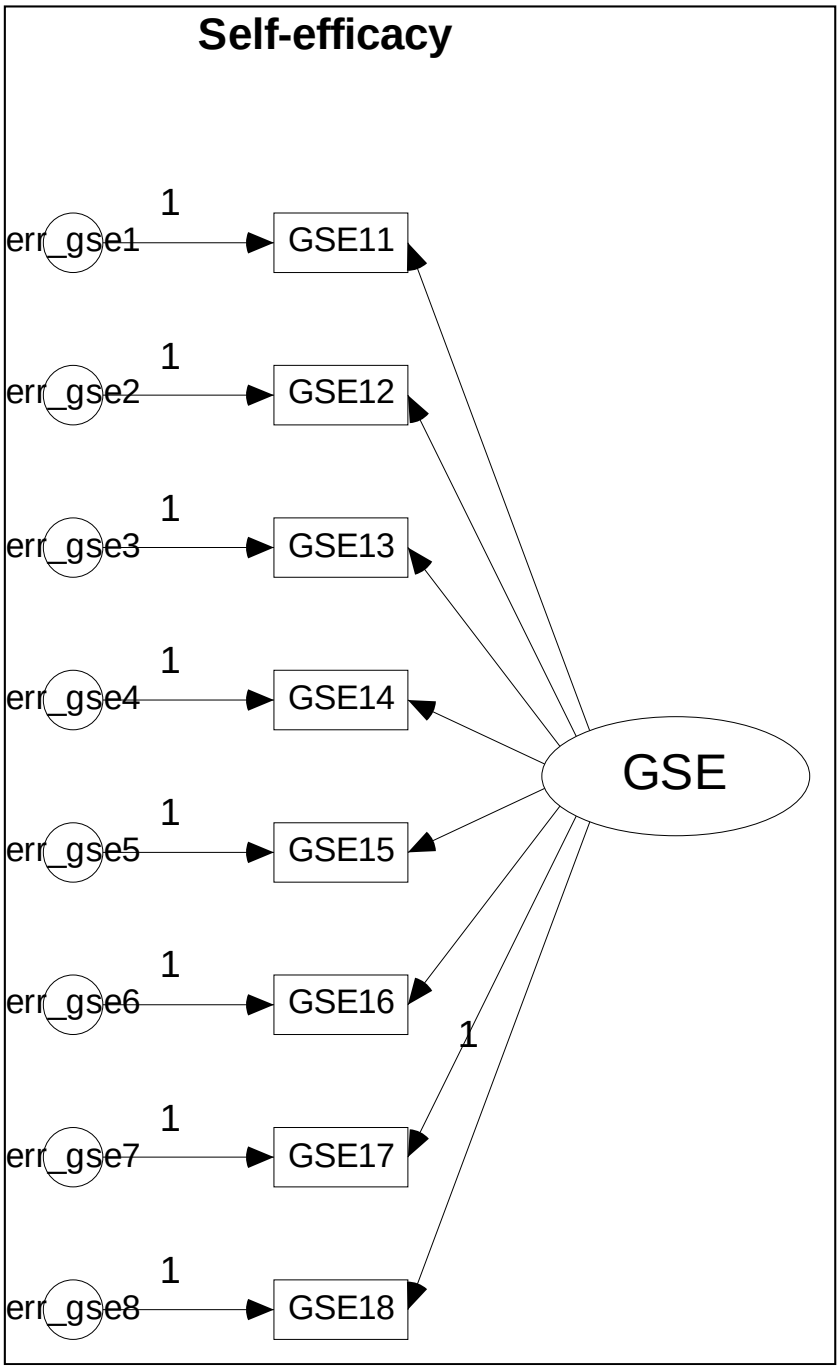
err_leff2
err_leff3
LSAT11
LSAT12
LSAT13
Leader Eff
err_lsat1
err_lsat2
err_lsat3
LEFF11
LEFF12
LEFF13
Leader Sat
err_exeff1
err_exeff2
err_exeff3
EXEFF11
EXEFF12
EXEFF13
Extra Effort
1


Self-efficacy
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err_gse1
GSE11
1
err_gse2
GSE12
1
err_gse3
GSE13
1
err_gse4
GSE14
GSE
1
err_gse5
GSE15
1
err_gse6
GSE16
1
1
err_gse7
GSE17
1
err_gse8
GSE18