

**THE INFLUENCE OF A TEAM DEVELOPMENT INTERVENTION  
(IMPROVISATIONAL THEATRE) ON CLIMATE FOR WORK  
GROUP INNOVATION**

By

Burgert Kirsten

THESIS PRESENTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE DEGREE



MASTER OF COMMERCE (INDUSTRIAL PSYCHOLOGY)

AT

STELLENBOSCH UNIVERSITY

Supervisor: Prof. Ronel du Preez

December 2008

## **Declaration**

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Date: 15 December 2008

**ABSTRACT**

Burgert Kirsten, MComm (University of Stellenbosch)

**THE INFLUENCE OF A TEAM DEVELOPMENT INTERVENTION  
(IMPROVISATIONAL THEATRE) ON CLIMATE FOR WORK GROUP  
INNOVATION**

Supervisor: Prof. Ronel du Preez

The present study evaluates the influence on the four factors of an innovative work group climate, namely participative safety, vision, support for innovation and task orientation, of a team development intervention based on improvisational theatre exercises. In the literature study, these four factors are compared with the principles of improvisational theatre, namely trust and support, agreement, listening and awareness, and narrative skills. A quasi-experimental study was conducted. Differences in pre-test and post-test scores of an experimental group ( $n_e=15$ ), who took part in a half-day improvisation theatre team development intervention, are compared with the differences in pre- and post-test scores of a control group ( $n_c=13$ ). The sample consisted of two teams from a health care management unit, which formed part of the health care department of a large insurance company in South Africa. The results show that, for innovative work group climate as a whole, the experimental group's scores improved significantly ( $p<.01$ ) in comparison to the control group's scores. The experimental group's scores for the three factors, vision, participative safety and task orientation, also improved significantly in comparison to the control group's scores ( $p<.05$  for all three factors). However, the experimental group's score for support for innovation did not improve significantly. It is therefore concluded that the intervention had a positive influence on climate for work group innovation, based on its impact on the three factors, vision, participative safety and task orientation. In conclusion, this study builds on previous research that endorses the application of improvisational theatre techniques in organisational development settings.

## OPSOMMING

Burgert Kirsten, MComm (Universiteit Stellenbosch)

### **DIE INVLOED VAN 'N SPANONTWIKKELINGSINTERVENSIE (IMPROVISASIEATEATER) OP KLIMAAT-VIR-WERKSGROEPINNOVASIE**

Studieleier: Prof. Ronel Du Preez

Hierdie studie evalueer die invloed van 'n spanontwikkelingsintervensie gebaseer op improvisasieteaterebeginsels op die vier faktore van klimaat vir werksgroepinnovasie, naamlik deelnemende veiligheid, visie, ondersteuning vir innovering en taakoriëntasie. In die literatuurstudie word hierdie faktore vergelyk met die beginsels van improvisasietheater, naamlik vertrouwe en ondersteuning, eensgesindheid, luister en bewustheid, en narratiewe vaardighede. 'n Kwasi-eksperimentele studie is uitgevoer. Die verskil in die voortoets- en natoetstellings van 'n eksperimentele groep ( $n_e=15$ ) wat aan 'n halfdag improvisasietheater-spanontwikkelingsintervensie deelgeneem het, word vergelyk met die voor- en natoetstellings van 'n kontrolegroep ( $n_k=13$ ). Die steekproef het bestaan uit twee spanne van die gesondheidsorg-bestuurseenheid wat deel uitmaak van die gesondheidsorg-departement van 'n groot versekeringsmaatskappy in Suid-Afrika. Die resultate dui aan dat die eksperimentele groep se uitslae beduidend ( $p<.01$ ) verbeter het in vergelyking met die kontrolegroep se tellings vir klimaat vir werksgroep innovasie as 'n geheel. Die eksperimentele groep se tellings vir die drie faktore, deelnemende veiligheid, visie en taakstyl, het ook beduidend verbeter in vergelyking met die kontrolegroep se tellings ( $p<.05$  vir al 3 faktore). Die eksperimentele groep se telling vir ondersteuning vir innovasie het egter nie beduidend verbeter nie. Die afleiding word dus gemaak dat die intervensie 'n positiewe invloed gehad het op klimaat vir werksgroepinnovasie as gevolg van die intervensie se impak op die faktore, deelnemende veiligheid, visie en taak oriëntasie. Hierdie navorsing bou voort op vorige navorsing wat die gebruik van improvisasieteatertegniese in besigheidsopleiding ondersteun.

## **ACKNOWLEDGEMENTS**

I would like to extend my gratitude and appreciation to the following people, without whom this study would not have been possible:

Prof. Ronel du Preez, my supervisor, for her patience, guidance, continuous commitment, input and support in this study.

Prof. Martin Kidd, for assistance and guidance with the statistical analysis.

Senior Management and staff members of the, health care management unit from which the sample for this study was drawn, for their participation and enthusiasm (due to the ethical agreement their names cannot be mentioned).

Pieter du Plessis, for his assistance in the acquisition of literature sources.

My family and friends for their ongoing support.

My parents, for the privilege of an education.

God, for giving me the strength and motivation to complete my studies.

The financial assistance of the National Research Foundation (NRF) towards this research is hereby acknowledged. Opinions expressed and conclusions arrived at, are those of the author and are not necessarily to be attributed to the National Research Foundation.

Burgert Kirsten

Stellenbosch

December 2008

## TABLE OF CONTENTS

ABSTRACT	ii
OPSOMMING	iii
ACKNOWLEDGEMENTS	v
<b>CHAPTER 1: INTRODUCTION</b>	<b>1</b>
1.1 BACKGROUND	1
1.2 RESEARCH QUESTION AND OBJECTIVES	4
1.3 RESEARCH DESIGN	5
1.4 OUTLINE OF THE THESIS	5
<b>CHAPTER 2: LITERATURE FRAMEWORK</b>	<b>6</b>
2.1 INTRODUCTION	6
2.2 ORGANISATIONAL CULTURE AND CLIMATE	6
2.3 ORGANISATIONAL CLIMATE DEFINED	8
2.4 CLIMATE FOR INNOVATION	10
2.4.1 Creativity enhancers	13
2.4.2 Creativity inhibitors	16
2.5 CLIMATE FOR WORK GROUP INNOVATION	18
2.5.1 Participative safety	19
2.5.2 Vision	23
2.5.3 Support for innovation	25
2.5.4 Task orientation	28
2.5.5 Summary: Climate for work group innovation	30
2.6 IMPROVISATIONAL THEATRE	32
2.6.1 PRINCIPLES OF IMPROVISATIONAL THEATRE	33
2.6.1.1 Trust and support	34
2.6.1.2 Agreement	35
2.6.1.3 Listening and awareness	35
2.6.1.4 Narrative skills	36
2.7 IMPROVISATION TRAINING IN ORGANISATIONS	38

2.8 THE RELATIONSHIP BETWEEN CLIMATE FOR WORK GROUP INNOVATION AND THE PRINCIPLES OF IMPROVISATIONAL THEATRE	40
2.8.1 Agreement and Participative Safety	41
2.8.2 Agreement and Support for Innovation	41
2.8.3 Agreement and Task orientation	42
2.8.4 Trust and Support and Participative Safety	42
2.8.5 Trust and Support and Support for Innovation	42
2.8.6 Listening, Awareness and Participative Safety	42
2.8.7 Narrative Skills and Vision	43
2.8.8 Narrative Skills and Task orientation	43
2.9 SUMMARY	45
<b>CHAPTER 3: RESEARCH METHODOLOGY</b>	47
3.1 INTRODUCTION	47
3.2 SELECTION AND OPERATIONALISATION OF VARIABLES	47
3.3 RESEARCH DESIGN	48
3.3.1 Internal validity	49
3.3.2 External validity	50
3.4 HYPOTHESES	51
3.5 STATISTICAL ANALYSIS	55
3.5.1 Reliability tests	55
3.5.2 Repeated measures ANOVA	55
3.5.3 Post hoc tests – Bonferroni multiple comparisons	56
3.6 SAMPLE	56
3.7 THE INTERVENTION	58
3.8 MEASURING INSTRUMENT	58
3.8.1 Validity and Reliability of the team climate inventory	60
3.9 SUMMARY	62
<b>CHAPTER 4: RESULTS AND DISCUSSION</b>	63
4.1 INTRODUCTION	63
4.2 MISSING VALUES	63

4.3	RELIABILITY ANALYSIS	64
4.4	ANALYSIS OF VARIANCE	66
4.4.1	Climate for work group innovation	67
4.4.2	Participative safety	71
4.4.2.1	Safety	72
4.4.2.2	Information sharing	74
4.4.2.3	Interaction frequency	75
4.4.2.4	Influence	76
4.4.2.5	Discussion and summary of results: Participative safety (safety, information sharing, interaction frequency, influence)	76
4.4.3	Vision	77
4.4.3.1	Sharedness	79
4.4.3.2	Attainability	81
4.4.3.3	Perceived value	81
4.4.3.4	Clarity	83
4.4.3.5	Discussion and summary of results: Vision (sharedness, attainability, perceived value, clarity)	84
4.4.4	Support for innovation	85
4.4.4.1	Articulated and enacted support	85
4.4.4.2	Discussion and summary of results: Support for innovation (articulated support and enacted support)	86
4.4.5	Task orientation	86
4.4.5.1	Excellence	88
4.4.5.2	Appraisal	89
4.4.5.3	Ideation	90
4.4.5.4	Discussion and summary of results: Task style (excellence, appraisal and ideation)	92
4.5	SUMMARY	92
	<b>CHAPTER 5: CONCLUSIONS AND IMPLICATIONS</b>	<b>95</b>
5.1	INTRODUCTION	95
5.2	LIMITATIONS	96
5.3	CONCLUSIONS AND RECOMMENDATIONS	99
	REFERENCES	102



**APPENDICES**

Appendix A: Intervention exercises	110
Appendix B: Team development programme	115

## LIST OF TABLES

Table 2.1:	Summary: Creativity enhancers and inhibitors	13
Table 2.2:	Differences between traditional and improvisational theatre	33
Table 2.3:	A comparison between climate for work group innovation factors and principles of improvisational theatre	45
Table 3.1:	Variables and operationalisation	48
Table 3.2:	Non-equivalent control group design	49
Table 3.3:	Team Climate Inventory (TCI) structure	61
Table 4.1:	Distribution of missing values for pre-test	63
Table 4.2:	Distribution of missing values for post-test	64
Table 4.3:	Reliability: Pre-test	65
Table 4.4:	Reliability: Post-test	65
Table 4.5:	ANOVA results: Climate	67
Table 4.6:	Bonferroni results: Climate	68
Table 4.7:	ANOVA results: Participative safety	71
Table 4.8:	Bonferroni results: Participative safety	72
Table 4.9:	ANOVA results: Safety	72
Table 4.10:	Bonferroni results: Safety	74
Table 4.11:	ANOVA results: Information sharing	74
Table 4.12:	Bonferroni results: Information sharing	75
Table 4.13:	ANOVA results: Interaction frequency	76
Table 4.14:	ANOVA results: Influence	76
Table 4.15:	ANOVA results: Vision	77
Table 4.16:	Bonferroni results: Vision	78
Table 4.17:	ANOVA results: Sharedness	79
Table 4.18:	Bonferroni results: Sharedness	80
Table 4.19:	ANOVA results: Attainability	81
Table 4.20:	ANOVA results: Perceived value	81
Table 4.21:	Bonferroni results: Perceived value	82
Table 4.22:	ANOVA results: Clarity	83
Table 4.23:	Bonferroni results: Clarity	84
Table 4.24:	ANOVA results: Support for innovation	85

Table 4.25: ANOVA results: Task orientation	87
Table 4.26: Bonferroni results: Task orientation	88
Table 4.27: ANOVA results: Excellence	89
Table 4.28: ANOVA results: Appraisal	89
Table 4.29: Bonferroni results: Appraisal	90
Table 4.30: ANOVA results: Ideation	91
Table 4.31: Bonferroni results: Ideation	92
Table 4.32: Summarised results according to hypotheses: Climate for work group innovation	93
Table 4.33 Summary: Empirical research objectives and results	94

**LIST OF FIGURES**

Figure 2.1:	Climate for work group innovation and related dimensions	31
Figure 4.1:	Time/group interaction: Climate	68
Figure 4.2:	Time/group interaction: Participative safety	71
Figure 4.3:	Time/group interaction: Safety	73
Figure 4.4:	Time/group interaction: Information sharing	75
Figure 4.5:	Time/group interaction: Vision	78
Figure 4.6:	Time/group interaction: Sharedness	80
Figure 4.7:	Time/group interaction: Perceived value	82
Figure 4.8:	Time/group interaction: Clarity	83
Figure 4.9:	Time/group interaction: Task orientation	87
Figure 4.10:	Time/group interaction: Appraisal	90
Figure 4.11:	Time/group interaction: Ideation	91

## CHAPTER 1

### INTRODUCTION

#### 1.1 BACKGROUND

The world of work is characterised by constant change. Organisations need to respond to the changing demands created by markets, consumers, shareholders, legal requirements, economy, suppliers, technology and social trends (West, Hirst, Richter & Shipton, 2004). The three primary reasons that require organisations to respond to these changes effectively are the escalating pace and volume of change, dealing with greater complexity and more intense competition (Isaksen & Tidd, 2006).

These changes in business environments have resulted in major developments in organisational design with an emphasis on innovation (Anderson & West, 1996). The pursuit of creativity and innovation in products, services, systems, and work processes has increasingly been recognised as a critical factor for long-term organisational survival and success (Ahmed, 1998; Amabile, 1988; Isaksen & Tidd, 2006; Mathisen, Einarsen, Jorstad, & Bronnick, 2004). The study of innovation and creativity at work provides strategies for organisations to adapt to and stay competitive in an ever-changing work environment (West & Farr, 1990). This has resulted in the theories of creativity and innovation attracting the attention of both academia and practitioners (Anderson & King, 1993; Lämsäsalmi & Kivimäki, 1999; Tesluk, Farr & Klein, 1997).

Researchers have found that teams play a very important role in the process of innovation within organisations, because teams stimulate creativity and innovation (Anderson & King, 1991; Hackman, 1987; King & Anderson, 1990; Loo, 2003). It is anticipated that the organisation of work in teams will lead to continuous improvements, as these kind of improvements rely on innovative

processes and creative problem solving in teams, related to everyday tasks (Dackert, Lööv & Mårtensson, 2004). Merx-Chermin and Nijhof (2005) mention that creativity should be viewed as a collective process to raise the level of the innovation potential of an organisation. Furthermore, West et al., (2004) declare that it is mainly through the work of teams that the management of change through innovation is achieved. Team-based structures enable organisations to quickly and effectively respond to the ever-changing demands of the organisational environment (Zaccaro, Rittman, & Marks, 2001). Therefore many organisations have converted to team-based structures to enhance their responsiveness and their ability to promote innovation (Pirola-Merlo & Mann, 2004).

Team innovation is the introduction of new ideas, which are pursued towards implementation by a group through interpersonal discussions, and following reshaping of the original idea over time (King & Anderson, 1990). West et al. (2004) propose that developing team innovation will improve an organisation's ability to adapt more quickly to the demands of change, and therefore, in order to manage and implement change within organisations, an understanding of how to develop innovative teams is vital (Pirola-Merlo & Mann, 2004; West et al., 2004).

According to West et al., (2004) one of the factors that play a crucial role in the innovation shown by teams is the climate for innovation within work groups. West (1990) proposes a four-factor theory of climate for work group innovation; hypothesising that participative safety, vision, support for innovation and task orientation is predictive of innovation in work groups. Isaksen and Tidd (2006) propose that an innovative climate can be created. Therefore it is argued that a work group's capacity to innovate can be enlarged by teaching the members of the group skills that foster the four factors indicative of a climate for work group innovation. Despite the fact that work teams need to be innovative and develop a climate that supports innovation, little is known about how team members can learn these skills and successfully apply it in organisations (Vera & Crossan, 2005). The answer could lie in the principles of improvisation.

The role of improvisation in the field of innovation has attracted growing attention (Crossan, 1997, 1998; Crossan, Cunha, Vera & Cunha, 2005; Kamoche, Cunha & Cunha, 2003; Moorman & Miner, 1998; Kanter, 2002; Vera & Crossan, 2004, 2005; Weick, 1998). Innovation has an inherent improvisational aspect and writers have long used jazz and rock music as a metaphor to describe the improvisational performance of innovators on project teams (Kanter, 2002; Vera & Crossan, 2005; Weick, 1998). Vera and Crossan suggest that improvisation has a positive effect on team innovation when combined with team and contextual moderating factors such as teamwork quality, experimental culture, information sharing and communication, and memory. Furthermore, they provide evidence that organisational members, through training, can learn the skill of improvisation.

Academics have turned to improvisational theatre in order to understand how individuals can work together in teams and be innovative (Crossan, 1997, 1998; Crossan, et al., 2005; Gibb, 2004; Kamoche, et al., 2003; Moshavi, 2001; Poynton, 2007; Vera & Crossan, 2004, 2005; Weick, 1998). They have found that improvisational theatre incorporates a certain set of principles and characteristics, and that these principles and characteristics can be taught to organisational members through exercises that were originally designed to develop the improvisational skills of actors. Based on these exercises, training programs have been developed to teach improvisational skills in organisations (Vera & Crossan, 2004; 2005). As this technique is only in the foundation phase of development, very limited literature and empirical evidence exist to support the effectiveness of these programs (Vera & Crossan, 2005). Thus, a need for sound theory development and empirical research in this field is evident. This study aims to contribute to this need by providing empirical evidence to support the use of improvisational theatre techniques for enhancing climate for work group innovation. It also aims to contribute to the development of the existing theory in making explicit the link between the principles of improvisational theatre and the factors of climate for work group innovation.

## 1.2 RESEARCH QUESTION AND OBJECTIVES

The research question that guides this research is: Will an improvisational theatre team development intervention have a positive influence on climate for work group innovation?

Based on this question the following literature and empirical objectives are stated.

Literature related objectives include:

1. To investigate the construct *climate for work group innovation*
2. To describe the principles of improvisational theatre
3. To discuss improvisational theatre exercises and the use of these exercises in organisational training
4. To relate the factors of climate for work group innovation to the principles of improvisational theatre.

The empirical objectives are as follows:

5. To determine whether a team development intervention (improvisational theatre) has a positive influence on climate for work group innovation
6. To determine whether a team development intervention (improvisational theatre) has a positive influence on participative safety
7. To determine whether a team development intervention (improvisational theatre) has a positive influence on vision
8. To determine whether a team development intervention (improvisational theatre) has a positive influence on support for innovation
9. To determine whether a team development intervention (improvisational theatre) has a positive influence on task orientation.

The knowledge gained from this study can contribute to the body of knowledge regarding improvisation and innovation in organisations; as well as provide valuable insight into the utility of such interventions. Furthermore, should the intervention be considered effective, this study could provide a basis for endorsing improvisational theatre as a fresh team developmental



tool that can assist organisations in becoming more innovative. In becoming more innovative, organisations could become more efficient and effective in meeting the many challenges of an ever-changing world of work.

### **1.3 RESEARCH DESIGN**

The current study uses a quasi-experimental design to determine the influence of an improvisational theatre team development intervention on climate for work group innovation. According to Goldstein (1993) quasi-experimental designs are useful in social science settings where the researcher cannot exercise full control over the environment. More specifically, a non-equivalent control group design is used. A non-equivalent control group design involves an experimental and a control group that both complete a pre-test and a post-test, but the experimental group and the control group do not have pre-experimental sampling equivalence and are not randomly allocated (Campbell & Stanley, 1963).

### **1.4 OUTLINE OF THE THESIS**

In Chapter 2 a theoretical framework for climate for work group innovation and the principles of improvisational theatre will be outlined. Following that the use of improvisational theatre exercises in organisational training programmes will be discussed. Lastly the similarities between the four factors of climate for work group innovation and the principles of improvisational theatre will be identified. Chapter 3 is dedicated to the description of the methodology used in this study. The research results are reported and discussed in Chapter 4 while Chapter 5 presents the conclusions, limitations, and recommendations for further research.

## **CHAPTER 2**

### **THEORETICAL FRAMEWORK**

#### **2.1 INTRODUCTION**

The purpose of this chapter is to establish a theoretical framework for the current research project and thereby achieve the four literature-related objectives. An explanation of the concept of organisational climate, with specific focus on climate for innovation, is presented. Thereafter West's (1990) four-factor theory of climate for work group innovation is discussed in detail, as this theory will serve as the point of departure in the subsequent empirical work. It is suggested that the factors of climate for innovation are similar to the principles of improvisational theatre, since both improvisation and climate for innovation, foster innovation. Therefore the subsequent section defines improvisational theatre and examines its principles. A discussion of improvisational theatre exercises and the use of these in organisational training follow, as it is postulated in this section that the exercises used by improvisational actors to learn improvisational principles, can successfully be implemented to teach work group members skills that promote an innovative climate. To conclude this chapter, a comparison between the four factors of a climate for work group innovation and the principles of improvisational theatre is made.

#### **2.2 ORGANISATIONAL CULTURE AND CLIMATE**

Organisational culture and climate are separate constructs functioning at different levels of meaning and representing different, yet overlapping, interpretations of the same phenomenon – thus they are closely interrelated (Ashkanasy, Wilderom & Peterson, 2000; Tesluk, et al., 1997). This necessitates differentiation between organisational culture and organisational climate, since scholars and practitioners have used both these

terms interchangeably (Patterson, West, Shackleton, Dawson, Lawthom, Maitlis, Robinson, & Wallace, 2005; Tesluk, et al., 1997). For the purposes of the current study, references to culture and climate imply organisational culture and organisational climate.

Organisational culture is the beliefs and values assumed by management and communicated to employees through norms, stories, socialisation processes, and interpretation of managerial responses to significant events (Ashkanasy, et al., 2000; Tesluk, et al., 1997). The beliefs and values that characterise a culture for innovation become evident in organisational structures, practices, and policies. Consequently these structures, practices, and policies direct individual creativity by creating a climate that communicates both the organisation's goals concerning innovation and the resources to achieve those goals (Tesluk, et al., 1997). Isaksen and Tidd (2006) highlight the following differences between culture and climate:

- ❖ **Different levels of analysis:** Culture refers to the deeply embedded norms beliefs and values within a whole organisation. Climate is included under the broader and more inclusive concept of culture. When studying culture, the whole organisation is used as the unit of analysis. However, when the focus is on climate, individuals and their shared perceptions of groups, divisions or the entire organisation as level of analysis, can be used.
- ❖ **Different disciplines involved:** Climate is a construct from the area of social psychology and culture as a construct comes from the domain of anthropology. Since these constructs come from different disciplines, the tools and methods used to study them are different.
- ❖ **Normative vs. descriptive:** Cultural elements are relatively descriptive. Thus, one set of values or hidden assumptions is not necessarily better or worse than another. Climate is more normative, in the sense that certain climates can be regarded as better for certain situations than others. For

example, different climates can be studied and the results compared against measures or outcomes such as innovation, motivation or growth.

- ❖ **More easily observable and influenced:** Climate differs from culture in the sense that it is more observable (on surface level in the organisation) and climate is more susceptible to change and improvement interventions.

According to Isaksen and Tidd (2006) it is more beneficial to focus on climate when considering organisational change through innovation. Culture is deemed difficult to measure or manage, whereas climate can be divided into different elements that can be more easily identified, measured and influenced. Climate is therefore regarded as more appropriate than culture as unit of analysis for this particular study, and so the next section will focus on organisational climate.

### **2.3 ORGANISATIONAL CLIMATE DEFINED**

Research on climate is characterised by two major obstacles: firstly, defining the concept of climate, and secondly measuring climate accurately at different levels of analysis (Anderson & West, 1998).

Numerous definitions of climate have been proposed. It is generally defined in terms of two approaches, namely the cognitive schema approach and the shared perceptions approach. The cognitive schema approach examines climate on the individual level and explains climate as an individual's constructive representation or cognitive schema of their work environment. This has mainly been operationalised through attempts to discover how an individual makes sense of their proximal work environment (Anderson & West, 1998). Climate at the individual level is also referred to as psychological climate and described as the intrapersonal awareness of the patterns of behaviour, feelings and attitudes as experienced by an individual (Ekvall & Ryhammar, 1999; Isaksen & Tidd, 2006).

The shared perceptions approach describes climate as shared perceptions of organisational policies, practices, procedures and the kinds of behaviours that get rewarded, supported, and expected (Ahmed, 1998; Anderson & West, 1998; Schneider, 1990). It also involves people's perceptions and experiences of the workplace in terms of warmth, trust, dynamism, ambiguity, and other affect-laden dimensions (Michela & Burke, 2000). Isaksen and Tidd (2006) refer to the shared perceptions as the *organisational* or *work unit* climate and define it as the objectively shared perceptions that characterise life within a defined work unit or in the wider organisation. Anderson and West (1998) argue that for a shared perception to exist; individuals must interact at work; there must be a common objective that directs individuals to collective action; and there must be adequate task interdependence so that individuals need to develop shared perceptions and expected patterns of behaviour.

The cognitive schema approach and the shared perceptions approach are, in theory, compatible with each other, and thus not mutually exclusive (Anderson & West, 1998). It can therefore be proposed that organisational climate is an individual's intrapersonal perception of the patterns of behaviour, feelings and attitudes present in his or her work environment. It is however likely that this perception is shared with others in the work environment, if there is a common objective that directs collective action (if there is adequate task interdependence). Climate also relates to different elements in the work environment and can therefore be considered as multidimensional.

In light of climate's multidimensional nature, Anderson and West (1998) caution that it is meaningless to apply the concept of climate without a specific reference point. The concept of climate should therefore be deconstructed into multiple facets, such as: climate for service, climate for quality or climate for innovation (Anderson & West, 1998; Schneider, 1990). Since the current study is concerned with climate for innovation, this construct will be discussed in the sections to follow.

## 2.4 CLIMATE FOR INNOVATION

In order to define an innovative climate, the difference between innovation and creativity must be clarified, as these two terms are closely related. Organisational and innovation researchers have made a clear differentiation between the terms *innovation* and *creativity* (Anderson, De Drue & Nijstad, 2004). Innovation has proven to be a term that is very difficult to define with any degree of specificity or general acceptance. A fundamental distinction can be made between definitions that describe innovation in terms of a product or outcome and those that define innovation as a developing process in work settings (Anderson & King, 1993). West and Farr's (1990, p. 9) definition of workplace innovation in terms of an emerging process is one of the most accepted:

Innovation is the intentional introduction and application within a role, group or organisation of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, the organisation or wider society.

Following from this definition, Anderson et al., (2004) identified the following two distinctions between workplace innovation and creativity. Firstly, workplace innovation involves the intentional introduction and application of new and improved ways of doing things, whereas creativity can refer to idea generation alone. Secondly, innovation should intentionally benefit one or more levels of analysis, such as the job role, work group or wider organisation. This is not necessarily true for creativity. Amabile (1988) makes a similar distinction between the two terms. She defines creativity as the production of new and valuable ideas by an individual or a group of individuals working together, and innovation as the successful implementation of these creative ideas in the organisation. This is in congruence with West (2002b), who points out that innovation is a two-component, fundamentally non-linear process, including creativity and innovation implementation. At the start of the process creativity plays the most important role whereas innovation implementation dominates the process in the later phases. The initial stages

of innovation are characterised by creativity or idea generation, when team members are required to develop ideas in reaction to a perceived need for innovation. Creative thinking is also expected when the initial implementation are considered. As the innovation is adapted to the organisational situation and stabilised, the need for creativity diminishes (West, 2002a). It is therefore concluded that creativity is a component of innovation and plays the most important role in the onset of the innovation process (idea generation). For innovation to take place these creative ideas must be successfully implemented within the organisation.

Creative ideas are however not enough for achieving innovative performance. If the organisational climate does not support innovation, creative people do not reach high levels of innovation (Miron, Erez & Naveh, 2004). Amabile (1988) argues that individual creativity is the most important element of organisational innovation, but that it is not sufficient by itself. Qualities of the organisation, such as climate, can be one of the most important determinants of an individual's creativity at any point in time. Pirola-Merlo and Mann (2004) propose a model that suggests that team creativity is the aggregated creativity of team members. Furthermore a positive climate facilitates individual creativity, and therefore indirectly (via that individual) positively influences team creativity.

A great deal of research has been done to identify work environments and social climates that may promote or hinder innovation and creativity at work. The results have shown that the major factors include: the combination of a supportive and challenging environment; commitment to clearly specified, determined, and attainable objectives or goals that are widely shared by the members of the organisation; freedom and independence regarding the choice of tasks and how they are performed; support for ideas; sufficient time for creating ideas; proper feedback; recognition and rewards for creative initiatives; a high level of risk taking and tolerance for errors; a non-threatening environment; and a shared concern for excellence and a high quality of performance (Anderson & King, 1993; Anderson & West, 1996; 1998; Ahmed, 1998; Amabile, Conti, Coon, Lazenby & Herron, 1996; Ekvall &

Ryhammar, 1999; Lämsalmi & Kivimäki, 1999; Martins & Terblanche, 2003; Mathisen et al., 2004; West, 1990). Furthermore, studies on the relationship between climate for innovation and innovative outcomes, have offered empirical support for the positive effects of the above-mentioned factors upon innovation (Mathisen et al., 2004).

Leadership is another factor that plays a crucial role in the innovative climate of an organisation. Managers do not only foster innovation in their organisations by employing individuals with creative personal characteristics and skills, as early creativity research suggests, but also by the climate that they create for these potentially creative individuals (Amabile, 1996). Leaders and their behaviour are a major force in creating the climate for innovation and creativity, and therefore deliberate climate creation is the main responsibility of leadership in any organisation (Isaksen & Tidd, 2003). A leader who understands the nature and management of climate has the ability to achieve organisational changes that are vital for quality and innovation (Michela & Burke, 2000). Individuals will produce more creative work when they experience management encouragement to solve problems more creatively (Amabile, 1996).

Top management influences individual creativity by creating the general organisational climate for creativity and innovation, by setting reward and evaluation systems, and by making resources available for innovative efforts, whereas middle level and project management influence innovation by establishing and communicating project goals and deadlines, by establishing degrees of freedom and constraint, and by giving feedback (Amabile, 1988). Providing feedback together with performance management, and effective conflict management leads to improved group innovation, since it improves coordination (Taggar, 2002).

Ekvall (1996) developed the Creative Climate Questionnaire (CCQ) based on knowledge gained from studies done in Sweden during the 1980s on conditions that kindle or stifle creativity and innovation in organisations. Through factor analysis 10 dimensions that influence creativity were identified.



Isaksen and Tidd (2006) translated and modified the original CCQ and developed the Situational Outlook Questionnaire (SOQ) consisting of nine factors. Similarly, Amabile's (1998) Model of Organisational Creativity identifies nine qualities of an organisational environment that serve to promote creativity and nine qualities that inhibit it. Her findings overlap with the findings of Ekvall as well as those of Isaksen and Tidd. The factors identified by Ekvall and modified by Isaksen and Tidd, together with the factors proposed by Amabile are summarised in Table 2.1 and discussed in the subsequent sections (2.4.1 and 2.4.2).

**TABLE 2.1**  
**SUMMARY: CREATIVITY ENHANCERS AND INHIBITERS**

<b>Creativity enhancers</b>	<b>Creativity inhibitors</b>
<ul style="list-style-type: none"> <li>• Challenge and involvement</li> <li>• Idea time</li> <li>• Freedom</li> <li>• Idea support</li> <li>• Risk taking</li> <li>• Trust and openness</li> <li>• Good project management</li> <li>• Sufficient resources</li> <li>• Recognition</li> <li>• Pressure</li> <li>• Playfulness and humour</li> <li>• Dynamism / Liveliness</li> <li>• Debate</li> </ul>	<ul style="list-style-type: none"> <li>• Various organisational characteristics</li> <li>• Time pressures</li> <li>• Constraint</li> <li>• Organisational disinterest</li> <li>• Overemphasis on the status quo</li> <li>• Competition and conflict</li> <li>• Poor project management</li> <li>• Insufficient resources</li> <li>• Poor evaluation</li> <li>• Stress</li> </ul>

### **2.4.1 Creativity enhancers**

**Challenge and involvement** refers to the degree to which individuals are involved in daily activities, long-term objectives and visions. A high level of challenge and involvement is an indication that individuals are intrinsically motivated and committed to contribute to the success of the organisation (Ekvall, 1996; Isaksen & Tidd, 2006). A sense of challenge arises from the

stimulating nature of a problem itself or its importance to the organisation (Amabile, 1988).

**Idea time** is the amount of time individuals are allowed to use for developing new ideas. A high level of idea-time provides opportunities to discuss and test new ideas that are not included in regular task assignments (Ekvall, 1996; Isaksen & Tidd, 2006). Sufficient time is allowed to think creatively about the problem, to explore different viewpoints rather than imposing an already determined approach (Amabile, 1988).

**Freedom** is the independence in behaviour exercised by the individuals in the organisation. A climate with a high level of freedom gives individuals a sense of control over their own work and ideas. The most important type of freedom is operational autonomy, which refers to freedom in the day-to-day conduct of one's work and freedom in deciding how to achieve the overall goal or mission of a project (Amabile, 1988; Ekvall, 1996; Isaksen & Tidd, 2006).

**Idea support** represents the way in which new ideas are treated. In a climate with high idea support, managers and co-workers receive new ideas and suggestions in an attentive and kind way. Individuals listen to each other and encourage initiatives within a constructive and positive atmosphere (Ekvall, 1996; Isaksen & Tidd, 2006). Amabile (1988) refers to this dimension as encouragement. It points to the enthusiasm of management about new ideas, and an atmosphere free of threatening evaluation.

**Risk taking** refers to a tolerance for uncertainty and ambiguity that employees are exposed to in the workplace. When the risk taking dimension is high, bold new initiatives can be taken even if the outcomes are unknown (Ekvall, 1996; Isaksen & Tidd, 2006).

**Trust and openness** involves the emotional safety in relationships among the employees of the organisation. The relationships are regarded safe when individuals are seen as both competent and sharing a common set of values. In a high trusting climate, people in the organisation have the courage to put

forward new ideas and views. Initiatives can be taken without fear of punishment and ridicule in case of failure. The corporate climate is characterised by collaboration and co-operation across levels and divisions (Amabile, 1988; Ekvall, 1996; Isaksen & Tidd, 2006).

**Good project management** signify the way in which a manager serves as a good role model, is enthusiastic, has good communication skills, protects the project team from outside distractions and interference, matches tasks to workers' skills and interests, and sets clear objectives without managing too tightly (Amabile, 1988).

**Sufficient resources** involve access to necessary resources, including facilities, equipment, information, funds and people (Amabile, 1988).

**Recognition** refers to a consensus that creative work will receive appropriate feedback, acknowledgment, and reward (Amabile, 1988).

**Pressure** reflects an internally generated sense of urgency that results from a general desire to accomplish something important, or from competition with outside organisations (Amabile, 1988).

**Playfulness and humour** refers to the spontaneity and ease that is demonstrated in the workplace. A stress-free atmosphere, including good-natured jokes and laughter, marks an organisation that is high in this dimension. The reverse climate is characterised by gravity and seriousness and the atmosphere is rigid, sombre and burdensome (Ekvall, 1996; Isaksen & Tidd, 2006).

**Dynamism and liveliness** signifies the eventfulness of life in the organisation. When this factor is high, new things are happening all the time and changes in approaching issues often occur. There is a sort of psychological turbulence that is described as *full speed and go* by people in such organisations (Ekvall, 1996).

**Debate** refers to encounters, exchanges or clashes among perspectives, ideas and differing experiences and knowledge. Debate focuses on issues and ideas in contrast to conflict that focuses on individuals and their relationships. It involves the productive use and respect for different viewpoints (Ekvall, 1996; Isaksen & Tidd, 2006).

#### 2.4.2 Creativity inhibitors

**Organisational characteristics** that inhibit creativity include improper reward systems in the organisation; unnecessary red tape; an organisational climate characterised by a lack of co-operation across divisions and levels; and no consideration for innovation in general (Amabile, 1988).

**Time pressures refer to** insufficient time to think creatively about a problem; too great a workload with unrealistic deadlines; and a high frequency of *fire fighting* (Amabile, 1988). Time pressure makes thinking outside instructions and planned routines difficult. Research has shown that people under time pressure are significantly less likely to be creative (Isaksen & Tidd, 2006).

**Constraint** is a lack of freedom in deciding what to do or how to accomplish a task as well as a lack of power over one's own work and ideas. (Amabile, 1988). If the climate is characterised by constraint, individuals demonstrate very little initiative for suggesting innovative ways of doing things. They may spend most of their time and energy getting permission and gaining support (internally and externally) (Isaksen & Tidd, 2006).

**Organisational disinterest** refers to a lack of organisational support, interest, or faith in a project. The organisation is perceived to be apathetic toward any accomplishments that a project achieves (Amabile, 1988). Where there is little support for innovation, individuals block each others' ideas, keep ideas to themselves, and idea-suggestion systems are not well utilised (Isaksen & Tidd, 2006).

**Overemphasis on the status quo** is characterised by a reluctance of managers or co-workers to change their way of doing things and an unwillingness to take risks (Amabile, 1988). In risk avoiding organisations individuals are often frustrated with the uninteresting nature of their work and the timely process used for implementing innovative ideas (Isaksen & Tidd, 2006).

**Competition and conflict** is marked by interpersonal or inter-group activity within the organisation that fosters a self-defensive attitude (Amabile, 1988). Conflict is characterised by the presence of personal, interpersonal or emotional tensions with high levels of conflict resulting in aversion and rivalry between groups and individuals (Ekvall, 1996; Isaksen & Tidd, 2006).

**Poor project management:** A manager who is unable to set a clear direction, who has poor technical or communication skills, and who controls too tightly or allows distractions and fragmentation of the team's efforts are characteristics of this dimension (Amabile, 1988).

**Insufficient resources** signify a lack of appropriate facilities, equipment, materials, funds, or people to support innovative efforts (Amabile, 1988).

**Poor evaluation:** An organisation characterised by inappropriate or inequitable evaluation and feedback systems, unrealistic expectations, an environment focused on criticism and external evaluation is unaccommodating to innovation (Amabile, 1988).

**Stress:** When individuals experience a high level of stress it has a negative influence on an innovative climate (Lämsalmi & Kivimäki, 1999).

These creativity enhancers and inhibitors can influence innovation on different levels. A distinction can be made between individual, group and organisational level innovation (Anderson & King, 1993). Since the current study is concerned with innovation at the group level, climate for work group innovation will be discussed in more depth next.

## 2.5 CLIMATE FOR WORK GROUP INNOVATION

The terms *work group* and *team* are often used interchangeably in literature, thus for the purpose of the current study a similar approach is followed and the terms are regarded as synonyms. Although a range of studies assessed climate for innovation in organisations, few have focused on the work group as level of analysis. As most innovations in organisations are initiated and implemented by a team or work group, this is a noteworthy shortcoming (Anderson & King, 1993; Anderson & West, 1996).

In order to define work group climate it is important to first define a work group. An organisational work group is a permanent or semi-permanent team to which individuals is allocated. The members share (approximately) common organisational positions, participate in the same work experiences, and, as a result, have similar organisational views. Members identify with the group and interact frequently in order to perform work-related tasks (Alderfor, 1987; Anderson & West, 1998).

Work group climate is the shared perceptions of group members of a local work unit about what is expected of them, their feelings about their manager and one another, work standards and recognition. It is through active social construction, within the work group, that a shared innovative climate evolves and become rooted in the foundation of the organisation (Anderson & West, 1998; Michela & Burke, 2002).

To understand the shared climate for innovation, West's (1990) four factor model, as the leading and most studied model of work group climate for innovation, is relevant. The model hypothesises that four major factors of team climate are predictive of innovation. These factors are participative safety, vision, support for innovation, and task orientation.

### 2.5.1 Participative safety

A corporate climate characterised by cooperation and collaboration and marked by mutual trust is an important attribute of innovative organisations and teams (Amabile, 1988; Isaksen & Tidd, 2006). West (1990) refers to this characteristic of an innovative work group as participative safety. Participative safety is a psychological construct that creates an atmosphere within a work group, which is perceived as interpersonally non-threatening, and thereby motivates and reinforces involvement in decision-making. The work group's characteristic interpersonal processes are non-judgemental, non-threatening, trusting and supportive of the individual offering contributions and ideas, and characterised by socio-emotional cohesiveness (Anderson & West, 1998; West, 1990).

When team leaders encourage participation it will have a positive influence on team innovation (West, et al. 2003). Fishman and Kavanaugh (1989) propose that the missing link in quality innovation is for supervisors to encourage a group climate where people feel safe to suggest improvement ideas. Furthermore, they propose that climate is created to a great extent by behaviours of the supervisor, such as listening attentively and giving acknowledgment and being positive about group members' suggestions. Anderson and King (1993) conclude, in a review of leadership and innovation in organisations, that many scholars are of the opinion that a participative and collaborative leadership style is likely to encourage innovation.

The factor participative safety can be divided into four sub-factors, namely safety, information sharing, interaction frequency and influence (Anderson & West, 1996).

**Safety** is the degree to which team members are willing to take risks (Lowen & Loo, 2004). This factor is also referred to by other authors as team psychological safety, and defined as a mutual belief amongst members that the team is safe for interpersonal risk taking and proposing new and improved ways of doing things (Anderson & West, 1996; Edmondson,

1999). When an individual feels that proposing a new idea will lead to an attack, censorship or ridicule, the person would be less likely to risk sharing that new idea (West, 1990). However it does not imply a careless sense of permissiveness, nor an unrelentingly positive affect but, rather, a sense of confidence that the team will not embarrass, reject, or punish someone sharing an idea. This confidence results from trust, openness and mutual respect between team members (Ahmed, 1998; Edmondson, 1999).

In their study to identify the characteristics of teams who developed highly successful products, Isaksen and Tidd (2006) identified the importance of safety in working relationships, trust and a no-blame climate as factors that allowed creative people to flourish. Baer and Frese's (2003) study of 47 mid-sized German companies established that climates for psychological safety and initiative has a positive influence on two measures of organisational performance, namely longitudinal change in return on assets (holding previous return on assets constant) and organisational goal achievement. Furthermore they concluded that climate for psychological safety and initiative moderated the relationship between process innovations and organisational performance. Edmonson (1999) also determined that team psychological safety fosters team-learning behaviour. When team members feel safe to participate it is likely that they will interact more frequently.

**Interaction frequency** refers to how often team members meet to talk both formally and informally (Anderson & West, 1996). If information and decision-making responsibility is shared and there is a high level of interaction between team members, the cross-fertilisation of ideas, which leads to innovation, is more likely to occur (Cowan, 1986; Mumford & Gustafson, 1988; West, 2002b).

**Information sharing** refers to the degree that information is shared amongst team members (Anderson & West, 1998; Lowen & Loo, 2004). Group behaviour that facilitates the open sharing of information increases individual creative performance, since it will provide group members with additional knowledge upon which to base or develop innovative ideas (Taggar, 2002;



West, 1990). Encouraging communication among the members of a team is an effective way to develop group innovation, since it diminishes the chances of process losses resulting from errors in task performance strategies (Carmen, De la Luz, & Salustiano, 2006; Taggar, 2002).

One of the most important factors in the creation of new knowledge is knowledge sharing (Merx-Chermin & Nijhof, 2005). Mumford and Gustafson's (1988) results indicated that climates encouraging interaction and production of knowledge lead to innovation (when studying scientists' work behaviour), whereas climates marked by distrust and lack of communication repressed scientific innovation. Work group learning behaviour such as seeking feedback, sharing information, asking for help, talking about errors, and experimenting, facilitate the obtaining and processing of information that helps a team to innovate. These behaviours enable the team to detect changes in the environment, learn about customers' needs, improve members' shared understanding of a situation, or discover unexpected consequences of earlier actions, according to Edmondson (1999).

**Influence** is the degree to which decision-making is collective (Lowen & Loo, 2004). It implies that everyone's view is listened to, even if it is in the minority (Anderson & West, 1998). If there is a high degree of influence it creates an atmosphere in which the cross-fertilisation of ideas can take place (Denton & Vloeberghs, 2002; West, 2002b).

The higher the level of each of these subordinate factors (safety, interaction frequency, information sharing and influence), the higher the level of participation in innovation and problem solving within a work group will be. Such participation also leads to an increase in the levels of other related dimensions, such as member commitment, teamwork, investment in the decision outcomes, and a willingness to offer new ideas to the group (Anderson & West, 1998; Isaksen & Tidd, 2006; Kivimäki, Kuk, Elovainio, Thomson, Kalliomaki-Levanto, & Heikkila, 1997; Mathisen et al., 2004). Participation and involvement creates a sense of ownership and responsibility from which develops a greater commitment to the organisation and a growing

ability to function under conditions of uncertainty (Ahmed,1998). Research has pointed out that a high degree of participation in decision-making is related to less resistance to change and a greater likelihood of innovation (West, 1990).

King and Anderson (1995) caution however, that greater participation in itself does not necessarily enhance group innovation and that the most innovative teams are not those that are most democratic but those in which the leader exercises a moderate degree of control. If the leader does not enforce some degree of control and direction upon the group, then it is easy for the very freedom, which encouraged the initiation of an innovation, to make it difficult to develop a clear implementation strategy and carry it through to the end. Leading an innovative team is therefore a fine balance between controlling and allowing freedom in the team.

Work group participation is sometimes automatically associated with group cohesion. Thus a higher level of group participation is seen as an indication of a higher level of group cohesion. However, inter-group conflicts within organisations, as an indicator of lack of cohesion, are often displayed in situations characterised by both high and low levels of participation. This means that people may fully participate in the decision-making process (high level of participation) in order to achieve their own political goals, or the political goals of their group or department (inter-group conflict and lack of cohesion). Such a situation is unlikely to lead to high innovative results, as people are often reluctant to take risks in situations perceived as unsafe (West, 1990).

The safety of cohesion may however, not be ultimately conducive to innovation, without clear vision. Edmondson (1999) states that team psychological safety and group cohesion are not similar, since research has shown that cohesion can reduce motivation to disagree and challenge others' perspectives, such as happens with the phenomenon of groupthink – in very cohesive groups the members regard the defence and maintenance of their personal relationships with other members higher than the sharing of

their own ideas, thereby hindering the generation of new ideas and creativity (Caarmen, de la Luz & Salustiano, 2006). It is suggested that cohesive teams, accompanied by top management's guidance, are likely to lead to innovation, since it decreases uncertainty and encourages interaction among team members, improving communication flow which resolves potential inter-departmental conflict (Carmen et al., 2006). Therefore group cohesion will have a positive influence on innovation as long as it is guided by a clear vision.

### 2.5.2 Vision

An organisational vision is the expression of an idealised picture of the future, based on organisational values, which represent a higher order goal and provides motivation for members (Isaksen & Tidd, 2006; West, 1990). For a work group to be innovative it must have a shared vision and clearly defined objectives, since these provide direction and focus to the members' creative energy (Anderson & West, 1996, 1998; Mathisen et al., 2004). A shared work group vision is a collective mental model of the future condition of the work group, or its tasks, that provides the basis for action (Pearce & Ensley, 2004).

West (1990) explains work group vision in terms of four dimensions, namely sharedness, attainability, perceived value, and clarity.

**Sharedness** explains the level of general acceptance of the vision by individuals within the team (Anderson & West, 1998; Lowen & Loo, 2004). In a longitudinal study conducted by Pearce and Ensley (2004) it was found that a shared vision plays a crucial role in the team innovation process.

**Attainability** refers to the degree to which individuals feel that the team's objectives are within their reach to achieve (Anderson & West, 1998; Lowen & Loo, 2004; West, 1990). It is important that members of a team should understand the vision and mission (which support creativity and innovation) and the breach between the present situation and the vision and

mission to be able to be creative and innovative (Martins & Terblanche, 2003).

**Perceived value** is the extent to which the vision has a valued outcome for group members and thus produces commitment to group goals (Anderson & West, 1998; Lowen & Loo, 2004; West, 1990). If individuals perceive that they are working in an environment where project goals are clear, challenging, and personally interesting, they will be intrinsically motivated to be more creative (Amabile, 1988; Isaksen & Tidd, 2006).

**Clarity** describes the degree to which the vision is easily understandable to the group members (Anderson & West, 1998; Lowen & Loo, 2004; West, 1990). In a study to identify key practices that explain how new product development teams were able to create extraordinary innovations, the importance of having a clear and stable vision to guide the product development team, is highlighted (Isaksen & Tidd, 2006).

Leaders who are able to set clear objectives facilitate innovation by enabling focused development of new ideas (West, et al., 2003). However, Amabile (1988) warns that project managers can suppress creativity if their goal setting is either too loose or too tight. If a manager is not able to give a clear direction for the project as a whole, and if he or she does not succeed in carefully conceptualising and communicating the general mission, team members may make fragmented and disorganised efforts, or may fail to make any efforts at all. On the other hand, if a project manager tries to manage too tightly at the procedural level, team members may become unmotivated and their actions may be uninspired routine responses.

Carmen et al. (2006) emphasise that an innovative vision by the top management team along with team diversity, affects innovations in organisations in terms of new products and improved existing products. They suggest that in order to promote innovation, organisations need diverse teams guided by the top management's vision. The guidance of the top management team's vision over this diversity will facilitate any conflict that

may occur, given the range of perspectives. Therefore a clear vision should be sufficient in situations where cohesion does not exist, as in a highly diverse team. This vision must be shared by all the members in order for it to facilitate innovation, since a vision that is imposed by those in higher positions is very unlikely to enhance innovation (West, 1990).

A clear, shared and elevating work group vision directs all the members' creative ideas in the same direction. However, if the members and managers of a work group do not support innovation, there will not be many ideas to direct, and therefore not much innovation will take place.

### **2.5.3 Support for innovation**

Support for innovation is defined as norms of innovation or the expectation, approval and practical support of more effective team processes (West, 1990; Lowen & Loo, 2004). This supportiveness is similar to participative safety in that it involves feelings of safety, but it centres on the task (feeling safe to innovate) and not on interpersonal interactions (Pirola-Merlo, Härtel, Mann and Hirst, 2002).

Management's support for innovation plays a crucial role throughout the innovation process (idea generation and implementation) (Klein & Knight, 2005; Monties, Ruiz, & Fernández, 2004), since positions of authority often have more influence on norms than subordinates and therefore group leaders are likely to be more influential in supporting group innovation (West, 1990). Individuals' creative thinking skills, such as a willingness to take risks, can be reinforced and made more habitual by an acceptance and encouragement of risk taking by his or her supervisor (Amabile, 1988). In a team where the leader models and encourages support for innovation and rewards, rather than punishes, innovative efforts, innovation is more likely to occur (West et al., 2003). Furthermore, frequent, constructive, and supportive feedback on work efforts by managers has a positive influence on individual creativity and the innovative process (Amabile, 1988). As a result, top management ought to promote an organisational climate in which employees are acknowledged

for their efforts towards innovation. These efforts may in some cases seem to be in opposition to the achievement of short-term objectives, but should be encouraged and valued for its long-term impact (Monties et al., 2004). Isaksen and Tidd's (2006) results confirm that teams that developed successful innovations had the full support and cooperation from their senior management.

West (1990) distinguishes between articulated and enacted support for innovation, since many organisations express support for the development of new and improved ways of working, but seldom provide practical support for their implementation. West's theory hypothesises that a high degree of articulated and enacted support for innovation will lead to more attempts to propose significant innovations. This support can manifest in several ways, such as verbal support within and outside group meetings; group and interpersonal cooperation in the development and application of new ideas; and the provision of time and resources by group members to develop and apply the ideas. Research on organisational climate and productivity suggests that an organisational climate that provides physical support for creative efforts and encourages independent action positively influences innovation (Mumford & Gustafson, 1988). Scott and Bruce's (1994) results also indicate that support for innovation (flexibility, encouragement and tolerance for change) significantly influences individual creativity. In organisations with a supportive climate for innovation and learning, employees are more likely to feel supervisory support for their empowerment and to respond by trusting those in authority and raising their commitment to the organisation (Latting, Beck, Slack, Tetrick, Jones, Etchegaray & Da Silva, 2004).

An organisational culture that encourages creativity and innovation permit employees time to think creatively and experiment. In organisations where creativity and innovation are promoted, employees are, for example, allowed to spend 15 percent of their time on creating new ideas and working on their own projects (Martins & Terblanche, 2003). Amabile (1988) points out that sufficient time to think creatively about a problem and to explore different

perspectives, freedom in deciding what to do or how to accomplish a task, and a sense of control over one's own work and ideas are vital qualities of an organisational environment that will have a positive effect on creativity.

Enacted support for innovation further involves the availability of resources to effectively implement new ideas. Amabile (1988) recognises access to sufficient resources as one of the most important qualities of an organisational environment that positively influences creativity. Resources include people with knowledge of the viability of implementing particular innovations, people who have knowledge of relevant markets, people with other types of relevant experience in the field, funds allocated to this work area, material resources (such as existing means of production within the organisation), systems of production, market research resources, data bases of relevant information, and the availability of employee training in relevant domains. These different resources were not only found in the more traditional creative areas such as research and development, but also in a variety of departments and divisions within organisations, such as finance, manufacturing, personnel, training, and organisational development (Amabile, 1988). In contrast, Scott and Bruce (1994) did not find any relationship between resource supply and innovative behaviour. However, they suggest that this finding could have resulted because resource availability only influences innovative behaviour up to a certain threshold. Since the data for their study was obtained in a research and development laboratory with the objective to innovate, resource levels are likely to have been always above such a threshold and therefore had no influence on innovative behaviour.

Support for risk taking and tolerance of mistakes are two cultural norms that endorse behaviours associated with innovation (Vera & Crossan, 2005). Support for innovation also implies a tolerance of error so that the innovator is not reprimanded when an attempt does not succeed (Amabile, 1988; West, 1990). Individuals need freedom to take risks, play with ideas and increase the range of thoughts from which innovations may emerge (Ahmed, 1998). Successful organisations reward success and acknowledge or celebrate failures, for example, by creating opportunities to

openly discuss and learn from mistakes (Martins & Terblanche, 2003). Rewards and award is a cultural norm that has a positive influence on innovation (Ahmed, 1998). It refers to the manner in which successes and failures are celebrated and rewarded. Key attributes of this norm are: the valuing of ideas; top management attention and support; respect for beginning ideas; celebration of accomplishments; suggestions are implemented; and encouragement.

Articulated and enacted support for innovation, a shared vision, and an interpersonal atmosphere that facilitates participation, are not sufficient to create a highly innovative climate. The last factor in West's (1990) model of climate for work group innovation is referred to as task orientation, and will be described below.

#### **2.5.4 Task orientation**

For a work group to be innovative, it requires clear standards of excellence characterised by individual commitment, motivation, self-esteem, individual performance and constant improvement (Isaksen & Tidd, 2006). West (1990) refers to these standards as task orientation and defines it as a shared concern among group members with excellence and quality of task performance in relation to shared vision or outcomes. It is the degree to which the team is focused on reaching quality outcomes through critical evaluation of their own and others' inputs within a constructive framework (Pirola-Merlo et al., 2002).

Task orientation encompasses three sub-factors, namely excellence, appraisal and ideation (Anderson & West, 1996). **Excellence** represents a concern among team members that the team should achieve the highest levels of performance; **appraisal** refers to mutual monitoring among team members to maintain a higher standard of work, and **ideation** is the frequency with which members feel ideas are generated in the team (Anderson & West, 1998; Lowen & Loo, 2004). Ideation is characterised



by team members building on each other's ideas to achieve the highest quality outcome (Anderson & West, 1998).

The task orientation factor within groups is characterised by an emphasis on individual and team accountability, control systems for evaluating and modifying performance, reflecting upon work methods and team performance, intra-team advice, feedback and cooperation, mutual monitoring, appraisal of performance and ideas, clear outcome criteria, exploration of opposing opinions, constructive controversy, and a concern to maximise the quality of task performance (Anderson & West, 1998; West, 1990). This factor therefore describes a general commitment to excellence in task performance combined with a climate, supportive of improvements in traditional policies, procedures and methods.

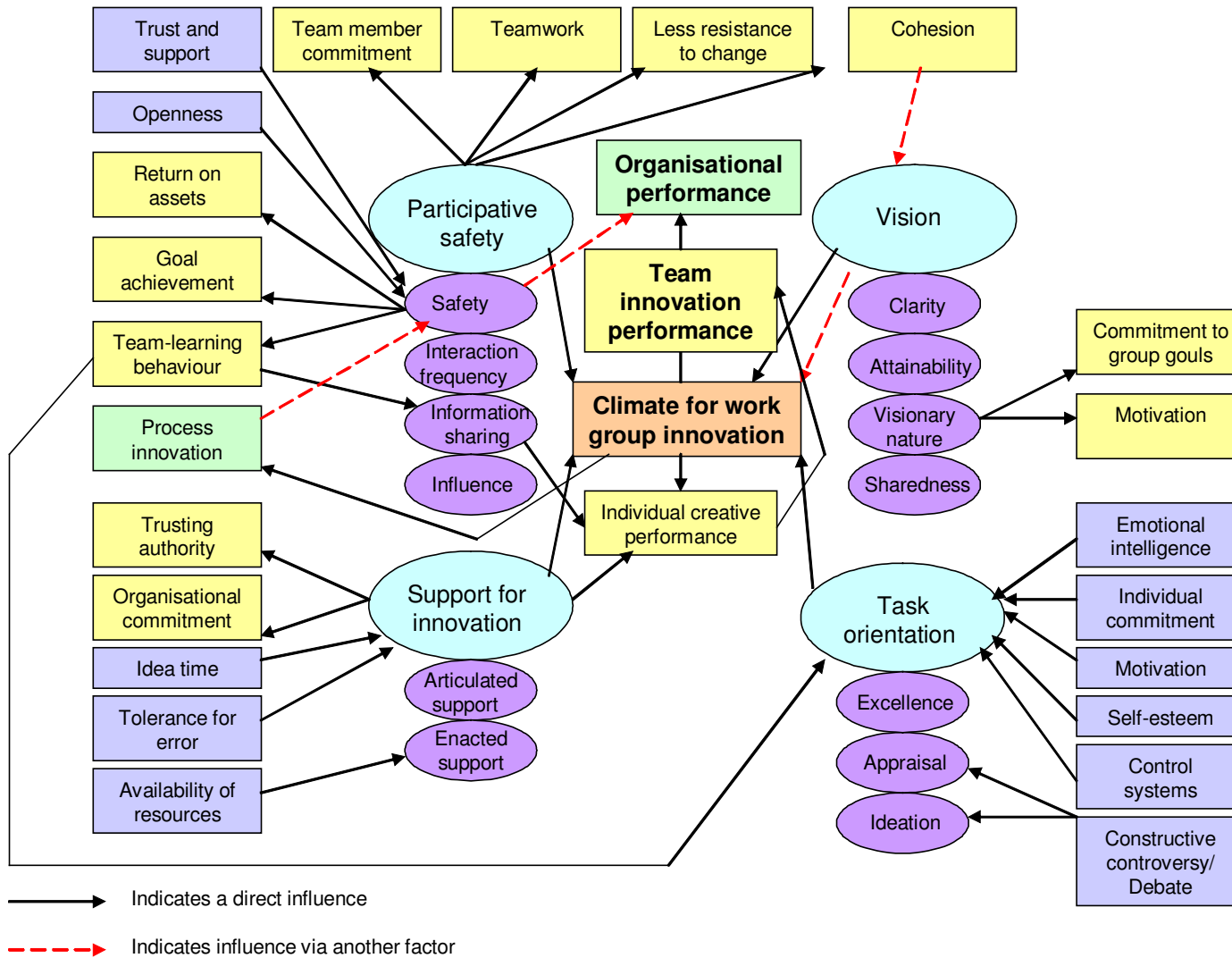
Research proposes that constructive controversy occurs where decision makers believe they are in a cooperative context of emphasising mutually beneficial goals, rather than in a competitive situation of having to win and trying to exceed each other; where decision-makers feel their personal competence is confirmed, and where they perceive processes of mutual influence rather than attempted dominance (West, 1990). Team leaders who are able to effectively promote commitment to excellence by managing opposing viewpoints will have a positive influence on the team's ability to generate innovative ideas (Mumford & Gustafson, 1988; West, 2003). Another term used by authors that relate to constructive controversy, is debate (Ahmed, 1998; Isaksen & Tidd, 2006). Debate refers to encounters, exchanges or clashes among individuals' perspectives, ideas and differing experiences and knowledge (Isaksen & Tidd, 2006). It is the degree to which members feel free to debate issues actively, and the degree to which minority opinions are expressed willingly and listened to with an open mind. Key attributes associated with this norm are the expectance and acceptance of disagreement and criticism, and a willingness not to be too sensitive (Ahmed, 1998).

The task orientation factor creates a group environment in which individuals feel stimulated to express themselves in an open non-political way, which is more constructive to innovation than a 'soft' atmosphere with poor standards of performance (West, 1990). However, since it may lead to circumstances in which it is probable that members' contributions are challenged, it is vital for the team to accurately identify and effectively manage emotions (emotional intelligence) in order to minimise members feeling threatened or defensive (Pirola-Merlo et al., 2002).

### **2.5.5 Summary: Climate for work group innovation**

In conclusion, West (1990) proposes that participative safety and support for innovation will primarily have a positive effect on the quantity of new ideas, since they influence potential innovators through the creation of appropriate social reinforcement contingencies. Furthermore, vision and task orientation will primarily have a positive influence on the quality and significance of new ideas, since they are more task or product orientated. Nevertheless, it is acknowledged that all four factors will have some influence on both the quality and quantity of group innovation, although the extent of the influence will vary across the factors.

Figure 2.1 illustrates the four factors and sub-factors of climate for innovation. The relationships between the factors and other dimensions (as discussed in the preceding literature review), is indicated. Confirmed relationships are indicated with a black solid line and influences via other variables (mediating influences) are indicated with a red broken line (e.g. climate for work group innovation is influenced by cohesion via vision and organisational performance is influenced by process innovation via safety).



**Figure 2.1: Climate for work group innovation and related dimensions**

In order for a work group to increase its capacity for innovation the members need to learn skills that promote the factors of an innovative climate. However, little is known about how team members can learn these skills and successfully apply it in organisations (Vera & Crossan, 2005).

Crossan (1998) proposes that improvisation is one of the few tools available to organisations to develop the capacity to be innovative. The role of improvisation in the innovation field has hence attracted growing attention from academia and practitioners alike (Crossan, 1997, 1998; Crossan et al., 2005; Kamoche et al., 2003; Moorman & Miner, 1998; Kanter, 2002; Vera & Crossan, 2004, 2005; Weick, 1998). The rich tradition of improvisation in theatre and music has provided a foundation for theory development, and the exercises emerging from that tradition have provided a bridge between theory and practice. Research findings by Vera and Crossan (2005) suggest that the same theatre principles that help actors to improvise are not only applicable in business settings, but can be learned and effectively applied by organisational members through training. Acknowledging that such skill can be developed is imperative to the understanding of team innovation and training. The next section defines improvisational theatre and describes the principles thereof that influence climate for work group innovation.

## **2.6 IMPROVISATIONAL THEATRE**

Improvisational theatre is a form of theatre that does not use a script or predetermined idea for dialogs, direction or movement (Nevraumont, Hanson & Smeaton, 2002). The performance is done spontaneously, without any preconceptions, in response to the immediate stimuli of the environment (Frost & Yarrow, 1990). These stimuli include suggestions from the audience about the characters, location, situation and style of the scene, as well as offers made by fellow actors on the stage (Nevraumont et al., 2002). Thus in order to create entertaining performances, improvisational actors must work together as a cooperative team (Frost & Yarrow, 1990).

Moshavi (2001) and Crossan (1997) highlight the main differences between improvisational and traditional theatre. These differences are indicated in Table 2.2.

**TABLE 2.2**  
**DIFFERENCES BETWEEN TRADITIONAL AND IMPROVISATIONAL THEATRE**

	<b>Traditional theatre</b>	<b>Improvisational theatre</b>
<b>Dialogue and action</b>	Scripted	Unscripted (created in real time)
<b>Props and settings</b>	Predetermined	Imaginary (brought to life by the actors)
<b>Audience</b>	Reasonably passive (only participate by applauding)	Play active role (supply the dramatic structure for scenes)
<b>Role of director</b>	Directs the performance	Helps the actors reflect on the performance

Although improvisational theatre performances are unpredictable, this does not imply that they are without substantial structure or principles. When experienced actors create improvised scenes, it appears easy and natural. It does however require extensive practice in a range of principles that prevent improvisers from being overwhelmed by the pressure of impromptu performance. Applying these principles also helps improvisers to stay focused on the creative process (Gladwell, 2006; Lowe, 2000; Vera & Crossan, 2005). The principles that improvisers apply to create successful performances will be discussed next.

### **2.6.1 THE PRINCIPLES OF IMPROVISATIONAL THEATRE**

In improvisational theatre ideas are created through inspiration and then manipulated through a set of principles (Izzo, 1997). These principles are trust and support, agreement, listening and awareness, and narrative skills. It is suggested here that these principles relate to the factors supportive of an innovative work group climate. Therefore a discussion of these principles will follow and this chapter will conclude with a comparison between these principles, and the four factors of an innovative work group climate.

### 2.6.1.1 Trust and support

Izzo (1997) suggests that two of the most important concepts in improvisational theatre are trust and support. Without a trusting and supportive environment, an individual's creativity cannot flourish and the improvisational theatre group's work will be disorganised and uninspired.

**Trust** is the reliance of an actor on the support and creativity of the others in the group. It includes trusting oneself, trusting the process of creativity and giving up control (Halpern, Close & Johnson 1994; Izzo, 1997). Self-trust and shared trust in the group can help improvisation actors to overcome the three major pitfalls of improvisational theatre. These pitfalls are selectivity, inflexibility and control seeking. Selectivity refers to when an actor screens his thoughts for either the best or safest idea. This can result from the actor overvaluing his idea, seeking originality, fearing judgement, or fearing of failure. An actor is inflexible when he holds on to an idea past its usefulness, or denies another actor's idea. It is a result of an actor's lack of trust in himself or in fellow actors. When an actor feels uncomfortable with the process of improvisation, with not knowing what happens next, or with being forced by another actor to have to introduce a new piece of information, actors tend to seek control by forcing their own ideas into a scene (Izzo, 1997).

**Support** in improvisational theatre is explained by the phrase, "...make your fellow players look good" (Halpern et al., 1994, p. 43). This entails that when an improvising actor gets into difficulty (for example, when he struggles to develop the scene), he can trust that another actor will come to his assistance by accepting what he is offering (in the form of a physical action or a verbal proposition) and developing it (Frost & Yarrow, 1990). This principle implies that one actor cares just as much about his own success as the success of his fellow actors (Halpern et al., 1994). According to Frost and Yarrow (1990) the biggest offence of improvisational theatre is leaving your partner without support.

### 2.6.1.2 Agreement

Agreement in improvisational theatre is also known as the *yes, and* principle. When actors apply this principle, they accept the information given to them by other actors and build on it. It ensures that an individual does not control the scene and that dialogue is dynamic (Crossan, 1998; Gladwell, 2006; Moshavi, 2001; Lowe, 2000). The rule of agreement creates a climate in which improvisers are required to accept, support, and add to the ideas expressed by other actors on stage. Because of the principle of agreement, actors know that the climate supports experimentation, that fellow players are not judging their actions, and that nothing is seen as a mistake. In this climate players feel safe to take risks (Vera & Crossan, 2005). Izzo (1997, p. 161) refers to the rule of agreement as *positive assumption*. He describes this principle as follows:

Positive assumption is an organic process by which one premise is extended by another. Each successive assumption affirms the previous one as true and present, and adds a new assumption flushed from all previous assumptions. As a scene progresses, each new assumption is like a piece of a jigsaw puzzle; each little bit adds to the whole picture.

Halpern et al. (1990) suggests that the only rule in improvisation theatre that can never be broken is the rule of agreement. When an improviser rejects a fellow actor's idea, it is called a *block*. According to Frost and Yarrow (1990) blocking is regarded as unacceptable in improvisation. Ignoring or discarding an idea in improvisation theatre is not an option and can even be considered as a form of aggression (Izzo, 1997; Johnstone, 1979).

### 2.6.1.3 Listening and awareness

The skills of listening and awareness in improvisational theatre are often referred to as *being in the moment*. As one of the fundamental rules of improvisational theatre, it requires actors to pay attention to what is happening around them, to be present, alert and to concentrate (Izzo, 1997). A lack of

attention and alertness, while creating a story, leads to conflict, incongruous actions and frustration for both the actors and the audience (Vera & Crossan, 2005). Planning ahead and thinking about the direction an actor would like the scene to go, implies they are not attentive to what is happening in the present and opportunities for discovery will be missed (Halpern et al., 1994). Frost and Yarrow (1990) explain *presence* as the performer being fully *there*, his attention completely focused, but with an awareness that extends beyond his immediate space to include the audience's space.

#### 2.6.1.4 Narrative skills

The two narrative skills, that actors need to develop in order to be good improvisers, are *free association* and *reincorporation* (Johnstone, 1979). Creativity and development are achieved through the use of free association (Frost & Yarrow, 1990). Incorporation is the process that gives form to free association, whereas reincorporation is the repetition of a previously revealed bit of information, or a situation within a scene, that can give form to developing scenes, and provide closure (Izzo, 1997). Therefore, while free association represents the nature of improvisation as creative and spontaneous, the rule of reincorporation reminds actors that improvisation does not mean *anything goes*, but that creating a coherent scene requires them to remember and reincorporate what was already initiated in the past. This principle refers to the ensemble's memory of the present performance, as well as lessons learned from previous performances (Frost & Yarrow, 1990). Johnstone (1979, p. 116) describes reincorporation as follows:

The improviser has to be like a man walking backwards. He sees where he has been, but he pays no attention to the future. His story can take him anywhere, but he must still 'balance' it, and give it shape, by remembering incidents that have been shelved and reincorporating them.

The use of *themes* is another narrative skill that ensures that improvised scenes are focused and coherent. A theme can be a headline, a topic or a



direction that engage imagination and gets the action started. If a theme is laden by too many stage directions, creativity is restrained and the actors don't have the freedom to adjust to the audience's response (Kanter, 2002).

Some improvisational theatre groups build their improvised sets around planned structures (Vera & Crossan, 2005). One of the narrative structures that improvisers use to create stories is referred to as the *story spine*, which is compiled as follows (Koppett, 2001):

- ❖ Once upon a time...
- ❖ Everyday...
- ❖ But one day...
- ❖ Because of that... (Repeat as needed)
- ❖ Until finally...
- ❖ Ever since then...

This structure acts as a spine and the free associated ideas form the flesh of the story around the spine. Thus the structure gives form and direction to the ideas that the actors generate through free association.

All of the abovementioned improvisational theatre principles help improvisational actors to work together to create successful performances. However, these principles cannot be adequately learned from only studying their processes and theory. They are learned experientially in the rehearsal room and on stage through exercises (Frost & Yarrow, 1990; Gladwell, 2006; Izzo, 1997; Spolin, 1963). Improvisational theatre exercises are referred to as *theatre games* and are often used as performance vehicles, or structures, in most staged improvisation theatre formats. These theatre games are not generally used in performance, but as a means to teach the principles of improvisation in order to subsequently apply them to stage performances (Izzo, 1997). They create an environment providing involvement and the personal freedom necessary for experience. In this experience, skills are developed while the person is enjoying the fun and excitement of playing the game (Spolin, 1963). These exercises are not only applicable in the context of improvisational theatre, but can also be used as an

experiential tool in organisational training (Crossen 1998; Keefe, 2003; Koppett, 2001; Lowe, 2000; Poynton, 2005; 2007; Vera & Crossan, 2005). In the next section this notion is developed further.

## **2.7 IMPROVISATIONAL TRAINING IN ORGANISATIONS**

Recent research results have shown that creativity and originality are neglected in the formal educational system (Beard & Wilson, 2002). This notion is supported by Johnstone (1979), who argues that everything around formal education is designed to suppress spontaneity. Despite this, however, it is suggested that individuals can relearn to be creative and spontaneous (De Bono, 1982; 1990; Vera & Crossan 2005). Improvisational theatre has proven that the potential to be creative and spontaneous can be rediscovered and developed through exercises. Creativity and spontaneity are improvisational skills, and can be learned by anyone, as long as learners understand and apply themselves to the principles, according to Izzo (1997) and Lowe (2000). The learning can take place during experiential training that incorporate theatre games and exercises (Frost & Yarrow, 1990; Izzo, 1997; Spolin, 1963).

Play in its broadest sense can be a more effective means of unlocking learning potential, in adults and children, than formal learning, as it serves to rehearse and exercise skills in a safer environment (Beard & Wilson, 2002; Lowe, 2000). Through play, individuals experience a combination of many aspects of learning, such as spontaneity, emotional reactions, unconscious motivations, personal temperament and style, social and cultural context, as well as the more researched intellectual processes (Blatner & Blatner, 1997). In her componential model of creativity, Amabile (1988) also refers to the importance of intellectual playfulness and deep involvement as a motivational state for creativity. It is said that innovators regard their work as play (Beard & Wilson, 2002).

Improvisation training involves the playing of theatre games designed to develop process skills such as listening and communication, context-specific

knowledge, a perspective and a context that enables team members to leave their comfort zone, and techniques that promote agreement and develop shared responsibility in teams (Crossan, 1998). Therefore improvisational theatre exercises provide a context in which individuals can learn principles necessary for innovation experientially. Not only individuals are developed through playing, teams also grow, since bonds of communication are created between the playing members (Lowe, 2000). Furthermore, teams have also been shown to develop shared attitudes and behavioural patterns through experience (Pirola-Marlo et al., 2002). Therefore, it is argued that a work group that is exposed to an improvisational theatre training programme will not only learn skills that will help the individual to be more innovative, but will also create shared attitudes and behaviours that could benefit the group as a whole. This point deserves note, since this study is concerned with climate for work group innovation, which is a shared attitude toward the work environment.

An improvisation training session usually begins with a short overview of the importance of improvisation to encourage individual investment of time and energy in the process. Individuals then work in small groups of 10 to 20, with an experienced improvisation facilitator, who takes them through a series of progressively more difficult improvisation exercises, and provides instruction on the key principles of improvisation. After the participants have experienced the improvisational principles through the exercises, additional concrete links to the work environment are established through reflection (Crossan, 1998; Keefe, 2003).

It can be argued that the skills of improvisational theatre are transferable, since the building blocks used in improvisational theatre are words, posture, tone of voice and facial expressions. Any individual therefore possesses a certain capability to experience and learn from improvisational theatre. Dramatic expression is also universal and timeless, and though it may vary in form over time and culture, it always interprets real life (Vera & Crossan, 2005).

In summary, improvisation is a skill that can be learned by applying oneself to the principles of improvisational theatre when playing theatre games (Frost & Yarrow, 1990; Izzo, 1997; Spolin, 1963). Furthermore the skill of improvisation promotes a group's capacity to be innovative (Vera & Crossan, 2005). Thus it is postulated that there is a decisive link between improvisation and climate for innovation, since both these concepts foster innovation. The following section illustrates the similarities between the factors of an innovative work group climate and the principles of improvisational theatre.

## **2.8 THE RELATIONSHIP BETWEEN CLIMATE FOR WORK GROUP INNOVATION AND THE PRINCIPLES OF IMPROVISATIONAL THEATRE**

Research conducted by Vera and Crossan (2005) applies the principles and insights gained from improvisational theatre to explain the nature of collective improvisation in organisations and how it influences innovation. They propose that certain key dimensions of effective improvisation will lead to innovation. These dimensions are teamwork quality (i.e. trust and support), experimental culture (agreement and tolerance for error), information sharing and communication, and memory (i.e. systems and procedures). They hypothesise that the higher the level of these dimensions, the stronger the relationship between collective improvisation and innovation will be. The findings of Vera and Crossan (2005) are relevant when drawing a comparison between the principles of improvisational theatre and the four factors of climate for work group innovation.

The four principles of improvisational theatre discussed in the theoretical framework above (trust and support, agreement, listening and awareness, and narrative skills) relate in several ways to the four factors of climate for work group innovation (participative safety, vision, support for innovation and task orientation). The following section elaborates on the relationship between these principles and indicates the similarities.

### 2.8.1 Agreement and participative safety

In improvisational theatre, actors know that because of the principle of agreement, the climate supports experimentation and that fellow players are not judging their actions (Vera & Crossan, 2005). This is similar in a team climate where participative safety is present, since interpersonal processes are non-judgemental and supportive of the individual offering contributions and ideas (West, 1990). In a work group where the *yes, and* principle is applied, members will feel psychologically safe to participate, since they know that sharing their ideas will not lead to an attack, censorship, ridicule or penalisation. On the contrary, they will feel safe to share their ideas, knowing their ideas will not only be accepted but also incorporated and developed (Izzo, 1997; Vera & Crossan, 2005; West, 1990).

### 2.8.2 Agreement and support for innovation

The rule of agreement is crucial for the establishing of an experimental climate in work groups, which is defined as a climate that provides room for experimentation and is tolerant of *competent* mistakes (Vera & Crossan, 2005). This experimental climate correlates with the factor support for innovation, since support for innovation is characterised by the expectation, approval and practical support of attempts to introduce new and improved ways of doing things in the work environment, as well as a tolerance for error (West, 1990). The principle of agreement enables improvisation actors to make quick corrections. Innovative companies also establish a *non-penalty* culture in which members can admit that they had a failed idea and move on to the next one (Kanter, 2002).

Evidence of how a *non-penalty* culture has led to an innovative discovery is the invention of the Post-It Note at 3M. A researcher's failed attempt to invent an adhesive was *yes-anded* by another researcher, who proposed using the *failed* adhesive to keep pieces of scrap paper from falling out of his choir book. Repeated *yes-anding* among 3M researchers led to the Post-It Notes as currently used (Vera & Crossan, 2005).

### **2.8.3 Agreement and task orientation**

Agreement is best described by the *yes, and* principle, meaning that an actor accepts and builds on a fellow actor's idea (Crossan, 1998; Moshavi, 2001). The sub-factor of task orientation, namely ideation, is very similar to the *yes, and* principle, since it is characterised by team members building on each others' ideas in order to achieve the best possible result (Anderson & West, 1996).

### **2.8.4 Trust and support, and participative safety**

Participative safety relates to active involvement in work group interactions, wherein the predominant interpersonal atmosphere is one of non-threatening trust and support (Anderson & West, 1998). Similarly, improvisational theatre facilitators agree that a climate of trust and support is crucial for an ensemble's performance to be organised and inspired and the individual's creativity to thrive (Izzo, 1997; Halpern et al., 1994).

### **2.8.5 Trust and support, and support for innovation**

A climate with a high degree of articulated and enacted support for the introduction of new ideas will lead to a higher level of innovation within a work group (West, 1990). This characteristic of an innovative climate is similar to the principle of *make your partner look good* in improvisational theatre, thus implying that an actor can trust his fellow actors to support the offered ideas and develop them (Frost & Yarrow, 1990).

### **2.8.6 Listening and awareness, and participative safety**

Listening and awareness skills, or the rule of *being in the moment*, as it is referred to in improvisational theatre, helps actors to pay attention to what their fellow actors are saying, to be present and alert and thereby avoid conflict, incongruous actions and frustration (Vera & Crossan, 2005).

Listening and awareness skills are important in work groups to ensure effective communication and information sharing. Research has shown that open information sharing and communication play a vital role in achieving high levels of participation in the innovative process of work groups. If the communication in a work group is poor, members feel they lack information, and the risk of engaging in the creative process seems too high (Vera & Crossan, 2005; West, 1990).

### **2.8.7 Narrative skills and vision**

The narrative skills of themes and story spine structures give improvisational theatre scenes direction and keep it coherent. In organisations a theme can take the form of a leader's statement of a vision (Kanter, 2002). Organisations can use the story spine structure from improvisational theatre to clarify their vision and to formulate the steps towards achieving that vision (Koppett, 2001). Such a visioning exercise, where the narrative skill of story spine structures is used, will help team members to create a shared vision with clear, attainable steps of how to achieve the vision.

### **2.8.8 Narrative skills and task orientation**

Task orientation is characterised by evaluations, modifications, control systems, critical appraisals and constructive controversy (West, 1990). These processes affect the quality of innovations and particularly their effectiveness and appropriateness. Within such a climate, contrasting opinions are investigated and the group's concern is to integrate information, opinions and ideas into a high quality solution or decision. In improvisational theatre narrative skills (ready-made structures and reincorporation) remind the actors that not every spontaneous idea is necessarily appropriate and requires them to remember and reincorporate what was already initiated in the past to give the scene meaning, structure, and closure (Izzo, 1997; Vera & Crossan, 2005). For this reason these narrative skills have the same purpose in improvisational theatre that task orientation has in climate for innovation. Both

focus on integrating ideas that will result in an excellent end product, whether it is a new innovation or an entertaining performance.

In work groups, ready-made structures and the principle of reincorporation are interpreted as team memory. Team memory is stored information from the team's past that can be implemented into current situations. This information includes declarative and procedural knowledge stored in systems, structures, cultures, strategies, rules, and procedures (Vera & Crossan, 2005). It is argued in the current paper, that team memory plays an important part in vision and task orientation. The vision of a team becomes part of team memory, since the vision of a team is a piece of information that is stored in the memory of the team that needs to be recalled whenever creative ideas need to be directed. For example, a facilitator of a brainstorming session would remind the team members of the vision in order to keep all the new ideas aligned with the vision. Furthermore, team memory is vital for task orientation, as the information stored in team memory is crucial for the evaluation, appraisal, and modification of new ideas.

In summary, participative safety and support for innovation ensures that a work group generates a quantity of new ideas, while vision and task orientation ensure that the quality of the ideas are of a good standard (West, 1990). Similarly, trust and support and agreement in improvisational theatre ensure that the actors can be spontaneous, while drawing on ready-mades and reincorporation ensures that the spontaneous ideas of the actors have structure and direction. These similarities are indicated in Table 2.3.



**TABLE 2.3**  
**A COMPARISON BETWEEN CLIMATE FOR WORK GROUP INNOVATION FACTORS AND**  
**PRINCIPLES OF IMPROVISATIONAL THEATRE**

**Climate for work group innovation factors and sub-factors**

	<b>Participative safety</b>	<b>Support for innovation</b>	<b>Vision</b>	<b>Task orientation</b>
	Safety, Interaction frequency, Information sharing, Influence	Articulated support, Enacted support	Clarity, Attainability, Perceived value, Sharedness	Excellence, Appraisal, Ideation
<b>Improvisational theatre principles</b>	<b>Trust and Support</b>	Interactive atmosphere characterised by trust and support	Members can trust that ideas will be supported	
	<b>Agreement</b>	Non-judgemental and supporting experimentation	Tolerance for error	Building on ideas
	<b>Listening and awareness</b>	Effective communication and information sharing		
	<b>Narrative skills</b>		Gives direction and focus to ideas	Ensure ideas are appropriate and focused

## 2.9 SUMMARY

This chapter commenced with the differentiation between culture and climate, since both these terms have been used interchangeably in literature. The climate construct was defined by focusing on two approaches, namely the cognitive schema approach and the shared perceptions approach. A discussion of climate for innovation and the enhancing factors followed. West's (1990) theory of climate for work group innovation was investigated with the focus on vision, participative safety, support for innovation and task orientation as possible predictors of innovation.

Hereby the first literature objective (to investigate the construct climate for work group innovation) has been achieved.

The second part of the chapter introduced improvisational theatre and described its principles; thereby achieving the second literature objective. The principles discussed included agreement, trust and support, listening and awareness, and narrative skills. In order to meet the third literature objective, the exercises improvisational actors use to train themselves in these principles were discussed. It was proposed that these exercises could be used to teach any person the skills of improvisational theatre and that the same theatre principles that assist actors in improvisation are not only generally applicable in business settings, but can be learned and effectively applied by organisational members through training.

The last part of the chapter was devoted to achieving the fourth literature objective, namely to relate the four factors of an innovative work group climate to the principles of improvisational theatre. It was concluded that there were prominent relationships between the two.

In light of the theoretical framework it is therefore argued that a team development intervention based on improvisational theatre exercises could be used to teach the members of a work group skills that will foster the development of an innovative climate. Chapter 3 will describe the methodology utilised to study the influence of such an intervention on climate for work group innovation.

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 INTRODUCTION

Chapter 2 investigated the four factors of climate for work group Innovation (vision, participative safety, support for innovation and task orientation) as well as the principles of improvisational theatre (trust and support, agreement, listening and awareness and narrative skills). The literature review culminated in a comparison between these two concepts, as both of them promote innovation. It was proposed that the same exercises used by improvisational actors to practice the skills of improvisation could be used to teach the members of a work group skills that would foster the factors of an innovative climate. This could ultimately lead to a work group being more innovative and adaptive to change – these are crucial characteristics for any work group wanting to be effective in today's ever-changing work environment.

The current chapter is concerned with the methodology used to measure the influence of an improvisational theatre intervention on climate for work group innovation. First the variables and the research design will be discussed, whereafter the statistical hypotheses, analysis techniques and sample will be presented. To conclude, the intervention and measuring instrument used in the study will be addressed.

#### 3.2 SELECTION AND OPERATIONALISATION OF VARIABLES

In order to determine the effectiveness of the intervention, the different variables of interest to the researcher, and their operational definitions, must be clarified. There is one independent variable: the team development intervention based on improvisational theatre exercises; and one dependant variable: the climate for work group innovation, as defined in West's four-

factor theory for climate for work group innovation. The variables and their operationalisation are summarised in Table 3.1.

**TABLE 3.1**  
**VARIABLES AND OPERATIONALISATION**

<b>Independent variable</b>	<b>Operationalisation</b>
Team development intervention based on improvisational theatre exercises	Half-day intervention program
<b>Dependant variable</b>	<b>Operationalisation</b>
Climate for work group innovation	Pre-test and post-test results on Climate for Work Group Innovation Inventory

### 3.3 RESEARCH DESIGN

According to Goldstein (1993) the constraints of the environment make a perfect study unattainable; however, awareness of the important factors in experimental design makes it possible to avoid a futile study. The researcher's task is to select the most rigorous design possible and through awareness of its limitations, control unrelated factors that might enable the researcher to determine whether a real change has occurred, whether the change can be attributed to the intervention and whether the change is likely to occur again with a new sample of subjects.

For practical reasons, a quasi-experimental design, specifically a non-equivalent control group design, was used in the present study. According to Goldstein (1993) quasi-experimental designs are valuable in situations where the researcher does not have full control over the environment. A non-equivalent control group design is the most frequently used design in social science research (Cook & Campbell, 1979). This design involves an experimental group and a control group that both complete a pre-test and a post-test, but the two groups do not have pre-experimental sampling equivalence (as the participants are not assigned to the groups at random) (Campbell & Stanley, 1963; Goldstein, 1993). Random selection of the

participants would have been neither possible nor useful in the study presented here, as the climate for work group innovation was to be measured for an already established unit. Both the experimental and control group were given a pre-test as well as a post-test, but only the experimental group was exposed to the team development intervention. The more similar the experimental group and the control group are in their assignment, and the more this similarity is reflected in their scores in the pre-test, the more effective this design should be (Breackwell, Hammond & Fife-Schaw, 1995; Campbell & Stanley, 1963). It is however difficult to find two groups that will score exactly the same in the pre-test for this design (Breakwell, Hammond & Fife-Schaw, 1995). The non-equivalent control group design is summarised in Table 3.2.

**TABLE 3.2**  
**NON-EQUIVALENT CONTROL GROUP DESIGN**

Group	Pre-test	Intervention	Post-test
Experimental group	T1	X	T2
Control group	T3		T4

X = Intervention

T1 & T3 = Pre-tests

T2 & T4 = Post-tests

### 3.3.1 Internal validity

A non-equivalent control group design controls for some of the threats of internal validity such as history, maturation, testing and instrumentation. If the difference in scores between the experimental group's pre-test and post-test is greater than that for the control group, this difference could not be attributed to the effects of these threats since both groups will be affected by them in the same way (Campbell & Stanley, 1963; Goldstein, 1993).

This design is however vulnerable to the following threats to internal validity (Breakwell et al., 1995; Campbell & Stanley, 1963; Cook & Campbell, 1979; Goldstein, 1993).

- ❖ **Interaction between selection and maturation** occurs when the respondents in the one group become more experienced, tired, or

uninterested in the treatment than the respondents in the other group (Cook & Campbell, 1979; Goldstein, 1993).

- ❖ **Interaction between selection and history** is also referred to as local history and represents other events than the treatment that affect one of the groups but not the other (Cook & Campbell, 1979; Goldstein, 1993).
- ❖ **Instrumentation** (ceiling or floor effect) refers to when a mean score approaches one end of a scale in the pre-test, not allowing for a change in the post-test (Cook & Campbell, 1979).
- ❖ **Differential statistical regression** occurs when participants are chosen as a group based on their high or low scores, resulting in the post-test scores regressing to the mean (Cook & Campbell, 1979; Goldstein, 1993).

The researcher must be sensitive to potential sources of differences between the groups, since the members are not chosen randomly. It is possible that critical differences such as motivation exist, which were not revealed by the pre-tests (Cook & Campbell, 1979; Goldstein, 1993). In addition, effects that are not part of the instructional procedure due to differential treatment of subjects in the control and experimental groups, must be controlled by the researcher. This includes the threats to internal validity such as compensatory rivalry and resentful demoralisation of control groups (Goldstein, 1993). In this study these threats were controlled by the researcher (as far as possible) by assuring the control group that they would have the opportunity to take part in the intervention after they had completed the post-test, should they be interested to do so.

### **3.3.2 External validity**

External validity refers to the extent that the causal relationship identified in a study can be generalised over variations of people, settings, treatments and outcomes (Cook & Campbell, 1979; Shadish, Cook & Campbell, 2002). Goldstein (1993) states that the threats to external validity of the non-equivalent control group design are not as easily specified as the internal

threats to validity. It is suggested that the following interactions may limit the generalisation to future participants:

- ❖ **Interaction between selection and treatment.** The characteristics of the experimental group might differ from those of future participants (Cook & Campbell, 1979; Goldstein, 1993).
- ❖ **Interaction between setting and treatment.** A result found in one kind of setting may not hold if the treatment were repeated in another setting (Cook & Campbell, 1979).
- ❖ **Interaction between causal outcome and pre-testing.** The pre-test could sensitise the experimental group to the intervention (Goldstein, 1993).

The fact that this design uses intact groups is an advantage, in that the experiment can be presented as part of the normal routine, and therefore some of the issues related to the guinea pig effect are deduced (Goldstein, 1993). In the current study the researcher treated both groups in the same manner by conducting the pre- and post-tests on exactly the same date and time with standard instructions. The only difference between them was the experimental group's exposure to the intervention.

### 3.4 HYPOTHESES

In light of the comparison between the factors of climate for work group innovation on the one hand and improvisational principles taught through improvisational theatre exercises on the other, the following substantive research and statistical hypotheses were formulated:

**H1:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on climate for work group innovation.

$$H_{01}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a1}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H2:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the factor participative safety of climate for work group innovation.

$$H_{02}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a2}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H3:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the subordinate factor safety (of the factor participative safety) of climate for work group innovation.

$$H_{03}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a3}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H4:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the subordinate factor information sharing (of the factor participative safety) of climate for work group innovation.

$$H_{04}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a4}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H5:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the subordinate factor interaction frequency (of the factor participative safety) of climate for work group innovation.

$$H_{05}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a5}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H6:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the subordinate factor influence (of the factor participative safety) of climate for work group innovation.

$$H_{06}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a6}: \mu_{\text{exp}} > \mu_{\text{control}}$$



**H7:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the factor vision of climate for work group innovation.

$$H_{07}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a7}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H8:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the subordinate factor sharedness (of the factor vision) of climate for work group innovation.

$$H_{08}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a8}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H9:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the subordinate factor attainability (of the factor vision) of climate for work group innovation.

$$H_{09}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a9}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H10:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the subordinate factor perceived value (of the factor vision) of climate for work group innovation.

$$H_{010}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a10}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H11:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the subordinate factor clarity (of the factor vision) of climate for work group innovation.

$$H_{011}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a11}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H12:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the factor support for innovation of climate for work group innovation.

$$H_{012}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a12}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H13:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the subordinate factor articulated support (of the factor support for innovation) of climate for work group innovation.

$$H_{013}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a13}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H14:** A team development intervention, based on improvisational theatre exercises will have a positive influence on the subordinate factor enacted support (of the factor support for innovation) of climate for work group innovation.

$$H_{014}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a14}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H15:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the factor task orientation of climate for work group innovation.

$$H_{015}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a15}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H16:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the subordinate factor excellence (of the factor task orientation) of climate for work group innovation.

$$H_{016}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a16}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H17:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the subordinate factor appraisal (of the factor task orientation) of climate for work group innovation.

$$H_{017}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a17}: \mu_{\text{exp}} > \mu_{\text{control}}$$

**H18:** A team development intervention, based on improvisational theatre exercises, will have a positive influence on the subordinate factor ideation (of the factor task orientation) of climate for work group innovation.

$$H_{018}: \mu_{\text{exp}} = \mu_{\text{control}}$$

$$H_{a18}: \mu_{\text{exp}} > \mu_{\text{control}}$$

### **3.5 STATISTICAL ANALYSIS**

The data was analysed using STATISTICA (a data analysis software system), (Statsoft Inc., 2008). The statistical methods applied were selected in accordance with the aims and objectives of the study, after consultation with a statistician. The following section provides a brief overview of these methods. The results from the analysis will be discussed in Chapter 4.

#### **3.5.1 Reliability tests**

Item analyses were performed on the five superordinate scales and the 15 sub-scales of the measuring instrument for the pre-test and the post-test. These item analyses were conducted to determine whether the superordinate scales and the sub-scales for the pre- and post-test were internally consistent.

#### **3.5.2 Repeated measures ANOVA**

The influence of the intervention on climate for innovation was determined by performing a repeated measures ANOVA analysis on the data from the pre-test and post-test for the experimental and control group. The repeated

measures ANOVA was conducted to determine whether there was a time/group interaction effect between the pre-test and post-test for the two groups. The time/group interaction effect hypothesis states that the change over time will be equal for all groups.

Repeated measures ANOVAs were performed on climate for innovation (climate) as a whole as well as on the four super ordinate scales participative safety, support for innovation, vision, and task orientation. Lastly repeated measures ANOVAs were also performed on each of the 13 subordinate scales.

### **3.5.3 Post hoc tests – Bonferroni multiple comparisons**

If the null hypothesis in the above analysis were rejected, it would mean there was a statistically significant time/group interaction ( $p < .05$ ). This would indicate that the one group's mean score had improved significantly from the pre-test to the post-test, in comparison with the other group's mean score. In such a case it would be appropriate to investigate in which group's mean scores this difference lay. The Bonferroni test was deemed appropriate for this task.

## **3.6 SAMPLE**

All the threats that are specific to the non-equivalent experimental design stem from the selection difference between groups (Cook & Campbell, 1979; Reichardt 1979). The researcher should therefore control the selection process so that the two groups are as equivalent as possible.

The two groups selected for the study were two teams from the healthcare management division that formed part of the healthcare department of a large insurance company in South Africa. Each team consisted of 20 members. Both teams were also sub-divided into two teams of 10 each with an appointed team leader. The two team leaders reported to a manager. The manager in turn reported to the director of the department. This was the

normal structure of the two teams and no new team leaders were appointed for the purpose of the study.

The team that was selected as experimental group was responsible for the management of clinical risk in hospitalised members of medical schemes and the control group's responsibility involved the management of clinical risk in non-hospitalised members of medical schemes. The two teams' day-to-day tasks were therefore very similar, making the equivalence of the two groups greater. They functioned separately from each other, resulting in each team having their own climate, even though the greater organisational climate and culture for both teams was the same. Furthermore, according to a statistician, the teams were large enough to supply sufficient data from which statistically significant inferences could be made. The group sizes were also ideal for the chosen type of intervention (10 to 20 individuals) (Crossan, 1998). The sizes and similarities between the two groups thus made them ideal for the current study.

The pre-test was administered to both the experimental and the control groups one day prior to the intervention. Sixteen members from each group completed the questionnaire used for the pre-test ( $n_e=16$  and  $n_c=16$ ). The next day the experimental group was exposed to the team development intervention. Unfortunately the manager of the team was not available to take part in the intervention.

It is difficult to determine the time period necessary between the intervention and the post-test (Goldstein, 1993). According to Tannenbaum and Yukl (1992) there are no guidelines for determining the length of time to wait before conducting the post-test. However the post-test should be administered after the participants have been in the transfer situation for a reasonable time period (Goldstein, 1993). For this reason the post-test was conducted eight weeks after the intervention on both the experimental and control groups. Fifteen members from the experimental group and 13 members from the control group were available to complete the

questionnaire for the post-test. Thus the sample sizes for the post-test were  $n_e=15$  and  $n_c=13$ .

### **3.7 THE INTERVENTION**

The objective of the intervention was to teach the participants the skills and knowledge associated with the four factors of an innovative work group climate through experiential improvisational theatre exercises. The exercises included in the intervention were selected from two recognised sources containing improvisational theatre exercises recommended for corporate training i.e. those of Gesell (1997) and Koppett (2001). The researcher took on the role of facilitator for the intervention, given that he is experienced in both team development intervention facilitation and teaching improvisational theatre. The intervention exercises (descriptions and rationale) are depicted in Appendix A.

The experimental group consisted of twenty participants. Although four of the members of the experimental group did not complete the questionnaire for the pre-test, all twenty participated in the intervention. For practical reasons the experimental group was divided into two separate groups of 10 each. One group was exposed to the intervention in the morning and the other in the afternoon (for the purpose of data analysis the two data sets were combined). The programme for the day is depicted in Appendix B.

### **3.8 MEASURING INSTRUMENT**

A review of instruments used to assess the creative and innovative environments in organisations showed the Team Climate Inventory (TCI) and KEYS (for assessing creativity in the work environment), to be the two most appropriate (Amabile, 1996; Anderson & West, 1994; Mathisen & Einarsen, 2004). However the TCI is the only available instrument that measures climate for innovation at the team level. As a result, the TCI developed by Anderson and West (1994) was used as the measuring instrument for the current study.

The main purpose of the TCI was to develop an instrument to serve as a team development tool capable of facilitating interventions in work groups related to innovation (Mathisen & Einarsen, 2004). The TCI is endorsed as a valuable instrument for measuring group climate in organisations, as well as for teambuilding and organisational development interventions (Anderson & West, 1998; Lowen & Loo, 2004).

The instrument is based on West's (1990) facet-specific four-factor theory of climate for work group innovation. His theory hypothesises that four major factors of climate are predictive of innovation. The fifth factor of the TCI is a social desirability scale designed to alert the user to potential faking good of climatic responses (Anderson & West, 1996). The items for the TCI were selected from other questionnaires related to the model for work group innovation (e.g. four items from the Siegel Scale of Support for Innovation (Siegel & Kaemmerer, 1978), and 15 items from the Tjosvold, Wedley & Field (1986) scale of constructive controversy). The remainder of the items were developed especially for the TCI (Anderson & West, 1996; Mathisen & Einarsen, 2004). The structure of the TCI regarding the 15 subordinate scales, five superordinate scales, and item dispersions, with examples, are shown in Table 3.3 (Anderson & West, 1996, p. 58).

The TCI is a five-factor, 44-item, multi-dimensional instrument (Anderson & West, 1996, 1998). The original 116-item TCI was subjected to exploratory and confirmatory factor analyses across a number of samples, resulting in the 44-item version of the TCI (Anderson & West, 1996).

In addition, validity studies for the TCI were conducted in different types of organisations, making the TCI a highly useful instrument that can be applied to teams in diverse settings (Mathisen & Einarsen, 2004). Consequently the TCI was regarded as ideal for this particular study.

### **3.8.1 Validity and Reliability of the Team Climate Inventory (TCI)**

Anderson and West (1998) present data to confirm the underlying factor structure, internal homogeneity, predictive validity and factor replicability across groups for the TCI.

The first sample that provided data for the exploratory factor analysis of this measuring instrument included 155 individuals from 27 hospital management teams. Additionally, responses from 121 groups in four occupations (35 primary health care teams, 42 social services teams, 20 psychiatric teams and 24 oil company teams; total N = 971) were used for confirmatory factor analysis (Anderson & West, 1998, p. 235).

The TCI has been translated and tested in five European languages. Results from internal homogeneity tests (Cronbach's alpha) consistently suggest that the reliability of the TCI is acceptable, with alphas above the generally expected value of .70 (Pallant, 2001, p. 85). Alphas range between .84 and .94 for the UK version (Anderson & West, 1998, p. 245), .95 for the Swedish version (Agrell & Gustafson, 1994, p. 146), .83 and .94 for the Finnish version (Kivimäki et al., 1997, p. 579), .83 and .94 for the Norwegian version (Mathisen et al., 2004, p. 386) and .56 and .91 for the Italian version (Ragazzoni, Baiardi, Zotti, Anderson & West, 2002, p. 331). In the current study the Cronbach alpha coefficient ranged between .81 and .92. Therefore it can be concluded that the TCI was also reliable for the sample used in this study. A more detailed discussion of the reliability testing on the TCI for the present study is offered in Chapter 4.



**TABLE 3.3**  
**TEAM CLIMATE INVENTORY (TCI) STRUCTURE**

<b>Factor</b>	<b>Subordinate factor</b>	<b>Items</b>	<b>Item example</b>
<b>Participative safety</b>	Safety	2	"People feel understood and accepted by each other."
	Information Sharing	3	"We share information generally in the team rather than keeping it to ourselves."
	Interaction Frequency	4	"Members of the team meet frequently to talk both formally and informally."
	Influence	3	"Everyone's view is listened to, even if it is in a minority."
<b>Vision</b>	Sharedness	3	"To what extent do you think other team members agree to these objectives?"
	Attainability	2	"To what extent do you think these objectives are realistic and can be attained?"
	Perceived value	4	"How worthwhile do you think these objectives are to the organisation?"
	Clarity	2	"How clear are you about what your team objectives are?"
<b>Support for innovation</b>	Articulated Support	4	"People in this team are always searching for fresh new ways of looking at problems."
	Enacted Support	4	"Team members provide practical support for new ideas and their application."
<b>Task orientation</b>	Excellence	2	"Is there real concern among team members that the team should achieve the highest standards of performance?"
	Appraisal	3	"Do you and your colleagues monitor each other so as to maintain a higher standard of work?"
	Ideation	2	"Do members of the team build on each others ideas in order to achieve the best possible outcome?"
<b>Social Desirability</b>	Social Aspect	3	"People in the team never feel tense with one another."
	Task Aspect	3	"The team always functions to the best of its capability."

(Anderson & West, 1996, p. 58)

### **3.9 SUMMARY**

This chapter addressed the research methodology that was employed to achieve the objectives of this study. As a non-equivalent control-group design (quasi-experimental) was considered most appropriate for this investigation, special mention was made of the internal and external threats to validity and possible ways to manage these threats. An overview of the hypothesis, sample and measuring instrument was provided. Chapter 4 will present the results obtained from the statistical analysis as well as a discussion thereof.

## CHAPTER 4

### RESULTS AND DISCUSSION

#### 4.1 INTRODUCTION

The aim of this study is to determine the influence of a team development intervention (based on improvisational theatre exercises) on climate for work group innovation. This aim is accomplished by determining whether there are significant within-group and between-group differences on the Team Climate Inventory measures of an experimental group, after participation in an intervention (improvisational theatre), and a control group that did not participate in such an intervention.

In this chapter the issue of missing values is addressed, where after the reliability analyses, ANOVAs and Bonferroni post-hoc tests are presented. The presentation of the results, together with the discussion thereof, will serve to answer the research question posed for this study.

#### 4.2 MISSING VALUES

Missing values presented a minor problem that had to be addressed before the data analysis could be done. The numbers of respondents who failed to respond to any individual item for the pre-test and the post-test were three and one respectively. Tables 4.1 and 4.2 depict the distribution of missing values across items for the pre- and post-test.

**TABLE 4.1**  
**DISTRIBUTION OF MISSING VALUES FOR PRE-TEST**

Number of missing values	Number of items
0	21
1	16
2	5
3	2

**TABLE 4.2**  
**DISTRIBUTION OF MISSING VALUES FOR POST-TEST**

Number of missing values	Number of items
0	42
1	2

The classical treatment of missing values through list-wise deletion of cases would have resulted in a decrease of the sample size to 19. This treatment of missing values is only viable in large sample sizes (Brown & Kros, 2003). Therefore it was decided, after consultation with a statistician, to replace the missing values with item means. The replacement of missing values with item means is a commonly used method of handling missing values, as it is easy to implement and it provides all cases with complete data (Brown & Kros, 2003).

#### **4.3 RELIABILITY ANALYSIS**

Item analyses were performed on the five superordinate scales and the 15 subordinate scales of the measuring instrument for the pre-test and the post-test. Coefficient alpha values were calculated to determine whether the superordinate scales and the subordinate scales for the pre- and post-test were internally consistent. The summarised results of the item analyses for the pre- and post-test are depicted respectively in Tables 4.3 and 4.4.

The four superordinate scales (participation, vision, support for innovation and task orientation) reported satisfactorily high Cronbach alpha values ( $\alpha > .70$ ) for the pre- and post-test (Pallant, 2001). Most of the subordinate scales also reported satisfactory alpha values higher than .70. The only subordinate scales with poor alpha values are influence (for the pre- and post test), clarity (for the pre-test), ideation (for the pre-test), appraisal (for the pre-test) and excellence (for the pre- and post-test). However, Pallant (2001) reports that Cronbach alpha values are very sensitive to the number of items in a scale. For scales with fewer than 10 items, alpha values in the region of .50 are

frequently obtained. In such cases it is more suitable to report the mean inter-item correlation for the items. Briggs and Cheek (1986, p. 115) report that in such cases the optimal range for the inter-item correlation is between .20 and .40.

**TABLE 4.3**  
**RELIABILITY: PRE-TEST**

Scale	Alpha	Mean	Inter-item correlation	Number of items
<b>Participation</b>	<b>0.90</b>	<b>42.95</b>	<b>0.43</b>	<b>12</b>
Information sharing	0.76	10.97	0.53	3
Safety	0.88	6.94	0.80	2
Influence	0.67	10.81	0.42	3
Interaction frequency	0.84	14.23	0.58	4
<b>Support for innovation</b>	<b>0.92</b>	<b>26.96</b>	<b>0.62</b>	<b>8</b>
Articulated support	0.82	13.70	0.54	4
Enacted support	0.88	13.26	0.67	4
<b>Vision</b>	<b>0.92</b>	<b>56.64</b>	<b>0.52</b>	<b>11</b>
Clarity	0.53	9.75	0.36	2
Perceived value	0.86	22.42	0.64	4
Sharedness	0.80	14.36	0.58	3
Attainability	0.87	10.10	0.78	2
<b>Task orientation</b>	<b>0.81</b>	<b>33.21</b>	<b>0.40</b>	<b>7</b>
Excellence	0.54	9.42	0.37	2
Appraisal	0.68	13.86	0.44	3
Ideation	0.35	9.93	0.21	2

**TABLE 4.4**  
**RELIABILITY: POST-TEST**

Scale	Alpha	Mean	Inter-item correlation	Number of items
<b>Participation</b>	<b>0.89</b>	<b>44.68</b>	<b>0.42</b>	<b>12</b>
Information sharing	0.81	11.71	0.59	3
Safety	0.85	7.04	0.75	2
Influence	0.54	11.11	0.28	3
Interaction frequency	0.80	14.82	0.51	4
<b>Support for innovation</b>	<b>0.93</b>	<b>27.90</b>	<b>0.64</b>	<b>8</b>
Articulated support	0.85	13.89	0.60	4
Enacted support	0.89	14.0	0.68	4
<b>Vision</b>	<b>0.92</b>	<b>59.61</b>	<b>0.56</b>	<b>11</b>
Clarity	0.75	10.5	0.63	2
Perceived value	0.91	22.71	0.77	4
Sharedness	0.81	15.43	0.59	3
Attainability	0.91	10.96	0.84	2
<b>Task orientation</b>	<b>0.87</b>	<b>36.71</b>	<b>0.52</b>	<b>7</b>
Excellence	0.59	10.75	0.44	2
Appraisal	0.76	15.61	0.57	3
Ideation	0.73	10.36	0.62	2

It is important to mention here that a scale with a high alpha is likely to have a high inter-item correlation and therefore in such a case an inter-item correlation above .40 is not an indication of unreliability. All of the subordinate scales with poor alpha values consist of only two or three items. Therefore their inter-item correlation scores were subsequently considered. All of these scales had satisfactory inter-item correlations (0.2 – 0.4), with only influence (for the pre-test), appraisal (for the pre-test) and excellence (for the post-test) reporting inter-item correlations marginally above the optimal value of .40. This will be taken in account when analysing these scales' results. It was concluded that the measuring instrument was deemed reliable for the present study.

#### **4.4 ANALYSIS OF VARIANCE**

The influence of the intervention on climate for innovation in work groups was determined by performing a repeated measures ANOVA on the data from the pre-test and post-test for the experimental and control group. Repeated measures ANOVAs were performed on climate for innovation as a whole as well as on the four superordinate scales; participative safety, vision, support for innovation and task orientation. Lastly repeated measures ANOVAs were also performed on each of the subordinate scales.

For clarity and to eliminate repetition, the time effect, group effect and time/group effect used in the discussion of the results is explained here (refer to Figure 3.2).

**Time effect:** A comparison of the means for the pre-tests (T1 and T3) versus the post-test (T2 and T4) for the experimental and control groups combined.

**Group effect:** A comparison of the means between the experimental (T1 and T2) and control group (T3 and T4) for the pre-test and post-test combined.

**Time/Group interaction effect:** To test whether the difference between the pre-test and post-test are the same for the experimental and control groups.

For the purposes of this study, a significant time/group interaction effect is the most important result indicating that there is a significant difference between the pre-test and post-test scores for the experimental and control groups. If the time/group interaction effect is insignificant, the time effect should be investigated.

The results from all the repeated measures ANOVAs will be presented and discussed in the following sections.

#### 4.4.1 Climate for work group innovation

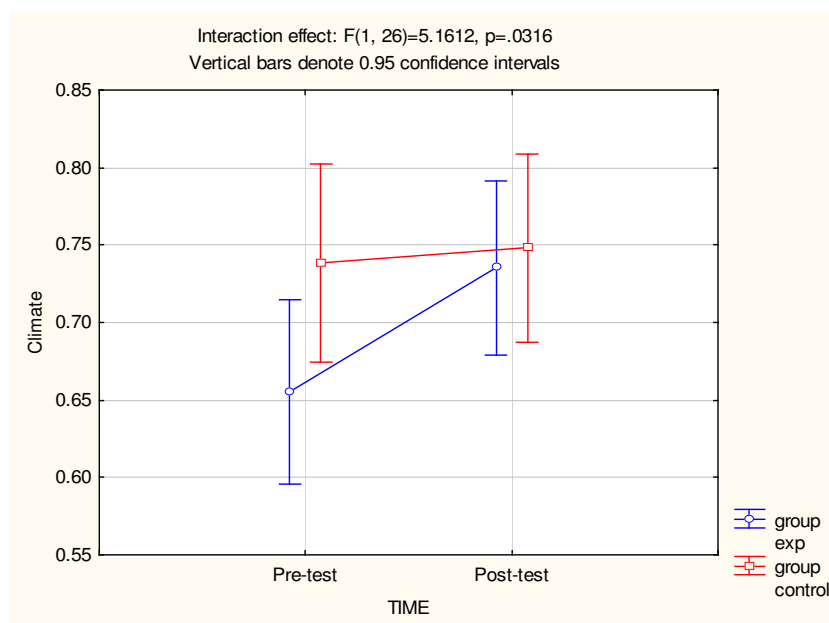
The mean scores for the four superordinate scales were converted to scores between 0 and 1 before the mean score for climate was calculated, since the superordinate scales differed in range. The mean score for climate was also converted to a score between 0 and 1 by dividing it by four in order to facilitate interpretation. The results derived from the repeated measures ANOVA for climate are depicted in Table 4.5.

**TABLE 4.5**  
**ANOVA RESULTS: CLIMATE**

<b>Effect</b>	<b>p</b>	<b>F</b>
Group	0.22	1.57
Time	0.007**	8.35
Time/Group	0.03*	5.16

\*  $p \leq .05$  \*\*  $p \leq .01$

The results from the repeated measures ANOVA indicate a significant time/group interaction at the 5% confidence level ( $p=.03$ ) as well as a significant time effect ( $p=.007$ ). The time/group interaction is graphically depicted in Figure 4.1, indicating that the one group's climate score changed significantly from the pre-test to the post-test, in comparison with the other group.



**Figure 4.1: Time/group interaction: climate**

The results from the Bonferroni test (refer to Table 4.6) indicate that there was a positive difference between the experimental group's pre-test and post-test means (0.66 to 0.74) at the 1% significance level ( $p=.005$ ). This is in contrast to the difference between the control group's pre- and post-test means that showed no significance (0.74 to 0.75;  $p=1$ ).

**TABLE 4.6**

**BONFERRONI RESULTS: CLIMATE**

Cell no.	Group	Time Mean	(1)	(2)	(3)	(4)
			0.66	0.74	0.74	0.75
1	Exp	Pre-test (1)		0.005**	0.31	0.19
2	Exp	Post-test (2)			1	1
3	Control	Pre-test (3)				1
4	Control	Post-test (4)				

\*  $p \leq .05$  \*\*  $p \leq .01$

These results indicate that the intervention had a positive influence on climate for work group innovation. However, the simple analysis of pre-test and post-test gain scores is normally inappropriate for non-equivalent control group designs, as the internal threats to validity could have resulted in a type I error (Cook & Campbell, 1979).



All the threats to validity specific to the non-equivalent control group design stem from the selection difference between the groups (Reichardt, 1979). The Bonferroni results however indicate that there was no significant difference between the experimental and control group's means for the pre-test ( $p=0.31$ ). Therefore, the two groups could be regarded as equivalent and the influence of threats to validity should be limited. Notwithstanding the equivalence of the groups, the possible influences of the threats to validity of this finding will be discussed below.

There are four threats to internal validity that are not controlled for by the non-equivalent control group design (Cook & Campbell, 1979). The first is the interaction between selection and maturation. Since the experimental group scored lower on the pre-test than the control group, the cumulative pattern of selection maturation (a subject who scores lower on a pre-test is expected to improve at a slower rate) is ruled out (Cook & Campbell, 1979). The results therefore imply that the intervention probably had an effect despite the lower pre-test/post-test change expected among the respondents in the experimental group.

A second threat to internal validity is instrumentation. The very low pre-test/post-test change of the control group could have been caused by a scaling problem such as a ceiling or floor effect (when a mean score approaches one end of a scale in the pre-test, not allowing a margin for improvement in the post-test) (Cook & Campbell, 1979). Since the control group's pre-test mean is satisfactorily located on the scale (0.74 on a scale from 0 to 1), the possibility of a ceiling or floor effect is dismissed.

A third threat to internal validity is statistical regression. Statistical regression occurs when participants are selected as a group because of their high or low scores, resulting in the post-test scores regressing to the middle of the distribution (Goldstein, 1993). This threat to validity could however not have caused the produced outcome, since the experimental group had not been selected on the bases of lower scores.

The last threat to internal validity relates to the interaction between selection and history. The fact that the experimental and the control group came from the same department, where they were exposed to the same influences, minimised the possibility of a local history effect. Furthermore there were no other events brought to the attention of the researcher that could have resulted in a local history effect.

It is therefore concluded with reasonable confidence that the significant positive change in climate for the experimental group was due to the intervention. Null hypothesis 1 is therefore rejected and thereby objective 5 of the study is achieved. However, since the size and direction of some biases will always be unknown in social science studies where randomisation is not present, the conclusion should be regarded as tentative (Cook & Campbell, 1979).

These findings support the assumptions of academia and practitioners who suggest that the principles of improvisational theatre can add value to organisations (Crossan, 1997; 1998; Crossan, et al., 2005; Gesell, 1997; Gibb, 2004; Kamoche et al., 2003; Koppett, 2001; Lowe, 2000; Moshavi, 2001; Poynton, 2007; Vera & Crossan, 2004. 2005). Furthermore support is indicated for findings that suggest that improvisation has a positive effect on team innovation when combined with team and contextual moderating factors, and that improvisation skills can be learned by organisational members through training (Vera & Crossan, 2005). The notion that exercises used by improvisational actors to develop their skill can be adopted by business as a means to experience and enhance individual and organizational capacity to be innovative is also maintained (Crossan, 1997).

The influence of the intervention on each of the four superordinate and 15 subordinate factors of climate for work group innovation will be discussed. A summary and discussion of the findings are presented at the end of each of the four superordinate factor sections in order to eliminate repetition.

#### 4.4.2 Participative safety

Table 4.7 illustrates that there was a significant time/group interaction effect at the 5% confidence level ( $p=.05$ ). The time/group interaction is graphically depicted in Figure 4.2. The one group's participative safety scores therefore differed significantly from the pre-test to the post-test, compared with the other group.

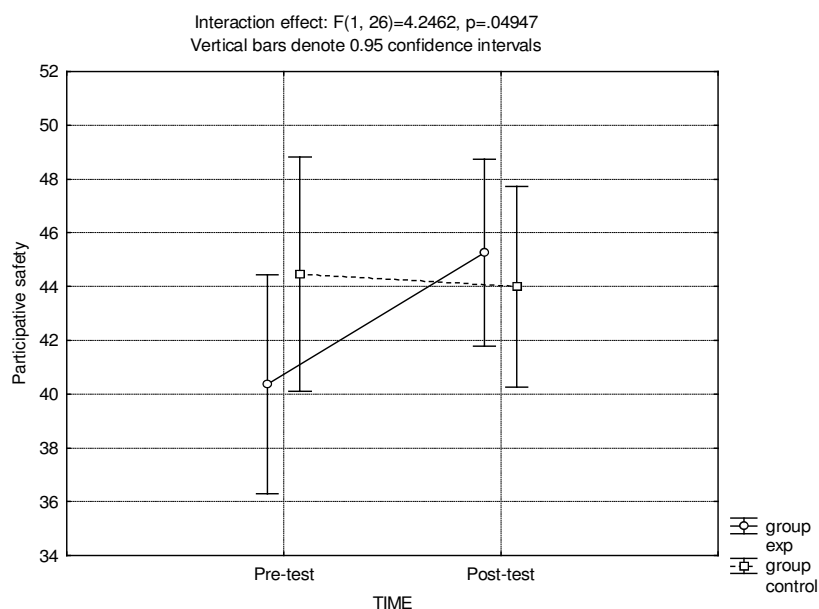
**TABLE 4.7**

**ANOVA RESULTS: PARTICIPATIVE SAFETY**

Effect	p	F
Group	0.55	0.36
Time	0.10	2.91
Time/Group	0.05*	4.25

\*  $p \leq .05$  \*\*  $p \leq .01$

The Bonferroni results (refer to Table 4.8) indicate that the experimental group's score had improved from the pre-test to the post-test. This improvement was only marginally above the 5% level of confidence ( $p=.06$ ). The control group's score did not show any significant difference ( $p=1$ ).



**Figure 4.2: Time/group interaction: participative safety**

These results could have been caused by internal threats to validity such as selection maturation and/or instrumentation (ceiling effect). However, since the experimental group scored lower on the pre-test than the control group, the cumulative pattern of selection maturation is dismissed

**TABLE 4.8**  
**BONFERRONI RESULTS: PARTICIPATIVE SAFETY**

Cell no.	Group	Time Mean	(1)	(2)	(3)	(4)
			40.36	45.27	44.46	44
1	Exp	Pre-test (1)		0.06	0.82	1
2	Exp	Post-test (2)			1	1
3	Control	Pre-test (3)				1
4	Control	Post-test (4)				

\*  $p \leq .05$  \*\*  $p \leq .01$

A ceiling effect is also ruled out, since the mean for the control group is 44.5 (on a scale from 15 to 60). It is therefore postulated that the positive change in the experimental group's participative safety score was not caused by internal threats to validity, but due to the intervention. Null hypothesis 2 is hence rejected.

Repeated measures ANOVAs were further performed on the subordinate scales of participative safety, namely safety, information sharing, interaction frequency and influence. The results and a discussion thereof follows.

#### 4.4.2.1 Safety

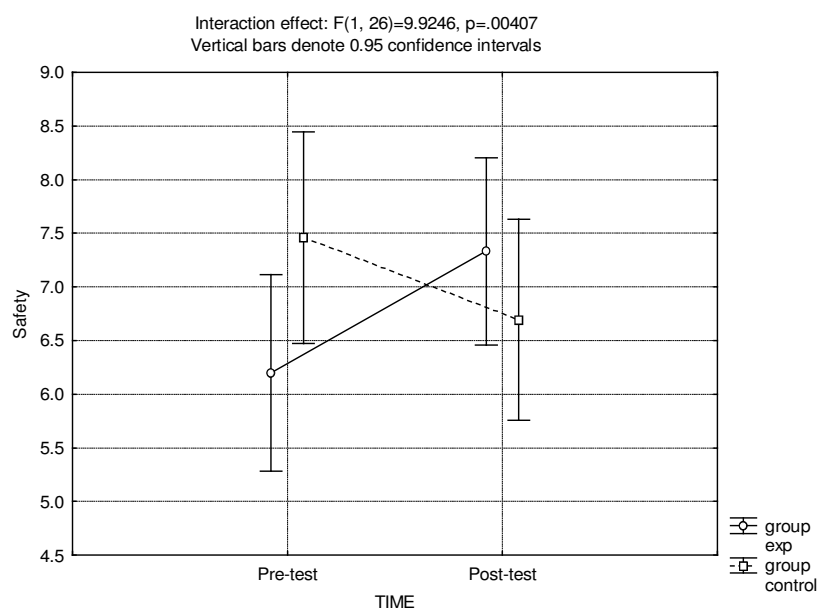
Table 4.9 indicates a significant time/group interaction at the 1% level of confidence ( $p=.004$ ). Figure 4.3 graphically illustrates the time/group interaction.

**TABLE 4.9**  
**ANOVA RESULTS: SAFETY**

Effect	p	F
Group	0.59	0.30
Time	0.55	0.36
Time/Group	0.004**	9.92

\*  $p \leq .05$  \*\*  $p \leq .01$

The Bonferroni test results (refer to Table 4.10) and Figure 4.3 illustrate that the experimental group's safety score improved from the pre-test to the post-test, whereas the control group's safety score decreased, confirming the significant time/group interaction effect. The Bonferroni test results indicate that none of the groups' score changes are significant at the 5% level. However the significance value of the experimental group's score is marginally higher than .05 ( $p=.06$ ) whereas the control group's change is insignificant ( $p=.56$ ).



**Figure 4.3: Time/group interaction: safety**

The control group's insignificant change could not have resulted because of a ceiling effect, since the control group scored 7.5 (on a scale from 2 to 10). The cumulative pattern of selection maturation could not have been the reason for the experimental group's progress from the pre-test to the post-test, since the experimental group had a lower score than the control group in the pre-test. Therefore, the possibility that the significant time/group interaction occurred because of internal threats to validity is dismissed. The improvement of the experimental group's safety score can therefore be regarded as resulting from the intervention. Thus, null hypothesis 3 is rejected.

**TABLE 4.10**  
**BONFERRONI RESULTS: SAFETY**

Cell no.	Group	Time Mean	(1) 6.20	(2) 7.33	(3) 7.46	(4) 6.69
1	Exp	Pre-test (1)		0.06	0.33	1
2	Exp	Post-test (2)			1	1
3	Control	Pre-test (3)				0.56
4	Control	Post-test (4)				

\*  $p \leq .05$  \*\*  $p \leq .01$

#### 4.4.2.2 Information sharing

The results in Table 4.11 indicate a significant time/group interaction effect at the 5% level of significance ( $p=.03$ ). The time/group interaction is graphically illustrated in Figure 4.4.

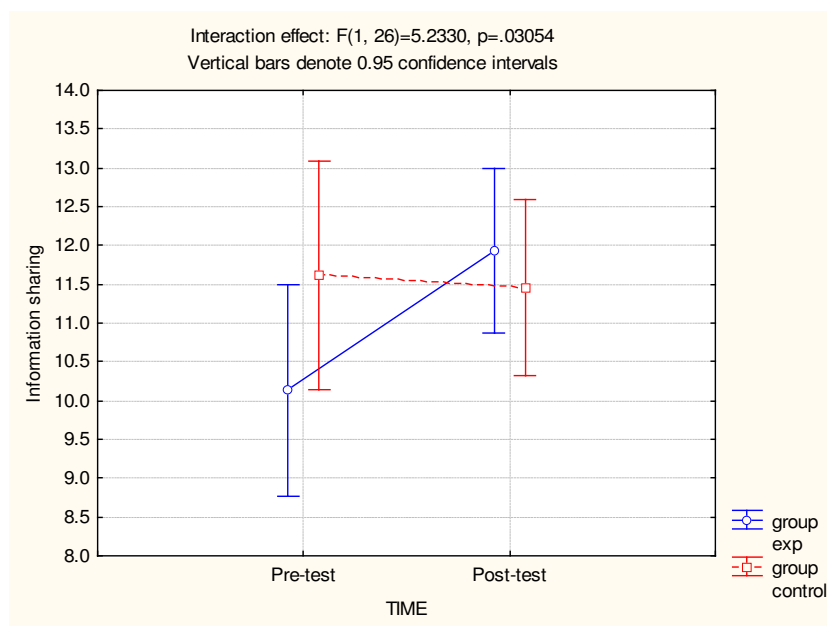
**TABLE 4.11**  
**ANOVA RESULTS: INFORMATION SHARING**

Effect	p	F
Group	0.51	0.44
Time	0.06	3.71
Time/Group	0.03*	5.23

\*  $p \leq .05$  \*\*  $p \leq .01$

The Bonferroni test results (refer to Table 4.12) point out that the experimental group's information sharing score improved significantly at the 5% level ( $p=.03$ ), while no significant change for the control group ( $p=1$ ) was noted. These results contribute to the significant time/group interaction.

The fact that the control group had a higher score on the pre-test rules out the possibility that the experimental group's improved score had been the result of the cumulative effect of selection maturation. The control group's small improvement could not have been caused by an instrumentation issue (ceiling or flooring effect) with a pre-test score of 11.6 on a scale of 3 to 15. Thus the possibility of a type I error is ruled out.



**Figure 4.4: Time/group interaction: information sharing**

The assumption is therefore made that the significant improvement of the experimental group's information sharing score resulted because of the intervention. Null hypothesis 4 is consequently rejected.

**TABLE 4.12**

**BONFERRONI RESULTS: INFORMATION SHARING**

Cell no.	Group	Time Mean	(1)	(2)	(3)	(4)
1	Exp	Pre-test (1)	10.13	11.93	11.62	11.46
2	Exp	Post-test (2)		0.03*	0.57	0.81
3	Control	Pre-test (3)			1	1
4	Control	Post-test (4)				1

\*  $p \leq .05$  \*\*  $p \leq .01$

#### 4.4.2.3 Interaction frequency

The results from the repeated measures ANOVA test indicate that there was no significant group, time or time/group effect for interaction frequency at the 5% level (refer to Table 4.13). None of the two groups' interaction frequency scores improved significantly from the pre-test to the post-test, compared with the other group. The conclusion is made that Interaction frequency was not

positively impacted by the intervention and therefore null hypothesis 5 is accepted.

**TABLE 4.13**

**ANOVA RESULTS: INTERACTION FREQUENCY**

<b>Effect</b>	<b>p</b>	<b>F</b>
Group	0.63	0.23
Time	0.16	2.11
Time/Group	0.32	1.03

\*  $p \leq .05$  \*\*  $p \leq .01$

#### 4.4.2.4 Influence

The results for the repeated measures ANOVA for influence are depicted in Table 4.14.

**TABLE 4.14**

**ANOVA RESULTS: INFLUENCE**

<b>Effect</b>	<b>p</b>	<b>F</b>
Group	0.13	2.51
Time	0.29	1.16
Time/Group	0.61	0.27

\*  $p \leq .05$  \*\*  $p \leq .01$

The ANOVA results show that there were no significant effects at the 5% level. This result could have been influenced by the low coefficient alpha values reported for this particular scale (refer to Tables 4.3 and 4.4). No strong conclusions can be drawn from any of the ANOVA results; therefore null hypothesis 6 is accepted.

#### 4.4.2.5 Discussion and summary of results: participative safety (safety, information sharing, interaction frequency, influence)

When the improvisational principle of agreement is applied it creates an atmosphere in which members will feel psychologically safe to participate. They know that sharing their ideas will not lead to an attack, censorship, ridicule or penalisation (West, 1990; Vera & Crossan, 2005; Izzo, 1997). Therefore, if they apply the principle of agreement it will not necessarily



have an influence on the frequency of their interaction and the amount of influence that takes place, but the members will feel safer to participate and therefore more information will be shared when they interact. The principle of listening and awareness also relates mostly to information sharing, since it helps individuals to communicate more effectively. This could explain why the intervention only had an impact on safety and information sharing and not on interaction frequency and influence.

To summarise, from the results of the repeated measures ANOVAs for participative safety and its subordinate factors, it is concluded that participative safety as superordinate factor was positively impacted by the intervention and, therefore objective 6 is achieved. However this positive influence only resulted because of the intervention's influence on information sharing and safety. The intervention had no impact on influence and interaction frequency as subordinate factors.

#### 4.4.3 Vision

The ANOVA results indicate a significant time/group interaction effect at the 5% level ( $p=.046$ ) as well as a significant group effect at the 5% level of significance for vision ( $p=.04$ ) (refer to Table 4.15).

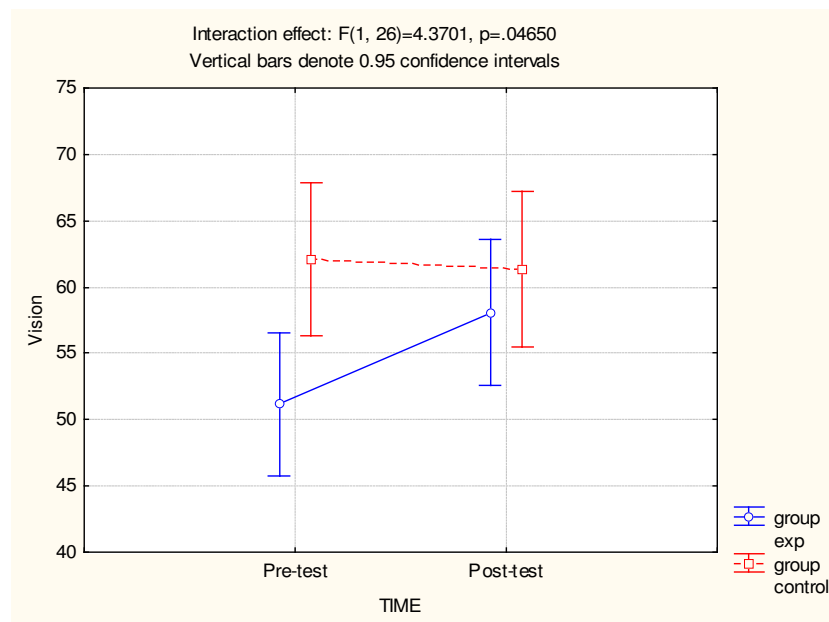
**TABLE 4.15**  
**ANOVA RESULTS: VISION**

<b>Effect</b>	<b>P</b>	<b>F</b>
Group	0.047*	4.33
Time	0.10	2.93
Time/Group	0.046*	4.37

\*  $p \leq .05$  \*\*  $p \leq .01$

The time/group interaction is graphically illustrated in Figure 4.5. The Bonferroni test results (refer to Table 4.16) indicate that there was a significant difference between the pre-test scores of the two groups at the 5% level of confidence ( $p=.05$ ), confirming the non-equivalence of the two groups for vision. There was no significant improvement in the experimental group's

pre-test to post-test scores. The difference is however marginally higher than .05 ( $p=.058$ ). The control group's score did not change significantly from the pre-test to the post-test ( $p=1$ ).



**Figure 4.5: Time/group interaction: vision**

The non-equivalence of the two groups does not invalidate the results, since the non-equivalent design assumes that the two groups will be different (but the researcher should strive for equivalence). It does however make the results more susceptible to internal threats to validity (such as selection maturation and instrumentation) than when the groups' scores on the pre-test are not different (Goldstein, 1993) as in the results for climate and participative safety.

**TABLE 4.16**

**BONFERRONI RESULTS: VISION**

Cell no.	Group	Time Mean	(1) 51.17	(2) 58.07	(3) 62.08	(4) 61.39
1	Exp	Pre-test (1)		0.058	0.05*	0.07
2	Exp	Post-test (2)			1	1
3	Control	Pre-test (3)				1
4	Control	Post-test (4)				

\*  $p \leq .05$  \*\*  $p \leq .01$

If the experimental group scored higher in the pre-test than the control group the experimental group's improved score could have been the result of the cumulative effect of selection maturation (a respondent who scores higher in the pre-test is expected to improve at a faster rate). This could however not be responsible for the experimental group's improved post-test score, since the experimental group had the lower score in the pre-test. The results therefore imply that the intervention probably had a positive influence on the experimental group despite the lower pre-test/post-test change expected. Further, a ceiling effect could not have been the cause of the low pre-test/post-test change of the control group, since the control group's pre-test mean was low enough (62.08 on a scale from 11–77) to allow an increase in the post-test.

It is therefore argued that the improvement of the experimental group's vision score could be attributed to their participation in the intervention. Consequently null hypothesis 7 is rejected.

Repeated measures ANOVAs were also conducted on the four subordinate scales of vision (sharedness, attainability, perceived value and clarity).

#### 4.4.3.1 Sharedness

Table 4.17 depicts a significant time/group interaction effect at the 5% level ( $p=0.04$ ). The time/group interaction is graphically illustrated in Figure 4.6.

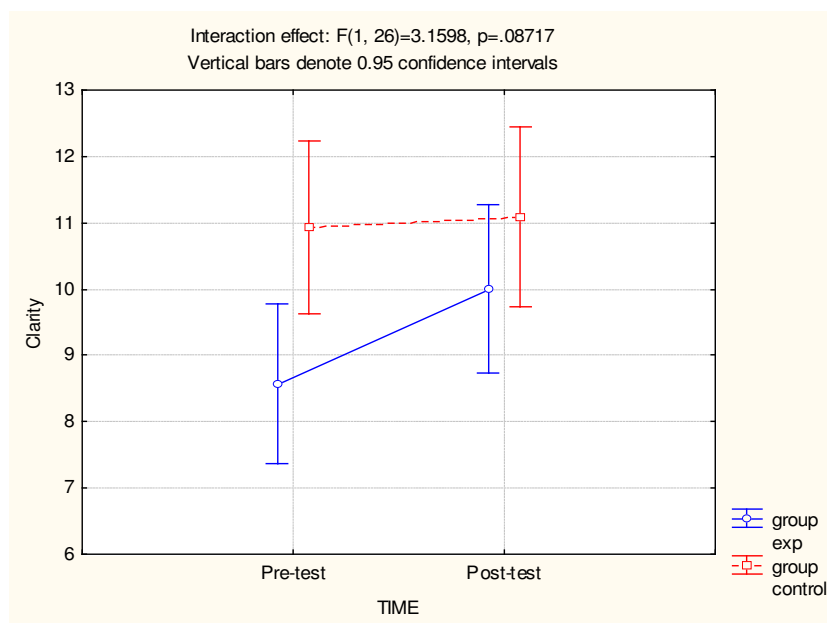
**TABLE 4.17**

**ANOVA RESULTS: SHAREDNESS**

<b>Effect</b>	<b>p</b>	<b>F</b>
Group	0.22	1.56
Time	0.07	3.48
Time/Group	0.04*	4.58

\*  $p \leq .05$  \*\*  $p \leq .01$

The Bonferroni test results (refer to Table 4.18) indicate that the experimental group's score improved significantly at the 5% level ( $p=.04$ ) from the pre-test to the post-test. The control group's score did not change ( $p=1$ ).



**Figure 4.6: Time/group interaction: sharedness**

The significant time/group interaction could not have been the result of the cumulative effect of selection maturation or the ceiling or flooring effect. The possibility of a type I error is therefore ruled out.

**TABLE 4.18**

**BONFERRONI RESULTS: SHAREDNESS**

Cell no.	Group	Time Mean	(1)	(2)	(3)	(4)
			13.09	15.33	15.69	15.54
1	Exp	Pre-test (1)		0.04*	0.27	0.35
2	Exp	Post-test (2)			1	1
3	Control	Pre-test (3)				1
4	Control	Post-test (4)				

\*  $p \leq .05$  \*\*  $p \leq .01$

It can therefore be argued with relative confidence that the intervention had a positive influence on sharedness and thus null hypothesis 8 is rejected.

#### 4.4.3.2 Attainability

The repeated measures ANOVA results for attainability are depicted in Table 4.19.

**TABLE 4.19**  
**ANOVA RESULTS: ATTAINABILITY**

<b>Effect</b>	<b>p</b>	<b>F</b>
Group	0.003**	10.47
Time	0.09	3.14
Time/Group	0.64	0.22

\*  $p \leq .05$  \*\*  $p \leq .01$

The data indicate that there was a significant group effect at the 1% level of confidence. There was no significant time or time/group interaction effect hence no Bonferroni analysis was done. It is concluded that the intervention did not have a positive influence on attainability and therefore null hypothesis 9 is accepted.

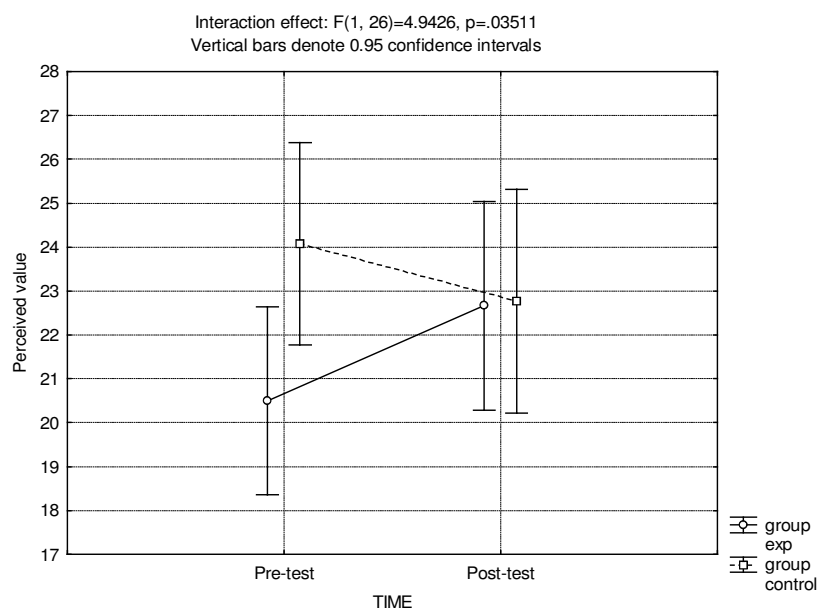
#### 4.4.3.3 Perceived value

The results for perceived value (refer to Table 4.20) indicate a significant time/group interaction effect at the 5% level ( $p=.04$ ). This interaction is graphically illustrated in Figure 4.7.

**TABLE 4.20**  
**ANOVA RESULTS: PERCEIVED VALUE**

<b>Effect</b>	<b>p</b>	<b>F</b>
Group	0.20	1.69
Time	0.59	0.10
Time/Group	0.04*	4.94

\*  $p \leq .05$  \*\*  $p \leq .01$



**Figure 4.7: Time/group interaction: perceived value**

The Bonferroni test results (refer to Table 4.21) indicate that the experimental group's score improved and that the control group's score decreased from the pre-test to the post-test. The changes in the experimental and control group's scores were however not significant at the 5% level ( $p=.31$  and  $p=1$  respectively). One can therefore not draw any strong conclusions from these results even though the time/group interaction was significant. It is therefore argued that the intervention did not have a positive effect on perceived value, and therefore null hypothesis 10 is accepted.

**TABLE 4.21**

**BONFERRONI RESULTS: PERCEIVED VALUE**

Cell no.	Group	Time	(1)	(2)	(3)	(4)
		<b>Mean</b>	20.51	22.67	24.07	22.77
1	Exp	Pre-test (1)		0.31	0.20	1
2	Exp	Post-test (2)			1	1
3	Control	Pre-test (3)				1
4	Control	Post-test (4)				

\*  $p \leq .05$  \*\*  $p \leq .01$

#### 4.4.3.4 Clarity

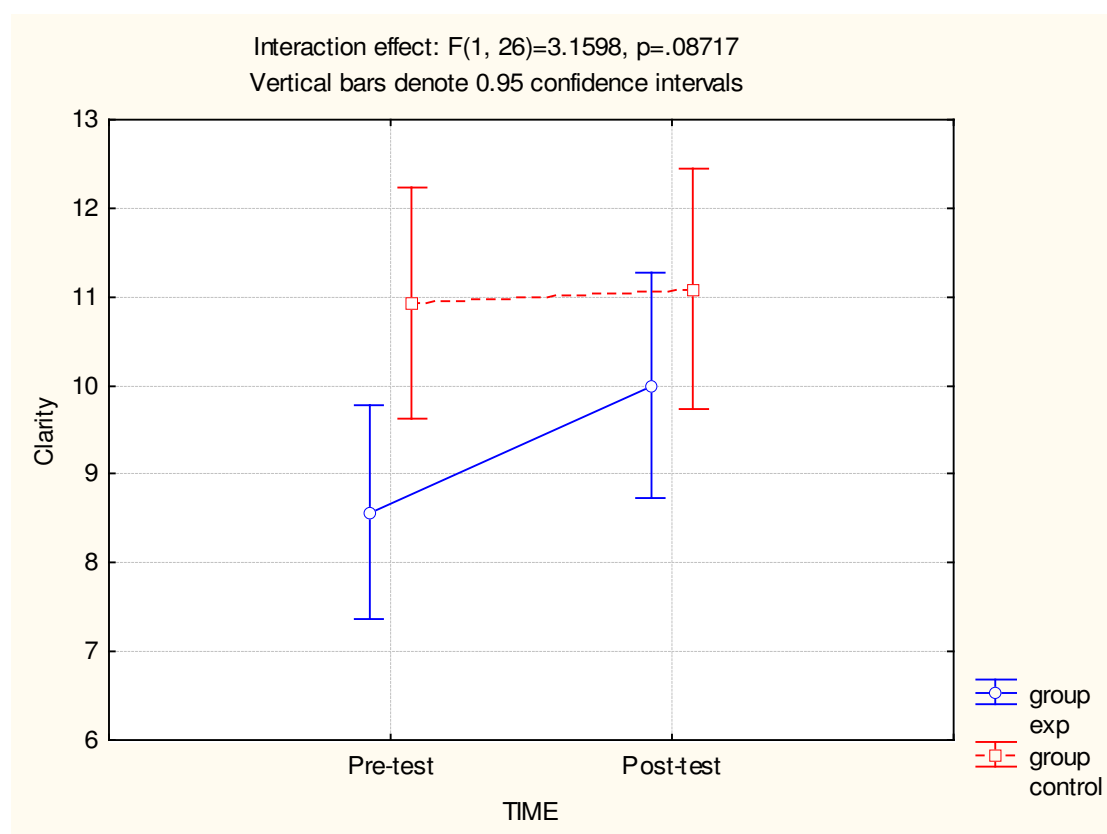
Table 4.22 illustrates the repeated measures ANOVA results for clarity.

**Table 4.22**  
**ANOVA RESULTS: CLARITY**

Effect	p	F
Group	0.04*	4.53
Time	0.04*	4.94
Time/Group	0.09	3.16

\*  $p \leq 0.05$  \*\*  $p \leq 0.01$

The ANOVA results indicate that there was no statistically significant time/group interaction effect at the 5% level ( $p=.09$ ). Significant time and group effects for clarity at the 5% level ( $p=.04$ ), were however indicated (refer to Figure 4.8).



**Figure 4.8: Time/group interaction: clarity**

One cannot draw any definite conclusions from the ANOVA results, since the time/group interaction effect was insignificant. The Bonferroni results (refer to Table 4.23) do however show that the experimental group's scores improved significantly at the 5% level, from the pre-test to the post-test ( $p=.04$ ) and that the control group's change was not significant ( $p=1$ ).

**TABLE 4.23**

**BONFERRONI RESULTS: CLARITY**

Cell no.	Group	Time Mean	(1) 8.6	(2) 10	(3) 10.90	(4) 11.1
1	Exp	Pre-test (1)		0.04*	0.07	0.04*
2	Exp	Post-test (2)			1	1
3	Control	Pre-test (3)				1
4	Control	Post-test (4)				

\*  $p \leq .05$  \*\*  $p \leq .01$

The control group's lack of change from the pre-test to the post-test could not have been the consequence of a ceiling effect (10.9 on a scale from 2 to 14). Furthermore, the experimental group's improved score could not have been the consequence of the cumulative effect of selection maturation (the experimental group scored lower on the pre-test than the control group).

The Bonferroni results imply that the intervention possibly had a positive influence on clarity. This finding cannot be stated with confidence as it is not supported by the time/group interaction. Therefore null hypothesis 11 is accepted.

**4.4.3.5 Discussion and summary of results: vision (sharedness, attainability, perceived value, clarity)**

In summary it can be concluded from the results for vision and its subordinate factors, that vision was positively influenced by the intervention, however the influence was weak as only a significant influence on sharedness could be reported. The intervention did not have a significant influence on the other subordinate factors, namely perceived value, attainability and clarity. With this objective 7 of this study is accomplished.



The objective of the exercises that focused on vision in the intervention, namely *fold the blanket* and *story visioning* (refer to Appendix A), was specifically developed to create a shared reality and a common vision through team agreement (Gesell, 1997). This explains the significant influence of the intervention on sharedness, since this factor refers to the level of general acceptance of the vision by individuals within a team (Anderson & West, 1998; Lowen & Loo, 2004). Clarity could also have been influenced by *story visioning*, since this exercise utilises the story spine to help participants to develop clear attainable steps of how a vision can be achieved (Koppett, 2001). It was anticipated that *story visioning* would have a positive influence on attainability as well, however the results indicate otherwise.

#### 4.4.4 Support for innovation

The results of the ANOVA analysis for support for innovation are depicted in Table 4.24.

**TABLE 4.24**

**ANOVA RESULTS: SUPPORT FOR INNOVATION**

<b>Effect</b>	<b>p</b>	<b>F</b>
Group	0.36	0.89
Time	0.12	2.53
Time/Group	0.88	0.02

\*  $p \leq .05$  \*\*  $p \leq .01$

The results from the repeated measures ANOVA indicate that there was no significant group, time or time/group effect for support for innovation at the 5% level. Support for innovation was therefore not positively influenced by the intervention. Null hypothesis 12 is consequently accepted.

##### 4.4.4.1 Articulated support and enacted support

Repeated measures ANOVA test data for the two subordinate factors of support for innovation (articulated support and enacted support) did not

indicate a time, group or time/group effect at the 5% level of significance either. Null hypotheses 12 and 13 were therefore also accepted.

#### **4.4.4.2 Discussion and summary of results: support for innovation (articulated support and enacted support)**

Objective 8 of this study was to determine whether the intervention had a positive influence on support for innovation. It can be concluded that the intervention had no influence on support for innovation.

One possible reason for this result could be the lack of managerial participation in the intervention. According to West (1990) those in positions of authority often have more influence on norms than subordinates; therefore group leaders are likely to be more influential in supporting group innovation. Therefore the absence of the group manager could have impacted on the support for innovation, and no subsequent significant improvement from the pre-test to the post-test could be attained.

However, it could be argued that the manager influences all the other factors of an innovative climate, and therefore those factors should also not have changed significantly after the intervention. It is however put forward here that support for innovation is much more likely to be influenced by leadership than the other three factors are, although this notion could not be substantiated from the available literature. West et al. (2003) posits that it has not been explored sufficiently whether and how leadership impacts team innovation,. However, in the model of climate for work group innovation, West (1990) emphasises the importance of leadership for support for innovation more than for the other factors.

#### **4.4.5 Task orientation**

The ANOVA analysis depicts a significant time/group interaction effect at the 5% level ( $p=.02$ ), as well as a significant time effect at the 1% level ( $p=.001$ ) . (refer to Table 4.25)

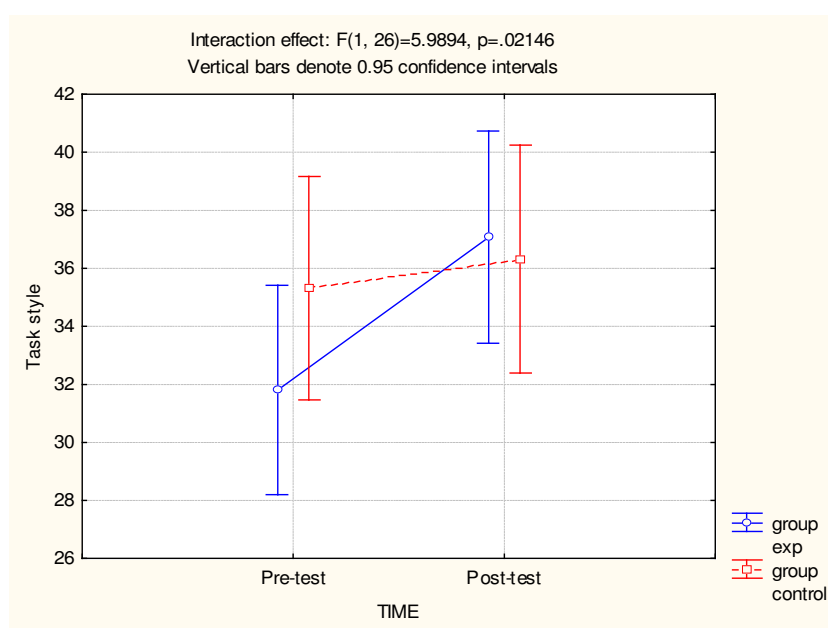
TABLE 4.25

## ANOVA RESULTS: TASK ORIENTATION

Effect	p	F
Group	0.58	0.32
Time	0.001**	12.92
Time/Group	0.02*	5.99

\*  $p \leq .05$  \*\*  $p \leq .01$

Refer to Figure 4.9 for a graphic illustration of the time/group interaction. The results from the Bonferroni test are indicated in Table 4.26.



**Figure 4.9: Time/group interaction: task orientation**

The Bonferroni analysis indicates that the experimental group's task orientation score improved significantly at the 1% level from the pre-test to the post-test ( $p=.001$ ). The control group's mean scores did not change significantly from the pre-test to the post-test. These results confirm the significant time/group interaction.

**TABLE 4.26**  
**BONFERRONI RESULTS: TASK ORIENTATION**

Cell no.	Group	Time Mean	(1) 31.8	(2) 37.07	(3) 35.31	(4) 36.31
1	Exp	Pre-test (1)		0.001**	1	0.54
2	Exp	Post-test (2)			1	1
3	Control	Pre-test (3)				1
4	Control	Post-test (4)				

\*  $p \leq .05$  \*\*  $p \leq .01$

The fact that the control group's mean score was higher in the pre-test, rules out the possibility that the experimental group's score improved because of the cumulative effect of selection maturation. Furthermore, the control group's insignificant change from the pre-test to the post-test could not have resulted because of a ceiling or flooring effect (35.3 on a scale from 7 to 49). It is therefore concluded with reasonable confidence that the intervention had a positive influence on task orientation, resulting in the rejection of null hypothesis 15.

Following is a presentation and discussion of the results for the three subordinate factors of task orientation, namely excellence, appraisal and ideation.

#### **4.4.5.1 Excellence**

The ANOVA results for excellence (refer to Table 4.27) illustrate that there was no significant time/group interaction effect ( $p=.27$ ). However a significant time effect at the 1% level ( $p=.003$ ) is noted. The measurement error of this particular scale (refer to Tables 4.3 and 4.4 for reliability results) could have contributed to this insignificant result. However, it is argued that this result is caused by of a lack of influence of the intervention on excellence, and therefore null hypothesis 16 is accepted.

**TABLE 4.27**  
**ANOVA RESULTS: EXCELLENCE**

<b>Effect</b>	<b>p</b>	<b>F</b>
Group	0.31	1.09
Time	0.003**	10.42
Time/Group	0.27	1.29

\*  $p \leq .05$  \*\*  $p \leq .01$

#### 4.4.5.2 Appraisal

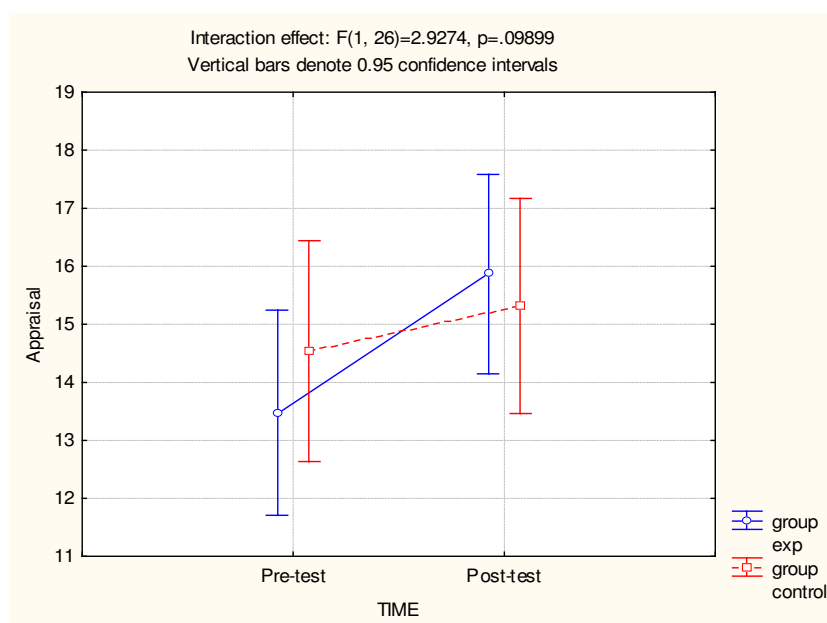
The ANOVA results for appraisal are shown in Table 4.28. There is no significant time/group interaction effect ( $p=.10$ ). The results indicate a significant time effect at the 1% level ( $p=.003$ ). The time/group interaction does however show a trend, since it is significant at the 10% level. The time/group interaction is graphically shown in Figure 4.10.

**TABLE 4.28**  
**ANOVA RESULTS: APPRAISAL**

<b>Effect</b>	<b>p</b>	<b>F</b>
Group	0.83	0.05
Time	0.003**	11.07
Time/Group	0.10	2.93

\*  $p \leq 0.05$  \*\*  $p \leq 0.01$

The Bonferroni test results (refer to Table 4.29) indicate that both groups' scores improved from the pre-test to the post-test, confirming that the time/group interaction only shows a trend. The Bonferroni analysis however indicates that the experimental group's score had improved significantly at the 1% level ( $p=.006$ ), whereas the control group's score did not indicate a statistically significant change ( $p=1$ ).



**Figure 4.10: Time/group interaction: appraisal**

Based on the Bonferroni results one could argue that the experimental group's improvement was due to the intervention. The cumulative effect of selection maturation as well as the ceiling or flooring effect can be ruled out. It is therefore concluded that the intervention could have been responsible for the positive change in the experimental group's appraisal score and therefore null hypothesis 17 is rejected.

**TABLE 4.29**

**BONFERRONI RESULTS: APPRAISAL**

Cell no.	Group	Time Mean	(1)	(2)	(3)	(4)
			13.50	15.86	14.54	15.31
1	Exp	Pre-test (1)		0.006**	1	0.90
2	Exp	Post-test (2)			1	1
3	Control	Pre-test (3)				1
4	Control	Post-test (4)				

\*  $p \leq .05$  \*\*  $p \leq .01$

#### 4.4.5.3 Ideation

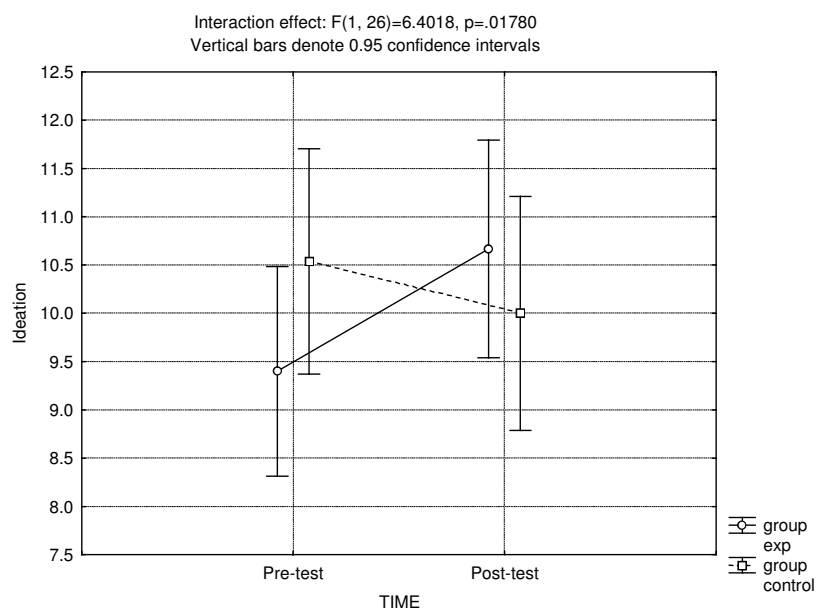
The ANOVA results (refer to Table 4.30) indicate a significant time/group interaction effect at the 5% level ( $p=.02$ ) (refer to Figure 4.11 for a graphic illustration). The results from the Bonferroni test are shown in Table 4.31.

**TABLE 4.30**  
**ANOVA RESULTS: IDEATION**

Effect	p	F
Group	0.74	0.11
Time	0.32	1.04
Time/Group	0.02*	6.40

\*  $p \leq 0.05$  \*\*  $p \leq 0.01$

The Bonferroni test-results indicate that the experimental group's ideation score improved slightly from the pre-test to the post-test and that the control group's score dropped marginally. This confirms the significant time/group interaction. The experimental group's improvement is however not statistically significant at the 5% level. It is however significant at the 10% level, indicative of a trend ( $p=0.09$ ). The control group's decline is however not statistically significant ( $p=1$ ).



**Figure 4.11 Time/group interaction: ideation**

The significant time/group effect could not have resulted because of internal threats to validity (ceiling or flooring effect as well as the cumulative effect of selection maturation). The possibility of a type I error is thus dismissed. It can therefore be put forward that the intervention had a slight positive influence on ideation. Null hypothesis 18 is consequently rejected.

**TABLE 4.31**  
**BONFERRONI RESULTS: IDEATION**

Cell no.	Group	Time Mean	(1)	(2)	(3)	(4)
			9.40	10.67	10.54	10
1	Exp	Pre-test (1)		0.09	0.95	1
2	Exp	Post-test (2)			1	1
3	Control	Pre-test (3)				1
4	Control	Post-test (4)				

\*  $p \leq .05$  \*\*  $p \leq .01$

#### **4.4.5.4 Discussion and summary of results: task orientation (excellence, appraisal and ideation)**

It can be stated with reasonable confidence that the intervention had a positive influence on task orientation as a whole. The subordinate factors, appraisal and ideation were impacted, whereas excellence did not show any influence. Objective 9 was attained as a result.

The fact that only appraisal and ideation, and not excellence, were influenced can be attributed to the fact that the improvisational principles taught by the intervention only relate to these two factors. Agreement relates to ideation, since both concepts refer to the acceptance of others' ideas and building on them. Narrative skills relate to appraisal. Appraisal refers to mutual monitoring among team members to maintain a higher standard of work, and narrative skills remind the actors that not every spontaneous idea is necessarily appropriate and requires them to remember and reincorporate what was already initiated in the past to create the best scenes (Anderson & West, 1996; Izzo, 1997; Vera & Crossan, 2005).

#### **4.5 SUMMARY**

The purpose of this chapter was to report the empirical results obtained in this study and to reach objectives 5 to 9.



The data analysis commenced with the coding of missing values and item analyses on the five superordinate scales and the 15 subordinate scales of the TCI. The TCI showed acceptable reliability properties for this particular study. The influence of the intervention on climate for work group innovation was determined by performing repeated measures ANOVAs on the data for the pre-tests and post-tests of the experimental group and control group. This was done for climate for innovation as a whole, as well as on the four superordinate scales and the 13 subordinate scales. Table 4.32 summarises the results according to the hypotheses stated.

**TABLE 4.32**

**SUMMARISED RESULTS ACCORDING TO THE HYPOTHESES: CLIMATE FOR WORK  
GROUP INNOVATION**

<b>CLIMATE</b>	<b>Reject Ho1</b>
<b>PARTICIPATIVE SAFETY</b>	<b>Reject Ho2</b>
Safety	Reject Ho3
Information sharing	Reject Ho4
Interaction frequency	Accept Ho5
Influence	Accept Ho6
<b>VISION</b>	<b>Reject Ho7</b>
Sharedness	Reject Ho8
Attainability	Accept Ho9
Perceived value	Accept Ho10
Clarity	Accepted Ho11
<b>SUPPORT FOR INNOVATION</b>	<b>Accept Ho12</b>
Articulated support	Accept Ho 13
Enacted support	Accept Ho 14
<b>TASK ORIENTATION</b>	<b>Reject Ho15</b>
Excellence	Accept Ho 16
Appraisal	Reject Ho17
Ideation	Reject Ho18

The results according to the objectives stated in Chapter 1, are summarised in Table 4.33.

**TABLE 4.33**  
**SUMMARY: EMPIRICAL RESEARCH OBJECTIVES AND RESULTS**

<b>Empirical research objectives</b>	<b>Results</b>
5. To determine whether a team development intervention (improvisational theatre) has a positive influence on climate for work group innovation	Climate for work group innovation was positively influenced by the intervention
6. To determine whether a team development intervention (improvisational theatre) has a positive influence on participative safety.	Participative safety was positively influenced by the intervention.
7. To determine whether a team development intervention (improvisational theatre) has a positive influence on vision.	Vision was positively influenced by the intervention.
8. To determine whether a team development intervention (improvisational theatre) has a positive influence on support for innovation.	Support for innovation was not influenced by the intervention.
9. To determine whether a team development intervention (improvisational theatre) has a positive influence on task orientation.	Task orientation was positively influenced by the intervention.

The results indicate that, for climate for work group innovation as a whole, the experimental group's scores improved significantly. The experimental group's scores for the three factors – participative safety, vision and task orientation – also improved significantly in comparison to the control group's scores. The experimental group's score for support for innovation did not improve significantly. It is therefore concluded that the intervention had a positive influence on climate for work group innovation, based on its impact on the three factors – vision, participative safety and task orientation.

In Chapter 5 the conclusions and recommendations will be discussed. The limitations of the current study, as well as recommendations for further research will be stated.

## CHAPTER 5

### CONCLUSIONS AND IMPLICATIONS

#### 5.1 INTRODUCTION

The use of improvisational theatre techniques in organisational training settings has received increased attention from academia and practitioners. However, little empirical evidence exists to confirm the effectiveness of such interventions. This study set out to determine the influence of a team development intervention based on improvisational theatre techniques, on the climate for work group innovation.

Chapter 1 emphasised the contribution that this study could make to the body of knowledge concerning innovation and the use of improvisational theatre techniques in organisations. The objectives of the study as well as the research design were highlighted. Chapter 2 served to present the theoretical background for the study. Climate for innovation, with a special emphasis on climate for work group innovation, was discussed. West's four-factor theory was emphasised, because it formed a significant part of the current study. The focus turned to improvisational theatre and its principles, with a discussion regarding improvisational theatre exercises and its use in organisational training settings. The chapter concluded with a comparison between the four factors of an innovative work group climate and the principles of improvisational theatre.

Chapter 3 provided the research methodology that supported the attainment of the empirical research objectives for this study. A non-equivalent control group design (quasi-experimental) was deemed most appropriate. This design involved an experimental and a control group that both completed a pre-test and a post-test, without the experimental and control group having pre-experimental sampling equivalence (the participants were not randomly

allocated to the groups). The sample consisted of two teams from a managed health care unit of an insurance company. The half-day intervention was developed utilising improvisational theatre exercises developed from existing literature and adapted for the purposes of this study. The Team Climate inventory (TCI) was used as measuring instrument.

An analysis and discussion of the data were presented in Chapter 4. The data was examined by performing repeated measures ANOVAs. The results indicated a significant time/group interaction for climate for work group innovation ( $p < .01$ ). The superordinate factors, participative safety, vision and task orientation, also showed a significant time/group interaction ( $p < .05$  for all three factors). Support for innovation was the only superordinate factor that did not indicate any significant results. It was therefore concluded that the intervention had a positive impact on climate for work group innovation due to the intervention's positive influence on the subordinate factors – participative safety, vision and task orientation. This final chapter will explicate the limitations, recommendations and concluding remarks.

## **5.2 LIMITATIONS**

A number of limitations were grounded in the nature of the intervention. The length of the intervention posed a threat, as a full day allocation (instead of the half-day) would have been more ideal. This would have provided more time for follow-up sessions to ensure retention of the skills learned. This was however not possible, as participants could not be withdrawn from work for an extended period of time. Furthermore it is unfortunate that the group had to be split into two for the intervention. Vera and Crossan (2005) state that it is easier for a team to develop and practice skills together if those skills have been learned together, since team training develops shared mental models and transactive memory, which improve team performance. The division of the team was however necessary, because part of the team's responsibility was to liaise between customers and hospitals, and therefore at least half the team had to stay on the job to take care of incoming customer calls.

The fact that the manager was not available for the intervention was another limitation. It can be postulated that her absence influenced the impact of the intervention on the group. Vera and Crossan (2005, p. 220) comments that "Creating a culture and a context that supports collective improvisation is difficult if not all team supervisors and members are trained, and if top management's commitment to the training is not highly visible to employees." The absence of the manager was due to miscommunication during the initial dialogue with the company and could not be rectified on the day of the intervention. A further communication related limitation stemmed from a lack of information given to the participants regarding the purpose of the study. This information was communicated to the director and the manager of the teams, and the purpose was stated on the cover letter of the questionnaire; however the participants still felt uninformed to some extent. This resulted in a rather negative attitude towards the intervention and the study. Some participants refused to complete the questionnaire since they felt that not enough information had been given to them and that they felt forced to partake in the study. The cover letter did state that participation was voluntary, but according to some of the participants, the manager had told them that they did not have a choice. Again the researcher should have made it clearer to the manager that participation in the study was voluntary. A number of the participants commented that they were initially not positive about attending the intervention, but that they were happy that they did.

The size of the sample is a limitation. In order to make significant statistical inferences, it is always better to have a larger sample. A solution for this problem would be to acquire more than one experimental group. However, the effect of internal threats to validity, such as local history, would increase.

The size of the sample also negatively impacts on the generaliseability of the results to other populations. Generalisation to future participants is also limited because the experimental group might have been sensitised to the intervention by the pre-test. Generalisation to other groups is further

hampered by the fact that the characteristics of the experimental group might differ from those of future participants (Goldstein, 1993).

The measuring instrument could have been a limitation. In some instances the subordinate factors that relate the most to improvisational theatre principles has only two or three items in the questionnaire, whereas those that do not relate that strongly to improvisational principles, has four items. For example the factor, participative safety, only has two items that relate to safety, but four that relate to interaction frequency. The principles of improvisational theatre (agreement, trust and support) relate much more to safety than to interaction frequency. Under the factor, vision, there are four items that relate to perceived value, but only three that relate to sharedness and two that relate to clarity. The narrative skills learned through the improvisational theatre exercises relate more to clarity and sharedness than to perceived value. Therefore the power of the subordinate factors that relate more to improvisational theatre principles is less, resulting in the superordinate factors showing smaller significance.

A number of statements made by participants, which could have made a positive contribution to the study, were lost, because they were not formally notarised. For example, one participant commented to the researcher after he had conducted the post-test that the *yes, and* principle had made a strong impression on her and that she still applied it in her work. A number of similar statements were lost, as the questionnaire did not provide a means for recording them.

The fact that there are no empirical data available to support the effectiveness of the different exercises utilised in the intervention could be viewed as a limitation. From this study it is also not possible to determine which of the improvisation exercises were effective and which were not.

### 5.3 CONCLUSIONS AND RECOMMENDATIONS

Research on the use of improvisational theatre exercises in organisational training settings is still in an early stage of development. The findings of this study build on the findings of limited previous research and so contribute to the existing body of knowledge. While this study points to the short-term benefits of improvisational theatre interventions, further research is needed to confirm the long-term benefits.

Future research endeavours could focus specifically on:

- ❖ Investigating the role of leadership in fostering climate for work group innovation.
- ❖ Investigating the role of leader participation on an innovative work group climate, since the influence of leadership involvement in innovative climate has not been established.
- ❖ Investigating the amount of influence leadership has on the different factors of an innovative climate.
- ❖ Investigating the effectiveness of the various individual improvisational theatre exercises in order to determine which of these should be included in future training and development interventions.
- ❖ Replicating the study on a larger sample and in another industry.
- ❖ The development and validation of a measurement instrument that measures improvisational skills.
- ❖ Including a qualitative research method in order to capture possible data lost due to the nature of the questionnaire.
- ❖ The transfer of skills to the work environment over time, with the use of a post-intervention time-series design.

Despite the limitations of this study, the results indicate that the intervention had a positive effect on climate for work group innovation. The impact of such an intervention could be even greater if some of the limitations encountered in this study were to be eliminated in future intervention programmes.

It is recommended that practitioners ensure that the company management partakes in the intervention in order to achieve optimal results from an improvisational theatre intervention. New behaviours learned by subordinates will not be sustained if leadership does not demonstrate the same behaviours. Furthermore it is recommended that practitioners undergo training in improvisational theatre before applying its techniques in interventions. A good understanding of the principles and how they are applied in improvisation theatre is crucial before it can be applied in other areas such as business training. Practitioners must also remember that climate change is a process which requires sufficient time if lasting transfer and transformation are to be established. For this reason it is crucial to arrange follow-up programmes that will entrench behavioural change. It must also be noted that before this intervention can be applied successfully for innovation training, it is first necessary to resolve major interpersonal conflicts, and to meet more pressing team development needs, that would otherwise undermine innovation. This research is useful for practitioners when proposing such interventions to corporate clients, as it makes a clear link between improvisational theatre concepts, such as *yes*, *and*, and well-established organisational development concepts, like climate for innovation. Making this link explicit is one of the main contributions of the current study.

Besides being useful for innovation training, as has been shown, improvisational theatre exercises can also be used in a diverse range of other organisational development programmes. Other possible applications include the use of improvisational theatre exercises in the following areas:

- ❖ As part of an induction programme for a new team to establish a team vision and norms;
- ❖ For emotional intelligence training, where the intervention may entail exercises that enhance awareness of one's own and others' emotions;
- ❖ In leadership training, for developing leaders' discernment relating to when to lead and when to follow, as well as providing team support;



- ❖ Training for effective communication, where body language plays an important part and listening skills are vital. Here improvisation supports the notion of listening without judgement and being able to build on what was said, rather than just moving along on the agenda.

This research has shown that the use of improvisational theatre exercises has a meaningful impact on climate for work group innovation. As such improvisational theatre becomes a team development tool that can be used to assist work teams in becoming more innovative. This is a contribution that is not only of importance in extending the body of knowledge in the field of team building; it is also important for sound business practice, as greater innovation in work teams means greater innovation in companies, and innovative companies respond more effectively to the demands of an ever-changing world of work.

## REFERENCE LIST

- Agrell, A., & Gustafson, R. (1994). The Team Climate Inventory (TCI) and group innovation: A psychometric test on a Swedish sample of work groups. *Journal of Occupational and Organizational Psychology*, *67*, 143–151.
- Ahmed, P.K. (1998). Culture and climate for innovation. *European Journal of Innovation Management*, *1*, 30–43.
- Alderfor, G. (1987). An intergroup perspective on group dynamics. In J.W. Lorsch (Ed.), *Handbook of Organizational Behavior*, (pp. 190–222). Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Amabile, T.M. (1988). A model of creativity and innovation in organisations. *Research in Organisational Behaviour*, *10*, 123–167.
- Amabile, T.M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, *39*(5), 1154–1184.
- Anderson, A., & West, N. (1996). The Team Climate Inventory: development of the TCI and its applications in teambuilding for innovativeness. *European Journal of Work and Organisational Psychology*, *5*(1), 3–66.
- Anderson, A., & West, N. (1998). Measuring climate for work group innovation: development and validation of the team climate inventory. *Journal of Organisational Behavior*, *19*, 235–258.
- Anderson, N.R., & King, N. (1991). Managing innovation in organisations. *Leadership and Organisational Development Journal*, *12*(4), 17–21.
- Anderson, N.R., & King, N. (1993). Innovation in organizations. In C.L. Cooper & I.T. Robertson (Eds) *International Review of Industrial Organizational Psychology*, *8*, (pp. 1–33). Wiley: Chichester.
- Anderson, N., De Drue, C.K.W., & Nijstad, B.A. (2004). The routinization of innovation research: a constructively critical review of the state-of-the-science. *Journal of Organizational Behavior*, *25*, 147–173.
- Ashkanasy, N.M., Wilderom, C.P.M., & Peterson M.F. (2000). *Handbook of Organizational Culture and Climate*. Thousand Oaks, California: Sage Publications.
- Baer, M., & Frese, M. (2003). Innovation is not enough: climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior*, *24*, 45–68.

- Beard, C., & Wilson, J.P. (2002). *The Power of Experiential Learning: A Handbook for Trainers and Educators*. London: Kogan Page.
- Blatner, A., & Blatner, A. (1997). *The Art of Play: Helping Adults Reclaim Imagination and Spontaneity*. New York, NY: Brunner/Mazel Inc.
- Breakwell, G.M., Hammond, S., & Fife-Schaw, C. (1995). *Research Methods in Psychology*. London: Sage.
- Briggs, S.R., & Cheek, J.M. (1986). The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality, 54*(1), 107–148.
- Brown, M.L., & Kros, J.F. (2003). Data mining and the impact of missing values. *Industrial Management and Data Systems, 103*(8), 611–621.
- Campbell, D.T., & Stanley, J.C. (1963). *Experimental and Quasi-experimental Research Designs*. Chicago, IL: Rand McNally College Publishing Company.
- Carmen, C., De la Luz, F., & Salustiano, M. (2006). Influence of top management team vision and work team characteristics on innovation. *European Journal of Innovation Management, 9*(2), 179–201.
- Cook, T.D., & Campbell D.T. (1979). *Quasi-experimentation: Design and Analysis Issues for Field Settings*. Boston: Houghton Mifflin Company.
- Cowan, D.A. (1986). Developing a process model of problem recognition. *Academy of Management Review, 11*, 763–776.
- Crossan, M. (1997). Improvise to innovate. *Ivey Business Journal, 62*(1), 36–42.
- Crossan, M. (1998). Improvisation in action. *Organisation Science, 9*(5), 593–599.
- Crossan, M., Cunha, M., Vera, D., & Cunha, J. (2005). Time and organisational improvisation. *Academy of Management Review, 30*(1), 129–145.
- Dackert, I., Lööv, L., & Mårtensson, M. (2004). Leadership and climate for innovation in teams. *Economic and Industrial Democracy, 25*(2), 301–318.
- De Bono, E. (1982). *Lateral Thinking*. Harmondsworth: Penguin Books
- De Bono, E. (1990). *Lateral Thinking for Management: a Handbook*. London: Penguin Books.

- Denton, M., & Vloeberghs, D. (2002). Leadership challenges for organisations in the New South Africa. *Leadership & Organization Development Journal*, 24(2), 84–95.
- Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44, 350–383.
- Ekvall, G. (1996). Organizational climate for creativity and innovation. *European Journal of Work and Organizational Psychology*, 5(1), 105–123.
- Ekvall, G., & Ryhammar, L. (1999). The creative climate: Its determinants and effects at a Swedish university. *Creativity Research Journal*, 12, 303–310.
- Fishman, N., & Kavanaugh, L. (1989). Searching for your missing quality link. *The Journal for Quality and Participation*, 12, 28–32.
- Frost, A., & Yarrow, R. (1990). *Improvisation in Drama*. New York: St. Martin's Press.
- Gesell, I. (1997). *Playing Along: 37 Group Learning Activities Borrowed from Improvisational Theater*. Duluth, Minnesota: Whole Person Associates.
- Gibb, S. (2004). Arts-based training in management development: the use of improvisational theatre. *Journal of Management Development*, 23(8), 741–750.
- Gladwell, M. (2006). *Blink: The Power of Thinking without Thinking*. London: Penguin.
- Goldstein, I.L. (1993). *Training in Organisations: Needs Assessment, Development and Evaluation* (3<sup>rd</sup> ed.). Pacific Grove, CA: Brooks/Cole Publishing Company.
- Halpern, C., Close, D., & Johnson, K. (1994). *Truth in Comedy: The Manual of Improvisation* (1<sup>st</sup> ed.). Colorado Springs, CO: Meriwether Publishing.
- Isaksen, S., & Tidd, J. (2006). *Meeting the Innovation Challenge: Leadership for Transformation and Growth*. Chichester, England: John Wiley & Sons, Ltd.
- Izzo, G. (1997). *The Art of Play: The New Genre of Interactive Theatre*. Portsmouth, NH: Heinemann.
- Johnstone, K. (1979). *Impro: Improvisation and the Theatre*. New York, NY: Theatre Arts Books.
- Kamoche, K., Cunha, M., & Cunha, J. (2003). Towards a theory of organisational improvisation: Looking beyond the jazz metaphor. *Journal of Management Studies*, 40, 2023–2051.

- Kanter, R.M. (2002). Strategy as improvisational theatre. *MIT Sloan Management Review*, Winter, 76–81.
- Keefe, J.A. (2003). *Improve Yourself: Business Spontaneity at the Speed of Thought*. Hoboken, New Jersey: John Wiley & Sons Inc.
- King, N., & Anderson, N. (1990). Innovation in working groups. In M.A. West & J.L. Farr (Eds), *Innovation and creativity at work: Psychological and Organisational Strategies*, (pp. 81–101). London: John Wiley.
- Kivimäki, M., Kuk, G., Elovainio, M., Thomson, L., Kalliomaki-Levanto, T., & Heikkila, A. (1997). The Team Climate Inventory: Four or five factors? *Journal of Occupational and Organisational Psychology*, 70, 375–389.
- Klein, K.J., & Knight, A.P. (2005). Innovation implementation: overcoming the challenge. *American Psychological Society*, 14(5), 243–246.
- Koppett, K. (2001). *Training to Imagine: Practical Improvisational Theatre Techniques to Enhance Creativity, Leadership, Teamwork and Learning*. Sterling: Stylus Publishing.
- Länsisalmi, H., & Kivimäki, M. (1999). Factors associated with innovative climate: what is the role of stress? *Stress Medicine*, 15, 203–213.
- Latting, J.K., Beck, M.H., Slack, K.J., Tetrick, L.E., Jones, A.P., Etchegaray, J.M., & Da Silva, N. (2004). Promoting service quality and client adherence to the service plan: the role of top management's support for innovation and learning. *Administration in Social Work*, 28(2), 29–48.
- Loo, R. (2003). Assessing team climate in project teams. *International Journal of Project Management*, 21, 511–517.
- Lowe, R. (2000). *Improvisation Inc.: Harnessing Spontaneity to Engage People and Groups*. San Francisco: Jossey-Bass/Pfeiffer and Creative Training Techniques Press.
- Lowen, P., & Loo, R. (2004). Assessing team climate by qualitative and quantitative approaches. *The Learning Organization*, 11(3), 260–272.
- Martins, E.C., & Terblanche, F. (2003). Building organisational culture that stimulates creativity and innovation. *European Journal of Innovation Management*, 6(1), 64–74.
- Mathisen, G., & Einarsen, S. (2004). A review of instruments assessing creative and innovative environments within organizations. *Creativity Research Journal*, 16(1), 119–140.

- Mathisen, G., Einarsen, S., Jorstad, K., & Bronnick, K.S. (2004). Climate for work group creativity and innovation: Norwegian validation of the team climate inventory. *Scandinavian Journal of Psychology, 45*, 383–392.
- Merx-Chermin, M., & Nijhof, W.J. (2005). Factors influencing knowledge creation and innovation in an organization. *Journal of European Industrial Training, 29*(2), 135–147.
- Michela, J.L., & Burke, W. (2000). Organizational culture and climate in transformations for quality and innovation. In N.M. Ashkanasy, C.P.M. Wilderom, & M.F. Peterson (Eds), *Handbook of Organizational Culture and Climate*, (pp. 225–244). Thousand Oaks, California: Sage Publications.
- Miron, E., Erez M., & Naveh, E. (2004). Do personal characteristics and cultural values that promote innovation, quality, and efficiency compete or complement each other? *Journal of Organizational Behavior, 25*, 175–199.
- Montes, F.J.L., Ruiz, A., & Fernández, L.M.M. (2004). Assessing the organizational climate and contractual relationship for perceptions of support for innovation. *International Journal of Manpower, 25*(2), 167–180.
- Moorman, C., & Miner. A. (1998). The convergence of planning and execution: Improvisation in new product development. *Journal of Marketing, 62*(3) 1–20.
- Moshavi, D. (2001). "Yes and": Introducing Improvisational theatre techniques to the management classroom. *Journal of Management Education, 25*(4) 437–49.
- Mumford, M.D., & Gustafson, S.B. (1988). Creativity syndrome: Integration, application and innovation. *Psychological Bulletin, 103*, 27–43.
- Nevraumont, E.J., Hanson, N.P., & Smeaton, K. (2002). *The Ultimate Improv Book: A Complete Guide to Comedy Improvisation*. Colorado Springs, CO: Meriwether Publishing.
- Pallant, J. (2001). *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS for Windows (version 10)*. Buckingham, Philadelphia: Open University Press.
- Patterson, M.G., West, M.A., Shackleton, V.J. Dawson, J.F., Lawthom, R Maitlis, S, Robinson, D.L., & Wallace, A.M. (2005). Validating the organizational climate measure: links to managerial practices, productivity and innovation. *Journal of Organizational Behavior, 26*, 379–408.

- Pearce, C.L., & Ensley, M.D. (2004). A reciprocal and longitudinal investigation of the innovation process: the central role of shared vision in product and process innovation teams (PPITs). *Journal of Organizational Behavior, 25*, 259–278.
- Pirola-Merlo, A., & Mann, L. (2004). The relationship between individual creativity and team creativity: aggregating across people and time. *Journal of Organizational Behavior, 25*, 235–257.
- Pirola-Merlo, A., Härtel, C., Mann, L., & Hirst, G. (2002). How leaders influence the impact of affective events on team climate and performance in R&D teams. *The Leadership Quarterly, 13*, 561–581.
- Poynton, R. (2005). Improvisational theatre: Alternative ways to engage with reality. *Convergence, 6*(4), 64–67.
- Poynton, R. (2007). Show up and listen: Improvisational theatre offers lessons for today's uncertainties. *HR Future, 3*(51), 51–52
- Ragazzoni, P., Baiardi, P., Zotti, A. M., Anderson, N., & West, M. (2002). Italian validation of the team climate inventory: a measure for team climate for innovation. *Journal of Managerial Psychology, 17*(4), 325–336.
- Reichardt, C.S. (1979). The statistical analysis of data from nonequivalent group designs. In T.D Cook & D.T. Campbell (Eds), *Quasi-experimentation: design and analysis issues for field settings*, (pp. 147–206). Boston: Houghton Mifflin Company.
- Schneider, B. (1990). The climate for service: an application of the climate construct. In B. Schneider (Ed.), *Organizational Climate and Culture* (pp. 383–412). San Francisco, CA: Jossey-Bass.
- Scott, S.G., & Bruce, R.A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal, 37* (3), 580–607.
- Shadish, W.R., Cook, T.D., & Campbell, D.T. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston: Houghton-Mifflin.
- Siegel, S.M., & Kaemmerer, W.F. (1978). Measuring the perceived support for innovation in organizations. *Journal of Applied Psychology, 63*, 553–562.
- Spolin, V. (1963). *Improvisation for the Theatre*. Evanston, IL: North Western University Press.
- Statsoft Inc. (2008). Statistica: Data Analysis Software System (Version 8.0) [computer software]. Tulsa: OK. Statsoft Inc.

- Taggar, S. (2002). Individual creativity and group ability to utilize individual creative resources: a multilevel model. *Academy of Management Journal*, 45 (2), 315–330.
- Tannenbaum S.I., & Yukl, G. (1992). Training and development in work organizations. *Annual Reviews Psychology*, 43, 399–441.
- Tesluk, P.E., Farr, J.L., & Klein, S.A. (1997). Influence of organizational culture and climate on individual creativity. *Journal of Creative Behavior*, 31, 27–41.
- Tjosvold, D., Wedley, W.C., & Field, R.H.G. (1986). Constructive controversy, the Vroom-Yetton Model, and managerial decision-making. *Journal of Occupational Behaviour*, 7, 125–138.
- Vera, D., & Crossan, M. (2004). Theatrical improvisation: Lessons for organisations. *Organisation Studies*, 25(5), 727–749.
- Vera, D., & Crossan, M. (2005). Improvisation and innovative performance in teams. *Organisation Science*, 16(3), 203–224.
- Weick, K.E. (1998). Improvisation as a mindset for organisational analysis. *Organisation Science*, 9(5), 543–555.
- West, M.A. (1990). The social psychology of innovation in groups. In M.A. West & J. L. Farr (Eds), *Innovation and Creativity at Work: Psychological and Organisational Strategies*, (pp. 309–333). London: John Wiley.
- West, M.A. (2002a). Ideas are ten a penny: it's team implementation not idea generation that counts. *International Association for Applied Psychology*, 411–424.
- West, M.A. (2002b). Sparkling fountains or stagnant ponds: An integrative model of creativity and innovation implementation in work groups. *Applied Psychology: An International Review*, 51, 355–387.
- West, M.A., & Farr, J.L. (1990). *Innovation and Creativity at Work: Psychological and Organisational Strategies*. London: John Wiley.
- West, M.A., Borrilla, C.S., Dawson, J.F., Brodbecka, F, Shapiro, D.A., & Haward, B. (2003). Leadership clarity and team innovation in health care. *The Leadership Quarterly*, 14, 393–410.
- West, M.A., Hirst, G., Richter, A., & Shipton, H. (2004). Twelve steps to heaven: Successfully managing change through developing innovative teams. *European Journal of Work and Organisational Psychology*, 13 (2), 269–299.



Zaccaro, S.J., Rittman, A. L., & Marks, M.A. (2001). Team leadership. *Leadership Quarterly*, *12*, 451–483.

## APPENDIX A

### INTERVENTION EXERCISES

#### 1. DECLARE YOURSELF (Koppett, 2001)

**Description:** The participants stand in a circle. One at a time, they step forward into the centre of the circle, making eye contact with the other members and saying, "I am (*name*) and I am here, and I think innovation is important because..."

**Rationale:** The purpose of the game is to get everybody's commitment to participate in the intervention. It introduces the first principle of a climate for innovation, namely participative safety. The fact that everyone gets an opportunity to share an idea illustrates how many ideas are generated when everyone participates and information is shared. The game also facilitates thoughts about the importance of innovation, which encourages further commitment to the intervention

#### 2. STORY EXCHANGE (Koppett, 2001)

**Description:** Participants exchange short stories from their lives. After exchanging stories, they cycle through a number of rounds in which they re-tell, in the first person, the stories they have just heard. In the end everyone comes together in a circle, and each member again tells the last story they heard. The stories will have changed significantly from the original versions .

**Rationale:** The exercise illustrates the importance of interaction and information sharing, which are two of the sub-factors of participative safety. It illustrates how information gets distorted if it is not shared with the whole group.

### 3. SAFETY ZONE (Koppett, 2001)

**Description:** Participants secretly pick an 'enemy' and a 'bodyguard'. They move around the room trying to keep their bodyguard between them and their enemy. One person's movement has an influence on the movement of all the other participants.

**Rationale:** The main purpose of the exercise is to warm the participants up and get them in a playful frame of mind. The exercise also introduces the concept of influence, which is another sub-factor of participative safety. It illustrates how the actions of one person influences everyone else. When everyone in a team allows themselves to be influenced by the rest of the team it results in a dynamic process.

### 4. I FAILED! (Koppett, 2001)

**Description:** Each participant gets a chance to take a huge bow and say, "I failed", "I made a mistake" or "I feel silly". Everyone then gives that person applause.

**Rationale:** The exercise creates an atmosphere of non-judgement and acceptance, which plays an important role in participative safety. It introduces the concept of tolerance for error, which is part of the factor, support for innovation. The exercise is also about acknowledging one's discomfort and embracing it, rather than fleeing from it.

### 5. THIS IS NOT A... (Gesell, 1997)

**Description:** Each participant uses an object in a way that converts it into something else. For the purpose of the intervention a colander was used.

**Rationale:** The purpose of the exercise is to encourage the participants to see things from a different perspective, to take risks and to be

spontaneous. The exercise also initiates a discussion about spontaneity and creative thinking, and the inhibitors thereof

#### **6. YES, AND VS. YES, BUT** (Gesell, 1997; Koppett, 2001)

**Description:** Two groups role-play the planning of a company party. The first must start each sentence with the words, "Yes, but." The second must start their sentences with the words, "Yes, and." The first group will have difficulty to achieve anything. The second will innovate much more easily.

**Rationale:** The exercise introduces the principle of agreement and illustrates how it relates to participative safety support for innovation and task style. Participants learn to accept others' ideas and build on them. The exercise fosters cooperation and improves interpersonal relations and listening skills.

#### **7. YES, AND** (Gesell, 1997; Koppett, 2001)

**Description:** The participants role-play in pairs short scenes, in which they practice the *yes, and* principle.

**Rationale:** The purpose of this exercise is to further establish the importance of agreement and how it relates to participative safety, support for innovation and task style.

#### **8. FOLD THE BLANKET** (Gesell, 1997)

**Description:** The participants engage in a cooperative activity around an object that is not really there, for example folding an imaginary blanket.

**Rationale:** The exercise illustrates the importance of a shared vision in the innovative process. The purpose of the exercise is to create a shared reality and a common vision through team agreement. The real meaning of reality is created through action and agreement of all the participants. In essence, reality is a shared vision among individuals.

## **9. MONSTER TALK/SPEAKING IN UNISON** (Gesell, 1997; Koppett, 2001)

**Description:** Two participants tell a story, answer questions or explain a process in unison, vocally mirroring each other. In order for the speech to be in accord the participants must listen attentively and give and take offers to and from each other.

**Rationale:** This exercise builds further on the principle of agreement and helps participants to practice listening and awareness skills. Listening and awareness skills are important for effective information sharing. The exercise also illustrates how important it is for individuals to influence and be influenced within the innovative process. Influence forms one of the sub factors of participative safety. The exercise also helps to establish trust and support between the participants.

## **10. SPEECH TAG** (Koppett, 2001)

**Description:** In groups of three or four, participants tell a story, tagging each other when they want to take over the narrative.

**Rationale:** Trust and support are fostered through this exercise. Participants must trust their team members to support them when they struggle. Trust and support both play important roles in participative safety and support for innovation. The exercise also develops listening and awareness skills. Lastly the participants learn to accept each other's ideas and build on them.

## **11. ONE WORD STORY** (Koppett, 2001)

**Description:** Participants tell a story with each successive person contributing the next word. A name for the story is created beforehand and guides the direction of the story.

**Rationale:** This exercise incorporates all four of the factors of an innovative group climate. It illustrates the importance of information sharing, as no one

can make a contribution if he or she does not listen to the offers of the participants that went before him or her. Each offer is influenced by the offers that went before it and influences the offers that follow it. Participants feel safe to share ideas because everyone is on equal ground and no one can make a suggestion that is more important than another suggestion. Each idea is supported by the previous ideas and supports the ideas that follow it. The name of the story directs the narrative and acts as a vision. Each consecutive idea must build on the previous idea and therefore not just any idea is applicable. What happened before helps each participant to select the best next offer.

## **12. STORY VISIONING** (Koppett, 2001)

**Description:** Using the *story spine* participants assume that their ideal vision of the future is the happy ending of a story. They then build a strategic plan using the other narrative elements leading to that vision.

**Rationale:** The purpose of the exercise is to develop clear and attainable steps to get to an ideal vision. The participants identify the steps themselves and take ownership of the vision, because it is their own 'story'. A sense of sharedness is therefore established.

## ADDENDUM B

### TEAM DEVELOPMENT PROGRAMME

Group	Exercise	Time	Group	Exercise	Time
<b>1</b>	Introduction	8:00	<b>2</b>	Introduction	13:00
	1. Declare yourself	8:15		1. Declare yourself	13:15
	2. Story exchange	8:30		2. Story exchange	13:30
	3. Safety zone	8:45		3. Safety zone	13:45
	4. I failed!	8:55		4. I failed!	13:55
	5. This is not a...	9:05		5. This is not a...	14:05
	6. <i>Yes vs. But</i>	9:20		6. <i>Yes vs. But</i>	14:20
	Break	9:50		Break	14:50
	7. Fold the blanket	10:00		7. Fold the blanket	15:00
	8. Monster talk	10:15		8. Monster talk	15:15
	9. One word story	10:45		9. One word story	15:45
	10. Speech tag	11:15		10. Speech tag	16:15
	11. Story visioning	11:30		11. Story visioning	16:30
	Conclusion	11:50		Conclusion	16:50